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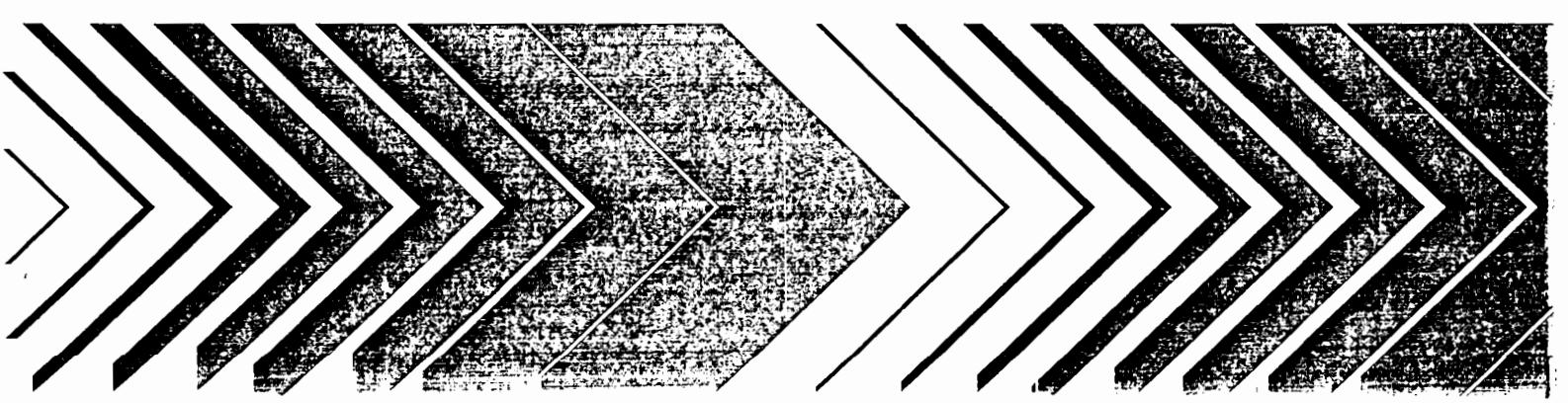
Activity Factors



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VOLUME III - ACTIVITY FACTORS

EXPOSURE FACTORS HANDBOOK

Update to Exposure Factors Handbook
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PREFACE

The National Center for Environmental Assessment (NCEA) of EPA's Office of Research and Development (ORD) has prepared this handbook to address factors commonly used in exposure assessments. This handbook was first published in 1989 in response to requests from many EPA Program and Regional offices for additional guidance on how to select values for exposure factors.

Several events sparked the efforts to revise the Exposure Factors Handbook. First, since its publication in 1989, new data have become available. Second, the Risk Assessment Council issued a memorandum titled, "Guidance on Risk Characterization for Risk Managers and Risk Assessors," dated February 26, 1992, which emphasized the use of multiple descriptors of risk (i.e., measures of central tendency such as average or mean, or high end), and characterization of individual risk, population risk, important subpopulations. A new document was issued titled "Guidance for Risk Characterization," dated February 1995. This document is an update of the guidance issued with the 1992 policy. Third, EPA published the revised Guidelines for Exposure Assessment in 1992.

As part of the efforts to revise the handbook, the EPA Risk Assessment Forum sponsored a two-day peer involvement workshop which was conducted during the summer of 1993. The workshop was attended by 57 scientists from academia, consulting firms, private industry, the States, and other Federal agencies. The purpose of the workshop was to identify new data sources, to discuss adequacy of the data and the feasibility of developing statistical distributions and to establish priorities.

As a result of the peer involvement workshop, three new chapters were added to the handbook. These chapters are: Consumer Product Use, Residential Building Characteristics, and Intake of Grains. This document also provides a summary of the available data on consumption of drinking water; consumption of fruits, vegetables, beef, dairy products, grain products, and fish; breast milk intake; soil ingestion; inhalation rates; skin surface area; soil adherence; lifetime; activity patterns; and body weight.

A new draft handbook that incorporated comments from the 1993 workshop was published for peer review in June 1995. A peer review workshop was held in July 1995 to discuss comments on the draft handbook. A new draft of the handbook that addressed comments from the 1995 peer review workshop was submitted to the Science Advisory Board (SAB) for review in August 1996. An SAB workshop meeting was held December 19-20, 1996, to discuss the comments of the SAB reviewers. Comments from the SAB review have been incorporated into the current handbook.

FOREWORD

The National Center for Environmental Assessment (NCEA) of EPA's Office of Research and Development (ORD) has five main functions: (1) providing risk assessment research, methods, and guidelines; (2) performing health and ecological assessments; (3) developing, maintaining, and transferring risk assessment information and training; (4) helping ORD set research priorities; and (5) developing and maintaining resource support systems for NCEA. The activities under each of these functions are supported by and respond to the needs of the various program offices. In relation to the first function, NCEA sponsors projects aimed at developing or refining techniques used in exposure assessments.

This handbook was first published in 1989 to provide statistical data on the various factors used in assessing exposure. This revised version of the handbook provides the up-to-date data on these exposure factors. The recommended values are based solely on our interpretations of the available data. In many situations different values may be appropriate to use in consideration of policy, precedent or other factors.

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The EPA Office of Water made an important contribution by conducting an analysis of the USDA Continuing Survey of Food Intakes by Individual (CSFII) data. They provided fish intake rates for the general population. The analysis was conducted under the direction of Helen Jacobs from the Office of Water.

15. ACTIVITY FACTORS

In calculating exposure, a person's average daily dose is determined from a combination of variables including the pollutant concentration, exposure duration, and frequency of exposure (Sexton and Ryan, 1987). These variables can be dependent on human activity patterns and time spent at each activity and/or location. A person's total exposure can be predicted using indirect approaches such as computerized mathematical models. This indirect approach of predicting exposure also requires activity patterns (time use) data. Thus, individual or group activities are important determinants of potential exposure because toxic chemicals introduced into the environment may not cause harm to an individual until an activity is performed subjecting the individual to contact with those contaminants. An individual's choice on how to spend time will vary according to their occupation, hobbies, culture, location, gender, age, and personal preferences. Educational level attained and socioeconomic status also influence chosen activities and their duration.

The purpose of this section is to describe published time use studies that provide information on activities in which various individuals engage, length of time spent performing various activities, locations in which individuals spend time and length of time spent by individuals within those various microenvironments. According to Robinson and Thomas (1991), microenvironments refer to a combination of activities and locations that yield potential exposures. Information on time spent in specific occupations and residing in specific areas also is included in this section.

This section summarizes data on how much time individuals spend doing various activities and in various microenvironments. These data cover a wide scope of activities and populations. The following table (Table 15-1) should be used as a guide to locating the information relevant to activities and microenvironments of concern. Assessors can consider using these data to develop exposure duration estimates for specific exposure scenarios. Available studies are grouped as key or relevant studies. The classifications of these studies are based on the applicability of their data to exposure assessments. All tables that provide data from these studies are presented at the back of this chapter.

15.1. ACTIVITY PATTERNS

The purpose of this section is to describe published time use studies that provide information on time-activity patterns of the national population and various subpopulations in the U.S. The studies involve survey designs where time diaries were used to collect information on the time spent at various activities and locations for children, adolescents, and adults, and to collect certain demographic and socioeconomic data. Available studies on time-activity data are summarized in the following sections. It should be noted that other site-limited studies, based on small sample sites, are available, but are not presented in this section. The studies presented in this section are ones believed to be the most appropriate for the purpose of the handbook. Activity pattern studies are presented in Sections 15.1.1 and 15.1.2.

15.1.1. Key Activity Pattern Studies

Timmer et al. (1985) - How Children Use Time - Timmer et al. (1985) conducted a study using the data obtained on children's time use from a 1981-1982 Panel study. This study was a follow-up of households from a previous survey conducted in 1975-76. The 922 respondents in the 1981-82 study were those who had completed at least three out of four waves of interview in the 1975 - 1976 survey. Timmer et al. (1985) conducted the survey during February through December 1981, and households were contacted four times during a 3 month interval of the survey period. The first contact was a personal interview, followed by subsequent telephone interviews for most of the respondents. However, families with children were contacted personally and questionnaires were administered to a maximum of three children per household.

The children surveyed were between the ages of 3 and 17 years and were interviewed twice. The questionnaires administered to children had two components: a time diary and a standardized interview. The time diary involved children reporting their activities beginning at 12.00 a.m. the previous night; the duration and location of each activity; the presence of another individual; and whether they were performing other activities at the same time. The standardized interview administered to the children was to gather information about their psychological, intellectual (using reading comprehension tests), and emotional well-being; their hopes and goals; their family environment; and their attitudes and beliefs.

For preschool children, parents provided information about the child's previous day's activities. Children in first through third grades completed the time

diary with their parents assistance and, in addition, completed reading tests. Children in fourth grade and above provided their own diary information and participated in the interview. Parents were asked to assess their children's socioemotional and intellectual development. A survey form was sent to a teacher of each school-age child to evaluate each child's socioemotional and intellectual development. The activity descriptor codes used in this study were developed by Juster et al. (1983). The activity codes and descriptors used for the adult time diaries in both surveys are presented in Appendix Table 15A-1.

The mean time spent performing major activities on weekdays and weekends by age and sex, and type of day is presented in Table 15-2. On weekdays, children spend about 40 percent of their time sleeping, 20 percent in school, and 10 percent eating, washing, dressing, and performing other personal activities (Timmer et al., 1985). The data in Table 15-2 indicates that girls spend more time than boys performing household work and personal care activities, and less time playing sports. Also, children spend most of their free time watching television. Table 15-3 presents the mean time children spend during weekdays and weekends performing major activities by five different age groups. Also, the significant effects of each variable (i.e., age, sex) are shown in Table 15-3. Older children spend more time performing household and market work, studying and watching television, and less time eating, sleeping, and playing. Timmer et al. (1985) estimated that on the average, boys spend 19.4 hours a week watching television and girls spend 17.8 hours per week performing the same activity.

A limitation associated with this study is that the data do not provide overall annual estimates of children's time use since the data were collected only during the time of the year when children attend school and not during school vacation. Another limitation is that a distribution pattern of children's time use was not provided. In addition, the survey was conducted in 1981 so there is a potential that activity patterns in children may have changed significantly from that period to the present. Therefore, application of these data for current exposure situations may bias exposure assessments results. An advantage of this survey is that diary recordings of activity patterns were kept and the data obtained were not based completely on recall. Another advantage is that because parents assisted younger children with keeping their diaries and with interviews, any bias that may have been created by having younger children record their data should have been minimized.

James and Knuiman (1987) - An Application of Bayes Methodology to the Analysis of Diary Records from a Water Use Study - In 1987, James and Knuiman provided a distribution of the amount of time (1-20 minutes) spent showering by individuals in households located in Australia. The distribution presented in the study of James and Knuiman was based on diary records of 2,500 households. James and Knuiman (1987) reported that 50 additional households provided data for shower durations exceeding 20 minutes, but were excluded from their analysis because specific values over 20 minutes were not reported. Using the data of James and Knuiman, a cumulative frequency distribution was derived for the handbook, based on the 2,550 households and is presented in Table 15-3. Based on the results in Table 15-3, approximate showering times are 7 minutes for the median value, 13 minutes for the 90th percentile, 16 minutes for the 95th percentile, and >20 minutes for the 99th percentile. The mean shower length is approximately 8 minutes using the shower durations of 1 to 20 minutes.

A mean value could not be calculated using the data for the 50 households that reported showering time >20 minutes. However, if a 30 minute showering time was assumed for the >20 minutes duration, the mean value would be 8.5 minutes as compared to a mean of 8 minutes if these households are excluded. Therefore, including the 50 additional households would give a similar mean and the results at the upper end of the distribution would not be affected.

A limitation of the study is that the data are from households in Australia and may not be representative of U.S. households. An advantage is that it presents cumulative distribution data.

Robinson and Thomas (1991) - Time Spent in Activities, Locations, and Microenvironments: A California-National Comparison - Robinson and Thomas (1991) reviewed and compared data from the 1987-88 California Air Resources Board (CARB) time activity study and from a similar 1985 national study, *American's Use of Time*. Data from the national study were recorded similarly to the CARB code categories, in order to make data comparisons (Robinson and Thomas, 1991).

The CARB study involved residents who lived in the state of California. One adult 18 years or older was randomly sampled in each household and was asked to complete a diary with entries for the previous day's

activities and the location of each activity. Time use patterns for other individuals 12 years and older in the households contacted were also included in the diaries. Telephone interviews based on the random-digit-dialing (RDD) procedure were conducted for approximately 1,762 respondents in the CARB survey. These interviews were distributed across all days of the week and across different months of the year (between October 1987-August 1988).

In the 1985 National study, single day diaries were collected from over 5,000 respondents across the U.S., 12 years of age and older. The study was conducted during January through December 1985. Three modes of time diary collection were employed for this survey: mailback, telephone interview, and personal interview. Data obtained from the personal interviews were not used in this study (Robinson and Thomas, 1991). The sample population for the mail-back and telephone interview was selected based on a RDD method. The RDD was designed to represent all telephone households in the contiguous United States (Robinson and Thomas, 1991). In addition to estimates of time spent at various activities and locations, the survey design provided information on the employment status, age, education, race, and gender for each member of the respondent's household. The mail-back procedure was based on a "tomorrow" approach, and the telephone interview was based on recall. In the "tomorrow" approach, respondents know, and agree ahead of time, that they will be keeping a diary (Robinson and Thomas, 1991).

Data comparisons by Robinson and Thomas (1991) were based on 10 major activity categories (100 sub-category codes) and 3 major locations (44 sub-location codes) employed in both the CARB and the 1985 national study. In order to make data comparisons, Robinson and Thomas (1991) excluded responses from individuals of ages 65 years and older and 18 years or younger in both surveys. In addition, only mail-back responses were analyzed for the 1985 national study. The data were then weighted to project both the California and national population in terms of days of the week, region, numbers of respondents per household, and 3 monthly seasons of the year (Robinson and Thomas, 1991).

Table 15-5 shows the mean time spent in the 10 major activities by gender and for all respondents between the ages of 18-64 years (time use data for the individual activities are presented in Appendix Table 15A-2). In both studies respondents spent most of their time (642 mins/day) on personal needs and care (i.e., sleep). Californians spent more time on paid work, education and training, obtaining goods and services, and communication, and less time on household work, child care, organizational activities, entertainment/social activities, and recreation than the national population. The male and female population closely followed the same trends as the general population. Table 15-6 shows the mean time spent at 3 major locations for the CARB and national study grouped by total sample and gender, ages 18-64 years (time use data for the 44 detailed microenvironments are presented in Appendix Table 15A-3). Respondents spent most of their time at home, 892 minutes/day for the CARB and 954 minutes/day for the national study. Californians spent more of their time away from home and traveling compared to the national population.

In addition, Robinson and Thomas (1991) defined a set of 16 microenvironments based on the activity and location codes employed in both studies. The analysis included data for adolescents (12-17 years) and adults (65 years and older) in both the CARB study and the mail-back portion of the 1985 national study (Robinson and Thomas, 1991). The mean duration of time spent in locations for total sample population, 12 years and older, across three types of locations is presented in Table 15-7 for both studies. Respondents spent most of their time indoors, 1255 and 1279 minutes/day for the CARB and national study, respectively.

Table 15-8 presents the mean duration of time and standard mean error for the 16 microenvironments grouped by total sample population and gender. Also included is the mean time spent for respondents ("Doers") who reported participating in each activity. Table 15-8 shows that in both studies men spend more time in work locations, automobiles and other vehicles, autoplaces (garages), and physical outdoor activities, outdoor sites. In contrast, women spend more time cooking, engaging in other kitchen activities, performing other chores, and shopping. The same trends also occur on a per participant basis.

Table 15-9 shows the mean time spent in various microenvironments grouped by type of the day (weekday or weekend) in both studies. Generally, respondents spent most of their time during the weekends in restaurants/bars (CARB study), motor vehicles, outdoor activities, social-cultural settings, leisure/communication activities, and sleeping. Microenvironmental differences by age are presented in Table 15-10. Respondents in the age groups 18-24 years and 25-44 years spent most of their time in

restaurants/bars and traveling. The oldest age group, 65 years and older, spent most of their time in the kitchen (cooking and other kitchen related activities) and in communication activities.

Limitations associated with the Robinson and Thomas (1991) study are that the CARB survey was based on recall and the survey was performed in California only. Therefore, if applied to other populations, the data set may be biased. Another limitation is that time distribution patterns (statistical analysis) were not provided for both studies. Also, the data are based on short term studies. An advantage of this study is that the 1985 national study represents the general U.S. population. Also, the 1985 national study provides time estimates by activities, locations, and microenvironments grouped by age, gender, and type of day. Another advantage is that the data were compared and that, overall, both data sets showed similar patterns of activity (Robinson and Thomas, 1991).

Wiley et al. (1991) - Study of Children's Activity Patterns - The California children's activity pattern survey design provided time estimates of children (under 12 years old) in various activities and locations (microenvironments) on a typical day (Wiley et al., 1991). The sample population, which consisted of 1,200 respondents (including children under 12 years of age and adult informants residing in the child's household), was selected using Waksberg RDD methods from English-speaking households. One child was selected from each household. If the selected child was 8 years old or less, the adult in the same household who spent the most time with the child responded. However, if the selected child was between 9 and 11 years old, that child responded. The population was also stratified to provide representative estimates for major regions of the state. The survey questionnaire included a time diary which provided information on the children's activity and location patterns based on a 24-hour recall period. In addition, the survey questionnaire included questions about potential exposure to sources of indoor air pollution (i.e., presence of smokers) on the diary day and the socio-demographic characteristics (i.e., age, gender, marital status of adult) of children and adult respondents. The questionnaires and the time diaries were administered via a computer-assisted telephone interviewing (CATI) technology (Wiley et al., 1991). The telephone interviews were conducted during April 1989 to February 1990 over four seasons: Spring (April-June 1989), Summer (July-September 1989), Fall (October-December 1989), and Winter (January-February 1990).

The data obtained from the survey interviews resulted in ten major activity categories, 113 detailed activity codes, 6 major categories of locations, and 63 detailed location codes. The average time respondents spent during the 10 activity categories for all children are presented in Table 15-11. Also included in this table are the detailed activity, including its code, with the highest mean duration of time; the percentage of respondents who reported participating in any activity (percent doing); and the mean, median, and maximum time duration for "doers." The dominant activity category, personal care (night sleep being the highest contributor), had the highest time expenditure of 794 mins/day (13.2 hours/day). All respondents reported sleeping at night, resulting in a mean daily time per participant of 794 mins/day spent sleeping. The activity category "don't know" had a duration of about 2 mins/day and only 4 percent of the respondents reported missing activity time.

Table 15-12 presents the mean time spent in the 10 activity categories by age and gender. Differences in activity patterns for boys and girls tended to be small. Table 15-13 presents the mean time spent in the 10 activity categories grouped by seasons and California regions. There were seasonal differences for 5 activity categories: personal care, educational activities, social/entertainment, recreation, and communication/ passive leisure. Time expenditure differences in various regions of the State were minimal for childcare, work-related activities, shopping, personal care, education, social life, and recreation.

Table 15-14 presents the distribution of time across six location categories. The participation rates (percent) of respondents, the mean, median, and maximum time for "doers." The detailed location with the highest average time expenditure are also shown. The largest amount of time spent was at home (1,078 minutes/day); 99 percent of respondents spent time at home (1,086 minutes/ participant/day). Tables 15-15 and 15-16 show the average time spent in the six locations grouped by age and gender, and season and region, respectively. There are age differences in time expenditure in educational settings for boys and girls (Table 15-15). There are no differences in time expenditure at the six locations by regions, and time spent in school decreased in the summer months compared to other seasons (Table 15-16). Table 15-17 shows the average potential exposure time children spent in proximity to tobacco smoke, gasoline fumes, and gas oven fumes grouped by age and gender. The sampled children spent more time closer to tobacco smoke (77

mins/day) than gasoline fumes (2 mins/day) and gas oven fumes (11 mins/day).

A limitation of this study is that the sampling population was restricted to only English-speaking households; therefore, the data obtained does not represent the diverse population group present in California. Another limitation is that time use values obtained from this survey were based on short-term recall (24-hr) data; therefore, the data set obtained may be biased. Other limitations are: the survey was conducted in California and is not representative of the national population, and the significance of the observed differences in the data obtained (i.e., gender, age, seasons, and regions) were not tested statistically. An advantage of this study is that time expenditure in various activities and locations were presented for children grouped by age, gender, and seasons. Also, potential exposures of respondents to pollutants were explored in the survey. Another advantage is the use of the CATI program in obtaining time diaries, which allows automatic coding of activities and locations onto a computer tape, and allows activities forgotten by respondents to be inserted into its appropriate position during interviewing (Wiley et al., 1991).

U.S. EPA (1992) - Dermal Exposure Assessment: Principles and Applications - U.S. EPA (1992) addressed the variables of exposure time, frequency, and duration needed to calculate dermal exposure as related to activity. The reader is referred to the document for a detailed discussion of these variables in relation to soil and water related activities. The suggested values that can be used for dermal exposure are presented in Table 15-18. Limitations of this study are that the values are based on small data sets and a limited number of studies. An advantage is that it presents default values for frequency and duration for use in exposure assessments when specific data are not available.

Tsang and Klepeis (1996) - National Human Activity Pattern Survey (NHAPS) - The National Human Activity Pattern Survey was conducted by the U.S. EPA (Tsang and Klepeis, 1996). It is the largest and most current human activity pattern survey available (Tsang and Klepeis, 1996). Data for 9,386 respondents in the 48 contiguous United States were collected via minute-by-minute 24-hour diaries between October 1992 and September 1994. Detailed data were collected for a maximum of 82 different possible locations, and a maximum of 91 different activities. Participants were selected using a Random Digit Dial (RDD) method and Computer Assisted Telephone Interviewing (CATI). The response rate was 63 percent, overall. If the chosen respondent was a child too young to interview, an adult in the household gave a proxy interview. Each participant was asked to recount their entire daily routine from midnight to midnight immediately previous to the day that they were interviewed. The survey collected information on duration and frequency of selected activities and of the time spent in selected microenvironments. In addition, demographic information was collected for each respondent to allow for statistical summaries to be generated according to specific subgroups of the U.S. population (i.e., by gender, age, race, employment status, census region, season, etc.). The participants' responses were weighted according to geographic, socioeconomic, time/season, and other demographic factors to ensure that results were representative of the U.S. population. The weighted sample matches the 1990 U.S. census population for each gender, age group, census region, and the day-of-week and seasonal responses are equally distributed. Saturdays and Sundays were over sampled to ensure an adequate weekend sample.

The data presented are a compilation of 24-hour diary locations, activities, and follow-up exposure questions based on exposure-related events (personal, exposure, household characteristics, medical background) (Tsang and Klepeis, 1996). Data presented are reported in the form of means, percentages of time spent, and percentages of respondent occurrences. The diary data are useful for obtaining national representative distributions of time spent in a large variety of activities and locations in a single day (Tsang and Klepeis, 1996). According to Tsang and Klepeis (1996), the 24-hour diaries in the NHAPS are useful in probabilistic modeling (Monte-Carlo) that provides frequency distributions of exposure. Overall survey results indicate that for time spent in microenvironments, the largest overall percentage of time was spent in residential-indoors (67 percent), followed by time spent outdoors (8 percent), and then time spent in vehicles (5 percent) (Tsang and Klepeis, 1996). Tables 15-19 through 15-146 provide data from the NHAPS study. NHAPS data on the time spent in selected activities are presented in Tables 15-19 through 15-92. NHAPS data on the time spent in selected microenvironments are presented in Tables 15-93 to 15-139 and of these tables, Tables 15-66 through 15-139 present 24-hour cumulative statistics (mean, minimum, maximuim, and percentiles) data for time spent in various activities and in various microenvironments.

- Tables 15-19 through 15-32 provide information on the frequency and duration of taking baths, frequency of taking showers, and on the amount of time spent in the shower or bathroom after completion of the activity.

- Table 15-33 provides the frequency for washing the hands in a day.

- Tables 15-34 through 15-36 present information on time spent by persons working with or being near foods while being grilled or barbecued; working with or near open flames; and working or being near excessive dust in the air.

- Tables 15-37 through 15-39 provide data for the number of times a vehicle was started in a garage or carport and if started with the door closed; and for time spent at a gas station or repair shop.

- Tables 15-40 through 15-42 present information on the number of times windows and doors were opened and the number of minutes they were left open at home while the respondent was at home.

- Tables 15-43 through 15-47 provide data for time spent in heavy traffic either running, walking, standing, or in a vehicle; and for time spent in indoor and outdoor parking lots and garages.

- Tables 15-48 through 15-50 present information for time spent working for pay; working at different times of day; and for the amount of that time was spent working outdoors.

- Tables 15-51 through 15-56 provide information for number of times of performing household tasks in a day such as vacuuming, and washing dishes and clothes in a residence.

- Tables 15-57 through 15-64 present data for number of times per day and the duration for playing in sand, gravel, and dirt; and for working in circumstances where one comes in contact with soil such as in a garden.

- Tables 15-65 through 15-67 provide information on the frequency of swimming in a fresh water swimming pool and the amount of time spent swimming during a 1-month period.

- Tables 15-68 through 15-87 present statistics for time spent in various major categories. They are as follows: Paid Work (main job); Household Work (food preparation and cleanup, cleaning house, clothes care); Child Care (indoor and outdoor playing); Obtaining Goods and Services (car repair); Personal Needs and Care (sleeping/napping); Free Time and Education (school); and Recreation (active sports, exercise, outdoor recreation).

- Tables 15-88 through 15-94 provide statistics for time spent in various activities that are the results of regrouping/combining activities described in Tables 15-68 through 15-87. Because the occurrences in some major categories were too small to conduct analyses, these categories were regrouped into broader categories so that new categories could be developed with a larger number of occurrences (Tsang and Klepeis, 1996). This regrouping was performed to create a better data set for estimating exposure activities from the available data (Tsang and Klepeis, 1996).

- Tables 15-95 through 15-103 provide cumulative statistics for time spent in various indoor microenvironments such as repair shops/gas stations; bar/ night club/bowling alley; and at school.

- Tables 15-104 through 15-112 present statistical data for time spent in various outdoor locations. These tables include data for locations such as schoolgrounds/ playground; parking lots; construction sites; parks and golf courses; and farms.

- Tables 15-113 through 15-120 present statistics for time spent in various locations in the home. Data are presented for the number of minutes spent in the kitchen, bathroom, bedroom, garage, basement, utility room or laundry room; in the outdoor pool or spa; and in the yard or other areas outside the house.

- Tables 15-121 through 15-130 provide data on time spent traveling and for traveling in various types of vehicles; and for time spent walking.

- Tables 15-131 through 15-140 provide statistics for total time spent indoors at home (categories regrouped/combined based on various data described in Tables 15-95 through 15-130), including all rooms; outdoors at home; traveling inside a vehicle; outdoors near a vehicle; outdoors other than near a residence; in an office or factory; in malls and other stores; in various public buildings; in bars, restaurants, etc.; and outdoor locations such as auto repair shops and laundromats.

- Table 15-141 provides the number of minutes spent in an activity or microenvironment where a smoker was present.

- Tables 15-142 and 15-143 present data for time spent smoking in a day.

- Tables 15-144 through 15-148 provide information for time spent smoking selected tobacco products such as cigars, cigarettes, and pipe tobacco.

Advantages of the NHAPS dataset are that it is representative of the U.S. population and it has been adjusted to be balanced geographically, seasonally, and for day/time. Also, it is representative of all ages, gender, and is race specific. A disadvantage of the study is that means cannot be calculated for time spent over 60, 120, and 181 minutes in selected activities. Therefore, actual time spent at the high end of the distribution for these activities cannot be captured.

15.1.2. Relevant Activity Pattern Studies

Robinson - Changes in Americans' Use of Time: 1965-1975 (1977) - Robinson (1977) compared time use data obtained from two national surveys that were conducted in 1965-1966 and in 1975. Each survey used the time-diary method to collect data. The 1965-66 survey excluded people in the following categories: (a) Non-Standard Metropolitan Statistical Area (non-SMSA) (designation of Census Bureau areas having no city with more than 50,000 population); (b) households where no adult members were in the labor force for at least 10 hours per week; (c) age 65 and over; and (d) farm-related occupations (Robinson, 1977). The 1,244 respondents in the 1965-66 study included either employed men and women or housewives (Robinson, 1977). The survey was conducted between November-December 1965 and March-April 1966. Respondents recorded their daily activities in time diaries by using the "tomorrow" approach. In this approach, diaries were kept on the day following the interviewer's initial contact. The interviewer then made a second call to the respondent to determine if the information in diaries were correct and to obtain additional data. Only one person per household was interviewed. The survey was designed to obtain information on time spent with family members, time spent at various locations during activities, and performing primary and secondary activities.

A similar study was conducted in 1975 from October through December. Unlike the 1965-1966 survey, the 1975 survey included rural areas, farmers, the unemployed, students, and retirees. Time diary data were collected using the "yesterday" approach. In this approach, interviewers made only one contact with respondents (greater than 1500) and the diaries were filled out based on a 24-hour recall (Robinson, 1977). Time diary data were also collected from the respondents' spouses.

In both surveys, the various activities were coded into 96 categories, and then were combined into five major categories. Free-time activities were grouped into 5 sub-categories (Appendix Table 15A-2). In order to compare data obtained from both surveys, Robinson (1977) excluded the same population groups in the 1975 survey that were excluded in the 1965-66 survey (i.e., farmers, rural residents).

Results obtained from the surveys were presented by gender, age, marital and employment status, race, and education. Robinson (1977) reported the data collected in hours/week; however, the method for converting daily

activities to hours/week were not presented. Table 15-149 shows the differences in time use by gender, employment, and marital status for five major activity categories and five subcategories for 1965 and 1975. Time spent on work related activities (i.e., work for pay and family care) was lower in 1975 than in 1965 for employed men and women. Table 15-149 also shows that there was an overall increase in free time activities for all the six groups. The difference in time use in 1965 and 1975 are presented by age, education, and race in Tables 15-150, 15-151, and 15-152, respectively. These tables include data for students and certain employed respondents that were excluded in Table 15-148 (Robinson, 1977). In 1975, the eldest group (ages 56-65 years) showed a decline in paid work, and an increase in family care, personal care and sleep (Table 15-150). Education level comparisons across the ten-year interval indicated that the less educated had a decrease in paid work and an increase in sleep and personal care; the most educated had an increase in work time and a decrease in other leisure (Table 15-151). For racial comparisons, Blacks spent less time at paid work than Whites across the ten-year interval (Table 15-152). Table 15-152 also shows that Blacks spent more time than Whites at free time activities in 1975.

A limitation of the study survey design is that time use data were gathered as social indicators. Therefore, the activity categories presented may not be relevant in exposure assessments. Another limitation is that statistical analysis of the data set was not provided. Additional limitations are that the time use data are old and the data may not reflect recent changes in time use. The 1965 and 1975 data sets excluded certain population groups and, therefore, may not be entirely representative of the U.S. population. Another limitation is that these are short-term studies and may not necessarily represent long-term activity patterns. An advantage of this study is that time use data were presented by age, gender, race, education level, and employment and marital status. Another advantage is that earlier investigations on the study method (24-hr recall) employed in the 1965 study revealed no systematic biases in reported activities (Robinson, 1977). Robinson (1977) also noted that the time-diary method provides a "zero-sum" measure (i.e., since there are only 24 daily hours or 168 weekly hours, if time on one activity increases then time on another activity must decrease).

Juster et al. (1983) - 1975-1981 Time Use Longitudinal Panel Study - The Time Allocation longitudinal study of the U.S. population began as part of a multinational project with the first survey conducted in 1965-66. A second national time use survey was conducted in 1975-1976 and another in 1981 (Juster et al. 1983). Juster et al. (1983) provided study descriptions of the second and third surveys. The surveys included a probability sample of the adult population (18 years and older) and children between the ages of 3 and 17 years in the United States. In both surveys, time use was measured from 24-hour recall diaries administered to respondents and their spouses. The 1975-1976 survey involved four waves of interview: wave 1, October-November 1975; wave 2, February 1976; wave 3, May-June 1976; wave 4, September 1976. The first wave was a personal interview and the other three waves were telephone interviews. The 1975-1976 survey sample consisted of 2,300 individuals, and of that sample, 1,519 respondents. Four recall diaries (one from each wave of interviews) were obtained from 947 respondents, with data on time use measures for two weekdays, one Saturday and one Sunday. The survey was designed to gather information for: employment status; earnings and other income; "consumption benefits for activities of respondents and their spouses;" health, friendships and associations of the respondents; stock technology available to the household, house repair, and maintenance activities of the family; division of labor in household work and related attitudes; physical characteristics of the respondents housing structure, net worth and housing values; job characteristics; and characteristics of mass media usage on a typical day (Juster et al., 1983).

The 1981 survey was a follow-up of respondents and spouses who had completed at least three waves of interview in the 1975-1976 survey. For the 1981 survey, 920 individuals were eligible. The survey design was similar to the 1975-1976 survey, however in this survey, the adult population was 25 years and older and consisted of 620 respondents. Four waves of interviews were conducted between February - March 1981 (wave 1), May - June 1981 (wave 2), September 1981 (wave 3), and November - December (wave 4). The 1981 survey included the respondents' children between the ages of 3 and 17 years. The survey design for children provided information on time use measures from two time diary reports: one school day and one non-school day. In addition, information for academic achievement measures,

school and family life measures, and ratings from the children's teachers were gathered during the survey.

Juster et al. (1983) did not report the time use data obtained for the 1975-1976 survey or the 1981 survey. These data are stored in four tape files and can be obtained from the Inter-university Consortium for Political and Social Research (ICPSR) in Michigan. The response rate for the first wave of interview (1975-76 survey) based on the original sample population was 66 percent, and response rates for the subsequent waves ranged from 42 percent (wave 4) to 50 percent (wave 2). In the 1981 survey, the response rate based on eligible respondents was 67 percent for the first interview, and ranged from 54 percent (wave 4) to 60 percent (wave 2) in the subsequent interviews (Juster et al., 1983). The 1975-1976 survey included 87 activities. In the 1981 survey, these 87 activities were broken down into smaller components, resulting in 223 activities (Juster et al., 1983). The activity codes and descriptors used for the adult time diaries in both surveys are presented in Appendix Table 15A-3.

A limitation of this study is that the surveys were not designed for exposure assessment purposes. Therefore, the time use data set may be biased. Another limitation is that time use data collected were based on a 24-hour diary recall. This may somewhat bias the data set obtained from this survey. An advantage associated with this survey is that it provides a database of information on various human activities. This information can be used to assess various exposure pathways and scenarios associated with these activities. Also, some of the data from these surveys were used in the studies conducted by Timmer et al. (1985) and Hill (1985). In addition, the activity descriptor codes developed in these studies were used by Timmer et al (1985), Hill (1985), and Robinson and Thomas (1991). These studies are presented in Sections 15.1.1 and 15.1.2. Another advantage of this survey is that the data are based on a national survey and conducted over a one year period, resulting in a seasonally balanced survey and one representative of the U.S. population.

Hill (1985) - Patterns of Time Use - Hill (1985) investigated the total amount of time American adults spend in one year performing various activities and the variation in time use across three different dimensions: demographic characteristics, geographical location, and seasonal characteristics. In this study, time estimates were based on data collected from time diaries in four waves (1 per season) of a survey conducted in the fall of 1975 through the fall of 1976 for the 1975-1976 Time Allocation Study. The sampling periods included two weekdays, one Saturday and one Sunday. The 1975-1976 Time Allocation Study provided information on the amount of time spent performing primary activities. The information gathered were responses to the survey question "What were you doing?" The survey also provided information on secondary activities (i.e., respondents performing more than one activity at the same time). Hill (1985) analyzed time estimates for 10 broad categories of activities based on data collected from 87 activities. These estimates included seasonal variation in time use patterns and comparisons of time use patterns for different days of the week. The 10 major categories and ranges of activity codes are listed in Appendix Table 15A-4. Hill (1985) collected data on time use for the major activity patterns in four different age groups (18-24, 25-44, 45-64, and 65 years and older). However, the time use data were summarized in graphs rather than in tables.

Analysis of the 1975-76 survey data revealed very small regional differences in time use among the broad activity patterns (Hill, 1985). The weighted mean hours per week spent performing the 10 major activity categories presented by region are shown in Table 15-153. In all regions, adults spent more time on personal care (included night sleep). Adults in the North Central region of the country spent more time on market work activities than adults in other regions of the country. Adults in the South spent more time on leisure activities (passive and active combined) than adults elsewhere (Table 15-153). Table 15-154 presents the time spent per day, by the day of the week for the 10 major activity categories. Time spent on the 87 activities (components of the 10 major categories) are presented in Appendix Table 15A-5. Adult time use was dominated in descending order by personal care (including sleep), market work, passive leisure, and house work. Collectively, these activities represent about 80 percent of available time (Hill, 1985).

According to Hill (1985), sleep was the single most dominant activity averaging about 56.3 hours per week. Television watching (passive leisure) averaged about 21.8 hours per week, and housework activities averaged about 14.7 hours per week. Weekdays were predominantly market-work oriented. Weekends (Saturday and Sunday) were predominantly devoted to household tasks ("sleeping in," socializing, and active leisure) (Hill, 1985). Table 15-155 presents the mean time spent performing these 10 groups of activities during each wave of interview (fall, winter, spring, and summer). Adjustments

were made to the data to assure equal distributions of weekdays, Saturdays, and Sundays (Hill, 1985). The data indicates that the time periods adults spent performing market work, child care, shopping, organizational activities, and active leisure were fairly constant throughout the year (Hill, 1985). The mean hours spent per week in performing the 10 major activity patterns are presented by gender in Table 15-156 (time use patterns for all 87 activities are presented in Appendix Table 15A-6). Table 15-156 indicates that time use patterns determined by data collected for the mid-1970's survey show gender differences. Men spent more time on activities related to labor market work and education, and women spent more time on household work activities.

A limitation associated with this study is that the time data were obtained from an old survey conducted in the mid-1970s. Because of fairly rapid changes in American society, applying these data to current exposure assessments may result in some biases. Another limitation is that time use data were not presented for children. An advantage of this study is that time diaries were kept and data were not based on recall. The former approach may result in a more accurate data set. Another advantage of this study is that the survey is seasonally balanced since it was conducted throughout the year and the data are from a large survey sample.

Sell (1989) - The Use of Children's Activity Patterns in the Development of a Strategy for Soil Sampling in West Central Phoenix - In a report prepared for the Arizona Department of Environmental Quality, Sell (1989) investigated the activity patterns of preschool and school age children in the west central portion of Phoenix known as Maryvale. The survey was conducted in two parts: (1) most of the school age children were interviewed personally from May through June, 1989 in three schools; and (2) survey questionnaires were mailed to parents of preschool children.

In the first survey, 15 percent of the total school population (2,008) was sampled with 111 children in grades K-6 participating (response rate of 37 percent). The surveyed population was 53.2 percent male and 46.8 percent female. Of this population, 41 percent were Hispanics, 49.5 percent Anglos, 7.2 percent Blacks, and 1.7 percent Asians. The children interviewed were between the ages of 5 and 13 years. Within each school, the children in grades K-6 were stratified into two groups, primary (grades K-3) and intermediate (grades 4-6), and children were selected randomly from each group. Children in grades K-2 were either interviewed in school or at home in the presence of a parent or an adult care-provider. In the course of the interview, children were asked to identify locations of activity areas, social areas (i.e., places they went with friends), favorite areas, and locations of forts or clubhouses. Aerial photographs were used to mark these areas.

The second survey involved only preschool children. Parents completed questionnaires which provided information on the amount of time their children spent outdoors, outdoor play locations, favorite places, digging areas, use of park or playgrounds, and swimming or wading locations. This survey was conducted between June-July 1989. One thousand (1,000) parents were sampled, but only 211 questionnaires were usable out of 886 questionnaires received resulting in a response rate for the preschool's survey of about 24 percent. The sample population consisted of children 1 month and up to preschool age. Of this population, 53 percent were Anglos, 18 percent Hispanics, 2 percent Blacks, and 3 percent Asians.

The survey design considered the kinds of activities children engaged in, but not the amount of time children spent in each activity. Therefore, Sell (1989) presented the data obtained from the survey in terms of percent of respondents who engaged in specific activities or locations. A summary of percent responses of the preschool and school-age children's activities at various locations in the Maryvale study areas are presented in Table 15-157. Also included in this table is a ranking of children's play locations based on other existing research works. Based on the survey data, Sell (1989) reported that the median time preschool children spent outdoors on weekdays was 1-2 hours, and on weekends the median time spent outdoors was 2-5 hours. Most of these children played outside in their own yards, and some played in other people's yards or parks and playgrounds (Sell, 1989).

Limitations associated with this study are that the survey design did not report the time spent in various activities or locations and the response rates obtained from the surveys were low and, therefore, may result in biased data. In addition, because the survey was conducted in Arizona, the surveyed population does not represent the children's population on a national basis. Advantages of this study are that it provides data on various activities children engage in and locations of these activities, and provides for time spent outdoors. This information is useful in determining exposure pathways to toxic pollutants for children.

Tarshis (1981) - The Average American Book - Tarshis (1981) compiled a book addressing the habits, tastes, lifestyles, and attitudes of the American people in which he reported data on time spent in personal grooming. The data presented are gathered from small surveys, the Newspaper Advertising Bureau, and magazines. Tarshis reported frequency and percentage data by gender and age for grooming activities such as showering and bathing as follows:

- 90 percent take some sort of a bath in an average 24-hour period;
- 5 percent average more than 1 shower or bath a day;
- 75 percent of men shower, 25 percent take baths;
- 50 percent of women take showers, 50 percent take baths;
- 65 percent of teenage girls 16-19 shower daily;
- 55 percent of teenage girls take at least one bath a week;
- 50 percent of women use an additive in their bath every time they bathe;
- People are more likely to shower than bathe if they are young and have higher income; and
- Showering is more popular than bathing in large cities.

Limitations of this study are that the data are compiled from other sources, and that the data are old; it is possible that these data may not reflect the current trends of the general population. An advantage of the study is that it presents frequency data that are useful in exposure assessment, especially concerning volatilization of chemicals from water.

AIHC (1994) - Exposure Factors Sourcebook - The activity factors data presented in the Sourcebook are similar to that in this handbook. The AIHC Sourcebook uses tenure data from the Bureau of Labor Statistics (1987), while this handbook uses more recent data (Carey, 1988) and provides general and specific recommendations for various age groups. Distributions were derived using data presented in U.S. EPA (1989) version of this handbook, the Bureau of Labor Statistics (1987), and various other references. Distribution data and/or recommendations are presented for time in one residence, residential occupancy, time spent indoors/outdoors, hours at home/away from home for adults and children, hours at work for adults, working tenure, and shower duration. For each distribution, the @Risk formula is provided for direct use in the @Risk software (Palisade, 1992). The Sourcebook has been classified as a relevant rather than a key study because it is not the primary source for the data used to make recommendations. It is a relevant source of alterative information.

15.2. OCCUPATIONAL MOBILITY

15.2.1. Background

The amount of time spent in different types of occupations may affect the duration and/or magnitude of exposures to contaminants specific to those occupations. For example, an individual who spends an entire lifetime as a farmer may experience a longer duration of exposure to certain contaminants, especially pesticides, than individuals who have indoor occupations. Also, individual exposures to specific chemicals in the work place may be significantly reduced when individuals change jobs. Work place exposures among women may be of shorter duration than among men because women's careers may be interrupted by home and family responsibilities. The key studies presented in the following section provide occupational tenure for workers grouped by age, race, gender, and employment status.

15.2.2. Key Occupational Mobility Studies

Carey (1988) - Occupational Tenure in 1987: Many Workers Have Remained in Their Fields - Carey (1988) presented median occupational and employer tenure for different age groups, gender, earnings, ethnicity, and educational attainment. Occupational tenure was defined as "the cumulative number of years a person worked in his or her current occupation, regardless of number of employers, interruptions in employment, or time spent in other occupations" (Carey, 1988). The information presented was obtained from supplemental data to the January 1987 Current Population Study, a U.S. Bureau of the Census publication. Carey (1988) did not present information on the survey design.

The median occupational tenure by age and gender, ethnicity, and employment status are presented in Tables 15-158, 15-159, and 15-160, respectively. The median occupational tenure of the working population (109.1 million people) 16 years of age and older in January of 1987, was 6.6 years (Table 15-158). Table 15-158 also shows that median occupational tenure increased from 1.9 years for workers 16-24 years old to 21.9 years for workers 70 years and older. The median occupational tenure for men 16 years and older was higher (7.9 years) than for women of the same age group (5.4 years). Table

15-159 indicates that whites had longer occupational tenure (6.7 years) than blacks (5.8 years), and Hispanics (4.5 years). Full-time workers had more occupational tenure than part-time workers 7.2 years and 3.1 years, respectively (Table 15-160).

Table 15-161 presents the median occupational tenure among major occupational groups. The median tenure ranged from 4.1 years for service workers to 10.4 years for people employed in farming, forestry, and fishing. In addition, median occupational tenure among detailed occupations ranged from 24.8 years for barbers to 1.5 years for food counter and fountain workers (Appendix Table 15A-7).

The strength of an individual's attachment to a specific occupation has been attributed to the individual's investment in education (Carey, 1988). Carey (1988) reported the median occupational tenure for the surveyed working population by age and educational level. Workers with 5 or more years of college had the highest median occupational tenure of 10.1 years. Workers that were 65 years and older with 5 or more years of college had the highest occupational tenure level of 33.8 years. The median occupational tenure was 10.6 years for self-employed workers and 6.2 years for wage and salary workers (Carey, 1988).

A limitation associated with this study is that the survey design employed in the data collection was not presented. Therefore, the validity and accuracy of the data set cannot be determined. Another limitation is that only median values were reported in the study. An advantage of this study is that occupational tenure (years spent in a specific occupation) was obtained for various age groups by gender, ethnicity, employment status, and educational level. Another advantage of this study is that the data were based on a survey population which appears to represent the general U.S. population.

Carey (1990) - Occupational Tenure, Employer Tenure, and Occupational Mobility - Carey (1990) conducted another study that was similar in scope to the study of Carey (1988). The January 1987 Current Population Study (CPS) was used. This study provided data on occupational mobility and employer tenure in addition to occupational tenure. Occupational tenure was defined in Carey (1988) as the "the cumulative number of years a person worked in his or her current occupation, regardless of number of employees, interruptions in employment, or time spent in other locations." Employer tenure was defined as "the length of time a worker has been with the same employer," while occupational mobility was defined as "the number of workers who change from one occupation to another" (Carey, 1990). Occupational mobility was measured by asking individuals who were employed in both January 1986 and January 1987 if they were doing the same kind of work in each of these months (Carey, 1990). Carey (1990) further analyzed the occupational mobility data and obtained information on entry and exit rates for occupations. These rates were defined as "the percentage of persons employed in an occupation who had voluntarily entered it from another occupation" and an exit rate was defined as "the percentage of persons employed in an occupation who had voluntarily left for a new occupation" (Carey, 1990).

Table 15-162 shows the voluntary occupational mobility rates in January 1987 for workers 16 years and older. For all workers, the overall voluntary occupational mobility rate was 5.3 percent. These data also show that younger workers left occupations at a higher rate than older workers. Carey (1990) reported that 10 million of the 100.1 million individuals employed in January 1986 and in January 1987 had changed occupations during that period, resulting in an overall mobility rate of 9.9 percent. Executive, administrative, and managerial occupations had the highest entry rate of 5.3 percent, followed by administrative support (including clerical) at 4.9 percent. Sales had the highest exit rate of 5.3 percent and service had the second highest exit rate of 4.8 percent (Carey, 1990). In January 1987, the median employer tenure for all workers was 4.2 years. The median employee tenure was 12.4 years for those workers that were 65 years of age and older (Carey, 1990).

Because the study was conducted by Carey (1990) in a manner similar to that of the previous study (Carey, 1988), the same advantages and disadvantages associated with Carey (1988) also apply to this data set.

15.3. POPULATION MOBILITY

15.3.1. Background

An assessment of population mobility can assist in determining the length of time a household is exposed in a particular location. For example, the duration of exposure to site-specific contamination, such as a polluted stream from which a family fishes or contaminated soil on which children play or vegetables are grown, will be directly related to the period of time residents live near the contaminated site.

Information regarding population mobility is compiled and published by the U.S. Bureau of the Census (BOC). Banks, insurance companies, credit card

companies, real estate and housing associations use residence history information. However, usually this information is confidential. Information compiled by the BOC provides information about population mobility; however, it is difficult to determine the average residence time of a homeowner or apartment dweller from this information. Census data provide representations of a cross-section of the population at specific points in time, but the surveys are not designed to follow individual families through time. The most current BOC information about annual geographical mobility and mobility by State is summarized in Appendix 15B. Figure 15-1 graphically displays the distribution of movers by type of move.

Available information was provided by the Oxford Development Corporation, the National Association of Realtors (NAR), and the BOC. According to Oxford Development Corporation, a property management firm, the typical residence time for an apartment dweller for their corporation has been estimated to range from 18 to 30 months (S. Cameron Hendricks, Sales Department, Oxford Development Corporation, Gaithersburg, MD, personal communication with P. Wood (Versar) August 10, 1992).

15.3.2. Key Population Mobility Studies

Israeli and Nelson (1992) - Distribution and Expected Time of Residence for U.S. Households - In risk assessments, the average current residence time (time since moving into current residence) has often been used as a substitute for the average total residence time (time between moving into and out of a residence) (Israeli and Nelson, 1992). Israeli and Nelson (1992) have estimated distributions of expected time of residence for U.S. households. Distributions and averages for both current and total residence times were calculated for several housing categories using the 1985 and 1987 BOC housing survey data. The total residence time distribution was estimated from current residence time data by modeling the moving process (Israeli and Nelson, 1992). Israeli and Nelson (1992) estimated the average total residence time for a household to be approximately 4.6 years or 1/6 of the expected life span (see Table 15-163). The maximal total residence time that a given fraction of households will live in the same residence is presented in Table 15-164. For example, only 5 percent of the individuals in the "All Households" category will live in the same residence for 23 years and 95 percent will move in less than 23 years.

The authors note that the data presented are for the expected time a household will stay in the same residence. The data do not predict the expected residence time for each member of the household, which is generally expected to be smaller (Israeli and Nelson, 1992). These values are more realistic estimates for the individual total residence time, than the average time a household has been living at its current residence. The expected total residence time for a household is consistently less than the average current residence time. This is the result of greater weighting of short residence time when calculating the average total residence time than when calculating the average current residence time (Israeli and Nelson, 1992). When averaging total residence over a time interval, frequent movers may appear several times, but when averaging current residence times, each household appears only once (Israeli and Nelson, 1992). According to Israeli and Nelson (1992), the residence time distribution developed by the model is skewed and the median values are considerably less than the means (T), which are less than the average current residence times.

U.S. Bureau of the Census (1993) - American Housing Survey for the United States in 1991 - This survey is a national sample of 55,000 interviews in which collected data were presented owners, renters, Black householders, and Hispanic householders. The data reflect the number of years a unit has been occupied and represent all occupied housing units that the residents' rented or owned at the time of the survey.

The results of the survey pertaining to residence time of owner/renter occupied units in the U.S. are presented in Table 15-165. Using the data in Table 15-165, the percentages of householders living in houses for specified time ranges were determined and are presented in Table 15-166. Based on the BOC data in Table 15-165, the 50th percentile and the 90th percentile values were calculated for the number of years lived in the householder's current house. These values were calculated by apportioning the total sample size (93,147 households) to the indicated percentile associated with the applicable range of years lived in the current home. Assuming an even distribution within the appropriate range, the 50th and 90th percentile values for years living in current home were determined to be 9.1 and 32.7 years, respectively. These were then rounded to 9 and 33 years. Based on the above data, the range of 9 to 33 years is assumed to best represent a central tendency estimate of length of residence and upper percentile estimate of residence time, respectively.

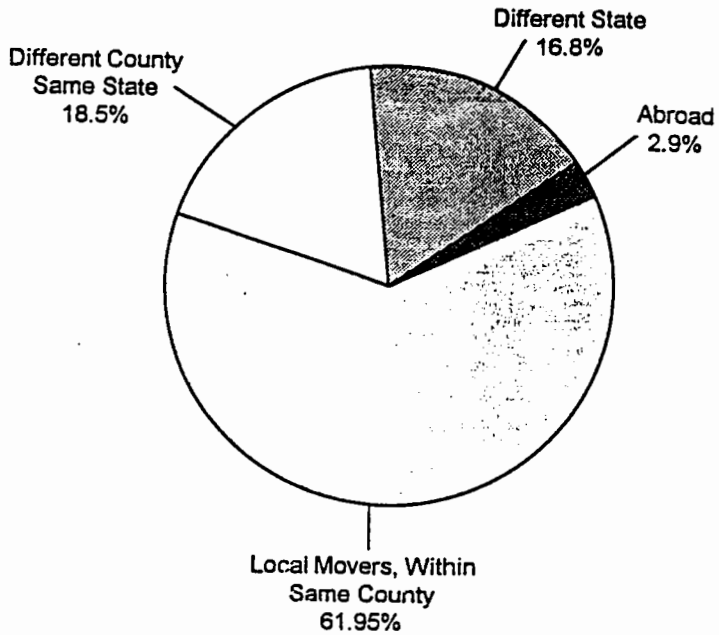

Figure 15-1. Distribution of Individuals Moving by Type of Move: 1991-92.

Source: U.S Bureau of the Census, 1993

A limitation associated with the above analysis is the assumption that there is an even distribution within the different ranges. As a result, the 50th and 90th percentile values may be biased.

Johnson and Capel (1992) - A Monte Carlo Approach to Simulating Residential Occupancy Periods and It's Application to the General U.S. Population - Johnson and Capel developed a methodology to estimate the distribution of the residential occupancy period (ROP) in the national population. ROP denotes the time (years) between a person moving into a residence and the time the person moves out or dies. The methodology used a Monte Carlo approach to simulate a distribution of ROP for 500,000 persons using data on population, mobility, and mortality.

The methodology consisted of six steps. The first step defined the population of interest and categorized them by location, gender, age, sex, and race. Next the demographic groups were selected and the fraction of the specified population that fell into each group was developed using U.S. BOC data. A mobility table was developed based on census data, which provided the probability that a person with specified demographics did not move during the previous year. The fifth step used data on vital statistics published by the National Center for Health Statistics and developed a mortality table which provided the probability that individuals with specific demographic characteristics would die during the upcoming year. As a final step, a computer based algorithm was used to apply a Monte Carlo approach to a series of persons selected at random from the population being analyzed.

Table 15-167 presents the results for residential occupancy periods for the total population, by gender. The estimated mean ROP for the total population was 11.7 years. The distribution was skewed (Johnson and Capel, 1992): the 25th, 50th, and 75th percentiles were 4, 9, and 16 years, respectively. The 90th, 95th, and 99th percentiles were 26, 33, and 47 years, respectively. The mean ROP was 11.1 years for males and 12.3 years for females, and the median value was 8 years for males and 9 years for females.

Descriptive statistics for subgroups defined by current ages were also calculated. These data, presented by gender, are shown in Table 15-168. The mean ROP increases from age 3 to age 12 and there is a noticeable decrease at age 24. However, there is a steady increase from age 24 through age 81.

There are a few biases within this methodology that have been noted by the authors. The probability of not moving is estimated as a function only of gender and age. The Monte Carlo process assumes that this probability is independent of (1) the calendar year to which it is applied, and (2) the past history of the person being simulated. These assumptions, according to Johnson and Capel (1992), are not entirely correct. They believe that extreme values are a function of sample size and will, for the most part, increase as the number of simulated persons increases.

15.3.3. Relevant Population Mobility Studies

National Association of Realtors (NAR) (1993) The Home Buying and Selling Process - The NAR survey was conducted by mailing a questionnaire to 15,000 home buyers throughout the U.S. who purchased homes during the second half of 1993. The survey was conducted in December 1993 and 1,763 usable responses were received, equaling a response rate of 12 percent (NAR, 1993). Of the respondents, forty-one percent were first time buyers. Home buyer names and addresses were obtained from Dataman Information Services (DIS). DIS compiles information on residential real estate transactions from more than 600 counties throughout the United States using courthouse deed records. Most of the 250 Metropolitan Statistical Areas are also covered in the DIS data compilation.

The home buyers were questioned on the length of time they owned their previous home. Typical homebuyer (41%) was found to have lived in their previous home between 4 and 7 years (Table 15-169). The survey results indicate that the average tenure of home buyers is 7.1 years based on an overall residence history of the respondents (NAR, 1993). In addition, the median length of residence in respondents' previous homes was found to be 6 years (see Table 15-170).

The distances the respondents moved to their new homes were typically short distances. Data presented in Table 15-171 indicate that the mean distances range from 230 miles for new home buyers and repeat buyers to 8 years for first time buyers and existing home buyers. Seventeen (17) percent of respondents purchased homes over 100 miles from their previous homes and 49 percent purchased homes less than 10 miles away.

Lehman (1994) - Homeowners Relocating at Faster Pace - Lehman (1994) presents data gathered by the Chicago Title and Trust Family Insurers. The data indicate that, in 1993, average U.S. homeowners moved every 12 years. In 1992, homeowners moved every 13.4 years and in 1991, every 14.3 years. Data from the U.S. Bureau of the Census indicate that 7 percent of the owner population moved in 1991. Based on this information, Lehman has concluded that it would take 12 years for 100 percent of owners to move. According to Lehman, Bill Harriett of the U.S. Bureau of the Census has been said that 14 years is a closer estimate for the time required for 100 percent of home owners to move. An advantage of this study is that it provides percentile data for the residential occupancy period.

15.4. RECOMMENDATIONS

Assessors are commonly interested in a number of specific types of time use data including time/frequencies for bathing, showering, gardening, residence time, indoor versus outdoor time, swimming, occupational tenure, and population mobility. Recommendations for each of these are discussed below. The confidence recommendations for activity patterns is presented in Table 15-172.

15.4.1. Recommendations for Activity Patterns

Following are recommendations for selected activities known to increase an individual's exposure to certain chemicals. These activities are time spent indoors versus outdoors and gardening, bathing and showering, swimming, residential time spent indoors and outdoors, and traveling inside a vehicle.

Time Spent Indoors Versus Outdoors and Gardening - Assessors often require knowledge of time individuals spend indoors versus outdoors. Ideally, this issue would be addressed on a site-specific basis since the times are likely to vary considerably depending on the climate, residential setting (i.e., rural versus urban), personal traits (i.e., age, health) and personal habits. The following general recommendation is offered in the absence of site-specific information. The key study by Robinson and Thomas (1991) compares the time use values derived in the CARB and National Studies; data are presented only for persons 12 years and older. The time use values did not differ significantly between the two studies and were averaged to provide the following recommended values. These values are applicable to

individuals 12 years and older. Approximately 21 hrs/day are spent indoors; 1.5 hrs/day are spent outdoors, and 1.5 hrs/day are spent in a vehicle.

Activities can vary significantly with differences in age. Special attention should be given to the activities of populations under the age of 12 years. Timmer et al. (1985) presented data on time spent in various activities for boys and girls ages 3-11 years. The study focused on activities performed indoors such as household work, personal care, eating, sleeping, school, studying, attending church, watching television, and engaging in household conversations. The average times spent in each indoor activity (and half the times spent in each activity which could have occurred indoors or outdoors) were summed. This procedure resulted in the following recommendations:

- Indoor activities accounted for about 78 percent of the total time in weekdays and 70 percent total time in weekend days. The corresponding times spent indoors are 19 hrs/day for weekdays and 17 hrs/day on weekends.

- Outdoor activities accounted for about 22 percent of children's time during weekdays and 30 percent during the weekend. The corresponding times spent outdoors are 5 hrs/day for weekdays and 7 hrs/day on weekends.

Assessors evaluating soil exposures are commonly interested in data on gardening times and frequencies. No data specific to time spent gardening could be found; thus, no firm recommendation could be made. However, three sets of data were found which indirectly relate to this issue which the assessor can consider in deriving time estimates for gardening:

- Robinson and Thomas (1991) estimated the time spent in "other outdoor activities" (Table 15-8) as 1 hr/day. These data apply to populations 12 years and older.

- Hill (1985) estimated that time spent in "house work and/or yard work" (Table 15-153) as 2 hr/day. These data apply to adult populations.

- Tsang and Klepeis (1996) estimated that time spent in the garden or other circumstances working with soil for persons 18-64 years old (Table 15-62) for the 90th, 95th, and 99th percentile at 16, 40, and 200 hours/month, respectively.

U.S. EPA's Dermal Exposure Assessment Document (1992) recommends, on the basis of judgement, an event frequency for the adult gardener, working outside: 1 to 2 events/week during warmer months or about 40 events/year. An upper percentile value of 40 hours/month is recommended based on Tsang and Klepeis (1996)

Baths and Showers - In the NHAPS study, 649 (~7 percent) of the total participants indicated either taking or giving at least one bath in a day. Those 649 respondents were subsequently asked the number of times they took or gave a bath in one day. The majority, 459 of 649 respondents, recorded taking or giving one bath in a day. These results are presented in Table 15-24. The recommended bathing duration is 20 minutes. This is a 50th percentile value based on the NHAPS distribution shown on Table 15-26; the reported 90th percentile value is 45 minutes.

The recommended shower frequency of one shower per day is based on the NHAPS data summarized in Table 15-19. This table showed that 3,594 of the 9,386 total participants indicated taking at least one shower the previous day. When asked the number of actual showers taken the previous day, the reported results ranged from one to ten showers; a majority (76 percent), of those 3,549 respondents, reported taking one shower the previous day. The NHAPS data shown on Table 15-19, Table 15-24, and Table 15-26 provide information grouped according to gender, age, race, employment, education, day of the week, seasonal conditions, and health conditions such as asthma, angina, and bronchitis/emphysema.

Recommendations for showering duration are based on the key study conducted by Tsang and Klepeis (1996). A recommended value for average showering time is 10 minutes (Table 15-20) based on professional judgement. This approximates the average showering value (8 minutes) of James and Knuiman (1987) (Table 15-18). The recommended 50th percentile value is 15 minutes, and the 95th percentile value is 35 minutes (Table 15-21). Although these values are slightly higher than those of James and Knuiman (1987), they are believed to be more representative of U.S. households.

Swimming - Data for swimming frequency is taken from the NHAPS Study (Tsang ad Klepeis, 1996). Of 9,386 participants, 653 (about 7 percent), answered yes to

the question "in the past month, did you swim in a freshwater pool?". The results to this question are summarized in Table 15-65. The recorded number of times respondents swam in the past month ranged from 1 to 60 with the greatest number of respondents, 147 (23 percent), reporting they swam one time per month. Thus, the recommended swimming frequency is one event/ month for the general population. The recommended swimming duration, 60 minutes per swimming event, is based on the NHAPS distribution shown on Table 15-67. Sixty minutes is based on the 50th percentile value; the 90th percentile value is 180 minutes per swimming event (based on one event/month); and the 99th percentile value is 181 minutes. This value (181) indicates that more than 180 minutes were spent.

In addition, users can obtain frequency and duration data grouped according to gender, age, race, employment, education, day of the week, and season. Frequency and duration data is also available in Table 15-65 and Table 15-67, for swimmer respondents reporting health conditions such as asthma, angina, and bronchitis/ emphysema.

Residential Time Spent Indoors and Outdoors - The recommendations for time spent indoors at one's residence is 16.4 hours/day. This is based on the NHAPS data summarized in Table 15-131 which records the 50th percentile value of 985.0 minutes per day (16.4 hours/day); and a 90th percentile value of 1,395 minutes per day (23.3 hours/day).

The recommended value for time spent outdoors at one's residence is 2 hours per day based on Table 15-102 (generated by the NHAPS data). Values of 105 minutes per day for the 50th percentile and 362 minutes per day for the 90th percentile are shown in Table 15-102.

Traveling Inside a Vehicle - The recommendation for time spent in a vehicle is 1 hour and 20 minutes per day. This recommendation is based on two studies and (1) Robinson and Thomas (1991) and (2) The NHAPS data. The Robinson and Thomas study evaluated two independent studies, the CARB and the National Study. They respectively reported mean durations for time spent in a vehicle as 98 and 87 minutes per day which averages to 92 minutes per day or about 1.5 hours per day. The NHAPS data, as summarized on Table 15-133, provide a 50th percentile value of 70 minutes per day (or 1 hour and 10 minutes) and a 90th percentile value of 190 minutes per day. Thus, the averaged value from these two studies is about 1 hour and 20 minutes. NHAPS data is grouped according to gender, race, age, employment status, census region, day of the week, season, and health condition of respondents.

15.4.2. Recommendations: Occupational Mobility

The median occupational tenure of the working population (109.1 million people) ages 16 years of age and older in January 1987 was 6.6 years (Carey, 1988). Since the occupational tenure varies significantly according to age it is recommended to use the age dependent values presented in Carey's 1988 study (Table 15-158). When age cannot be determined, it is recommended to use the median tenure value of 6.6 years for working men and women 16 years and older. For persons 70 years and older, a tenure value of 21.9 years is recommended for a working lifetime. A value of 30.5 years and 18.8 years is recommended for men and women, respectively. Part-time employment, race and the position held are important to consider in determining occupational tenure. The ratings indicating confidence in the occupational mobility recommendations are presented in Table 15-173. It should be noted that the recommended values are not for use in evaluating job tenure. These data can be used for determining time spent in an occupation and not for time spent at a specific job site.

15.4.3. Recommendations: Population Mobility

There are three key studies from which the population mobility recommendations were derived: Israeli and Nelson (1992), U.S. Bureau of the Census (1993) - and Johnson and Capel (1992). Each study used a unique approach to estimate the length of time a person resides in a household. The respective approaches were to (1) average current and total residence time; (2) model current residence time; and (3) determine the residential occupancy period. A summary of the approaches used and values recommended by each of these studies is presented in Table 15-174.

The three studies provide residence time estimates that are very similar to the 9 year (50th percentile) and 30 year (95th percentile). Tables 15-163 and 15-164 show residence times for different types of residences and are recommended where assessors are interested in specific types of residences. The ratings indicating confidence in the population mobility recommendations is presented in Table 15-175.

15.4.4. Summary of Recommended Activity Factors

Table 15-176 includes a summation of the recommended activity pattern factors presented in this section and the studies which provided data on the specific activities. The type of activities include indoor activities, outdoor activities, time inside a vehicle, taking a bath or shower, swimming, working at a specific occupation, and residing in a particular location.

15.5. REFERENCES FOR CHAPTER 15

AIHC. (1994) Exposure factors sourcebook. Washington, DC. American Industrial Health Council.

Bureau of Labor Statistics. (1987) Most occupational exposures are voluntary. Washington, DC: U.S. Department of Labor.

Carey, M. (1988) Occupational tenure in 1987: Many workers have remained in their fields. Monthly Labor Review. October 1988. 3-12.

Carey, M. (1990) Occupational tenure, employer tenure, and occupational mobility. Occupational Outlook Quarterly. Summer 1990: 55-60.

Hill, M.S. (1985) Patterns of time use. In: Juster, F.T.; Stafford, F.P., eds. Time, goods, and well-being. Ann Arbor, MI: University of Michigan, Survey Research Center, Institute for Social Research, pp. 133-166.

Israeli, M; Nelson, C.B. (1992) Distribution and expected time of residence for U.S. households. Risk Anal. 12(1):65-72.

James, I.R.; Knuiman, M.W. (1987) An application of Bayes methodology to the analysis of diary records from a water use study. J. Am. Sta. Assoc. 82(399):705-711.

Johnson, T. and Capel, J. (1992) A monte carlo approach to simulating residential occupancy periods and its application to the general U.S. population. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Air Quality and Standards.

Juster, F.T.; Hill, M.S.; Stafford, F.P.; Parsons, J.E. (1983) Study description. 1975-1981 time use longitudinal panel study. Ann Arbor, MI: The University of Michigan, Survey Research Center, Institute for Social Research.

Juster, F.T. (1985) A note on recent changes in time use. In: Juster, F.T.; Stafford, F.P.; eds. Time, goods, and well-being. Ann Arbor, MI: University of Michigan, Survey Research Center, Institute for Social Research. pp. 313-330.

Lehman, H.J. (1994) Homeowners relocating at faster pace. Virginia Homes Newspaper, Saturday, June 15, P. E1.

National Association of Realtors (NAR). (1993) The homebuying and selling process: 1993. The Real Estate Business Series. Washington, DC: NAR.

Palisade. (1992) @Risk users guide. Newfield, NY: Palisade Corporation.

Robinson, J.P. (1977) Changes in Americans' use of time: 1965-1975. A progress report. Cleveland, OH: Cleveland State University, Communication Research Center.

Robinson, J.P; Thomas, J. (1991) Time spent in activities, locations, and microenvironments: a California-National Comparison Project report. Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

Sell, J. (1989) The use of children's activity patterns in the development of a strategy for soil sampling in West Central Phoenix. The Arizona Department of Environmental Quality, Phoenix, Arizona.

Sexton, K; Ryan, P.B. (1987) Assessment of human exposure to air pollution: methods, measurements, and models. In: Watson, A.; Bates, R.R.; Kennedy, D., eds. Air pollution, the automobile and public health: research opportunities for quantifying risk. Washington, DC: National Academy of Sciences Press.

Spencer, G. (1989) Projections of the populations of the United States by age, sex, and race: 1988 to 2080. Washington, DC: U.S. Department of Commerce, Bureau of the Census. Series, P-25, No. 1018.

Tarshis, B. (1981) The "Average American" book. New York, NY: New American Library, p. 191.

Timmer, S.G.; Eccles, J.; O'Brien, K. (1985) How children use time. In: Juster, F.T.; Stafford, F.P.; eds. Time, goods, and well-being. Ann Arbor, MI: University of Michigan, Survey Research Center, Institute for Social Research, pp. 353-380.

Tsang, A.M.; Klepeis, N.E. (1996) Results tables from a detailed analysis of the National Human Activity Pattern Survey (NHAPS) response. Draft Report prepared for the U.S. Environmental Protection Agency by Lockheed Martin, Contract No. 68-W6-001, Delivery Order No. 13.

U.S. Bureau of the Census. (1993) American Housing Survey for the United States in 1991. Washington, DC: U.S. Government Printing Office.

U.S. Bureau of the Census. (1993) Geographical mobility: March 1991 to March 1992. Current population reports P.20-473.

U.S. EPA. (1989) Exposure factors handbook. Washington, DC: Office of Health and Environmental Assessment. EPA/600/08-89/043.

U.S. EPA. (1992) Dermal exposure assessment: principles and applications. Washington, DC: Office of Health and Environmental Assessment. EPA No. 600/8-91-011B. Interim Report.

Wiley, J.A.; Robinson, J.P.; Cheng, Y.; Piazza, T.; Stork, L.; Plasden, K. (1991) Study of children's activity patterns. California Environmental Protection Agency, Air Resources Board Research Division. Sacramento, CA.

Table 15-1. Time Use Table Locator Guide

Percentile	Basis	Population	Application	Study	Table
Averages	Activity	Children 3-17 yrs	National	Timmer et al., 1985	15-2
Distribution	Activity	Children and Teens	National	Timmer et al., 1985	15-3
Distribution	Showering	Adults	Foreign-Australia	James and Knuiman, 1987 Tsang and Klepeis, 1996	15-4 15-24
Averages	Activity	Adults 18-64 yrs	National	Robinson and Thomas, 1991	15-5
Averages	Activity	Adults 18-64 yrs	Regional-CA	Robinson and Thomas, 1991	15-5
Averages	Microenvironment	Adults 18-64 yrs	National/Regional-CA	Robinson and Thomas, 1991	15-6
Averages	Microenvironment	Children and Adult	Regional-California	Robinson and Thomas, 1991	15-7 to 15-10
Averages	Microenvironment	Children and Adults	National	Robinson and Thomas, 1991	15-7 to 15-10
Averages	Activity	Infants and Children	Regional-California	Wiley et al., 1991	15-11
Distribution	Activity	Infants and Children	Regional-California	Wiley et al., 1991	15-12
Averages	Activity by season	Infants and Children	Regional-California	Wiley et al., 1991	15-13
Averages	Microenvironment	Infants and Children	Regional-California	Wiley et al., 1991	15-14
Distribution	Microenvironment	Infant and Children	Regional-California	Wiley et al., 1991	15-15
Averages	Microenvironment by season	Infants and Children	Regional-California	Wiley et al., 1991	15-16
Distribution	Microenvironment near pollutant	Infant and Children	Regional-California	Wiley et al., 1991	15-17
Averages	Bathing and swimming	Adults	Regional-National	USEPA, 1992 Tsang and Klepeis, 1996	15-18 15-22, 15-63
Average	Activity by employment	Adults	National	Robinson, 1977	15-147
Averages	Occupational Tenure by race and gender	Teens and Adults	National	Carey, 1988	15-157
Averages	Occupational Tenure by employment and gender	Teens and Adults	National	Carey, 1988	15-158
Distribution	Occupational Tenure by employment	Teens and Adults	National	Carey, 1988	15-159
Distribution	Occupational Mobility by age	Teens and Adults	National	Carey, 1990	15-160
Distribution	Population Mobility by locale	All ages	National	Census, 1993	Figure 15-1
Averages	Residence Time by region, setting	All ages	National	Israeli and Nelson, 1992	15-161
Distribution	Residence Time by region, setting	All ages	National	Israeli and Nelson, 1992	15-162
Distribution	Residence Time by year moved in	All ages	National	Census, 1993	15-163
Distribution	Residence Time by years in current home	All ages	National	Census, 1993	15-164
Distribution	Residence Time by gender	All ages	National	Johnson and Capel, 1992	15-165
Distribution	Residence Time by age	All ages	National	Johnson and Capel, 1992	15-166
Distribution	Residence Time by years in previous house	All ages	National	NAR, 1993	15-167
Distribution	Residence Time by tenure in previous home	All ages	National	NAR, 1993	15-168
Distribution	Relocation Distance	All ages	National	NAR, 1993	15-169

Table 15-2. Mean Time Spent (minutes) Performing Major Activities Grouped by Age, Sex and Type of Day

Activity	Age (3-11 years)				Age (12-17 years)			
	Duration of Time (mins/day)				Duration of Time (mins/day)			
	Weekdays		Weekends		Weekdays		Weekends	
	Boys (n=118)	Girls (n=111)	Boys (n=118)	Girls (n=111)	Boys (n=77)	Girls (n=83)	Boys (n=77)	Girls (n=83)
Market Work	16	0	7	4	23	21	58	25
Household Work	17	21	32	43	16	40	46	89
Personal Care	43	44	42	50	48	71	35	76
Eating	81	78	78	84	73	65	58	75
Sleeping	584	590	625	619	504	478	550	612
School	252	259	--	--	314	342	--	--
Studying	14	19	4	9	29	37	25	25
Church	7	4	53	61	3	7	40	36
Visiting	16	9	23	37	17	25	46	53
Sports	25	12	33	23	52	37	65	26
Outdoors	10	7	30	23	10	10	36	19
Hobbies	3	1	3	4	7	4	4	7
Art Activities	4	4	4	4	12	6	11	9
Playing	137	115	177	166	37	13	35	24
TV	117	128	181	122	143	108	187	140
Reading	9	7	12	10	10	13	12	19
Household Conversations	10	11	14	9	21	30	24	30
Other Passive Leisure	9	14	16	17	21	14	43	33
NA[a]	22	25	20	29	14	17	10	4
Percent of Time Accounted for by Activities Above	94%	92%	93%	89%	93%	92%	88%	89%

a NA = Unknown
Source: Timmer et al., 1985.

Table 15-3. Mean Time Spent (minutes) in Major Activities Grouped by Type of Day for Five Different Age Groups

	Time Duration (mins)										Significant Effects[a]
	Weekday					Weekend					
Age (years)	3-5	6-8	9-11	12-14	15-17	3-5	6-8	9-11	12-14	15-17	
Activities											
Market Work	--	14	8	14	28	--	4	10	29	48	
Personal Care	41	49	40	56	60	47	45	44	60	51	A,S,AxS (F>M)
Household Work	14	15	18	27	34	17	27	51	72	60	A,S, AxS (F>M)
Eating	82	81	73	69	67	81	80	78	68	65	A
Sleeping	630	595	548	473	499	634	641	596	604	562	A
School	137	292	315	344	314	--	--	--	--	--	
Studying	2	8	29	33	33	1	2	12	15	30	A
Church	4	9	9	9	3	55	56	53	32	37	A
Visiting	14	15	10	21	20	10	8	13	22	56	A (Weekend only)
Sports	5	24	21	40	46	3	30	42	51	37	A,S (M>F)
Outdoor activities	4	9	8	7	11	8	23	39	25	26	
Hobbies	0	2	2	4	6	1	5	3	8	3	
Art Activities	5	4	3	3	12	4	4	4	7	10	
Other Passive Leisure	9	1	2	6	4	6	10	7	10	18	A
Playing	218	111	65	31	14	267	180	92	35	21	A,S (M>F)
TV	111	99	146	142	108	122	136	185	169	157	A,S, AxS (M>F)
Reading	5	5	9	10	12	4	9	10	10	18	A
Being read to	2	2	0	0	0	3	2	0	0	0	A
NA	30	14	23	25	7	52	7	14	4	9	A

a Effects are significant for weekdays and weekends, unless otherwise specified A = age effect, $P<0.05$, for both weekdays and weekend activities; S = sex effect $P<0.05$, F>M, M>F = females spend more time than males, or vice versa; and AxS = age by sex interaction, $P<0.05$.

Source: Timmer et al., 1985.

Table 15-4. Cumulative Frequency Distribution of Average Shower Duration for 2,550 Households

Shower duration (minutes)	Cumulative frequency (percentage)
1	0.2
2	0.8
3	3.1
4	9.6
5	22.1
6	37.5
7	51.6
8	62.5
9	72.0
10	79.4
11	84.5
12	88.4
13	90.6
14	92.3
15	93.7
16	94.9
17	95.7
18	96.7
19	97.6
20	98.0
<20	100.0

Source: Adapted from James and Knuiman, 1987.

Table 15-5. Mean Time Spent (minutes/day) in Ten Major Activity Categories Grouped by Total Sample and Gender for the CARB and National Studies (age 18-64 years)

Activity Category[a]	Activity Codes[b]	Time Duration (mins/day)					
		CARB (1987-88)	National (1985)	CARB (1987-88)		National (1985)	
		Total Sample		Men	Women	Men	Women
		n[c] = 1,359	n = 1,980	n = 639	n = 720	n = 921	n = 1,059
Paid Work	00-09	273	252	346	200	323	190
Household Work	10-19	102	118	68	137	79	155
Child Care	20-29	23	25	12	36	11	43
Obtaining Goods and Services	30-39	61	55	48	73	44	62
Personal Needs and Care	40-49	642	642	630	655	636	645
Education and Training	50-59	22	19	25	20	21	16
Organizational Activities	60-69	12	17	11	13	12	20
Entertainment/Social Activities	70-79	60	62	57	55	64	62
Recreation	80-89	43	50	53	31	69	43
Communication	90-99	202	196	192	214	197	194

a,b Time use for components of activity categories and codes are shown in Appendix Table 15A-6.
c n = total diary days.
Source: Robinson and Thomas, 1991

Table 15-6. Total Mean Time Spent at Three Major Locations Grouped by Total Sample and Gender for the CARB and National Study (ages 18-64 years)

Location[a]	Code[b]	CARB (1987-88)	National (1985)	CARB (1987-88)		National (1985)	
		Total Sample		Men	Women	Men	Women
		n[c] = 1359	n[c] = 1980	n[c] = 39	n[c] = 720	n[c] = 921	n[c] = 1059
At Home	WC01-13	892	954	822	963	886	1022
Away From Home	WC21-40	430	384	487	371	445	324
Travel	WC51-61	116	94	130	102	101	87
Not Ascertained	WC99	2	8	1	4	8	7
Total Time		1440	1440	1440	1440	1440	1440

a,b Time use data for the 44 components of location and location codes are presented in Appendix Table 15A-7.
c n = total diary days.
Source: Robinson and Thomas, 1991.

Table 15-7. Mean Time Spent at Three Locations for both CARB and National Studies (ages 12 years and older)

Location Category	Mean duration (mins/day)			
	CARB (n = 1762)[b]	S.E.[a]	National (n = 2762)[b]	S.E.
Indoor	1255[c]	28	1279[c]	21
Outdoor	86[d]	5	74[d]	4
In-Vehicle	98[d]	4	87[d]	2
Total Time Spent	1440		1440	

[a] S.E. = Standard Error of Mean

[b] Weighted Number - National sample population was weighted to obtain a ratio of 46.5 males and 53.5 females, in equal proportion for each day of the week, and for each quarter of the year.

[c] Difference between the mean values for the CARB and national studies is not statistically significant.

[d] Difference between the mean values for the CARB and national studies is statistically significant at the 0.05 level.

Source: Robinson and Thomas, 1991.

Table 15-8. Mean Time Spent (minutes/day) in Various Microenvironments Grouped by Total Population and Gender (12 years and over) in the National and CARB Data

	National Data Mean Duration (mins/day) (standard error)[a]					
Microenvironment	N = 1284[b] Men	"Doer"[c] Men	N = 1478[b] Women	"Doer" Women	N = 2762[b] Total	"Doer" Total
Autoplaces	5 (1)	90	1 (0)	35	3 (0)	66
Restaurant/bar	22 (2)	73	20 (2)	79	21 (1)	77
In-vehicle	92 (3)	99	82 (3)	94	87 (2)	97
In-Vehicle/other	1 (1)	166	1 (0)	69	1 (0)	91
Physical/outdoors	24 (3)	139	11 (2)	101	17 (2)	135
Physical/indoors	11 (1)	84	6 (1)	57	8 (1)	74
Work/study-residence	17 (2)	153	15 (2)	150	16 (1)	142
Work/study-other	221 (10)	429	142 (7)	384	179 (6)	390
Cooking	14 (1)	35	52 (2)	67	34 (1)	57
Other activities/kitchen	54 (3)	69	90 (4)	102	73 (2)	88
Chores/child	88 (3)	89	153 (5)	154	123 93)	124
Shop/errand	23 (2)	56	38 (2)	74	31 (1)	67
Other/outdoors	70 (6)	131	43 (4)	97	56 (4)	120
Social/cultural	71 (4)	118	75 (4)	110	73 (3)	118
Leisure-eat/indoors	235 (8)	241	215 (7)	224	224 (5)	232
Sleep/indoors	491 (14)	492	496 (11)	497	494 (9)	495
	CARB Data Mean Duration (mins/day) (standard error)[a]					
Microenvironment	N = 867[b] Men	"Doer"[c] Men	N = 895[b] Women	"Doer" Women	N = 1762[b] Total	"Doer" Total
Autoplaces	31 (8)	142	9 (2)	50	20 (4)	108
Restaurant/bar	45 (4)	106	28 (3)	86	36 (3)	102
In-vehicle	105 (7)	119	85 (4)	100	95 (4)	111
In-Vehicle/other	4 (1)	79	3 (2)	106	3 (1)	94
Physical/outdoors	25 (3)	131	8 (1)	86	17 (2)	107
Physical/indoors	8 (1)	63	5 (1)	70	7 (1)	68
Work/study-residence	14 (3)	126	11 (2)	120	13 (2)	131
Work/study-other	213 (14)	398	156 (11)	383	184 (9)	450
Cooking	12 (1)	43	42 (2)	65	27 (1)	55
Other activities/kitchen	38 (3)	65	60 (4)	82	49 (2)	74
Chores/child	66 (4)	75	134 (6)	140	100 (4)	109
Shop/errand	21 (3)	61	41 (3)	78	31 (2)	70
Other/outdoors	95 (9)	153	44 (4)	82	69 (5)	117
Social/cultural	47 (4)	112	59 (5)	114	53 (3)	112
Leisure-eat/indoors	223 (10)	240	251 (10)	263	237 (7)	250
Sleep/indoors	492 (17)	499	504 (15)	506	498 (12)	501

a Standard error of the mean
b Weighted number
c Doer = Respondents who reported participating in each activity/location spent in microenvironments.
Source: Robinson and Thomas, 1991.

Table 15-9. Mean Time Spent (minutes/day) in Various Microenvironments by Type of Day for the California and National Surveys (sample population ages 12 years and older)

Weekday Microenvironment	Mean Duration (standard error)[a] (mins/day)		Mean Duration for "Doer"[b] (mins/day)	
	CARB (n=1259)[c]	NAT (n=1973)[c]	CARB	NAT
1 Autoplaces	21 (5)	3 (1)	108	73
2 Restaurant/Bar	29 (3)	20 (2)	83	73
3 In-Vehicle/Internal Combustion	90 (5)	85 (2)	104	95
4 In-Vehicle/Other	3 (1)	1 (0)	71	116
5 Physical/Outdoors	14 (2)	15 (2)	106	118
6 Physical/Indoors	7 (1)	8 (1)	64	68
7 Work/Study-Residence	14 (2)	16 (2)	116	147
8 Work/Study-Other	228 (11)	225 (8)	401	415
9 Cooking	27 (2)	35 (2)	58	57
10 Other Activities/Kitchen	51 (3)	73 (3)	76	87
11 Chores/Child	99 (5)	124 (4)	108	125
12 Shop/Errand	30 (2)	30 (2)	67	63
13 Other/Outdoors	67 (6)	51 (4)	117	107
14 Social/Cultural	42 (3)	62 (3)	99	101
15 Leisure-Eat/Indoors	230 (9)	211 (6)	244	218
16 Sleep/Indoors	490 (14)	481 (10)	495	483

Weekend Microenvironment	Mean Duration (standard error)[a] (mins/day)		Mean Duration for "Doer"[b] (mins/day)	
	CARB (n=503)[c]	NAT (n=789)[c]	CARB	NAT
1 Autoplaces	19 (4)	3 (1)	82	62
2 Restaurant/Bar	55 (6)	23 (2)	127	84
3 In-Vehicle/Internal Combustion	108 (8)	91 (6)	125	100
4 In-Vehicle/Other	5 (3)	0 (0)	130	30
5 Physical/Outdoors	23 (3)	23 (4)	134	132
6 Physical/Indoors	7 (1)	9 (2)	72	80
7 Work/Study-Residence	10 (2)	15 (3)	155	165
8 Work/Study-Other	74 (11)	64 (6)	328	361
9 Cooking	27 (2)	34 (2)	60	55
10 Other Activities/Kitchen	44 (3)	73 (4)	71	90
11 Chores/Child	103 (7)	120 (5)	114	121
12 Shop/Errand	35 (4)	35 (3)	81	75
13 Other/Outdoors	74 (7)	67 (7)	126	132
14 Social/Cultural	79 (7)	99 (6)	140	141
15 Leisure-Eat/Indoors	256 (12)	257 (11)	273	268
16 Sleep/Indoors	520 (20)	525 (17)	521	525

[a] Standard Error of Mean
[b] Doer = Respondent who reported participating in each activity/location spent in microenvironments.
[c] Weighted Number

Source: Robinson and Thomas, 1991.

Table 15-10. Mean Time Spent (minutes/day) in Various Microenvironments by Age Groups for the National and California Surveys

Microenvironment	National Data Mean Duration (Standard Error)[a]									
	Age 12-17 years N=340[b]	"Doer"[c]	Age 18-24 years N=340	"Doer"	Age 24-44 years N=340	"Doer"	Age 45-64 years N=340	"Doer"	Age 65+ years N=340	"Doer"
Autoplaces	2 (1)	73	7 (2)	137	2 (1)	43	4 (1)	73	4 (2)	57
Restaurant/bar	9 (2)	60	28 (3)	70	25 (3)	86	19 (2)	67	20 (5)	74
In-vehicle/internal combustion	79 (7)	88	103 (8)	109	94 (4)	101	82 (5)	91	62 (5)	80
In-vehicle/other	0 (0)	12	1 (1)	160	1 (0)	80	1 (1)	198	1 (1)	277
Physical/outdoors	32 (8)	130	17 (4)	110	19 (4)	164	7 (1)	79	15 (4)	81
Physical/indoors	15 (3)	87	8 (2)	76	7 (1)	71	7 (2)	77	7 (1)	51
Work/study-residence	22 (4)	82	19 (6)	185	16 (2)	181	9 (2)	169	5 (3)	297
Work/study-other	159 (14)	354	207 (20)	391	220 (11)	422	180 (13)	429	35 (6)	341
Cooking	11 (3)	40	18 (2)	39	38 (2)	57	43 (3)	64	50 (5)	65
Other activities/kitchen	53 (4)	64	42 (3)	55	70 (4)	86	90 (6)	101	108 (9)	119
Chores/child	91 (7)	92	124 (9)	125	133 (6)	134	121 (6)	122	119 (7)	121
Shop/errands	26 (4)	68	31 (4)	65	33 (2)	66	33 (3)	67	35 (5)	69
Other/outdoors	70 (13)	129	34 (4)	84	48 (6)	105	60 (7)	118	82 (13)	140
Social/cultural	87 (10)	120	100 (12)	141	56 (3)	94	73 (6)	116	85 (8)	122
Leisure-eat/indoors	237 (16)	242	181 (11)	189	200 (8)	208	238 (11)	244	303 (20)	312
Sleep/indoors	548 (31)	551	511 (26)	512	479 (14)	480	472 (15)	472	507 (26)	509

Table 15-10. Mean Time Spent (minutes/day) in Various Microenvironments by Age Groups (continued)

Microenvironment	CARB Data Mean Duration (Standard Error)[a]									
	Age 12-17 years N=183[b]	"Doer"[c]	Age 18-24 years N=250	"Doer"	Age 24-44 years N=749	"Doer"	Age 45-64 years N=406	"Doer"	Age 65+ years N=158	"Doer"
Autoplaces	16 (8)	124	16 (4)	71	25 (9)	114	20 (5)	94	9 (2)	53
Restaurant/bar	16 (4)	44	40 (8)	98	44 (5)	116	31 (4)	82	25 (7)	99
In-vehicle/internal combustion	78 (11)	89	111 (13)	122	98 (5)	111	100 (11)	117	63 (8)	89
In-vehicle/other	1 (0)	19	3 (1)	60	5 (2)	143	2 (1)	56	2 (1)	53
Physical/outdoors	32 (7)	110	13 (3)	88	17 (3)	128	14 (3)	123	15 (4)	104
Physical/indoors	20 (4)	65	5 (2)	77	6 (1)	61	5 (1)	77	3 (1)	48
Work/study-residence	25 (5)	76	30 (11)	161	7 (2)	137	10 (3)	139	5 (3)	195
Work/study-other	196 (30)	339	201 (24)	344	215 (14)	410	173 (20)	429	30 (11)	336
Cooking	3 (1)	19	14 (2)	40	32 (2)	59	31 (3)	68	41 (7)	69
Other activities/kitchen	31 (4)	51	31 (5)	55	43 (3)	65	62 (6)	91	97 (14)	119
Chores/child	72 (11)	77	79 (8)	85	110 (6)	119	99 (8)	109	123 (15)	141
Shop/errands	14 (3)	50	35 (7)	71	33 (4)	71	32 (3)	77	35 (5)	76
Other/outdoors	58 (8)	78	80 (15)	130	68 (8)	127	76 (12)	134	55 (7)	101
Social/cultural	63 (14)	109	65 (10)	110	50 (5)	122	50 (5)	107	49 (7)	114
Leisure-eat/indoors	260 (27)	270	211 (19)	234	202 (9)	215	248 (15)	261	386 (34)	394
Sleep/indoors	557 (44)	560	506 (30)	510	487 (17)	491	485 (23)	491	502 (31)	502

[a] Standard error.
[b] All N's are weighted number.
[c] Doer = Respondents who reported participating in each activity/location spent in microenvironments.
Source: Robinson and Thomas, 1991.

Table 15-11. Mean Time (minutes/day) Children Spent in Ten Major Activity Categories for All Respondents

Activity Category	Mean Duration (mins/day)	% Doing	Mean Duration for Doers[b] (mins/day)	Median Duration for Doer (mins/day)	Maximum Duration for Doers (mins/day)	Detailed Activity with Highest Avg. Minutes (code)
Work-related[a]	10	25	39	30	405	Eating at work/school/daycare (06)
Household	53	86	61	40	602	Travel to household (199)
Childcare	< 1	< 1	83	30	290	Other child care (27)
Goods/Services	21	26	81	60	450	Errands (38)
Personal Needs and Care[c]	794	100	794	770	1440	Night sleep (45)
Education[d]	110	35	316	335	790	School classes (50)
Organizational Activities	4	4	111	105	435	Attend meetings (60)
Entertain/Social	15	17	87	60	490	Visiting with others (75)
Recreation	239	92	260	240	835	Games (87)
Communication/Passive Leisure	192	93	205	180	898	TV use (91)
Don't know/Not coded	2	4	41	15	600	--
All Activities[e]	1441					

[a] Includes eating at school or daycare, an activity not grouped under the "education activities" (codes 50-59, 549).
[b] "Doers" indicate the respondents who reported participating in each activity category.
[c] Personal care includes night sleepand daytime naps, eating, travel for personal care.
[d] Education includes student and other classes, homework, library, travel for education.
[e] Column total may not sum to 1440 due to rounding error
Source: Wiley et al., 1991.

Table 15-12. Mean Time Children Spent in Ten Major Activity Categories Grouped by Age and Gender

Activity Category	Mean Duration (minutes/day)									
	Boys					Girls				
	0-2 yrs	3-5 yrs	6-8 yrs	9-11 yrs	All Ages	0-2 yrs	3-5 yrs	6-8 yrs	9-11 yrs	All Ages
Work-related	4	9	14	12	10	5	12	11	10	10
Household	33	45	55	65	48	58	44	51	76	57
Childcare	0	0	0	1	<1	0	0	0	4	1
Goods/Services	20	22	19	14	19	22	25	23	22	23
Personal Needs and Care[a]	914	799	736	690	792	906	816	766	701	797
Education[b]	60	67	171	138	106	41	95	150	176	115
Organizational Activities	1	3	7	6	4	6	1	4	6	4
Entertainment/Social	3	15	5	34	13	5	16	9	36	17
Recreation	217	311	236	229	250	223	255	238	194	228
Communication/Passive Leisure	187	166	195	250	197	171	173	189	213	186
Don't know/Not coded	1	4	1	1	2	3	1	<1	3	2
All Activities[c]	1440	1441	1439	1440	1442	1440	1438	1441	1441	1440
Sample Sizes Unweighted N's	172	151	145	156	624	141	151	124	160	576

[a] Personal needs and care includes night sleep and daytime naps, eating, travel for personal care.
[b] Education includes student and other classes, homework, library, travel for education.
[c] The column totals may differ from 1440 due to rounding error.
Source: Wiley et al., 1991.

Table 15-13. Mean Time Children Spent in Ten Major Activity Categories Grouped by Seasons and Regions

Activity Category	Mean Duration (minutes/day)								
	Season					Region of California			
	Winter (Jan-Mar)	Spring (Apr-June)	Summer (July-Sept)	Fall (Oct-Dec)	All Seasons	So. Coast	Bay Area	Rest of State	All Regions
Work-related	10	10	6	13	10	10	10	8	10
Household	47	58	53	52	53	45	62	55	53
Childcare	<1	1	<1	<1	<1	<1	<1	1	<1
Goods/Services	19	17	26	23	21	20	21	23	21
Personal Needs and Care[a]	799	774	815	789	794	799	785	794	794
Education[b]	124	137	49	131	110	109	115	109	110
Organizational Activities	3	5	5	3	4	2	6	6	4
Entertainment/Social	14	12	12	22	15	17	10	16	15
Recreation	221	243	282	211	239	230	241	249	239
Communication/Passive Leisure	203	180	189	195	192	206	190	175	192
Don't know/Not coded	<1	2	3	<1	2	1	1	3	2
All Activities[c]	1442	1439	1441	1441	1441	1440	1442	1439	1441
Sample Sizes (Unweighted)	318	204	407	271	1200	224	263	713	1200

[a] Personal needs and care includes night sleep and daytime naps, eating, travel for personal care.
[B] Education includes student and other classes, homework, library, travel for education.
[c] The column totals may not be equal to 1440 due to rounding error.
Source: Wiley et al., 1991.

Table 15-14. Mean Time Children Spent in Six Major Location Categories for All Respondents (minutes/day)

Location Category	Mean Duration (mins)	% Doing	Mean Duration for Doers (mins)	Median Duration for Doers (mins)	Maximum Duration for Doers (mins)	Detailed Location with Highest Avg. Time
Home	1,078	99	1,086	1,110	1,440	Home - bedroom
School/Childcare	109	33	330	325	1,260	School or daycare facility
Friend's/Other's House	80	32	251	144	1,440	Friend's/other's house - bedroom
Stores, Restaurants, Shopping Places	24	35	69	50	475	Shopping mall
In-transit	69	83	83	60	1,111	Traveling in car
Other Locations	79	57	139	105	1,440	Park, playground
Don't Know/Not Coded	<1	1	37	30	90	--
All Locations	1,440					

Source: Wiley et al., 1991.

Table 15-15. Mean Time Children Spent in Six Location Categories Grouped by Age and Gender

Location Category	Mean Duration (minutes/day)									
	Boys					Girls				
	0-2 yrs	3-5 yrs	6-8 yrs	9-11 yrs	All Boys	0-2 yrs	3-5 yrs	6-8 yrs	9-11 yrs	All Girls
Home	1,157	1,134	1,044	1,020	1,094	1,151	1,099	1,021	968	1,061
School/Childcare	86	88	144	120	108	59	102	133	149	111
Friend's/Other's House	67	73	77	109	80	56	47	125	102	80
Stores, Restaurants, Shopping Places	21	25	22	15	21	23	35	27	26	28
In-transit	54	62	61	62	59	76	88	53	93	79
Other Locations	54	58	92	114	77	73	68	81	102	81
Don't Know/Not Coded	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
All Locations[a]	1,439	1,440	1,439	1,440	1,439	1,438	1,440	1,440	1,440	1,440
Sample Sizes (Unweighted)	172	151	145	156	624	141	151	124	160	576

[a] The column totals may not sum to 1,440 due to rounding error.
Source: Wiley et al., 1991.

Table 15-16. Mean Time Children Spent in Six Location Categories Grouped by Season and Region

Location Category	Mean Duration (minutes/day)								
	Season					Region of California			
	Winter (Jan-Mar)	Spring (Apr-June)	Summer (July-Sept)	Fall (Oct-Dec)	All Seasons	So. Coast	Bay Area	Rest of State	All Regions
Home	1,091	1,042	1,097	1,081	1,078	1,078	1,078	1,078	1,078
School/Childcare	119	141	52	124	109	113	103	108	109
Friend's/Other's House	69	75	108	69	80	73	86	86	80
Stores, Restaurants, Shopping Places	22	21	30	24	24	26	23	23	24
In-transit	75	75	60	65	69	71	73	63	69
Other Locations	63	85	93	76	79	79	76	81	79
Don't Know/Not Coded	<1	<1	<1	<1	<1	<1	<1	<1	<1
All Locations[a]	1,439	1,439	1,440	1,439	1,439	1,439	1,440	1,440	1,439
Sample Sizes (Unweighted N's)	318	204	407	271	1,200	224	263	713	1,200

[a] The column totals may not sum to 1,440 due to rounding error.
Source: Wiley et al., 1991.

Table 15-17. Mean Time Children Spent in Proximity to Three Potential Exposures Grouped by All Respondents, Age, and Gender

Potential Exposures	Mean Duration (minutes/day)										
		Boys					Girls				
	All Children	0-2 yrs	3-5 yrs	6-8 yrs	9-11 yrs	All Boys	0-2 yrs	3-5 yrs	6-8 yrs	9-11 yrs	All Girls
Tobacco Smoke	77	115	75	66	66	82	77	68	71	74	73
Gasoline Fumes	2	2	1	1	4	2	1	1	3	1	1
Gas Oven Fumes	11	10	15	12	11	12	12	10	10	7	10
Sample Sizes (Unweighted N's)	1,166[a]	168	148	144	150	610	140	147	122	147	556

[a] Respondents with missing data were excluded.
Source: Wiley et al., 1991.

Table 15-18. Range of Recommended Defaults for Dermal Exposure Factors

	Water Contact				Soil Contact	
	Bathing		Swimming			
	Central	Upper	Central	Upper	Central	Upper
Event time and frequency[a]	10 min/event 1 event/day 350 days/yr	15 min/event 1 event/day 350 days/yr	0.5 hr/event 1 event/day 5 days/yr	1.0 hr/event 1 event/day 150 days/yr	40 events/yr	350 events/yr
Exposure duration	9 years	30 years	9 years	30 years	9 years	30 years

[a] Bathing event time is presented to be representative of baths as well as showers.
Source: U.S. EPA 1992.

Table 15-19. Number of Times Taking a Shower at Specified Daily Frequencies by the Number of Respondents

		TImes/Day									
	Total N	0	1	2	3	4	5	8	10	11:1-0+	DK
Overall	3594	2	2747	802	30	1	1	1	1	4	5
Gender											
Male	1720	*	1259	436	21	1	*	*	*	1	2
Female	1872	2	1486	366	9	*	1	1	1	3	3
Refused	2	*	2	*	*	*	*	*	*	*	*
Age (years)											
*	64	*	46	17	*	*	*	*	*	*	1
1-4	41	*	30	9	1	*	*	*	*	*	1
5-11	140	*	112	26	1	*	*	*	*	*	1
12-17	270	*	199	65	6	*	*	*	*	*	*
18-64	2650	1	1983	636	21	1	1	1	1	3	2
> 64	429	1	377	49	1	*	*	*	*	1	*
Race											
White	2911	2	2323	562	17	*	1	*	*	4	2
Black	349	*	199	140	7	1	*	1	*	*	1
Asian	64	*	49	14	1	*	*	*	*	*	*
Some Others	65	*	40	23	2	*	*	*	*	*	*
Hispanic	162	*	103	56	2	*	*	*	1	*	*
Refused	43	*	33	7	1	*	*	*	*	*	2
Hispanic											
No	3269	2	2521	711	24	1	1	1	*	4	4
Yes	277	*	190	81	5	*	*	*	1	*	*
DK	17	*	13	4	*	*	*	*	*	*	*
Refused	31	*	23	6	1	*	*	*	*	*	1
Employment											
*	439	*	330	99	8	*	*	*	*	*	2
Full Time	1838	1	1361	454	17	*	*	*	1	2	2
Part Time	328	1	261	65	*	*	1	*	*	*	*
Not Employed	967	*	780	177	5	1	*	1	*	2	1
Refused	22	*	15	7	*	*	*	*	*	*	*
Education											
*	515	*	382	121	9	*	*	*	*	*	3
< High School	297	*	240	54	2	*	*	*	*	1	*
High School Graduate	1042	1	789	243	5	*	1	1	*	1	1
< College	772	1	589	176	4	*	*	*	1	*	1
College Graduate	576	*	434	133	7	1	*	*	*	1	*
Post Graduate	392	*	313	75	3	*	*	*	*	1	*
Census Region											
Northeast	828	*	622	196	7	*	*	*	*	*	3
Midwest	756	*	621	131	3	*	*	*	*	*	1
South	1246	1	893	334	14	1	*	*	*	3	*
West	764	1	611	141	6	*	1	1	1	1	1
Day of Week											
Weekday	2481	*	1889	563	17	1	1	1	1	4	4
Weekend	1113	2	858	239	13	*	*	*	*	*	1
Season											
Winter	941	*	732	198	9	*	*	*	*	1	1
Spring	889	*	674	205	7	*	*	*	1	*	2
Summer	1003	*	735	254	10	1	*	*	*	2	1
Fall	761	2	606	145	4	*	1	1	*	1	1
Asthma											
No	3312	2	2543	730	25	1	1	1	1	4	4
Yes	261	*	189	67	5	*	*	*	*	*	*
DK	21	*	15	5	*	*	*	*	*	*	1
Angina											
No	3481	1	2653	786	29	1	1	1	1	4	4
Yes	91	1	77	12	1	*	*	*	*	*	*
DK	22	*	17	4	*	*	*	*	*	*	1
Bronchitis/Emphysema											
No	3419	2	2620	758	27	1	1	1	1	4	4
Yes	154	*	112	39	3	*	*	*	*	*	*
DK	21	*	15	5	*	*	*	*	*	*	1

Note: * Signifies missing data; Dk= don't know; N = sample size.
Source: Tsang and Klepeis,1996

Table 15-20. Times (minutes) Spent Taking Showers by the Number of Respondents

	Total N	Minutes/Shower							
		-	0-10	10-20	20-30	30-40	40-50	50-60	60-61
Overall	3594	47	1640	1348	397	72	52	51	17
Gender									
Male	1720	13	788	625	213	35	25	14	7
Female	1872	34	850	693	184	37	27	37	10
Refused	2	*	2	*	*	*	*	*	*
Age									
*	64	6	27	23	3	1	*	2	2
1-4	41	1	13	14	10	1	*	2	*
5-11	140	1	60	52	18	3	2	4	*
12-17	270	2	94	104	40	13	9	7	1
18-64	2650	16	1238	977	288	50	37	33	11
>64	429	21	208	148	38	4	4	3	3
Race									
White	2911	38	1406	1070	292	39	31	26	9
Black	349	5	115	120	58	20	11	16	4
Asian	64	*	25	25	10	1	2	*	1
Some Others	65	*	18	29	6	3	4	4	1
Hispanic	162	1	57	60	25	8	4	5	2
Refused	43	3	19	14	6	1	*	*	*
Hispanic									
No	3269	43	1526	1188	352	61	42	44	13
Yes	277	1	98	109	40	10	8	7	4
DK	17	*	5	9	1	*	2	*	*
Refused	31	3	11	12	4	1	*	*	*
Employment									
*	439	4	163	165	66	17	10	12	2
Full Time	1838	10	875	682	191	32	20	20	8
Part Time	328	4	160	112	39	4	5	3	1
Not Employed	967	27	431	355	97	19	16	16	6
Refused	22	2	11	4	4	*	1	*	*
Education									
*	515	10	190	186	79	21	13	14	2
< High School	297	8	93	125	51	6	7	6	1
High School Graduate	1042	12	451	409	108	23	17	16	6
< College	772	12	377	271	79	14	6	7	6
College Graduate	576	2	297	211	50	5	5	5	1
Post Graduate	392	3	232	116	30	3	4	3	1
Census Region									
Northeast	828	7	374	326	79	15	11	12	4
Midwest	756	11	385	253	70	16	9	9	3
South	1246	26	490	461	179	35	26	23	6
West	764	3	391	278	69	6	6	7	4
Day of Week									
Weekday	2481	34	1134	908	279	46	38	32	10
Weekend	1113	13	506	410	118	26	14	19	7
Season									
Winter	941	12	421	358	95	18	15	16	6
Spring	889	14	410	314	93	21	14	18	5
Summer	1003	11	435	366	128	29	17	12	5
Fall	761	10	374	280	81	4	6	5	1
Asthma									
No	3312	38	1526	1222	362	65	44	41	14
Yes	261	4	108	89	33	7	8	10	2
DK	21	5	6	7	2	*	*	*	1
Angina	3481								
No	91	36	1591	1276	389	70	51	51	17
Yes	22	7	38	36	8	1	1	*	*
DK		4	11	6	*	1	*	*	*
Bronchitis/Emphysema									
No	3419	40	1566	1258	375	67	47	50	16
Yes	154	3	66	54	19	5	5	1	1
DK	21	4	8	6	3	*	*	*	*

NOTE: * - Missing data; DK = don't know; N = sample size; Refused = Refused to answer. A value of 61 for number of minutes signifies that more than 60 minutes were spent.
Source: Tsang and Klepeis, 1996.

Table 15-21. Number of Minutes Spent Taking a Shower (minutes/shower)

Category	Population Group	Total N	Percentiles											
			1	2	5	10	25	50	75	91	95	98	99	100
Overall		3547	3	4	5	5	10	15	20	30	35	50	60	61
Gender	Male	1707	3	4	5	5	10	15	20	30	30	45	60	61
Gender	Female	1838	3	4	5	5	10	15	20	30	40	60	60	61
Age (years)	1-4	40	5	5	5	5	5	10	17.5	30	50	60	60	60
Age (years)	5-11	139	3	4	5	5	10	15	20	30	40	60	60	60
Age (years)	12-17	268	5	5	5	7	10	15	25	35	45	60	60	61
Age (years)	18-64	2634	3	3	5	5	10	15	20	30	30	45	60	61
Age (years)	>64	408	3	3	5	5	10	10	20	30	30	45	60	61
Race	White	2873	3	4	5	5	10	13	20	30	30	45	60	61
Race	Black	344	4	4	5	6	10	20	30	40	60	60	61	61
Race	Asian	64	1	3	4	5	10	15	20	30	40	48	61	61
Race	Some Others	65	3	3	5	10	10	15	30	45	60	60	61	61
Race	Hispanic	161	3	4	5	6	10	15	25	40	45	60	61	61
Hispanic	No	3226	3	4	5	5	10	15	20	30	30	45	60	61
Hispanic	Yes	276	3	4	5	6	10	15	22.5	39	45	60	61	61
Employment	Full Time	1828	3	4	5	5	10	15	20	30	30	45	60	61
Employment	Part Time	324	2	3	5	5	10	12	20	30	30	45	60	60
Employment	Not Employed	940	3	3	5	5	10	15	20	30	40	60	60	61
Education	< High School	289	4	5	5	8	10	15	20	30	40	60	60	61
Education	High School Graduate	1030	2	3	5	5	10	15	20	30	40	60	60	61
Education	< College	760	3	5	5	5	10	12	20	30	30	45	60	61
Education	College Graduate	574	3	3	5	5	10	10	20	25	30	40	60	61
Education	Post Graduate	389	2	3	4	5	7	10	15	25	30	45	60	61
Census Region	Northeast	821	4	5	5	5	10	15	20	30	32	50	60	61
Census Region	Midwest	745	3	4	5	5	10	10	20	30	30	45	60	61
Census Region	South	1220	3	3	5	5	10	15	20	30	40	60	60	61
Census Region	West	761	2	3	5	5	10	10	15	30	30	45	60	61
Day of Week	Weekday	2447	3	4	5	5	10	15	20	30	35	48	60	61
Day of Week	Weekend	1100	3	4	5	5	10	15	20	30	40	60	60	61
Season	Winter	929	3	4	5	5	10	15	20	30	40	60	60	61
Season	Spring	875	3	4	5	5	10	15	20	30	40	60	60	61
Season	Summer	992	2	3	5	5	10	15	20	30	40	45	60	61
Season	Fall	751	3	4	5	5	10	12	20	30	30	40	48	61
Asthma	No	3274	3	4	5	5	10	15	20	30	32	45	60	61
Asthma	Yes	257	3	4	5	5	10	15	20	40	50	60	60	61
Angina	No	3445	3	4	5	5	10	15	20	30	35	50	60	61
Angina	Yes	84	3	4	5	5	10	15	15	30	30	40	45	45
Bronchitis/Emphysema	No	3379	3	4	5	5	10	15	20	30	35	50	60	61
Bronchitis/Emphysema	Yes	151	3	4	5	5	10	15	20	30	40	48	60	61

NOTE: A value of 61 for number of minutes signifies that more than 60 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-22. Time (minutes) Spent in the Shower Room Immediately After Showering by the Number of Respondents

		Minutes/Shower								
	Total N	*-*	0-0	0-10	10-20	20-30	30-40	40-50	50-60	61-61
Overall	3594	61	241	2561	509	138	24	28	27	5
Gender										
Male	1720	22	113	1316	207	46	5	4	6	1
Female	1872	39	128	1243	302	92	19	24	21	4
Refused	2	*	*	2	*	*	*	*	*	*
Age (years)										
*	64	6	9	37	7	3	*	1	1	*
1-4	41	*	5	31	3	1	*	1	*	*
5-11	140	3	9	110	14	3	*	*	1	*
12-17	270	1	17	206	29	10	3	2	1	1
18-64	2650	31	171	1897	388	99	19	18	23	4
> 64	429	20	30	280	68	22	2	6	1	*
Race										
White	2911	39	189	2074	430	110	20	23	21	5
Black	349	8	23	254	42	17	*	3	2	*
Asian	64	*	7	45	9	2	*	*	1	*
Some Others	65	3	7	41	6	3	3	1	1	*
Hispanic	162	6	11	118	19	4	1	1	2	*
Refused	43	5	4	29	3	2	*	*	*	*
Hispanic										
No	3269	48	216	2328	470	130	23	26	23	5
Yes	277	8	19	200	35	8	1	2	4	*
DK	17	1	2	11	3	*	*	*	*	*
Refused	31	4	4	22	1	*	*	*	*	*
Employment										
*	439	4	28	336	48	14	3	4	2	?*
Full Time	1838	20	109	1332	267	71	12	11	16	*
Part Time	328	5	21	223	55	13	4	4	3	*
Not Employed	967	29	81	655	138	39	5	9	6	5
Refused	22	3	2	15	1	1	*	*	*	*
Education										
*	515	11	38	390	51	15	3	4	2	1
< High School	297	14	18	193	48	16	*	6	1	1
High School Graduate	1042	17	68	733	160	37	6	7	13	1
< College	772	11	56	536	118	33	7	4	5	2
College Graduate	576	3	28	426	86	19	8	3	3	*
Post Graduate	392	5	33	283	46	18	*	4	3	*
Census Region										
Northeast	828	6	61	603	116	20	6	8	8	*
Midwest	756	19	39	536	118	29	5	3	7	*
South	1246	26	74	885	171	58	10	15	4	3
West	764	10	67	537	104	31	3	2	8	2
Day of Week										
Weekday	2481	43	165	1784	342	88	20	16	19	4
Weekend	1113	18	76	777	167	50	4	12	8	1
Season										
Winter	941	11	50	678	138	36	13	9	4	2
Spring	889	13	56	636	125	37	4	8	9	1
Summer	1003	25	92	691	138	39	5	5	7	1
Fall	761	12	43	556	108	26	2	6	7	1
Asthma										
No	3312	52	225	2374	465	123	19	24	26	4
Yes	261	2	14	178	42	15	5	3	1	1
DK	21	7	2	9	2	*	*	1	*	*
Angina										
No	3481	52	233	2495	486	132	24	27	27	5
Yes	91	3	5	55	22	5	*	1	*	*
DK	22	6	3	11	1	1	*	*	*	*
Bronchitis/Emphysema										
No	3419	53	226	2446	482	131	23	27	26	5
Yes	154	2	12	104	26	7	1	1	1	*
DK	21	6	3	11	1	*	*	*	*	*

NOTE: * Signifies missing data. DK= respondents answered don't know. Refused = respondents refused to answer. N = doer sample size in specified range of number of minutes spent. A value of 61 for number of minutes signifies that more than 60 minutes were spent.
Source: Tsang and Klepeis,1996

Table 15-23. Number of Minutes Spent in the Shower Room Immediately After Showering (minutes/shower)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		3533	0	0	0	1	3	5	10	20	30	40	50	61
Gender	Male	1698	0	0	0	1	3	5	10	15	20	30	30	61
Gender	Female	1833	0	0	0	1	3	5	12	20	30	45	60	61
Age (years)	1-4	41	0	0	0	0	1	5	10	15	20	45	45	45
Age (years)	5-11	137	0	0	0	1	2	5	10	15	20	30	30	60
Age (years)	12-17	2619	0	0	0	1	3	5	10	20	30	40	52	61
Age (years)	18-64	2619	0	0	0	1	3	5	10	20	30	40	52	61
Age (years)	> 64	409	0	0	0	1	4	5	10	20	30	35	45	60
Race	White	2872	0	0	0	1	3	5	10	20	30	40	50	61
Race	Black	341	0	0	0	1	3	5	10	20	25	30	45	60
Race	Asian	64	0	0	0	0	2	5	10	15	20	30	60	60
Race	Some Others	62	0	0	0	0	3	5	10	30	35	45	52	52
Race	Hispanic	156	0	0	0	1	3	5	10	20	25	40	60	60
Hispanic	No	3221	0	0	0	1	3	5	10	20	30	40	50	61
Hispanic	Yes	269	0	0	0	1	3	5	10	20	25	45	60	60
Employment	Full Time	1818	0	0	0	1	3	5	10	20	30	35	50	60
Employment	Part Time	323	0	0	0	1	3	5	10	20	30	45	50	60
Employment	Not Employed	938	0	0	0	1	3	5	10	20	30	45	60	61
Education	< High School	283	0	0	0	1	3	5	15	20	30	45	45	61
Education	High School Graduate	1025	0	0	0	1	3	5	10	20	30	45	60	61
Education	< College	761	0	0	0	1	3	5	10	20	30	35	50	61
Education	College Graduate	573	0	0	1	1	3	5	10	20	30	35	45	60
Education	Post Graduate	387	0	0	0	1	2	5	10	20	30	30	45	60
Census Region	Northeast	822	0	0	0	1	3	5	10	20	25	40	50	60
Census Region	Midwest	737	0	0	0	1	3	5	10	20	30	35	45	60
Census Region	South	1220	0	0	0	1	3	5	10	20	30	40	45	61
Census Region	West	754	0	0	0	1	2	5	10	20	30	30	60	61
Day of Week	Weekday	2438	0	0	0	1	3	5	10	20	30	40	50	61
Day of Week	Weekend	1095	0	0	0	1	3	5	10	20	30	40	50	61
Season	Winter	930	0	0	0	1	4	5	10	20	30	40	45	61
Season	Spring	876	0	0	0	1	2	5	10	20	30	45	60	61
Season	Summer	978	0	0	0	1	3	5	10	20	30	30	50	61
Season	Fall	749	0	0	0	1	3	5	10	20	25	40	53	61
Asthma	No	3260	0	0	0	1	3	5	10	20	30	38	50	61
Asthma	Yes	259	0	0	0	1	3	5	13	20	30	40	45	61
Angina	No	3429	0	0	0	1	3	5	10	20	30	40	50	61
Angina	Yes	88	0	0	0	2	3	8.5	15	20	30	30	45	45
Bronchitis/Emphysema	No	3366	0	0	0	1	3	5	10	20	30	40	50	61
Bronchitis/Emphysema	Yes	152	0	0	0	1	2.5	5	10	20	30	30	45	60

NOTE: N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes. A value of 61 for number of minutes signifies that more than 60 minutes were spent.
Source: Tsang and Klepeis,1996

Table 15-24. Number of Baths Given or Taken in One Day by Number of Respondents

		Number of Baths/Day										
	Total N	1	2	3	4	5	6	7	10	11	15	DK
Overall	649	459	144	20	9	4	2	1	1	1	3	5
Gender												
Male	159	117	33	5	1	*	1	1	*	*	1	*
Female	490	342	111	15	8	4	1	*	1	1	2	5
Age (years)												
*	9	8	1	*	*	*	*	*	*	*	*	*
18-64	491	322	127	20	9	4	2	1	1	1	2	2
> 64	149	129	16	*	*	*	*	*	*	*	1	3
Race												
White	487	364	92	13	7	2	1	*	*	1	2	5
Black	106	68	29	5	1	*	1	1	1	*	*	*
Asian	12	5	5	*	1	*	*	*	*	*	1	*
Some Others	12	7	4	1	*	*	*	*	*	*	*	*
Hispanic	26	10	13	1	*	2	*	*	*	*	*	*
Refused	6	5	1	*	*	*	*	*	*	*	*	*
Hispanic												
No	600	430	127	19	9	2	2	1	1	1	3	5
Yes	40	21	16	1	*	2	*	*	*	*	*	*
DK	6	5	1	*	*	*	*	*	*	*	*	*
Refused	3	3	*	*	*	*	*	*	*	*	*	*
Employment												
*	1	1	*	*	*	*	*	*	*	*	*	*
Full Time	283	183	76	12	5	*	2	1	1	1	1	1
Part Time	76	56	17	1	1	1	*	*	*	*	*	*
Not Employed	287	217	51	7	3	3	*	*	*	*	2	4
Refused	2	2	*	*	*	*	*	*	*	*	*	*
Education												
*	4	4	*	*	*	*	*	*	*	*	*	*
< High School	96	66	19	3	2	2	*	*	*	*	1	3
High School Graduate	235	167	54	8	2	*	1	1	*	*	*	2
< College	163	112	38	6	2	2	1	*	*	1	1	*
College Graduate	102	68	28	3	2	*	*	*	1	*	*	*
Post Graduate	49	42	5	*	1	*	*	*	*	*	1	*
Census Region												
Northeast	137	100	25	3	4	1	1	*	*	1	*	2
Midwest	151	116	29	4	1	*	*	*	1	*	*	*
South	255	164	70	9	2	3	1	1	*	*	2	3
West	106	79	20	4	2	*	*	*	*	*	1	*
Day of Week												
Weekday	415	299	89	10	4	2	2	1	1	1	2	4
Weekend	234	160	55	10	5	2	*	*	*	*	1	1
Season												
Winter	178	124	37	10	1	3	*	*	*	*	1	2
Spring	160	126	27	4	1	*	*	1	*	*	*	1
Summer	174	112	49	4	3	1	1	*	1	*	2	1
Fall	137	97	31	2	4	*	1	*	*	1	*	1
Asthma												
No	596	424	129	19	7	4	2	1	1	1	3	5
Yes	52	34	15	1	2	*	*	*	*	*	*	*
DK	1	1	*	*	*	*	*	*	*	*	*	*
Angina												
No	620	435	141	19	9	4	2	1	1	1	3	4
Yes	26	22	2	1	*	*	*	*	*	*	*	1
DK	3	2	1	*	*	*	*	*	*	*	*	*
Bronchitis/Emphysema												
No	610	429	137	20	9	4	2	1	1	1	2	4
Yes	36	27	7	*	*	*	*	*	*	*	1	1
DK	3	3	*	*	*	*	*	*	*	*	*	*

NOTE: * Signifies missing data; Dk= respondents answered don't know; N = sample size; Refused = respondents refused to answer.
Source: Tsang and Klepeis,1996

Table 15-25. Total Time Spent Taking or Giving a Bath by the Number of Respondents

		Minutes/Bath							
	Total N	*-*	0-10	10-20	20-30	30-40	40-50	50-60	61-61
Overall	649	18	153	237	128	27	29	36	21
Gender									
Male	159	4	48	59	23	8	4	7	6
Female	490	14	105	178	105	19	25	29	15
Age (years)									
*	9	2	2	4	1	*	*	*	*
18-64	491	6	105	174	111	22	24	31	18
> 64	149	10	46	59	16	5	5	5	3
Race									
White	487	11	124	185	97	16	19	24	11
Black	106	4	16	35	19	8	9	9	6
Asian	12	*	2	6	3	1	*	*	*
Some Others	12	*	2	3	5	1	*	*	1
Hispanic	26	1	8	6	3	1	1	3	3
Refused	6	2	1	2	1	*	*	*	*
Hispanic									
No	600	16	136	224	120	26	27	33	18
Yes	40	1	15	10	6	1	1	3	3
DK	6	*	1	2	2	*	1	*	*
Refused	3	1	1	1	*	*	*	*	*
Employment									
*	1	*	*	*	1	*	*	*	*
Full Time	283	4	58	107	64	12	12	19	7
Part Time	76	1	26	26	15	5	1	2	*
Not Employed	287	12	69	104	48	10	16	15	13
Refused	2	1	*	*	*	*	*	*	1
Education									
*	4	1	*	2	1	*	*	*	*
< High School	96	7	15	35	16	3	6	7	7
High School Graduate	235	6	57	85	51	13	5	11	7
< College	163	4	45	53	32	4	11	8	6
College Graduate	102	*	18	44	20	5	5	9	1
Post Graduate	49	*	18	18	8	2	2	1	*
Census Region									
Northeast	137	5	43	36	31	6	7	6	3
Midwest	151	2	42	67	26	3	3	5	3
South	255	9	42	87	55	16	14	21	11
West	106	2	26	47	16	2	5	4	4
Day of Week									
Weekday	415	12	90	161	84	11	23	23	11
Weekend	234	6	63	76	44	16	6	13	10
Season									
Winter	178	5	44	63	33	9	11	9	4
Spring	160	6	39	60	27	9	7	6	6
Summer	174	3	43	62	34	7	4	14	7
Fall	137	4	27	52	34	2	7	7	4
Asthma									
No	596	16	144	218	114	26	28	33	17
Yes	52	1	9	19	14	1	1	3	4
DK	1	1	*	*	*	*	*	*	*
Angina									
No	620	14	147	226	124	25	28	35	21
Yes	26	3	6	10	3	2	1	1	*
DK	3	1	*	1	1	*	*	*	*
Bronchitis/Emphysema									
No	610	15	150	218	119	26	26	35	21
Yes	36	2	3	17	9	1	3	1	*
DK	3	1	*	2	*	*	*	*	*

NOTE: * Signifies missing data. Dk= respondents answered don't know. Refused = respondents refused to answer. N = doer sample size in a specified range of number of minutes spent. A value of 61 for number of minutes signifies that more than 60 minutes were spent.
Source: Tsang and Klepeis,1996

Table 15-26. Number of Minutes Spent Giving and Taking the Bath(s) (minutes/bath)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		631	2	5	5	10	15	20	30	45	60	61	61	61
Gender	Male	155	1	4	5	6	10	15	30	45	60	61	61	61
Gender	Female	476	3	5	5	10	15	20	30	45	60	61	61	61
Age (years)	18-64	485	2	5	5	10	15	20	30	60	60	61	61	61
Age (years)	> 64	139	3	5	5	5	10	15	20	40	60	61	61	61
Race	White	476	1	4	5	10	10	20	30	45	60	61	61	61
Race	Black	102	5	5	9	10	15	22.5	40	60	61	61	61	61
Race	Asian	12	10	10	10	10	15	20	27.5	30	40	40	40	40
Race	Some Others	12	5	5	5	10	15	27.5	30	40	61	61	61	61
Race	Hispanic	25	2	2	5	5	10	20	45	61	61	61	61	61
Hispanic	No	584	2	5	5	10	15	20	30	45	60	61	61	61
Hispanic	Yes	39	2	2	5	5	10	20	30	60	61	61	61	61
Employment	Full Time	279	1	4	5	10	15	20	30	45	60	61	61	61
Employment	Part Time	75	3	4	5	10	10	20	30	35	40	60	60	60
Employment	Not Employed	275	2	5	5	10	10	20	30	60	60	61	61	61
Education	< High School	89	1	5	10	10	15	20	35	60	61	61	61	61
Education	High School Graduate	229	5	5	5	10	12	20	30	45	60	61	61	61
Education	< College	159	1	2	5	6	10	20	30	45	60	61	61	61
Education	College Graduate	102	5	5	8	10	15	20	30	45	60	60	60	61
Education	Post Graduate	49	1	1	5	5	10	15	25	40	45	60	60	60
Census Region	Northeast	132	1	5	5	6	10	15	30	45	60	61	61	61
Census Region	Midwest	149	2	4	5	7	10	20	30	30	60	61	61	61
Census Region	South	246	3	5	10	10	15	20	35	60	60	61	61	61
Census Region	West	104	5	5	5	10	11	20	30	45	60	61	61	61
Day of Week	Weekday	403	2	5	5	10	15	20	30	45	60	61	61	61
Day of Week	Weekend	228	4	5	5	10	10	20	30	60	60	61	61	61
Season	Winter	173	2	5	5	10	10	20	30	45	60	61	61	61
Season	Spring	154	1	3	5	10	10	20	30	45	60	61	61	61
Season	Summer	171	5	5	5	10	10	20	30	60	60	61	61	61
Season	Fall	133	4	5	8	10	15	20	30	45	60	61	61	61
Asthma	No	580	2	5	5	10	12	20	30	45	60	61	61	61
Asthma	Yes	51	4	5	5	10	15	20	30	60	61	61	61	61
Angina	No	606	2	5	5	10	15	20	30	45	60	61	61	61
Angina	Yes	23	5	5	5	5	10	15	30	40	45	60	60	60
Bronchitis/Emphysema	No	595	2	5	5	10	10	20	30	45	60	61	61	61
Bronchitis/Emphysema	Yes	34	5	5	8	15	15	20	30	45	45	60	60	60

NOTE: N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes. A value of 61 for number of minutes signifies that more than 60 minutes were spent.
Source: Tsang and Klepeis,1996

Table 15-27. Time Spent in the Bathroom Immediately After the Bath(s) by the Number of Respondents

		Minutes/Bath								
	Total N	*-*	0-0	0-10	10-20	20-30	30-40	40-50	50-60	61-61
Overall	649	25	85	422	74	23	7	6	5	2
Gender										
Male	159	6	18	118	11	4	1	1	*	*
Female	490	19	67	304	63	19	6	5	5	2
Age (years)										
*	9	2	2	4	1	*	*	*	*	*
18-64	491	7	71	336	50	14	4	5	2	2
> 64	149	16	12	82	23	9	3	1	3	*
Race										
White	487	22	59	319	58	15	4	4	5	1
Black	106	2	14	67	13	5	3	2	*	*
Asian	12	*	2	9	1	*	*	*	*	*
Some Others	12	*	5	6	1	*	*	*	*	*
Hispanic	26	*	4	18	*	3	*	*	*	1
Refused	6	1	1	3	1	*	*	*	*	*
Hispanic										
No	600	25	76	390	71	20	7	6	4	1
Yes	40	*	7	28	1	3	*	*	*	1
DK	6	*	1	3	1	*	*	*	1	*
Refused	3	*	1	1	1	*	*	*	*	*
Employment										
*	1	*	*	1	*	*	*	*	*	*
Full Time	283	6	35	203	30	7	1	1	*	*
Part Time	76	1	9	54	8	2	2	*	*	*
Not Employed	287	18	41	164	35	14	4	4	5	2
Refused	2	*	*	*	1	*	*	1	*	*
Education										
*	4	1	*	2	1	*	*	*	*	*
< High School	96	10	11	51	12	7	1	*	2	2
High School Graduate	235	6	35	158	22	7	3	3	1	*
< College	163	4	17	113	18	4	3	2	2	*
College Graduate	102	2	14	66	15	4	*	1	*	*
Post Graduate	49	2	8	32	6	1	*	*	*	*
Census Region										
Northeast	137	8	13	91	16	8	*	*	1	*
Midwest	151	5	20	100	18	3	2	1	2	*
South	255	9	31	164	30	9	5	4	1	2
West	106	3	21	67	10	3	*	1	1	*
Day of Week										
Weekday	415	17	53	280	40	16	2	4	2	1
Weekend	234	8	32	142	34	7	5	2	3	1
Season										
Winter	178	3	14	122	24	7	3	1	2	2
Spring	160	8	21	96	20	8	4	2	1	*
Summer	174	9	31	110	16	6	*	2	*	*
Fall	137	5	19	94	14	2	*	1	2	*
Asthma										
No	596	24	75	388	69	21	7	5	5	2
Yes	52	1	10	34	4	2	*	1	*	*
DK	1	*	*	*	1	*	*	*	*	*
Angina										
No	620	23	82	405	70	22	6	6	4	2
Yes	26	2	2	17	3	1	*	*	1	*
DK	3	*	1	*	1	*	1	*	*	*
Bronchitis/Emphysema										
No	610	22	78	400	71	21	6	5	5	2
Yes	36	3	6	21	2	2	1	1	*	*
DK	3	*	1	1	1	*	*	*	*	*

Note: * Signifies missing data. Dk= respondents answered don't know. Refused = respondents refused to answer. N = doer sample size in specified range of number of minutes spent. A value of 61 for number of minutes signifies that more than 60 minutes were spent.
Source: Tsang and Klepeis, 1996

Table 15-28. Number of Minutes Spent in the Bathroom Immediately After the Bath(s) (minutes/bath)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		624	0	0	0	0	2	5	10	20	30	45	55	61
Gender	Male	153	0	0	0	0	2	5	10	12	20	30	35	45
Gender	Female	471	0	0	0	0	2	5	10	20	30	45	60	61
Age (years)	18-64	484	0	0	0	0	2	5	10	15	25	40	50	61
Age (years)	> 64	133	0	0	0	1	5	10	15	30	35	55	60	60
Race	White	465	0	0	0	0	2	5	10	18	30	45	58	61
Race	Black	104	0	0	0	0	2	5	10	20	30	40	45	45
Race	Asian	12	0	0	0	0	2	5	7.5	10	20	20	20	20
Race	Some Others	12	0	0	0	0	0	3	7.5	10	15	15	15	15
Race	Hispanic	26	0	0	0	0	1	5	10	25	25	61	61	61
Hispanic	No	575	0	0	0	0	2	5	10	20	30	40	50	61
Hispanic	Yes	40	0	0	0	0	1	5	10	22.5	25	61	61	61
Employment	Full Time	277	0	0	0	0	2	5	10	15	20	30	30	45
Employment	Part Time	75	0	0	0	0	3	5	10	15	25	35	40	40
Employment	Not Employed	269	0	0	0	0	2	5	10	25	35	58	60	61
Education	< High School	86	0	0	0	0	5	10	15	30	35	61	61	61
Education	High School Graduate	229	0	0	0	0	2	5	10	15	30	40	45	58
Education	< College	159	0	0	0	0	2	5	10	15	30	45	60	60
Education	College Graduate	100	0	0	0	0	1.5	5	10	19	25	30	37.5	45
Education	Post Graduate	47	0	0	0	0	1	5	10	15	20	30	30	30
Census Region	Northeast	129	0	0	0	0	2	5	10	20	30	30	30	60
Census Region	Midwest	146	0	0	0	0	2	5	10	15	25	50	60	60
Census Region	South	246	0	0	0	0	3	5	10	20	30	45	55	61
Census Region	West	103	0	0	0	0	1	5	10	20	20	30	45	58
Day of Week	Weekday	398	0	0	0	0	2	5	10	18	30	40	50	61
Day of Week	Weekend	226	0	0	0	0	3	5	10	20	30	45	60	61
Season	Winter	175	0	0	0	1	3	5	10	20	30	58	61	61
Season	Spring	152	0	0	0	0	2	5	10	20	30	40	45	60
Season	Summer	165	0	0	0	0	2	5	10	15	20	30	45	50
Season	Fall	132	0	0	0	0	2	5	10	15	20	45	55	60
Asthma	No	572	0	0	0	0	2	5	10	20	30	45	58	61
Asthma	Yes	51	0	0	0	0	1	5	10	15	30	30	45	45
Angina	No	597	0	0	0	0	2	5	10	20	30	45	58	61
Angina	Yes	24	0	0	0	1	5	5	10	15	30	55	55	55
Bronchitis/Emphysema	No	588	0	0	0	0	2	5	10	20	30	45	58	61
Bronchitis/Emphysema	Yes	33	0	0	0	0	2	5	10	30	40	45	45	45

NOTE: N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes. A value of 61 for number of minutes signifies that more than 60 minutes were spent.
Source: Tsang and Klepeis,1996

Table 15-29. Total Time Spent Altogether in the Shower or Bathtub by the Number of Respondents

	Total N	Minutes/Bath													
		-	0-0	0-10	10-20	20-30	30-40	40-50	50-60	70-80	80-90	90-100	100-110	110-120	121-121
Overall	4290	38	5	1903	1577	548	46	65	67	3	6	2	1	21	8
Gender															
Male	1934	8	1	872	735	234	19	24	24	1	1	1	1	10	3
Female	2355	30	4	1031	841	314	27	41	43	2	5	1	*	11	5
Refused	1	*	*	*	1	*	*	*	*	*	*	*	*	*	*
Age (years)															
*	86	5	1	26	36	12	*	1	4	*	*	*	*	*	1
1-4	198	*	*	35	84	50	2	13	7	1	1	1	*	4	*
5-11	265	2	*	64	107	66	3	7	7	2	2	1	1	2	1
12-17	239	*	*	78	96	46	5	5	8	*	*	*	*	1	*
18-64	2919	15	1	1429	1051	303	32	31	35	*	3	*	*	13	6
> 64	583	16	3	271	203	71	4	8	6	*	*	*	*	1	*
Race															
White	3452	27	4	1616	1248	401	35	44	50	1	3	*	1	16	6
Black	453	7	1	141	177	89	7	11	11	2	*	1	*	4	2
Asian	74	*	*	33	31	7	*	1	1	*	1	*	*	*	*
Some Others	78	*	*	24	28	19	2	3	2	*	*	*	*	*	*
Hispanic	180	2	*	63	79	24	2	4	2	*	2	1	*	1	*
Refused	53	2	*	26	14	8	*	2	1	*	*	*	*	*	*
Hispanic															
No	3892	31	4	1744	1423	496	41	56	62	3	4	1	1	18	8
Yes	333	5	1	128	136	40	5	8	5	*	2	1	*	2	*
DK	21	1	*	7	8	4	*	*	*	*	*	*	*	1	*
Refused	44	1	*	24	10	8	*	1	*	*	*	*	*	*	*
Employment															
*	692	2	*	172	284	162	9	24	22	3	3	2	1	7	1
Full Time	1985	11	2	1002	707	190	20	20	18	*	*	*	*	12	3
Part Time	400	5	1	190	147	44	4	4	5	*	*	*	*	*	*
Not Employed	1181	20	2	524	429	146	13	17	22	*	3	*	*	1	4
Refused	32	*	*	15	10	6	*	*	*	*	*	*	*	1	*
Education															
*	775	6	*	200	317	175	10	26	24	3	3	2	1	7	1
< High School	386	10	2	132	147	66	7	8	10	*	1	*	*	1	2
High School Graduate	1254	12	1	574	476	138	14	14	18	*	*	*	*	4	3
< College	864	2	*	414	331	93	6	7	8	*	1	*	*	2	*
College Graduate	558	4	1	308	168	53	7	7	4	*	*	*	*	5	*
Post Graduate	453	4	1	275	138	23	2	3	3	*	*	*	*	2	2
Census Region															
Northeast	927	7	*	436	328	106	11	14	12	1	2	1	*	6	3
Midwest	956	9	3	440	343	126	5	15	10	*	2	1	*	2	*
South	1513	16	2	601	588	208	22	25	35	2	1	*	1	8	4
West	894	6	*	426	318	108	8	11	10	*	1	*	*	5	1
Day of Week															
Weekday	2881	23	3	1346	1038	336	30	40	39	1	1	2	1	16	5
Weekend	1409	15	2	557	539	212	16	25	28	2	5	*	*	5	3
Season															
Winter	1124	8	1	504	417	137	14	13	19	1	*	*	*	7	3
Spring	1145	15	3	499	417	149	9	22	17	1	3	1	*	7	2
Summer	1165	11	1	495	420	176	14	19	19	1	2	1	*	5	1
Fall	856	4	*	405	323	86	9	11	12	*	1	*	1	2	2
Asthma															
No	3946	35	5	1767	1445	502	38	53	65	3	5	2	1	19	6
Yes	327	2	*	128	128	43	8	11	2	*	1	*	*	2	2
DK	17	1	*	8	4	3	*	1	*	*	*	*	*	*	*
Angina															
No	4151	34	5	1839	1529	530	45	62	66	3	6	2	1	21	8
Yes	114	3	*	52	41	14	1	2	1	*	*	*	*	*	*
DK	25	1	*	12	7	4	*	1	*	*	*	*	*	*	*
Bronchitis/Emphysema															
No	4059	34	3	1803	1502	517	42	58	63	3	5	2	1	19	7
Yes	207	2	2	86	71	28	4	6	4	*	1	*	*	2	1
DK	24	2	*	14	4	3	*	1	*	*	*	*	*	*	*

Note: * Signifies missing data. DK = respondents answered "don't know". Refused = respondents refused to answer. N = doer sample size in specified range of number of minutes spent. A value of "121" for number of minutes signifies that more than 120 minutes were spent.
Source: Tsang and Klepeis,1996

Table 15-30. Total Number of Minutes Spent Altogether in the Shower or Bathtub (minutes/bath)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		4252	3	4	5	5	10	15	20	30	35	60	60	121
Gender	Male	1926	3	4	5	5	10	15	20	30	30	60	60	121
Gender	Female	2325	3	4	5	5	10	15	20	30	40	60	75	121
Age (years)	1-4	198	1	5	5	10	15	20	30	45	60	120	120	120
Age (years)	5-11	263	4	5	5	10	13	20	30	30	60	90	120	121
Age (years)	12-17	239	4	4	5	7	10	15	30	30	45	60	60	120
Age (years)	18-64	2904	3	4	5	5	10	13.5	20	30	30	50	60	121
Age (years)	> 64	567	2	3	5	5	10	15	20	30	30	45	60	120
Race	White	3425	3	4	5	5	10	15	20	30	30	60	60	121
Race	Black	446	4	4	5	6	10	15	25	30	45	75	120	121
Race	Asian	74	5	5	5	7	10	15	15	30	30	60	90	90
Race	Some Others	78	5	5	5	7	10	15	30	30	45	60	60	60
Race	Hispanic	178	1	3	5	7	10	15	20	30	45	90	100	120
Hispanic	No	3861	3	4	5	5	10	15	20	30	35	60	60	121
Hispanic	Yes	328	1	3	5	5	10	15	20	30	45	60	90	120
Employment	Full Time	1974	3	4	5	5	10	10	20	30	30	45	60	121
Employment	Part Time	395	3	3	5	5	10	15	20	30	30	45	60	60
Employment	Not Employed	1161	2	3	5	5	10	15	20	30	35	60	60	121
Education	< High School	376	1	4	5	5	10	15	25	30	45	60	90	121
Education	High School Graduate	1242	3	4	5	5	10	15	20	30	30	60	60	121
Education	< College	862	3	4	5	5	10	15	20	30	30	45	60	120
Education	College Graduate	554	3	3	5	5	10	10	15	30	30	45	90	120
Education	Post Graduate	449	3	4	5	5	8	10	15	20	30	45	60	121
Census Region	Northeast	920	4	4	5	5	10	15	20	30	35	60	100	121
Census Region	Midwest	947	3	4	5	5	10	15	20	30	30	45	60	120
Census Region	South	1497	3	4	5	5	10	15	20	30	45	60	75	121
Census Region	West	888	3	3	5	5	10	15	20	30	30	45	60	121
Day of Week	Weekday	2858	3	4	5	5	10	15	20	30	30	60	60	121
Day of Week	Weekend	1394	3	4	5	5	10	15	20	30	40	60	75	121
Season	Winter	1116	3	4	5	5	10	15	20	30	35	60	60	121
Season	Spring	1130	3	4	5	5	10	15	20	30	40	60	90	121
Season	Summer	1154	3	4	5	5	10	15	20	30	40	60	60	121
Season	Fall	852	3	5	5	5	10	15	20	30	30	60	60	121
Asthma	No	3911	3	4	5	5	10	15	20	30	30	60	60	121
Asthma	Yes	325	3	4	5	5	10	15	20	30	45	60	120	121
Angina	No	4117	3	4	5	5	10	15	20	30	35	60	60	121
Angina	Yes	111	3	4	5	5	10	15	20	30	30	45	45	60
Bronchitis/Emphysema	No	4025	3	4	5	5	10	15	20	30	30	60	60	121
Bronchitis/Emphysema	Yes	205	1	3	5	5	10	15	20	30	45	60	120	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-31. Time Spent in the Bathroom Immediately Following a Shower or Bath by the Number of Respondents

		Minutes/Shower or Bath											
	Total N	*-*	0-0	0-10	10-20	20-30	30-40	40-50	50-60	70-80	80-90	110-120	121-121
Overall	4290	108	348	2770	713	250	20	32	35	1	2	7	4
Gender													
Male	1934	37	138	1357	312	67	5	8	6	*	*	1	3
Female	2355	71	210	1413	400	183	15	24	29	1	2	6	1
Refused	1	*	*	*	1	*	*	*	*	*	*	*	*
Age (years)													
*	86	12	8	38	19	6	*	1	1	*	*	*	1
1-4	198	2	59	123	12	*	1	1	*	*	*	*	*
5-11	265	5	33	168	23	3	1	*	1	*	*	1	*
12-17	239	1	17	165	34	16	1	3	2	*	*	*	*
18-64	2919	53	184	1901	517	189	14	25	26	1	1	5	3
> 64	583	35	47	345	108	36	3	2	5	*	1	1	*
Race													
White	3452	80	271	2235	590	194	15	29	24	1	2	7	4
Black	453	15	49	276	63	35	4	2	9	*	*	*	*
Asian	74	*	8	48	12	4	1	1	*	*	*	*	*
Some Others	78	2	7	46	19	3	*	1	1	*	*	*	*
Hispanic	180	4	8	134	21	12	*	*	1	*	*	*	*
Refused	53	7	5	31	8	2	*	*	*	*	*	*	*
Hispanic													
No	3892	95	316	2504	655	227	19	32	32	1	1	6	4
Yes	333	8	28	227	46	21	1	*	2	*	*	*	*
DK	21	*	1	10	5	2	*	*	1	*	1	1	*
Refused	44	5	3	29	7	*	*	*	*	*	*	*	*
Employment													
*	692	8	111	479	66	17	3	4	3	*	*	1	*
Full Time	1985	36	122	1302	357	120	10	16	14	1	1	3	3
Part Time	400	8	22	256	71	32	2	5	2	*	*	2	*
Not Employed	1181	52	93	712	214	79	5	7	16	*	1	1	1
Refused	32	4	*	21	5	2	*	*	*	*	*	*	*
Education													
*	775	14	114	531	82	20	3	7	3	*	*	1	*
< High School	386	28	30	220	65	30	2	1	5	*	2	1	2
High School Graduate	1254	34	89	799	204	92	8	12	10	1	*	4	1
< College	864	17	59	568	158	46	4	2	9	*	*	*	1
College Graduate	558	8	27	392	115	31	2	8	5	*	*	*	*
Post Graduate	453	7	29	290	89	31	1	2	3	*	*	1	*
Census Region													
Northeast	927	20	69	614	161	49	3	2	6	*	*	1	2
Midwest	956	27	86	600	155	57	5	13	11	*	*	1	1
South	1513	41	119	971	255	93	8	7	10	1	2	5	1
West	894	20	74	585	142	51	4	10	8	*	*	*	*
Day of Week													
Weekday	2881	79	224	1889	474	153	15	19	19	1	1	5	2
Weekend	1409	29	124	881	239	97	5	13	16	*	1	2	2
Season													
Winter	1124	34	77	726	193	65	7	8	9	*	1	3	1
Spring	1145	26	99	756	167	70	4	12	10	*	*	1	*
Summer	1165	36	112	740	184	66	6	9	8	1	1	2	*
Fall	856	12	60	548	169	49	3	3	8	*	*	1	3
Asthma													
No	3946	101	306	2540	673	236	18	30	32	1	1	6	2
Yes	327	5	41	219	37	14	2	2	3	*	1	1	2
DK	17	2	1	11	3	*	*	*	*	*	*	*	*
Angina													
No	4151	99	333	2687	691	241	20	32	34	1	2	7	4
Yes	114	6	13	68	17	9	*	*	1	*	*	*	*
DK	25	3	2	15	5	*	*	*	*	*	*	*	*
Bronchitis/Emphysema													
No	4059	98	325	2623	684	236	19	31	32	1	1	6	3
Yes	207	6	22	133	24	14	1	1	3	*	1	1	1
DK	24	4	1	14	5	*	*	*	*	*	*	*	*

Note: * Signifies missing data. A value of "121" for number of minutes signifies that more than 120 minutes were spent. DK= respondents answered "don't know". Refused = respondents refused to answer. N = doer sample size in a specified range or number of minutes spent.
Source: Tsang and Klepeis.

Table 15-32. Number of Minutes Spent in the Bathroom Immediately Following a Shower or Bath (minutes/bath)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		4182	0	0	0	1	4	5	15	20	30	40	60	121
Gender	Male	1897	0	0	0	1	3	5	10	15	20	30	40	121
Gender	Female	2284	0	0	0	1	5	10	15	30	30	45	60	121
Age (years)	1-4	196	0	0	0	0	0	2	5	10	15	20	35	45
Age (years)	5-11	260	0	0	0	0	2	5	10	15	15	30	35	120
Age (years)	12-17	238	0	0	0	2	5	5	10	20	30	45	45	60
Age (years)	18-64	2866	0	0	0	1	5	10	15	20	30	45	60	121
Age (years)	> 64	548	0	0	0	1	4	10	15	20	30	40	60	120
Race	White	3372	0	0	0	1	4	5	15	20	30	40	60	121
Race	Black	438	0	0	0	0	4	6	15	30	30	60	60	60
Race	Asian	74	0	0	0	0	2	5	10	20	30	35	45	45
Race	Some Others	76	0	0	0	1	5	10	15	20	25	30	60	60
Race	Hispanic	176	0	0	1	1	3	5	10	20	30	30	30	60
Hispanic	No	3797	0	0	0	1	4	5	15	20	30	45	60	121
Hispanic	Yes	325	0	0	0	1	3	5	10	20	30	30	30	60
Employment	Full Time	1949	0	0	0	1	5	10	15	20	30	40	60	121
Employment	Part Time	392	0	0	0	2	5	10	15	25	30	45	60	120
Employment	Not Employed	1129	0	0	0	1	5	10	15	20	30	45	60	121
Education	< High School	358	0	0	0	1	5	10	15	30	30	60	90	121
Education	High School Graduate	1220	0	0	0	1	5	10	15	25	30	45	60	121
Education	< College	847	0	0	0	1	5	10	15	20	30	30	60	121
Education	College Graduate	550	0	0	1	2	5	10	15	20	30	45	45	60
Education	Post Graduate	446	0	0	0	1	5	8	15	20	30	30	50	120
Census Region	Northeast	907	0	0	0	1	5	5	10	20	30	30	45	121
Census Region	Midwest	929	0	0	0	1	5	5	15	20	30	45	60	121
Census Region	South	1472	0	0	0	1	3.5	5	15	20	30	40	60	121
Census Region	West	874	0	0	0	1	3	5	10	20	30	45	45	60
Day of Week	Weekday	2802	0	0	0	1	4	5	10	20	30	35	50	121
Day of Week	Weekend	1380	0	0	0	1	4	8	15	20	30	45	60	121
Season	Winter	1090	0	0	0	1	5	7	15	20	30	45	60	121
Season	Spring	1119	0	0	0	1	3	5	10	20	30	45	50	120
Season	Summer	1129	0	0	0	1	3	5	10	20	30	40	52	120
Season	Fall	844	0	0	0	1	5	8	15	20	30	35	60	121
Asthma	No	3845	0	0	0	1	4	5	15	20	30	40	60	121
Asthma	Yes	322	0	0	0	0	3	5	10	20	30	60	90	121
Angina	No	4052	0	0	0	1	4	5	15	20	30	40	60	121
Angina	Yes	108	0	0	0	0	4.5	5.5	12.5	20	30	30	30	60
Bronchitis/emphysema	No	3961	0	0	0	1	4	5	15	20	30	40	60	121
Bronchitis/emphysema	Yes	201	0	0	0	0	4	10	10	30	30	60	88	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-33. Range of Number of Times Washing the Hands at Specified Daily Frequencies by the Number of Respondents

		Number of Times/Day								
	Total N	*-*	0-0	1-2	3-5	6-9	10-19	20-29	30+	DK
Overall	4663	38	34	311	1692	1106	892	223	178	189
Gender										
Male	2163	16	19	218	975	487	286	59	49	54
Female	2498	22	15	92	716	619	606	164	129	135
Refused	2	*	*	1	1	*	*	*	*	*
Age (years)										
*	84	8	*	1	25	15	11	4	5	15
1-4	263	*	15	62	125	35	11	2	3	10
5-11	348	1	5	61	191	48	21	4	2	15
12-17	326	3	6	46	159	64	30	7	2	9
18-64	2972	18	7	131	1029	760	640	168	143	76
> 64	670	8	1	10	163	184	179	38	23	64
Race										
White	3774	21	28	251	1377	902	740	181	140	134
Black	463	6	2	30	149	120	85	19	23	29
Asian	77	1	*	5	29	19	12	4	1	6
Some Others	96	*	1	10	39	16	15	8	5	2
Hispanic	193	1	3	14	78	42	31	10	5	9
Refused	60	9	*	1	20	7	9	1	4	9
Hispanic										
No	4244	27	29	276	1536	1022	823	205	164	162
Yes	347	2	5	33	130	76	57	17	10	17
DK	26	*	*	1	12	4	5	1	1	2
Refused	46	9	*	1	14	4	7	*	3	8
Employment										
*	926	4	26	165	471	145	61	13	7	34
Full Time	2017	12	4	96	707	525	406	116	103	48
Part Time	379	*	*	13	142	101	86	10	15	12
Not Employed	1309	18	4	36	365	327	334	83	52	90
Refused	32	4	*	1	7	8	5	1	1	5
Education										
*	1021	13	26	174	507	158	74	13	12	44
< High School	399	2	*	8	120	96	88	26	24	35
High School Graduate	1253	12	4	56	391	318	298	70	47	57
< College	895	2	3	28	284	246	197	59	48	28
College Graduate	650	6	*	23	238	174	139	28	27	15
Post Graduate	445	3	1	22	152	114	96	27	20	10
Census Region										
Northeast	1048	9	6	68	404	243	195	55	38	30
Midwest	1036	5	7	68	373	251	212	41	38	41
South	1601	14	11	108	559	379	295	79	66	86
West	978	10	10	67	356	233	186	48	36	32
Day of Week										
Weekday	3156	34	22	199	1103	764	599	155	147	133
Weekend	1507	4	12	112	589	342	293	68	31	56
Season										
Winter	1264	6	10	91	507	286	223	55	51	35
Spring	1181	13	9	78	406	283	238	60	44	50
Summer	1275	15	9	78	443	315	232	65	48	70
Fall	943	4	6	64	336	222	199	43	35	34
Asthma										
No	4287	28	32	283	1562	1024	819	207	165	167
Yes	341	1	2	26	126	77	69	16	10	14
DK	35	9	*	2	4	5	4	*	3	8
Angina										
No	4500	28	34	306	1652	1069	851	218	171	171
Yes	125	2	*	3	32	34	36	5	3	10
DK	38	8	*	2	8	3	5	*	4	8
Bronchitis/Emphysema										
No	4424	27	33	302	1627	1040	835	213	172	175
Yes	203	3	1	7	57	61	55	10	3	6
DK	36	8	*	2	8	5	2	*	3	8

Note: * Signifies missing data. N = doer sample size in a specified range or number of minutes spent. DK= respondents answered "don't know". Refused = respondents refused to answer.
Source: Tsang and Klepeis, 1996

Table 15-34. Number of Minutes Spent (at home) Working or Being Near Food While Fried, Grilled, or Barbequed (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		1055	0	1	2	5	10	20	30	105	121	121	121	121
Gender	Male	485	0	1	2	5	10	20	30	90	121	121	121	121
Gender	Female	570	0	0	2	5	10	20	30	120	121	121	121	121
Age (years)	1-4	35	0	0	2	2	5	20	30	45	60	60	60	60
Age (years)	5-11	82	0	0	0	2	5	15	30	60	90	121	121	121
Age (years)	12-17	82	0	0	2	4	10	20	45	60	90	121	121	121
Age (years)	18-64	747	0	2	3	5	10	20	40	120	121	121	121	121
Age (years)	> 64	96	0	1	3	5	10	20	30	60	120	121	121	121
Race	White	848	0	1	2	5	10	20	30	105	121	121	121	121
Race	Black	115	2	2	5	5	10	20	30	61	121	121	121	121
Race	Asian	18	0	0	0	0	5	10	20	121	121	121	121	121
Race	Some Others	16	5	5	5	5	12.5	20	45	121	121	121	121	121
Race	Hispanic	48	0	0	5	5	15	30	60	90	121	121	121	121
Hispanic	No	960	0	1	2	5	10	20	30	90	121	121	121	121
Hispanic	Yes	84	0	1	2	5	10	20	60	121	121	121	121	121
Employment	Full Time	506	1	2	3	5	10	20	45	121	121	121	121	121
Employment	Part Time	95	0	1	2	5	10	15	40	90	121	121	121	121
Employment	Not Employed	252	0	1	3	5	10	20	30	90	121	121	121	121
Education	< High School	96	0	1	2	5	10	22.5	52.5	121	121	121	121	121
Education	High School Graduate	318	0	2	5	5	10	20	30	120	121	121	121	121
Education	< College	208	0	2	3	5	10	20	35	121	121	121	121	121
Education	College Graduate	135	1	1	2	5	10	20	30	90	121	121	121	121
Education	Post Graduate	83	0	2	5	5	10	15	30	60	121	121	121	121
Census Region	Northeast	198	0	2	3	5	10	15	30	90	121	121	121	121
Census Region	Midwest	248	0	0	4	5	10	20	30	121	121	121	121	121
Census Region	South	399	0	1	2	5	10	20	40	90	121	121	121	121
Census Region	West	210	0	0	2	5	7	15	30	60	121	121	121	121
Day of Week	Weekday	662	0	1	3	5	10	20	30	90	121	121	121	121
Day of Week	Weekend	393	0	1	2	5	10	20	30	120	121	121	121	121
Season	Winter	267	0	2	2	5	10	20	30	60	121	121	121	121
Season	Spring	296	0	0	3	5	10	20	45	120	121	121	121	121
Season	Summer	299	0	0	3	5	10	20	30	90	121	121	121	121
Season	Fall	193	0	0	2	5	10	20	30	121	121	121	121	121
Asthma	No	960	0	1	2.5	5	10	20	30	90	121	121	121	121
Asthma	Yes	92	0	0	2	5	15	30	60	121	121	121	121	121
Angina	No	1032	0	1	2	5	10	20	30	95	121	121	121	121
Angina	Yes	19	0	0	0	5	15	30	30	121	121	121	121	121
Bronchitis/Emphysema	No	1005	0	1	2	5	10	20	30	90	121	121	121	121
Bronchitis/Emphysema	Yes	47	0	0	3	5	10	30	60	121	121	121	121	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-35. Number of Minutes Spent (at home) Working or Being Near Open Flames Including Barbeque Flames (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		479	0	0	1	2	10	20	60	121	121	121	121	121
Gender	Male	252	0	0	1	2	10	20	60	121	121	121	121	121
Gender	Female	227	0	0	2	2	10	20	30	121	121	121	121	121
Age (years)	1-4	14	0	0	0	0	5	10	30	121	121	121	121	121
Age (years)	5-11	29	0	0	0	0	5	15	30	90	121	121	121	121
Age (years)	12-17	28	0	0	1	2	10	22.5	42.5	60	60	90	90	90
Age (years)	18-64	372	0	0	1	3	10	20	60	121	121	121	121	121
Age (years)	:> 64	31	2	2	2	4	5	17	30	120	121	121	121	121
Race	White	407	0	0	1	2	10	20	45	121	121	121	121	121
Race	Black	31	0	0	0	2	5	20	30	60	121	121	121	121
Race	Asian	5	5	5	5	5	20	40	121	121	121	121	121	121
Race	Some Others	8	10	10	10	10	11	22.5	60	121	121	121	121	121
Race	Hispanic	22	2	2	3	5	5	30	60	120	121	121	121	121
Hispanic	No	436	0	0	1	2	10	20	42.5	121	121	121	121	121
Hispanic	Yes	36	2	2	3	5	11	60	90	121	121	121	121	121
Employment	Full Time	262	0	0	1	2	10	20	60	121	121	121	121	121
Employment	Part Time	44	0	0	1	4	5	15	52.5	121	121	121	121	121
Employment	Not Employed	99	0	1	2	3	10	20	40	120	121	121	121	121
Education	< High School	27	2	2	2	3	5	20	60	121	121	121	121	121
Education	High School Graduate	130	0	0	2	3	10	20	60	121	121	121	121	121
Education	< College	92	0	0	1	2	10	30	90	121	121	121	121	121
Education	College Graduate	95	0	1	2	5	10	20	40	121	121	121	121	121
Education	Post Graduate	55	0	0	0	2	10	20	40	121	121	121	121	121
Census Region	Northeast	124	0	0	1	3	10	15	30	121	121	121	121	121
Census Region	Midwest	112	0	0	2	3	10	20	45	121	121	121	121	121
Census Region	South	149	0	0	1	2	5	20	60	121	121	121	121	121
Census Region	West	94	0	0	1	2	10	20	60	121	121	121	121	121
Day of Week	Weekday	284	0	0	1	3	10	15	30	121	121	121	121	121
Day of Week	Weekend	195	0	0	1	2	10	30	60	121	121	121	121	121
Season	Winter	142	0	0	0	2	10	20	60	121	121	121	121	121
Season	Spring	115	0	1	2	3	10	20	60	120	121	121	121	121
Season	Summer	137	0	0	2	3	10	20	45	121	121	121	121	121
Season	Fall	85	1	1	1	3	10	20	40	121	121	121	121	121
Asthma	No	443	0	0	1	2	10	20	45	121	121	121	121	121
Asthma	Yes	35	0	0	3	3	15	30	120	121	121	121	121	121
Angina	No	461	0	0	1	2	10	20	45	121	121	121	121	121
Angina	Yes	15	2	2	2	2	10	15	60	121	121	121	121	121
Bronchitis/Emphysema	No	461	0	0	1	2	10	20	45	121	121	121	121	121
Bronchitis/Emphysema	Yes	16	3	3	3	5	12.5	37.5	106	121	121	121	121	121

Note: A value of"121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-36. Number of Minutes Spent Working or Being Near Excessive Dust in the Air (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		679	0	2	5	7	30	121	121	121	121	121	121	121
Gender	Male	341	1	2	5	8	30	121	121	121	121	121	121	121
Gender	Female	338	0	2	5	5	30	121	121	121	121	121	121	121
Age (years)	1-4	22	0	0	0	2	5	75	121	121	121	121	121	121
Age (years)	5-11	50	0	0.5	2	4	15	75	121	121	121	121	121	121
Age (years)	12-17	52	0	1	2	5	5	20	120	121	121	121	121	121
Age (years)	18-64	513	2	5	5	10	30	121	121	121	121	121	121	121
Age (years)	5:> 64	38	2	2	2	5	35	105.5	121	121	121	121	121	121
Race	White	556	0	2	5	8	30	121	121	121	121	121	121	121
Race	Black	66	1	3	5	5	20	121	121	121	121	121	121	121
Race	Asian	7	20	20	20	20	60	90	121	121	121	121	121	121
Race	Some Others	15	5	5	5	10	60	120	121	121	121	121	121	121
Race	Hispanic	29	3	3	5	7	20	121	121	121	121	121	121	121
Hispanic	No	611.	0	2	5	5	30	121	121	121	121	121	121	121
Hispanic	Yes	57	0	3	3	10	30	121	121	121	121	121	121	121
Employment	Full Time	368	2	5	7	15	37.5	121	121	121	121	121	121	121
Employment	Part Time	66	0	2	5	5	20	120	121	121	121	121	121	121
Employment	Not Employed	122	0	2	5	8	30	121	121	121	121	121	121	121
Education	< High School	52	2	5	5	7	35	121	121	121	121	121	121	121
Education	High School Graduate	199	0	0	5	10	30	121	121	121	121	121	121	121
Education	< College	140	5	5	10	20	60	121	121	121	121	121	121	121
Education	College Graduate	82	1	2	5	15	30	121	121	121	121	121	121	121
Education	Post Graduate	76	3	5	5	10	37.5	121	121	121	121	121	121	121
Census Region	Northeast	138	0	0	5	5	20	121	121	121	121	121	121	121
Census Region	Midwest	145	2	2	5	10	30	121	121	121	121	121	121	121
Census Region	South	227	1	2	5	5	30	121	121	121	121	121	121	121
Census Region	West	169	0	3	5	10	30	120	121	121	121	121	121	121
Day of Week	Weekday	471	0	1	5	7	30	121	121	121	121	121	121	121
Day of Week	Weekend	208	2	2	5	5	30	121	121	121	121	121	121	121
Season	Winter	154	0	0	5	5	30	121	121	121	121	121	121	121
Season	Spring	193	0	1	3	5	20	121	121	121	121	121	121	121
Season	Summer	193	2	2	5	10	30	121	121	121	121	121	121	121
Season	Fall	139	3	5	5	10	30	121	121	121	121	121	121	121
Asthma	No	606	0	2	5	5	30	121	121	121	121	121	121	121
Asthma	Yes	73	0	3	5	10	30	121	121	121	121	121	121	121
Angina	No	662	0	2	5	7	30	121	121	121	121	121	121	121
Angina	Yes	15	3	3	3	30	60	121	121	121	121	121	121	121
Bronchitis/Emphysema	No	637	0	2	5	7	30	121	121	121	121	121	121	121
Bronchitis/Emphysema	Yes	41	0	0	5	5	30	121	121	121	121	121	121	121

Note: A valueof "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-37. Range of the Number of Times an Automobile or Motor Vehicle was Started in a Garage or Carport at Specified Daily Frequencies by the Number of Respondents

		Times/day				
	Total N	1-2	3-5	6-9	10+	Dk
Overall	2009	1321	559	78	17	34
Gender						
Male	939	588	290	40	7	14
Female	1070	733	269	38	10	20
Age(years)						
*	20	13	2	1	1	3
1-4	111	68	39	2	2	*
5-11	150	93	49	6	*	2
12-17	145	86	42	12	1	4
18-64	1287	840	367	50	12	18
> 64	296	221	60	7	1	7
Race						
White	1763	1164	486	69	17	27
Black	110	70	31	4	*	5
Asian	46	34	10	2	*	*
Some Others	24	19	5	*	*	*
Hispanic	55	26	24	3	*	2
Refused	11	8	3	*	*	*
Hispanic						
No	1879	1239	519	74	17	30
Yes	111	68	35	4	*	4
DK	12	9	3	*	*	*
Refused	7	5	2	*	*	*
Employment						
*	398	241	127	20	3	7
Full Time	919	610	253	35	9	12
Part Time	149	93	48	4	2	2
Not Employed	536	372	129	19	3	13
Refused	7	5	2	*	*	*
Education						
*	427	262	134	21	4	6
< High School	84	59	17	2	1	5
High School Graduate	464	336	107	13	2	6
< College	440	304	107	20	5	4
College Graduate	326	201	106	10	2	7
Post Graduate	268	159	88	12	3	6
Census Region						
Northeast	289	213	64	8	2	2
Midwest	541	360	142	29	2	8
South	702	430	221	27	8	16
West	477	318	132	14	5	8
Day of Week						
Weekday	1383	903	386	63	11	20
Weekend	626	418	173	15	6	14
Season						
Winter	567	396	136	20	5	10
Spring	518	336	141	25	5	11
Summer	525	313	178	18	6	10
Fall	399	276	104	15	1	3
Asthma						
No	1861	1228	514	70	17	32
Yes	146	92	44	8	*	2
DK	2	1	1	*	*	*
Angina						
No	1959	1288	545	76	17	33
Yes	48	33	12	2	*	1
DK	2	*	2	*	*	*
Bronchitis/Emphysema						
No	1922	1266	532	74	17	33
Yes	84	54	25	4	*	1
DK	3	1	2	*	*	*

Note: "*" Signifies missing data; "DK" = respondent answered don't know; Refused - the respondent refused to answer; N = doer sample size.
Source: Tsang and Klepeis, 1996

Table 15-38. Range of the Number of Times Motor Vehicle Was Started with Garage Door Closed at Specified Daily Frequencies by the Number of Respondents

		Times/day				
	Total N	None	1-2	3-5	6-9	Dk
Overall	2009	1830	99	26	2	52
Gender						
Male	939	860	41	15	*	23
Female	1070	970	58	11	2	29
Age (years)						
*	20	14	1	*	*	5
1-4	111	99	8	2	*	2
5-11	150	141	6	*	*	3
12-17	145	127	9	4	1	4
18-64	1287	1184	57	18	1	27
> 64	296	265	18	2	*	11
Race						
White	1763	1616	82	22	1	42
Black	110	95	6	2	1	6
Asian	46	41	4	*	*	1
Some Others	24	21	2	*	*	1
Hispanic	55	46	5	2	*	2
Refused	11	11	*	*	*	*
Hispanic						
No	1879	1714	92	23	2	48
Yes	111	97	7	3	*	4
DK	12	12	*	*	*	*
Refused	7	7	*	*	*	*
Employment						
*	398	360	22	5	1	10
Full Time	919	840	46	13	1	19
Part Time	149	137	6	2	*	4
Not Employed	536	488	24	5	*	19
Refused	7	5	1	1	*	*
Education						
*	427	387	23	6	1	10
< High School	84	74	2	1	*	7
High School Graduate	464	429	24	2	*	9
< College	440	399	24	8	1	8
College Graduate	326	299	12	6	*	9
Post Graduate	268	242	14	3	*	9
Census Region						
Northeast	289	270	10	5	1	3
Midwest	541	500	22	4	1	14
South	702	628	42	8	*	24
West	477	432	25	9	*	11
Day of Week						
Weekday	1383	1269	66	21	*	27
Weekend	626	561	33	5	2	25
Season						
Winter	567	509	32	9	1	16
Spring	518	470	29	3	*	16
Summer	525	476	23	11	*	15
Fall	399	375	15	3	1	5
Asthma						
No	1861	1696	92	23	1	49
Yes	146	132	7	3	1	3
DK	2	2	*	*	*	*
Angina						
No	1959	1785	96	26	2	50
Yes	48	43	3	*	*	2
DK	2	2	*	*	*	*
Bronchitis/Emphysema						
No	1922	1747	96	26	2	51
Yes	84	80	3	*	*	1
DK	3	3	*	*	*	*

Note: "*" Signifies missing data; "DK" = respondents answered don't know; N = doer sample size; Refused = the respondent refused to answer.
Source: Tsang and Klepeis, 1996

Table 15-39. Number of Minutes Spent at a Gas Station or Auto Repair Shop (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		967	1	2	3	4	5	6	10	30	90	121	121	121
Gender	Male	552	2	2	3	4	5	7	10	30	120	121	121	121
Gender	Female	414	0	1	2	3	5	5.5	10	15	30	121	121	121
Age (years)	1-4	29	0	0	0	0	5	5	10	20	60	121	121	121
Age (years)	5-11	42	2	2	2	3	5	5	10	15	15	120	120	120
Age (years)	12-17	57	1	3	3	5	5	5	10	20	30	60	121	121
Age (years)	18-64	760	1	2	3	4	5	5.5	10	30	120	121	121	121
Age (years)	> 64	67	0	2	3	4	5	10	15	15	40	120	120	120
Race	White	788	1	2	3	4	5	7.5	10	30	120	121	121	121
Race	Black	95	0	1	2	3	5	5	10	15	15	20	120	120
Race	Asian	13	2	2	2	2	5	5	10	10	10	10	10	10
Race	Some Others	22	5	5	5	5	5	5	12	20	30	30	30	30
Race	Hispanic	42	0	0	3	4	5	10	15	25	30	121	121	121
Hispanic	No	875	1	2	3	4	5	6	10	30	120	121	121	121
Hispanic	Yes	82	0	2	2	3	5	8	10	20	35	121	121	121
Employment	Full Time	542	1	2	3	4	5	7	10	30	121	121	121	121
Employment	Part Time	107	2	3	4	5	5	10	10	30	120	121	121	121
Employment	Not Employed	186	1	1	3	4	5	10	10	20	40	120	120	121
Education	< High School	70	0	2	3	4.5	5	10	30	121	121	121	121	121
Education	High School Graduate	293	1	2	3	5	5	8	15	30	121	121	121	121
Education	< College	213	1	2	2	4	5	8	10	15	60	121	121	121
Education	College Graduate	143	2	2	3	4	5	5	10	15	30	121	121	121
Education	Post Graduate	106	1	2	3	3	5	7	10	15	35	56	90	120
Census Region	Northeast	167	1	2	3	5	5	5	10	30	121	121	121	121
Census Region	Midwest	246	0	2	2	3	5	8	10	30	120	121	121	121
Census Region	South	348	0	1	3	4	5	6.5	10	20	45	120	121	121
Census Region	West	206	2	2	3	4	5	8	10	20	70	121	121	121
Day of Week	Weekday	634	1	2	3	4	5	7	10	30	121	121	121	121
Day of Week	Weekend	333	1	1	3	4	5	5	10	15	30	120	121	121
Season	Winter	236	1	1	3	4	5	6	10	20	60	121	121	121
Season	Spring	232	2	2	3	5	5	7.5	15	30	120	121	121	121
Season	Summer	282	0	2	3	4	5	10	10	30	120	121	121	121
Season	Fall	217	1	2	2	3	5	5	10	15	35	121	121	121
Asthma	No	892	1	2	3	4	5	7	10	25	90	121	121	121
Asthma	Yes	74	0	2	2	3	5	5	10	30	120	121	121	121
Angina	No	947	1	2	3	4	5	6	10	30	90	121	121	121
Angina	Yes	17	3	3	3	4	10	10	15	15	121	121	121	121
Bronchitis/Emphysema	No	920	1	2	3	4	5	7	10	25	60	121	121	121
Bronchitis/Emphysema	Yes	45	2	2	2	3	5	5	15	120	120	121	121	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-40. Number of Minutes Spent at Home While the Windows Were Left Open (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		1960	2	10	30	180	360	840	961	961	961	961	961	961
Gender	Male	893	5	10	30	180	360	840	961	961	961	961	961	961
Gender	Female	1067	2	10	30	119	360	840	961	961	961	961	961	961
Age (years)	1-4	99	0	1	10	180	180	600	961	961	961	961	961	961
Age (years)	5-11	159	3	10	20	60	360	600	961	961	961	961	961	961
Age (years)	12-17	101	2	5	24	180	360	600	961	961	961	961	961	961
Age (years)	18-64	1282	6	16	60	180	360	840	961	961	961	961	961	961
Age (years)	> 64	282	1	5	30	180	360	840	961	961	961	961	961	961
Race	White	1558	2	10	30	180	360	840	961	961	961	961	961	961
Race	Black	208	3	10	30	180	360	840	961	961	961	961	961	961
Race	Asian	47	10	10	16	180	360	600	961	961	961	961	961	961
Race	Some Others	44	1	1	60	90	180	600	961	961	961	961	961	961
Race	Hispanic	80	2	20	30	60	360	600	961	961	961	961	961	961
Hispanic	No	1775	2	10	30	180	360	840	961	961	961	961	961	961
Hispanic	Yes	156	20	20	30	180	180	840	961	961	961	961	961	961
Employment	Full Time	822	5	15	30	180	360	840	961	961	961	961	961	961
Employment	Part Time	190	1	7	30	60	180	840	961	961	961	961	961	961
Employment	Not Employed	576	5	10	60	180	360	840	961	961	961	961	961	961
Education	< High School	163	1	6	30	90	360	840	961	961	961	961	961	961
Education	High School Graduate	542	2	10	60	180	360	840	961	961	961	961	961	961
Education	< College	408	5	15	30	119	360	840	961	961	961	961	961	961
Education	College Graduate	247	15	15	60	100	360	840	961	961	961	961	961	961
Education	Post Graduate	216	10	10	30	180	360	840	961	961	961	961	961	961
Census Region	Northeast	498	3	10	30	119	360	840	961	961	961	961	961	961
Census Region	Midwest	390	5	10	60	180	360	840	961	961	961	961	961	961
Census Region	South	494	1	6	30	90	360	600	961	961	961	961	961	961
Census Region	West	578	2	10	30	180	360	840	961	961	961	961	961	961
Day of Week	Weekday	1285	3	10	30	180	360	840	961	961	961	961	961	961
Day of Week	Weekend	675	2	10	30	119	360	840	961	961	961	961	961	961
Season	Winter	308	1	2	10	24	180	360	961	961	961	961	961	961
Season	Spring	661	10	20	60	180	360	600	961	961	961	961	961	961
Season	Summer	680	10	30	180	180	600	961	961	961	961	961	961	961
Season	Fall	311	3	5	30	60	180	600	961	961	961	961	961	961
Asthma	No	1809	2	10	30	180	360	840	961	961	961	961	961	961
Asthma	Yes	145	5	10	60	118	360	840	961	961	961	961	961	961
Angina	No	1902	3	10	30	180	360	840	961	961	961	961	961	961
Angina	Yes	49	1	1	24	30	180	961	961	961	961	961	961	961
Bronchitis/Emphysema	No	1850	2	10	30	180	360	840	961	961	961	961	961	961
Bronchitis/Emphysema	Yes	100	5	15	35	180	480	961	961	961	961	961	961	961

Note: Values of "180", "360", "600","840" and "961" for number of minutes signify that 2-4 hours, 4-8 hours, 8-12 hours, 12-16 hours, and more than 16 hours, respectively, were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-41. Number of Minutes the Outside Door Was Left Open While at Home (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		1170	0	1	5	10	60	180	600	600	721	721	721	721
Gender	Male	505	0	1	3	10	60	180	600	600	721	721	721	721
Gender	Female	665	1	1	5	10	60	180	600	600	721	721	721	721
Age (years)	1-4	68	0	0	2	10	30	180	360	721	721	721	721	721
Age (years)	5-11	109	0	1	3	10	60	180	600	600	600	721	721	721
Age (years)	12-17	79	0	1	3	5	60	180	360	600	721	721	721	721
Age (years)	18-64	718	1	1	3	10	60	180	600	600	721	721	721	721
Age (years)	> 64	180	1	1	10	20	180	360	600	721	721	721	721	721
Race	White	968	0	1	5	10	60	180	600	600	721	721	721	721
Race	Black	100	1	2.5	5.5	13	60	180	600	600	600	660.5	721	721
Race	Asian	23	1	1	2	60	180	360	600	600	721	721	721	721
Race	Some Others	22	1	1	1	15	30	180	600	600	721	721	721	721
Race	Hispanic	45	0	0	5	5	45	180	360	600	600	721	721	721
Hispanic	No	1073	0	1	3	10	60	180	600	600	721	721	721	721
Hispanic	Yes	81	0	1	5	10	45	180	360	600	600	721	721	721
Employment	Full Time	451	1	1	3	10	60	180	600	600	721	721	721	721
Employment	Part Time	93	0	3	5	15	60	180	600	600	721	721	721	721
Employment	Not Employed	362	1	1	5	10	60	360	600	600	721	721	721	721
Education	< High School	96	1	1	2	11	75	360	600	600	721	721	721	721
Education	High School Graduate	309	1	3	5	10	60	180	600	600	721	721	721	721
Education	< College	225	0	1	3	10	60	180	600	600	721	721	721	721
Education	College Graduate	150	0	0.5	1	15	60	180	600	600	721	721	721	721
Education	Post Graduate	124	2	2	3	5	30	180	600	600	721	721	721	721
Census Region	Northeast	223	1	2	5	10	90	180	600	600	721	721	721	721
Census Region	Midwest	221	0	0	2	10	60	180	600	600	721	721	721	721
Census Region	South	361	1	1	5	10	60	180	360	600	600	721	721	721
Census Region	West	365	0	1	5	15	60	180	600	600	721	721	721	721
Day of Week	Weekday	732	0	1	5	10	60	180	600	600	721	721	721	721
Day of Week	Weekend	438	1	1	5	10	60	180	600	600	721	721	721	721
Season	Winter	184	0	0	2	3	10	60	180	600	600	600	600	600
Season	Spring	407	1	1	5	20	180	360	600	600	721	721	721	721
Season	Summer	385	0	2	10	30	180	360	600	721	721	721	721	721
Season	Fall	194	1	1	2	10	30	180	360	600	600	600	600	600
Asthma	No	1072	0	1	5	10	60	180	600	600	721	721	721	721
Asthma	Yes	97	1	1	3	6	30	180	600	600	721	721	721	721
Angina	No	1133	0	1	5	10	60	180	600	600	721	721	721	721
Angina	Yes	36	1	1	3	10	104.5	360	360	600	721	721	721	721
Bronchitis/emphysema	No	1105	0	1	3	10	60	180	600	600	721	721	721	721
Bronchitis/emphysema	Yes	63	5	5	10	10	90	180	600	600	600	721	721	721

Note: Values of "180", "360","600", and "721" for number of minutes signify that 2-4 hours, 4-8 hours, 8-12 hours, and over 12 hours, respectively, were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-42. Number of Times an Outside Door Was Opened in the Home at Specified Daily Frequencies by the Number of Respondents

		Times/Day					
	Total N	1-2	3-5	6-9	10-19	20+	DK
Overall	1187	192	248	229	267	196	55
Gender							
Male	511	80	96	100	118	93	24
Female	676	112	152	129	149	103	31
Age (years)							
*	19	6	3	2	3	1	4
1-4	68	13	14	8	17	13	3
5-11	109	15	16	18	31	23	6
12-17	79	11	17	17	13	17	4
18-64	730	112	145	156	171	123	23
> 64	182	35	53	28	32	19	15
Race							
White	979	155	193	188	233	168	42
Black	103	22	28	21	12	14	6
Asian	23	1	9	4	6	2	1
Some Others	22	3	4	2	7	4	2
Hispanic	46	8	11	10	8	8	1
Refused	14	3	3	4	1	*	3
Hispanic							
No	1086	179	227	208	244	180	48
Yes	83	11	17	16	20	15	4
DK	7	*	2	1	3	1	*
Refused	11	2	2	4	*	*	3
Employment							
*	255	40	46	43	60	53	13
Full Time	458	79	98	95	104	72	10
Part Time	95	14	20	19	22	18	2
Not Employed	369	58	81	69	80	52	29
Refused	10	1	3	3	1	1	1
Education							
*	267	42	48	46	63	54	14
< High School	98	21	17	15	18	20	7
High School Graduate	318	48	66	65	71	54	14
< College	228	44	52	37	49	34	12
College Graduate	150	21	37	39	31	19	3
Post Graduate	126	16	28	27	35	15	5
Census Region							
Northeast	228	37	38	49	53	38	13
Midwest	225	44	54	39	50	33	5
South	365	59	81	69	71	66	19
West	369	52	75	72	93	59	18
Day of Week							
Weekday	746	116	167	156	167	106	34
Weekend	441	76	81	73	100	90	21
Season							
Winter	185	19	51	39	42	27	7
Spring	417	73	94	66	90	73	21
Summer	387	72	68	81	80	66	20
Fall	198	28	35	43	55	30	7
Asthma							
No	1087	175	228	211	245	179	49
Yes	99	16	20	18	22	17	6
DK	1	1	*	*	*	*	*
Angina							
No	1147	183	241	221	259	192	51
Yes	39	8	7	8	8	4	4
DK	1	1	*	*	*	*	*
Bronchitis/emphysema							
No	1121	179	230	216	258	186	52
Yes	64	12	18	12	9	10	3
DK	2	1	*	1	*	*	*

Note: * Signifies missing data; "DK" = respondent answered don't know; N = sample size; Refused = respondent refused to answer.
Source: Tsang and Klepeis, 1996

Table 15-43. Number of Minutes Spent Running, Walking, or Standing Alongside a Road with Heavy Traffic (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		401	0	1	2	2	5	15	30	60	121	121	121	121
Gender	Male	202	1	1	2	3	5	17.5	45	120	121	121	121	121
Gender	Female	198	0	0	1	2	5	10	30	60	120	121	121	121
Age (years)	1-4	12	1	1	1	2	4	7.5	30	60	60	60	60	60
Age (years)	5-11	20	1	1	1.5	2	5	6	12.5	25	60	90	90	90
Age (years)	12-17	27	0	0	2	2	4	5	30	60	90	120	120	120
Age (years)	18-64	304	0	1	1	2	5	15	30	90	121	121	121	121
Age (years)	> 64	31	2	2	2	4	5	20	45	60	121	121	121	121
Race	White	306	0	1	2	2	5	15	30	110	121	121	121	121
Race	Black	51	0	0	1	1	3	7	30	50	60	60	121	121
Race	Asian	10	3	3	3	4	5	7.5	15	17.5	20	20	20	20
Race	Some Others	7	2	2	2	2	5	10	45	121	121	121	121	121
Race	Hispanic	24	2	2	2	3	10	17.5	40	60	60	120	120	120
Hispanic	No	356	0	1	1	2	5	15	30	90	121	121	121	121
Hispanic	Yes	43	1	1	2	2	5	10	30	60	120	121	121	121
Employment	Full Time	214	0	1	1	2	5	15	30	120	121	121	121	121
Employment	Part Time	50	0	0.5	2	2	5	15	30	90	121	121	121	121
Employment	Not Employed	76	0	1	2	3	5.5	15	30	60	110	120	121	121
Education	< High School	18	4	4	4	5	6	10	15	30	121	121	121	121
Education	High School Graduate	106	1	1	2	2	5	15	60	121	121	121	121	121
Education	< College	84	0	0	1	3	5.5	20	40	120	121	121	121	121
Education	College Graduate	79	0	1	1	2	5	15	30	60	90	121	121	121
Education	Post Graduate	50	1	1	2	2	5	10	20	52.5	90	120	120	120
Census Region	Northeast	129	1	1	2	2	5	20	50	120	121	121	121	121
Census Region	Midwest	83	0	0	1	2	5	10	20	60	121	121	121	121
Census Region	South	105	0	0	1	2	5	15	30	90	121	121	121	121
Census Region	West	84	1	2	2	3	5	15	30	60	120	121	121	121
Day of Week	Weekday	303	0	0	2	2	5	15	30	60	120	121	121	121
Day of Week	Weekend	98	1	1	2	3	5	15	30	121	121	121	121	121
Season	Winter	104	0	0	1	2	4.5	10	20	60	110	121	121	121
Season	Spring	114	1	1	2	2	6	20	60	120	121	121	121	121
Season	Summer	104	0	1	2	2	5	10	30	60	121	121	121	121
Season	Fall	79	0	1	2	3	5	20	35	120	121	121	121	121
Asthma	No	370	0	1	2	2	5	15	30	60	121	121	121	121
Asthma	Yes	31	0	0	1	2	5	15	30	120	121	121	121	121
Angina	No	393	0	1	2	2	5	15	30	90	121	121	121	121
Angina	Yes	8	2	2	2	2	6.5	17.5	30	60	60	60	60	60
Bronchitis/Emphysema	No	378	0	1	1	2	5	15	30	60	121	121	121	121
Bronchitis/Emphysema	Yes	22	2	2	5	5	5	17.5	30	121	121	121	121	121

NOTE: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis,1996

Table 15-44. Number of Minutes Spent in a Car, Van, Truck, or Bus in Heavy Traffic (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		1197	1	2	5	5	10	20	60	120	121	121	121	121
Gender	Male	534	1	2	4	5	10	20	60	120	121	121	121	121
Gender	Female	663	1	2	5	5	10	25	60	120	121	121	121	121
Age (years)	1-4	33	4	4	5	5	10	15	30	60	60	121	121	121
Age (years)	5-11	63	1	2	5	5	10	20	45	60	120	121	121	121
Age (years)	12-17	52	3	3	4	5	9	12.5	27.5	90	120	120	121	121
Age (years)	18-64	889	1	2	5	5	10	25	60	120	121	121	121	121
Age (years)	> 64	139	3	3	5	5	15	30	60	121	121	121	121	121
Race	White	959	1	2	4	5	10	25	60	120	121	121	121	121
Race	Black	133	2	3	5	5	10	20	40	90	120	121	121	121
Race	Asian	20	5	5	5	5	11	20	30	45	52.5	60	60	60
Race	Some Others	24	5	5	10	10	12.5	30	60	90	120	121	121	121
Race	Hispanic	55	1	2	5	5	10	20	60	120	121	121	121	121
Hispanic	No	1097	1	2	5	5	10	20	60	120	121	121	121	121
Hispanic	Yes	95	1	2	5	5	10	20	90	121	121	121	121	121
Employment	Full Time	659	1	2	5	5	10	30	60	120	121	121	121	121
Employment	Part Time	108	2	2	4	5	10	20	48.5	121	121	121	121	121
Employment	Not Employed	279	1	2	5	5	10	30	60	120	121	121	121	121
Education	< High School	81	0	3	5	10	10	20	40	121	121	121	121	121
Education	High School Graduate	352	1	2	5	5	10	30	60	120	121	121	121	121
Education	< College	276	1	2	3	5	15	30	60	120	121	121	121	121
Education	College Graduate	176	1	2	4	5	12.5	30	60	120	121	121	121	121
Education	Post Graduate	150	2	2	5	5	10	20	60	97.5	120	121	121	121
Census Region	Northeast	229	2	2	4	5	10	20	60	120	121	121	121	121
Census Region	Midwest	263	2	2	5	5	10	30	45	120	121	121	121	121
Census Region	South	429	1	2	5	5	10	30	60	120	121	121	121	121
Census Region	West	276	1	2	5	5	10	20	60	120	121	121	121	121
Day of Week	Weekday	927	1	2	5	5	10	20	60	120	121	121	121	121
Day of Week	Weekend	270	2	2	5	5	10	25	60	120	121	121	121	121
Season	Winter	286	1	2	5	5	10	20	60	120	121	121	121	121
Season	Spring	317	1	2	5	5	10	30	60	120	121	121	121	121
Season	Summer	312	1	3	5	5	10	30	60	120	121	121	121	121
Season	Fall	282	2	2	4	5	10	20	45	120	121	121	121	121
Asthma	No	1108	1	2	5	5	10	20	60	120	121	121	121	121
Asthma	Yes	89	2	2	5	5	10	30	60	121	121	121	121	121
Angina	No	1159	1	2	5	5	10	20	60	120	121	121	121	121
Angina	Yes	35	0	0	5	5	10	30	70	121	121	121	121	121
Bronchitis/emphysema	No	1130	2	2	5	5	10	20	60	120	121	121	121	121
Bronchitis/emphysema	Yes	64	1	1	2	5	10	27.5	51	120	121	121	121	121

NOTE: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996

Table 15-45. Number of Minutes Spent in a Parking Garage or Indoor Parking Lot (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		294	0	1	1	2	3	5	10	30	60	121	121	121
Gender	Male	138	1	1	1	2	4	5	15	60	121	121	121	121
Gender	Female	156	0	1	1	2	3	5	10	20	40	60	120	121
Age (years)	1-4	8	0	0	0	0	2	3.5	5	10	10	10	10	10
Age (years)	5-11	15	1	1	1	2	3	5	10	45	60	60	60	60
Age (years)	12-17	20	0	0	0.5	1.5	2	7.5	15	45	90.5	121	121	121
Age (years)	18-64	229	1	1	2	2	5	5	10	30	60	121	121	121
Age (years)	> 64	18	0	0	0	2	3	5	15	45	90	90	90	90
Race	White	208	1	1	2	2	3	5	10	30	60	121	121	121
Race	Black	34	0	0	1	1	5	5	15	20	30	30	30	30
Race	Asian	15	2	2	2	2	2	10	60	120	121	121	121	121
Race	Some Others	7	3	3	3	3	3	5	15	121	121	121	121	121
Race	Hispanic	28	1	1	1	2	4.5	10	20	60	120	121	121	121
Hispanic	No	251	0	1	1	2	3	5	10	30	60	120	121	121
Hispanic	Yes	39	1	1	1	3	5	10	30	121	121	121	121	121
Employment	Full Time	171	1	1	1	2	3	5	10	30	60	121	121	121
Employment	Part Time	23	2	2	5	5	5	5	10	30	60	121	121	121
Employment	Not Employed	58	0	1	1	2	4	10	20	40	120	121	121	121
Education	< High School	13	0	0	0	5	5	10	10	30	121	121	121	121
Education	High School Graduate	58	1	1	1	2	3	9.5	30	90	121	121	121	121
Education	< College	54	1	1	2	2	4	5	15	40	120	120	121	121
Education	College Graduate	72	1	1	2	2	4.5	5	10	15	60	120	121	121
Education	Post Graduate	50	1	1	2	2	5	5	10	12.5	20	40	60	60
Census Region	Northeast	53	2	2	2	2	5	6	10	30	90	121	121	121
Census Region	Midwest	59	0	0	1	2	3	5	10	30	60	121	121	121
Census Region	South	92	1	1	2	2	3.5	5	10	30	60	121	121	121
Census Region	West	90	0	1	1	1.5	4	5	15	45	60	121	121	121
Day of Week	Weekday	208	0	1	1	2	3	5	10	30	60	121	121	121
Day of Week	Weekend	86	1	1	2	2	5	7	15	30	60	121	121	121
Season	Winter	67	0	1	1	2	3	5	10	20	30	120	121	121
Season	Spring	78	0	1	1	2	3	5.5	15	60	120	121	121	121
Season	Summer	85	0	1	2	2	5	5	15	30	90	121	121	121
Season	Fall	64	1	1	2	2	4.5	5	10	30	45	121	121	121
Asthma	No	263	1	1	2	2	3	5	10	30	60	121	121	121
Asthma	Yes	30	0	0	1	1	4	7	10	30	121	121	121	121
Angina	No	291	0	1	1	2	4	5	10	30	60	121	121	121
Angina	Yes	2	3	3	3	3	3	46.5	90	90	90	90	90	90
Bronchitis/emphysema	No	281	0	1	1	2	3	5	10	30	60	121	121	121
Bronchitis/emphysema	Yes	12	2	2	2	5	5	5.5	10	60	120	120	120	120

NOTE: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis,1996

Table 15-46. Number of Minutes Spent Walking Outside to a Car in the Driveway or Outside Parking Areas (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		3303	0	0	0	0	2	5	10	20	30	60	121	121
Gender	Male	1511	0	0	0	0	2	4	10	20	30	60	121	121
Gender	Female	1791	0	0	0	0	2	5	10	20	30	60	60	121
Age (years)	1-4	132	0	0	0	0	1.5	2	5	15	20	30	60	121
Age (years)	5-11	245	0	0	0	0	1	2	5	15	30	45	80	121
Age (years)	12-17	202	0	0	0	0	1	5	10	20	30	30	60	121
Age (years)	18-64	2303	0	0	0	0	2	5	10	20	30	60	120	121
Age (years)	> 64	373	0	0	0	1	2	5	10	15	30	30	88	121
Race	White	2756	0	0	0	0	2	5	10	20	30	60	120	121
Race	Black	279	0	0	0	0	1	3	5	10	20	30	45	88
Race	Asian	53	0	0	0	0	1	3	10	15	30	32	45	45
Race	Some Others	63	0	0	0	0	2	5	10	30	30	60	120	120
Race	Hispanic	127	0	0	1	1	2	5	10	20	60	120	121	121
Hispanic	No	3029	0	0	0	0	2	5	10	20	30	60	120	121
Hispanic	Yes	235	0	0	0	0	2	5	10	20	60	120	121	121
Employment	Full Time	1613	0	0	0	0	2	5	10	20	30	60	120	121
Employment	Part Time	312	0	0	0	1	2	5	10	20	45	120	121	121
Employment	Not Employed	785	0	0	0	0	2	5	10	20	30	60	60	121
Education	< High School	241	0	0	0	0	2	4	10	20	30	110	121	121
Education	High School Graduate	935	0	0	0	0	2	5	10	20	30	60	121	121
Education	< College	680	0	0	0	1	2	5	10	20	30	60	120	121
Education	College Graduate	445	0	0	0	0	2	5	10	20	30	60	60	121
Education	Post Graduate	381	0	0	0	1	2	5	10	15	25	30	120	121
Census Region	Northeast	680	0	0	0	0	2	5	10	15	30	60	90	121
Census Region	Midwest	763	0	0	0	1	2	5	10	15	30	60	120	121
Census Region	South	1149	0	0	0	0	2	4	10	20	30	60	90	121
Census Region	West	711	0	0	0	0	2	5	10	20	30	60	120	121
Day of Week	Weekday	2209	0	0	0	0	2	5	10	20	30	60	120	121
Day of Week	Weekend	1094	0	0	0	0	2	5	10	20	30	60	120	121
Season	Winter	855	0	0	0	0	1	4	10	15	30	30	100	121
Season	Spring	890	0	0	0	0	2	5	10	20	30	100	120	121
Season	Summer	903	0	0	0	0	2	4	10	20	30	60	60	121
Season	Fall	655	0	0	0	1	2	5	10	15	30	45	110	121
Asthma	No	3063	0	0	0	0	2	5	10	20	30	60	120	121
Asthma	Yes	234	0	0	0	1	2	5	10	15	30	120	121	121
Angina	No	3219	0	0	0	0	2	5	10	20	30	60	120	121
Angina	Yes	72	0	0	0	0	2	5	10	15	30	45	110	110
Bronchitis/Emphysema	No	3132	0	0	0	0	2	5	10	20	30	60	120	121
Bronchitis/Emphysema	Yes	162	0	0	0	0	2	5	10	20	30	110	121	121

NOTE: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis,1996

Table 15-47. Number of Minutes Spent Running or Walking Outside Other Than to the Car (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		1273	1	1	3	5	15	45	120	121	121	121	121	121
Gender	Male	605	2	2	5	10	20	60	121	121	121	121	121	121
Gender	Female	668	0	1	2	5	15	30	116	121	121	121	121	121
Age (years)	1-4	82	3	3	5	10	30	120	121	121	121	121	121	21
Age (yeaars)	5-11	149	4	5	5	10	30	120	121	121	121	121	121	21
Age (years)	12-17	110	5	5	5	10	15	60	121	121	121	121	121	121
Age (years)	18-64	772	0	1	2	5	15	30	120	121	121	121	121	121
Age (years)	5:> 64	143	1	1	2	5	15	30	60	121	121	121	121	121
Race	White	1051	1	1	3	5	15	45	121	121	121	121	121	121
Race	Black	111	0	1	3	5	15	35	120	121	121	121	121	121
Race	Asian	21	2	2	10	10	15	30	70	120	121	121	121	121
Race	Some Others	23	5	5	10	15	20	60	121	121	121	121	121	121
Race	5:hispanic	55	2	3	8	10	20	40	90	121	121	121	121	121
Hispanic	No	1156	1	1	3	5	15	45	120	121	121	121	121	121
Hispanic	Yes	99	1	2	2	10	20	60	121	121	121	121	121	121
Employment	Full Time	517	0	1	2	5	15	30	120	121	121	121	121	121
Employment	Part Time	112	1	2	2	5	15	30	90	121	121	121	121	121
Employment	Not Employed	300	1	1	3	5	15	30	120	121	121	121	121	121
Education	< High School	97	0	1	3	5	15	30	90	121	121	121	121	121
Education	High School Graduate	287	0	0	2	5	15	30	120	121	121	121	121	121
Education	< College	234	1	1	2	5	15	30	120	121	121	121	121	121
Education	College Graduate	153	1	2	5	10	20	45	120	121	121	121	121	121
Education	Post Graduate	138	1	1	3	5	15	37.5	90	121	121	121	121	121
Census Region	Northeast	265	1	1	3	5	20	45	120	121	121	121	121	121
Census Region	Midwest	286	1	2	5	5	15	40	121	121	121	121	121	121
Census Region	South	412	1	1	3	5	15	45	121	121	121	121	121	121
Census Region	West	310	1	1	3	5.5	15	45	120	121	121	121	121	121
Day of Week	Weekday	843	1	1	3	5	15	40	120	121	121	121	121	121
Day of Week	Weekend	430	1	2	4	5	20	60	121	121	121	121	121	21
Season	Winter	312	0	2	2	5	10	42.5	90	121	121	121	121	21
Season	Spring	403	1	2	4	10	20	60	121	121	121	121	121	121
Season	Summer	396	1	1	3	10	20	55	121	121	121	121	121	21
Season	Fall	162	1	1	2	5	15	30	120	121	121	121	121	121
Asthma	No	1162	1	1	3	5	15	45	120	121	121	121	121	21
Asthma	Yes	105	2	4	5	6	15	45	121	121	121	121	121	21
Angina	No	1240	1	1	3	5	15	45	120	121	121	121	121	121
Angina	Yes	25	1	1	5	5	15	45	121	121	121	121	121	121
Bronchitis/Emphysema	No	1204	1	1	3	5	15	45	120	121	121	121	121	121
Bronchitis/Emphysema	Yes	62	1	2	4	5	15	30	120	121	121	121	121	121

NOTE: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis,1996

Table 15-48. Number of Hours Spent Working for Pay (hours/week)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		4896	0	0	0	12	33	40	50	60	61	61	61	61
Gender	Male	2466	0	0	0	18	40	40	53	61	61	61	61	61
Gender	Female	2430	0	0	0	6	28	40	43	55	60	61	61	61
Age (years)	1-4	0	*	*	*	*	*	*	*	*	*	*	*	*
Age (years)	5-11	0	*	*	*	*	*	*	*	*	*	*	*	*
Age (years)	12-17	14	0	0	0	1	9	18.5	24	26	31	31	31	31
Age (years)	18-64	4625	0	0	0	15	35	40	50	60	61	61	61	61
Age (years)	> 64	181	0	0	0	0	5	21	40	50	61	61	61	61
Race	White	3990	0	0	0	10	32	40	50	60	61	61	61	61
Race	Black	499	0	0	0	18	35	40	46	60	61	61	61	61
Race	Asian	76	0	0	0	7	36.5	40	50	61	61	61	61	61
Race	Some Others	87	0	0	0	0	30	40	50	60	61	61	61	61
Race	Hispanic	194	0	0	0	15	32	40	48	60	60	61	61	61
Hispanic	No	4494	0	0	0	12	33	40	50	60	61	61	61	61
Hispanic	Yes	341	0	0	0	8	32	40	50	60	61	61	61	61
Employment	Full Time	4094	0	0	0	30	40	40	50	60	61	61	61	61
Employment	Part Time	802	0	0	0	0	10	20	30	38	40	61	61	61
Employment	Not Employed	0	*	*	*	*	*	*	*	*	*	*	*	*
Education	< High School	308	0	0	0	1	21	40	48	61	61	61	61	61
Education	High School Graduate	1598	0	0	0	12	32	40	48	60	61	61	61	61
Education	< College	1251	0	0	0	15	30	40	50	60	61	61	61	61
Education	College Graduate	954	0	0	0	16	40	40	50	60	61	61	61	61
Education	Post Graduate	716	0	0	0	10	35	40	50	60	61	61	61	61
Census Region	Northeast	1096	0	0	0	14	32	40	50	60	61	61	61	61
Census Region	Midwest	1118	0	0	0	12	32	40	50	60	61	61	61	61
Census Region	South	1675	0	0	0	12	35	40	50	60	61	61	61	61
Census Region	West	1007	0	0	0	9	30	40	50	60	61	61	61	61
Day of Week	Weekday	3306	0	0	0	10	33	40	50	60	61	61	61	61
Day of Week	Weekend	1590	0	0	0	12	33	40	48	60	61	61	61	61
Season	Winter	1306	0	0	0	10	32	40	50	60	61	61	61	61
Season	Spring	1197	0	0	0	15	35	40	50	60	61	61	61	61
Season	Summer	1343	0	0	0	3	33	40	48	60	61	61	61	61
Season	Fall	1050	0	0	0	14.5	32	40	50	60	61	61	61	61
Asthma	No	4579	0	0	0	12	34	40	50	60	61	61	61	61
Asthma	Yes	302	0	0	0	9	30	40	48	60	61	61	61	61
Angina	No	4811	0	0	0	12	34	40	50	60	61	61	61	61
Angina	Yes	66	0	0	0	0	20	40	44	60	61	61	61	61
Bronchitis/Emphysema	No	4699	0	0	0	12	33	40	50	6	61	61	61	61
Bronchitis/Emphysema	Yes	182	0	0	0	6	30	40	48	60	61	61	61	61

Note: * Signifies missing data. A value of "61" for number of hours signifies that more than 60 hours were spent. N = doer sample size.
Percentiles are the percentage of doers below or equal to a given number of hours.
Source: Tsang and Klepeis, 1996.

Table 15-49. Number of Hours Spent Working for Pay Between 6PM and 6AM (hours/week)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		4894	0	0	0	0	0	0	8	30	45	61	61	61
Gender	Male	2465	0	0	0	0	0	0	10	35	50	61	61	61
Gender	Female	2429	0	0	0	0	0	0	5	20	39	61	61	61
Age (years)	1-4	0	0	0	0	0	0	0	0	0	0	0	0	0
Age (years)	5-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Age (years)	12-17	14	0	0	0	0	0	4.5	20	24	25	25	25	25
Age (years)	18-64	4623	0	0	0	0	0	0	8	30	42	61	61	61
Age (years)	> 64	181	0	0	0	0	0	0	0	20	61	61	61	61
Race	White	3989	0	0	0	0	0	0	8	25	40	61	61	61
Race	Black	499	0	0	0	0	0	0	10	40	61	61	61	61
Race	Asian	75	0	0	0	0	0	0	12	30	61	61	61	61
Race	Some Others	87	0	0	0	0	0	0	7	25	45	61	61	61
Race	Hispanic	194	0	0	0	0	0	0	15	35	48	61	61	61
Hispanic	No	4492	0	0	0	0	0	0	8	27	40	61	61	61
Hispanic	Yes	341	0	0	0	0	0	0	13	35	50	61	61	61
Employment	Full Time	4092	0	0	0	0	0	0	8	30	45	61	61	61
Employment	Part Time	802	0	0	0	0	0	0	6	20	35	61	61	61
Employment	Not Employed	0	0	0	0	0	0	0	0	0	0	0	0	0
Education	< High School	308	0	0	0	0	0	0	11	50	61	61	61	61
Education	High School Graduate	1597	0	0	0	0	0	0	8	35	50	61	61	61
Education	< College	1251	0	0	0	0	0	0	9	26	40	60	61	61
Education	College Graduate	953	0	0	0	0	0	0	8	20	40	61	61	61
Education	Post Graduate	716	0	0	0	0	0	0	7	20	30	61	61	61
Census Region	Northeast	1096	0	0	0	0	0	0	7	24	40	61	61	61
Census Region	Midwest	1118	0	0	0	0	0	0	10	30	42	61	61	61
Census Region	South	1674	0	0	0	0	0	0	7	30	48	61	61	61
Census Region	West	1006	0	0	0	0	0	0	10	30	47	61	61	61
Day of Week	Weekday	3306	0	0	0	0	0	0	8	30	48	61	61	61
Day of Week	Weekend	1588	0	0	0	0	0	0	7	28	40	61	61	61
Season	Winter	1305	0	0	0	0	0	0	8	28	40	61	61	61
Season	Spring	1197	0	0	0	0	0	0	8	30	48	61	61	61
Season	Summer	1342	0	0	0	0	0	0	9	30	48	61	61	61
Season	Fall	1050	0	0	0	0	0	0	7	25	40	61	61	61
Asthma	No	4578	0	0	0	0	0	0	8	30	45	61	61	61
Asthma	Yes	301	0	0	0	0	0	0	8	28	36	61	61	61
Angina	No	4809	0	0	0	0	0	0	8	30	44	61	61	61
Angina	Yes	66	0	0	0	0	0	0	7	36	40	61	61	61
Bronchitis/Emphysema	No	4697	0	0	0	0	0	0	8	30	43	61	61	61
Bronchitis/Emphysema	Yes	182	0	0	0	0	0	0	10	40	50	61	61	61

Note: A Value of "61" for number of hours signifies that more than 60 hours were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of hours.
Source: Tsang and Klepeis, 1996.

Table 15-50. Number of Hours Worked in a Week That Was Outdoors (hours/week)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		4891	0	0	0	0	0	0	1	30	50	61	61	61
Gender	Male	2463	0	0	0	0	0	0	16	42	60	61	61	61
Gender	Female	2428	0	0	0	0	0	0	0	2	12	55	61	61
Age (years)	1-4	0	0	0	0	0	0	0	0	0	0	0	0	0
Age (years)	5-11	0	0	0	0	0	0	0	0	0	0	0	0	0
Age (years)	12-17	14	0	0	0	0	0	0	0	0	0	0	0	0
Age (years)	18-64	4621	0	0	0	0	0	0	1	30	50	61	61	61
Age (years)	> 64	181	0	0	0	0	0	0	2	29	60	61	61	61
Race	White	3986	0	0	0	0	0	0	2	30	50	61	61	61
Race	Black	499	0	0	0	0	0	0	0	25	48	61	61	61
Race	Asian	75	0	0	0	0	0	0	0	3	30	40	61	61
Race	Some Others	87	0	0	0	0	0	0	1	17	40	48	61	61
Race	Hispanic	194	0	0	0	0	0	0	2	30	50	61	61	61
Hispanic	No	4489	0	0	0	0	0	0	1	30	48	61	61	61
Hispanic	Yes	341	0	0	0	0	0	0	2	35	60	61	61	61
Employment	Full Time	4090	0	0	0	0	0	0	2	35	50	61	61	61
Employment	Part Time	801	0	0	0	0	0	0	0	15	30	61	61	61
Employment	Not Employed	0	0	0	0	0	0	0	0	0	0	0	0	0
Education	< High School	308	0	0	0	0	0	0	16.5	55	61	61	61	61
Education	High School Graduate	1594	0	0	0	0	0	0	6	40	60	61	61	61
Education	< College	1251	0	0	0	0	0	0	1	30	46	61	61	61
Education	College Graduate	953	0	0	0	0	0	0	0	20	35	50	61	61
Education	Post Graduate	716	0	0	0	0	0	0	0	4	15	60	61	61
Census Region	Northeast	1094	0	0	0	0	0	0	0	25	40	61	61	61
Census Region	Midwest	1117	0	0	0	0	0	0	0	30	50	61	61	61
Census Region	South	1674	0	0	0	0	0	0	2	32	55	61	61	61
Census Region	West	1006	0	0	0	0	0	0	2	33	50	61	61	61
Day of Week	Weekday	3305	0	0	0	0	0	0	1	32	50	61	61	61
Day of Week	Weekend	1586	0	0	0	0	0	0	1	30	48	61	61	61
Season	Winter	1305	0	0	0	0	0	0	0	25	50	61	61	61
Season	Spring	1195	0	0	0	0	0	0	2	30	50	61	61	61
Season	Summer	1341	0	0	0	0	0	0	2	36	50	61	61	61
Season	Fall	1050	0	0	0	0	0	0	0	30	45	61	61	61
Asthma	No	4576	0	0	0	0	0	0	1	30	50	61	61	61
Asthma	Yes	300	0	0	0	0	0	0	0	31	50	61	61	61
Angina	No	4806	0	0	0	0	0	0	1	30	50	61	61	61
Angina	Yes	66	0	0	0	0	0	0	4	35	50	61	61	61
Bronchitis/Emphysema	No	4694	0	0	0	0	0	0	1	30	50	61	61	61
Bronchitis/Emphysema	Yes	182	0	0	0	0	0	0	2	30	60	61	61	61

NOTE: A value of "61" for number of hours signifies that more than 60 hours were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of hours.
Source: Tsang and Klepeis,1996

Table 15-51. Number of Times Floors Were Swept or Vacuumed at Specified Frequencies by the Number of Respondents

	Total N	Number of Times						
		Almost Every Day	3-5/week	1-2/week	1-2/month	< Often	Never	DK
Overall	4663	921	1108	2178	373	48	10	25
Gender								
Male	2163	415	520	976	201	27	5	19
Female	2498	505	588	1201	172	21	5	6
Refused	2	1	0	1	0	0	0	0
Age (years)								
*	84	16	11	41	12	3	0	1
1-4	263	96	74	88	4	0	0	1
5-11	348	115	107	120	6	0	0	0
12-17	326	82	83	144	15	2	0	0
18-64	2972	524	723	1420	252	34	6	13
> 64	670	88	110	365	84	9	4	10
Race								
White	3774	641	879	1868	324	36	8	18
Black	463	167	115	150	19	5	2	5
Asian	77	11	15	39	8	3	0	1
Some Others	96	26	29	32	8	1	0	0
Hispanic	193	68	61	55	7	2	0	0
Refused	60	8	9	34	7	1	0	1
Hispanic								
No	4244	799	988	2035	345	43	9	25
Yes	347	106	107	110	21	3	0	0
DK	26	8	3	11	2	1	1	0
Refused	46	8	10	22	5	1	0	0
Employment								
*	926	290	267	342	24	2	0	1
Full Time	2017	291	486	1018	184	27	2	9
Part Time	379	82	82	177	34	1	0	3
Not Employed	1309	256	263	626	127	18	8	11
Refused	32	2	10	15	4	0	0	1
Education								
*	1021	314	285	384	31	4	0	3
< High School	399	110	91	162	20	6	2	8
High School Graduate	1253	269	302	591	69	12	3	7
< College	895	130	223	438	93	8	2	1
College Graduate	650	64	132	346	93	9	3	3
Post Graduate	445	34	75	257	67	9	0	3
Census Region								
Northeast	1048	236	230	484	83	8	2	5
Midwest	1036	156	249	527	86	10	2	6
South	1601	376	403	707	93	11	2	9
West	978	153	226	460	111	19	4	5
Day of Week								
Weekday	3156	631	765	1458	248	33	5	16
Weekend	1507	290	343	720	125	15	5	9
Season								
Winter	1264	268	309	557	105	15	2	8
Spring	1181	217	286	560	96	12	3	7
Summer	1275	251	312	596	94	13	1	8
Fall	943	185	201	465	78	8	4	2
Asthma								
No	4287	821	1013	2030	351	39	10	23
Yes	341	95	88	133	17	7	0	1
DK	35	5	7	15	5	2	0	1
Angina								
No	4500	892	1080	2098	352	44	10	24
Yes	125	21	23	63	16	2	0	0
DK	38	8	5	17	5	2	0	1
Bronchitis/emphysema								
No	4424	871	1064	2063	349	44	9	24
Yes	203	45	39	99	17	2	1	0
DK	36	5	5	16	7	2	0	1

Note: * Signifies missing data; DK = respondent answered don't know; N = sample size; Refused = respondent refused to answer.
Source: Tsang and Klepeis, 1996

Table 15-52. Number of Days Since the Floor Area in the Home Was Swept or Vacuumed by the Number of Respondents

		Number of Days since That Area Was Swept-vacuumed													
	Total N	0	Swept-Vacuumed Yes'day	1	2	3	4	5	6	7	8	10	14	>2 Weeks	Dk
Overall	9386	8112	550	278	189	85	63	31	17	26	2	1	5	16	11
Gender															
Male	4294	3688	245	136	100	35	37	19	8	10	1	0	3	7	5
Female	5088	4421	304	142	89	50	26	12	9	16	1	1	2	9	6
Refused	4	3	1	0	0	0	0	0	0	0	0	0	0	0	0
Age (years)															
*	187	180	1	0	3	1	0	0	0	0	0	0	0	1	1
1-4	499	67	199	93	54	24	19	17	9	7	0	1	2	6	1
5-11	703	393	121	70	50	23	22	8	2	4	1	0	2	2	5
12-17	589	533	30	12	6	3	0	0	1	2	0	0	0	2	0
18-64	6059	5592	198	102	76	34	22	6	5	13	1	0	1	5	4
> 64	1349	1347	1	1	0	0	0	0	0	0	0	0	0	0	0
Race															
White	7591	6586	398	232	152	72	55	29	14	24	2	1	5	13	8
Black	945	825	72	18	17	7	3	1	2	0	0	0	0	0	0
Asian	157	138	5	6	2	2	1	0	0	1	0	0	0	1	1
Some Others	182	141	21	7	9	2	1	0	0	0	0	0	0	1	0
Hispanic	385	300	52	15	9	2	2	0	1	1	0	0	0	1	2
Refused	126	122	2	0	0	0	1	1	0	0	0	0	0	0	0
Hispanic															
No	8534	7421	460	248	170	80	57	29	15	24	2	1	5	14	8
Yes	702	549	88	29	17	5	4	2	2	2	0	0	0	1	3
Dk	47	42	1	1	1	0	1	0	0	0	0	0	0	1	0
Refused	103	100	1	0	1	0	1	0	0	0	0	0	0	0	0
Employment															
*	1773	974	349	175	112	50	41	25	12	13	1	1	4	9	7
Full Time	4096	3826	96	64	50	21	18	6	4	6	1	0	0	4	0
Part Time	802	741	28	10	8	6	2	0	0	4	0	0	1	1	1
Not Employed	2644	2502	77	29	18	8	2	0	1	3	0	0	0	1	3
Refused	71	69	0	0	1	0	0	0	0	0	0	0	0	1	0
Education															
*	1968	1162	353	175	114	50	41	25	12	13	1	1	4	10	7
< High School	834	793	24	13	2	1	0	0	0	0	0	0	0	0	1
High School Graduate	2612	2447	76	39	26	9	7	1	2	0	1	0	0	2	2
< College	1801	1681	55	25	18	10	6	0	1	3	0	0	0	2	0
College Graduate	1247	1155	28	19	17	10	5	3	1	7	0	0	0	1	1
Post Graduate	924	874	14	7	12	5	4	2	1	3	0	0	1	1	0
Census Region															
Northeast	2075	1793	129	65	35	18	4	9	9	6	0	0	0	5	2
Midwest	2102	1826	108	59	47	21	17	7	2	6	2	1	2	2	2
South	3243	2805	193	87	75	26	27	8	3	8	0	0	2	5	4
West	1966	1688	120	67	32	20	15	7	3	6	0	0	1	4	3
Day of Week															
Weekday	6316	5487	366	160	125	57	51	18	13	15	2	1	4	11	6
Weekend	3070	2625	184	118	64	28	12	13	4	11	0	0	1	5	5
Season															
Winter	2524	2144	162	79	61	27	17	7	3	13	0	0	1	5	5
Spring	2438	2112	121	90	48	19	19	9	7	4	0	0	2	5	2
Summer	2536	2187	167	68	41	26	19	12	3	3	0	1	2	4	3
Fall	1888	1669	100	41	39	13	8	3	4	6	2	0	0	2	1
Asthma															
No	8629	7455	502	262	171	80	59	30	13	22	2	1	5	16	11
Yes	694	596	48	15	17	5	4	1	4	4	0	0	0	0	0
Dk	63	61	0	1	1	0	0	0	0	0	0	0	0	0	0
Angina															
No	9061	7793	547	277	189	83	63	31	17	26	2	1	5	16	11
Yes	250	246	2	1	0	1	0	0	0	0	0	0	0	0	0
Dk	75	73	1	0	0	1	0	0	0	0	0	0	0	0	0
Bronchitis/emphysema															
No	8882	7645	536	268	182	84	61	31	17	25	2	1	5	15	10
Yes	433	397	13	10	7	1	2	0	0	1	0	0	0	1	1
Dk	71	70	1	0	0	0	0	0	0	0	0	0	0	0	0

Note: * Signifies missing data; DK = respondents answered don't know; N= sample size; Refused = respondent refused to answer.
Source: Tsang and Klepeis, 1996

Table 15-53. Number of Loads of Laundry Washed in a Washing Machine at Home by the Number of Respondents

	Total N	Number of Loads/Day											
		1	2	3	4	5	6	7	8	9	10	>10	DK
Overall	1762	582	604	303	123	55	27	11	12	1	5	1	38
Gender													
Male	678	219	241	120	41	17	8	*	*	1	1	*	30
Female	1083	363	363	183	82	38	19	10	12	*	4	1	8
Refused	1	*	*	*	*	*	*	1	*	*	*	*	*
Age (years)													
*	30	9	14	2	3	1	*	*	*	*	*	*	1
1-4	109	29	36	24	12	5	2	*	*	*	1	*	*
5-11	141	38	55	28	8	6	2	1	*	1	1	*	1
12-17	127	39	52	22	10	1	1	*	1	*	*	*	1
18-64	1161	385	376	209	80	35	22	9	11	*	3	1	30
> 64	194	82	71	18	10	7	*	1	*	*	*	*	5
Race													
White	1511	513	519	254	101	48	23	11	12	1	3	*	26
Black	112	27	41	23	11	4	1	*	*	*	1	*	4
Asian	22	7	4	3	5	*	*	*	*	*	*	*	3
Some Others	31	8	12	5	1	1	1	*	*	*	*	*	3
Hispanic	68	18	24	15	5	2	2	*	*	*	1	*	1
Refused	18	9	4	3	*	*	*	*	*	*	*	1	1
Hispanic													
No	1615	536	556	271	115	50	24	11	12	1	4	*	35
Yes	126	38	42	26	8	5	3	*	*	*	1	*	3
DK	6	*	2	4	*	*	*	*	*	*	*	*	*
Refused	15	8	4	2	*	*	*	*	*	*	*	1	*
Employment													
*	369	102	143	71	29	12	5	1	1	1	2	*	2
Full Time	734	259	244	128	42	20	10	5	4	*	2	*	20
Part Time	160	58	53	23	10	8	3	*	1	*	*	*	4
Not Employed	482	158	158	79	41	15	8	5	6	*	1	1	10
Refused	17	5	6	2	1	*	1	*	*	*	*	*	2
Education													
*	413	118	160	77	32	12	6	1	1	1	2	*	3
< High School	133	44	44	22	10	4	3	2	*	*	*	*	4
High School Graduate	508	175	166	85	35	18	8	3	4	*	*	*	14
< College	321	105	101	61	25	9	3	2	5	*	2	1	7
College Graduate	212	83	68	32	11	8	4	*	1	*	*	*	5
Post Graduate	175	57	65	26	10	4	3	3	1	*	1	*	5
Census Region													
Northeast	367	111	146	57	23	13	7	2	1	*	*	*	7
Midwest	406	125	123	76	42	14	5	3	6	1	*	1	10
South	628	205	228	110	39	17	6	6	4	*	3	*	10
West	361	141	107	60	19	11	9	*	1	*	2	*	11
Day of Week													
Weekday	1172	418	409	194	62	29	17	7	7	1	1	1	26
Weekend	590	164	195	109	61	26	10	4	5	*	4	*	12
Season													
Winter	458	154	159	73	31	14	6	3	4	1	3	1	9
Spring	465	154	159	87	28	10	10	3	2	*	1	*	11
Summer	482	158	166	85	38	11	8	4	3	*	1	*	8
Fall	357	116	120	58	26	20	3	1	3	*	*	*	10
Asthma													
No	1615	548	545	274	105	50	27	11	12	1	5	1	36
Yes	140	31	56	28	18	5	*	*	*	*	*	*	2
DK	7	3	3	1	*	*	*	*	*	*	*	*	*
Angina													
No	1710	564	592	294	113	54	26	11	12	1	5	1	37
Yes	40	14	9	7	8	1	1	*	*	*	*	*	*
DK	12	4	3	2	2	*	*	*	*	*	*	*	1
Bronchitis/Emphysema													
No	1658	544	572	285	112	53	26	10	12	1	5	1	37
Yes	96	36	28	16	11	2	1	1	*	*	*	*	1
DK	8	2	4	2	*	*	*	*	*	*	*	*	*

Note: * Signifies missing data; "DK" = respondent answered don't know; N= sample size; Refused = respondent refused to answer.
Source: Tsang And Klepeis, 1996

Table 15-54. Number of Times Using a Dishwasher at Specified Frequencies by the Number of Respondents

	Total N	Number of Times/Week					
		*	Almost Every Day	3-5/Week	1-2/Week	<1-2/Week	DK
Overall	2635	1	557	678	529	824	46
Gender							
Male	1235	*	259	282	247	417	30
Female	1399	1	298	396	282	406	16
Refused	1	*	*	*	*	1	*
Age (years)							
*	35	*	4	13	11	6	1
1-4	145	*	9	4	3	118	11
5-11	211	*	14	8	15	157	17
12-17	206	*	27	33	31	113	2
18-64	1718	*	438	512	397	360	11
> 64	320	1	65	108	72	70	4
Race							
White	2267	1	504	603	487	637	35
Black	163	*	19	32	19	90	3
Asian	54	*	7	8	7	31	1
Some Others	45	*	9	8	1	24	3
Hispanic	84	*	13	15	12	40	4
Refused	22	*	5	12	3	2	*
Hispanic							
No	2444	1	524	635	504	739	41
Yes	164	*	27	32	21	79	5
DK	11	*	2	2	2	5	*
Refused	16	*	4	9	2	1	*
Employment							
*	552	*	49	45	46	382	30
Full Time	1191	*	276	359	298	249	9
Part Time	204	*	48	70	46	38	2
Not Employed	678	1	181	200	136	155	5
Refused	10	*	3	4	3	*	*
Education							
*	593	*	55	51	55	400	32
< High School	124	1	29	27	26	41	*
High School Graduate	582	*	153	173	114	132	10
< College	560	*	144	181	117	117	1
College Graduate	446	*	105	134	126	80	1
Post Graduate	330	*	71	112	91	54	2
Census Region							
Northeast	538	*	133	144	95	159	7
Midwest	514	*	116	130	110	152	6
South	953	*	200	251	169	312	21
West	630	1	108	153	155	201	12
Day of Week							
Weekday	1768	1	378	466	341	549	33
Weekend	867	*	179	212	188	275	13
Season							
Winter	711	*	144	175	149	223	20
Spring	664	1	122	181	132	214	14
Summer	721	*	157	185	134	239	6
Fall	539	*	134	137	114	148	6
Asthma							
No	2439	1	521	622	492	765	38
Yes	189	*	35	54	35	58	7
DK	7	*	1	2	2	1	1
Angina							
No	2570	1	538	664	512	809	46
Yes	60	*	19	11	16	14	*
DK	5	*	*	3	1	1	*
Bronchitis/Emphysema							
No	2533	1	540	646	504	796	46
Yes	93	*	16	27	23	27	*
DK	9	*	1	5	2	1	*

Note: * Signifies missing data; "DK" = respondent answered don't know; N= sample size; Refused = respondent refused to answer.
Source: Tsang And Klepeis, 1996

Table 15-55. Number of Times Washing Dishes by Hand at Specified Frequencies by the Number of Respondents

	Total N	Number of Times/Week					
		*	Almost Every Day	3-5/Week	1-2/Week	<1-2/Week	DK
Overall	3626	1	2600	490	326	197	12
Gender							
Male	1554	*	982	264	183	117	8
Female	2071	1	1618	225	143	80	4
Refused	1	*	*	1	*	*	*
Age (years)							
*	65	*	51	6	2	6	*
1-4	1	*	*	*	1	*	*
5-11	103	*	12	14	33	44	*
12-17	228	*	57	45	69	56	1
18-64	2642	1	1979	379	201	76	6
> 64	587	*	501	46	20	15	5
Race							
White	2928	1	2114	391	257	157	8
Black	385	*	261	61	40	21	2
Asian	61	*	48	6	3	4	*
Some Others	67	*	44	9	9	5	*
Hispanic	147	*	108	17	12	8	2
Refused	38	*	25	6	5	2	*
Hispanic							
No	3322	1	2383	454	296	178	10
Yes	258	*	185	32	25	14	2
DK	21	*	16	*	3	2	*
Refused	25	*	16	4	2	3	*
Employment							
*	328	*	71	57	102	97	1
Full Time	1765	*	1282	284	145	50	4
Part Time	349	*	270	44	17	15	3
Not Employed	1165	1	965	104	60	31	4
Refused	19	*	12	1	2	4	*
Education							
*	386	*	101	65	107	112	1
< High School	354	*	298	26	15	12	3
High School Graduate	1106	1	856	140	74	30	5
< College	796	*	606	116	57	16	1
College Graduate	591	*	445	86	47	13	*
Post Graduate	393	*	294	57	26	14	2
Census Region							
Northeast	832	*	636	90	60	43	3
Midwest	811	*	569	114	81	45	2
South	1214	1	840	175	124	70	4
West	769	*	555	111	61	39	3
Day of Week							
Weekday	2474	*	1759	335	236	136	8
Weekend	1152	1	841	155	90	61	4
Season							
Winter	985	*	691	138	90	63	3
Spring	902	1	648	117	85	46	5
Summer	987	*	705	132	92	55	3
Fall	752	*	556	103	59	33	1
Asthma							
No	3345	1	2407	455	290	183	9
Yes	263	*	179	33	34	14	3
DK	18	*	14	2	2	*	*
Angina							
No	3501	*	2499	475	321	194	12
Yes	105	1	86	11	5	2	*
DK	20	*	15	4	*	1	*
Bronchitis/Emphysema							
No	3438	1	2459	460	314	192	12
Yes	169	*	126	27	11	5	*
DK	19	*	15	3	1	*	*

Note: * Signifies missing data; "DK" = respondent answered don't know; N= sample size; Refused = respondent refused to answer.
Source: Tsang And Klepeis, 1996

Table 15-56. Number of Times for Washing Clothes in a Washing Machine at Specified Frequencies by the Number of Respondents

		Number of Times/Week						
	Total N	*	Almost Every Day	3-5 /Day	1-2/week	<1/week	Never	DK
Overall	4663	404	566	1033	1827	331	465	37
Gender								
Male	2163	212	211	458	811	154	300	17
Female	2498	191	355	575	1015	177	165	20
Refused	2	1	*	*	1	*	*	*
Age (years)								
*	84	3	6	11	47	3	2	12
1-4	263	261	*	*	*	*	1	1
5-11	348	101	2	4	16	15	206	4
12-17	326	1	22	29	83	67	124	*
18-64	2972	31	489	832	1328	197	83	12
> 64	670	7	47	157	353	49	49	8
Race								
White	3774	316	499	883	1445	246	370	15
Black	463	39	33	72	207	52	55	5
Asian	77	4	1	12	39	13	8	*
Some Others	96	16	10	15	36	8	11	*
Hispanic	193	29	19	41	77	10	17	*
Refused	60	*	4	10	23	2	4	17
Hispanic								
No	4244	342	528	950	1674	307	424	19
Yes	347	59	31	69	130	20	38	*
DK	26	2	3	6	10	3	2	*
Refused	46	1	4	8	13	1	1	18
Employment								
*	926	366	23	32	97	76	327	5
Full Time	2017	21	305	569	929	119	66	8
Part Time	379	6	64	101	166	29	13	*
Not Employed	1309	10	170	326	628	105	58	12
Refused	32	1	4	5	7	2	1	12
Education								
*	1021	367	33	37	129	89	343	23
< High School	399	3	61	88	178	40	27	2
High School Graduate	1253	14	218	367	548	55	47	4
< College	895	3	126	261	432	51	19	3
College Graduate	650	12	78	171	321	57	9	2
Post Graduate	445	5	50	109	219	39	20	3
Census Region								
Northeast	1048	84	119	216	454	81	87	7
Midwest	1036	88	108	229	408	78	121	4
South	1601	147	229	376	557	97	182	13
West	978	85	110	212	408	75	75	13
Day of Week								
Weekday	3156	257	407	697	1217	232	320	26
Weekend	1507	147	159	336	610	99	145	11
Season								
Winter	1264	121	157	273	472	101	129	11
Spring	1181	122	135	259	464	82	113	6
Summer	1275	102	163	280	484	88	142	16
Fall	943	59	111	221	407	60	81	4
Asthma								
No	4287	371	522	951	1700	303	421	19
Yes	341	32	42	79	118	26	43	1
DK	35	1	2	3	9	2	1	17
Angina								
No	4500	403	555	993	1759	321	451	18
Yes	125	*	8	37	58	7	13	2
DK	38	1	3	3	10	3	1	17
Bronchitis/emphysema								
No	4424	397	549	979	1724	315	441	19
Yes	203	7	15	51	92	14	23	1
DK	36	*	2	3	11	2	1	17

Note: * Signifies missing data; "DK" = respondent answered don't know; N= sample size; Refused = respondent refused to answer.
Source: Tsang And Klepeis, 1996

Table 15-57. Number of Minutes Spent Playing on Sand or Gravel in a Day by the Number of Respondents

		Minutes/Day												
	Total N	*-*	0-0	0-10	10-20	20-30	30-40	40-50	50-60	70-80	80-90	90-100	110-120	121
Overall	700	41	348	42	34	57	4	12	66	2	9	2	27	56
Gender														
Male	352	18	189	20	13	25	*	7	32	*	7	1	10	30
Female	347	23	158	22	21	32	4	5	34	2	2	1	17	26
Refusedused	1	*	1	*	*	*	*	*	*	*	*	*	*	*
Age (years)														
*	3	1	*	*	1	*	*	*	*	*	*	*	*	1
1-4	216	13	115	15	9	15	2	3	15	1	5	*	7	16
5-11	200	7	96	11	12	14	*	5	25	1	2	1	6	20
12-17	41	1	23	1	2	4	*	*	3	*	*	1	3	3
18-64	237	18	112	15	10	24	2	4	23	*	2	*	11	16
> 64	3	1	2	*	*	*	*	*	*	*	*	*	*	*
Race														
White	568	34	274	37	30	49	2	9	57	1	8	2	21	44
Black	68	4	42	5	3	2	*	1	4	*	*	*	3	4
Asian	5	*	2	*	*	1	*	*	1	*	*	*	*	1
Some Others	16	2	9	*	*	*	2	*	1	*	*	*	*	3
Hispanic	41	*	19	*	1	5	*	2	3	1	1	*	3	4
Refused	2		2	*	*	*	*	*	*	*	*	*	*	*
Hispanic														
No	619	36	309	41	29	49	4	10	59	1	7	2	23	49
Yes	77	5	36	1	4	8	*	2	7	1	2	*	4	7
DK	3	*	2	*	1	*	*	*	*	*	*	*	*	*
Refused	1	*	1	*	*	*	*	*	*	*	*	*	*	*
Employment														
*	461	22	234	27	24	33	2	8	43	2	7	2	16	41
Full Time	149	9	73	7	7	16	1	3	17	*	2	*	6	8
Part Time	29	2	10	4	1	2	1	*	4	*	*	*	2	3
Not Employed	60	7	31	4	2	6	*	1	2	*	*	*	3	4
Refused	1	1	*	*	*	*	*	*	*	*	*	*	*	*
Education														
*	461	22	234	27	24	33	2	8	43	2	7	2	16	41
< High School	22	5	9	*	*	3	*	*	1	*	*	*	2	2
High School Graduate	73	4	39	4	1	8	1	*	6	*	1	*	2	7
< College	66	2	34	6	2	6	*	2	6	*	*	*	4	4
College Graduate	54	4	26	3	3	6	1	2	7	*	*	*	*	2
Post Graduate	24	4	6	2	4	1	*	*	3	*	1	*	3	*
Census Region														
Northeast	124	8	60	8	5	7	*	4	16	*	1	*	6	9
Midwest	128	6	69	8	6	14	*	2	11	*	2	*	3	7
South	273	17	133	18	12	25	3	3	30	*	3	2	6	21
West	175	10	86	8	11	11	1	3	9	2	3	*	12	19
Day of Week														
Weekday	445	35	216	27	22	40	3	10	37	2	6	2	17	28
Weekend	255	6	132	15	12	17	1	2	29	*	3	*	10	28
Season														
Winter	107	10	44	9	6	11	1	2	8	2	1	*	4	9
Spring	240	8	113	21	14	22	1	3	25	*	2	*	12	19
Summer	262	12	146	5	9	20	2	5	25	*	5	2	9	22
Fall	91	11	45	7	5	4	*	2	8	*	1	*	2	6
Asthma														
No	638	38	319	39	34	51	4	10	57	2	9	2	22	51
Yes	61	3	28	3	*	6	*	2	9	*	*	*	5	5
DK	1	*	1	*	*	*	*	*	*	*	*	*	*	*
Angina														
No	699	40	348	42	34	57	4	12	66	2	9	2	27	56
DK	1	1	*	*	*	*	*	*	*	*	*	*	*	*
Bronchitis/Emphyseme														
No	679	41	339	41	34	54	4	12	62	2	9	2	26	53
Yes	21	*	9	1	*	3	*	*	4	*	*	*	1	3

Note: "*" = Signifies missing data. "DK" = Don't know. Refused = refused to answer. N = Doer sample size in specified range of number of minutes spent. A value of "121" for number of minutes signifies that more than 120 minutes were spent.
Source: Tsang and Klepeis, 1996.

Table 15-58. Number of Minutes Spent Playing in Sand or Gravel (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		659	0	0	0	0	0	0	45	120	121	121	121	121
Gender	Male	334	0	0	0	0	0	0	45	120	121	121	121	121
Gender	Female	324	0	0	0	0	0	1	60	120	121	121	121	121
Age (years)	1-4	203	0	0	0	0	0	0	30	120	121	121	121	121
Age (years)	5-11	193	0	0	0	0	0	3	60	121	121	121	121	121
Age (years)	12-17	40	0	0	0	0	0	0	45	120	121	121	121	121
Age (years)	18-64	219	0	0	0	0	0	0	45	120	121	121	121	121
Age (years)	> 64	2	0	0	0	0	0	0	0	0	0	0	0	0
Race	White	534	0	0	0	0	0	0	50	120	121	121	121	121
Race	Black	64	0	0	0	0	0	0	15	120	121	121	121	121
Race	Asian	5	0	0	0	0	0	30	60	121	121	121	121	121
Race	Some Others	15	0	0	0	0	0	0	60	121	121	121	121	121
Race	Hispanic	39	0	0	0	0	0	15	60	121	121	121	121	121
Hispanic	No	583	0	0	0	0	0	0	45	120	121	121	121	121
Hispanic	Yes	72	0	0	0	0	0	1.5	60	120	121	121	121	121
Employment	Full Time	140	0	0	0	0	0	0	45	105	121	121	121	121
Employment	Part Time	27	0	0	0	0	0	10	60	121	121	121	121	121
Employment	Not Employed	53	0	0	0	0	0	0	30	120	121	121	121	121
Education	< High School	17	0	0	0	0	0	0	60	121	121	121	121	121
Education	High School Graduate	69	0	0	0	0	0	0	30	121	121	121	121	121
Education	< College	64	0	0	0	0	0	0	37.5	120	121	121	121	121
Education	College Graduate	50	0	0	0	0	0	0	30	60	60	121	121	121
Education	Post Graduate	20	0	0	0	0	0	15	60	120	120	120	120	120
Census Region	Northeast	116	0	0	0	0	0	0	60	120	121	121	121	121
Census Region	Midwest	122	0	0	0	0	0	0	30	60	121	121	121	121
Census Region	South	256	0	0	0	0	0	0	45	120	121	121	121	121
Census Region	West	165	0	0	0	0	0	0	60	121	121	121	121	121
Day of Week	Weekday	410	0	0	0	0	0	0	40	120	121	121	121	121
Day of Week	Weekend	249	0	0	0	0	0	0	60	121	121	121	121	121
Season	Winter	97	0	0	0	0	0	5	45	120	121	121	121	121
Season	Spring	232	0	0	0	0	0	1	52.5	120	121	121	121	121
Season	Summer	250	0	0	0	0	0	0	60	120	121	121	121	121
Season	Fall	80	0	0	0	0	0	0	30	105	121	121	121	121
Asthma	No	600	0	0	0	0	0	0	45	120	121	121	121	121
Asthma	Yes	58	0	0	0	0	0	3	60	120	121	121	121	121
Angina	No	659	0	0	0	0	0	0	45	120	121	121	121	121
Bronch/emphys	No	638	0	0	0	0	0	0	45	120	121	121	121	121
Bronch/emphys	Yes	21	0	0	0	0	0	30	60	121	121	121	121	121

NOTE: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis,1996

Table 15-59. Number of Minutes Spent Playing in Outdoors on Sand, Gravel, Dirt, or Grass When Fill Dirt Was Present by the Number of Respondents

		Minutes/Day											
	Total N	*-*	0-0	0-10	10-20	20-30	30-40	40-50	50-60	70-80	80-90	110-120	121
Overall	700	53	380	51	29	48	1	6	60	7	1	21	43
Gender													
Male	352	26	183	22	18	33	*	3	24	5	1	16	21
Female	347	27	196	29	11	15	1	3	36	2	*	5	22
Refused	1	*	1	*	*	*	*	*	*	*	*	*	*
Age (years)													
*	3	*	*	1	*	*	*	*	1	*	*	*	1
1-4	216	11	118	14	10	13	1	4	18	4	*	7	16
5-11	200	15	103	14	8	15	*	1	17	1	*	9	17
12-17	41	3	19	3	2	7	*	*	4	1	*	2	*
18-64	237	23	138	19	9	13	*	1	20	1	1	3	9
> 64	3	1	2	*	*	*	*	*	*	*	*	*	*
Race													
White	568	40	317	40	21	38	*	5	48	5	1	15	38
Black	68	8	33	5	2	6	*	1	7	1	*	3	2
Asian	5	*	2	*	*	2	*	*	*	*	*	*	1
Some Others	16	*	10	1	2	1	1	*	1	*	*	*	*
Hispanic	41	5	17	5	4	*	*	*	4	1	*	3	2
Refused	2	*	1	*	*	1	*	*	*	*	*	*	*
Hispanic													
No	619	45	345	42	21	44	1	6	54	5	1	17	38
Yes	77	8	32	9	8	3	*	*	6	2	*	4	5
DK	3	*	3	*	*	*	*	*	*	*	*	*	*
Refused	1	*	*	*	*	1	*	*	*	*	*	*	*
Employment													
*	461	29	240	32	20	35	1	5	40	6	*	18	35
Full Time	149	11	91	8	8	8	*	1	12	1	1	3	5
Part Time	29	4	17	3	*	2	*	*	2	*	*	*	1
Not Employed	60	8	32	8	1	3	*	*	6	*	*	*	2
Refused	1	1	*	*	*	*	*	*	*	*	*	*	*
Education													
*	461	29	240	32	20	35	1	5	40	6	*	18	35
< High School	22	5	9	*	*	3	*	*	2	*	*	1	2
High School Graduate	73	6	44	7	2	3	*	*	7	1	1	1	1
< College	66	4	38	7	3	3	*	1	7	*	*	*	3
College Graduate	54	3	35	3	4	4	*	*	3	*	*	*	2
Post Graduate	24	6	14	2	*	*	*	*	1	*	*	1	*
Census Region													
Northeast	124	6	70	13	3	5	*	*	18	1	*	2	6
Midwest	128	12	77	6	7	10	*	1	7	2	*	2	4
South	273	23	153	17	12	20	*	3	17	4	*	11	13
West	175	12	80	15	7	13	1	2	18	*	1	6	20
Day of Week													
Weekday	445	39	235	34	21	34	1	2	38	6	1	10	24
Weekend	255	14	145	17	8	14	*	4	22	1	*	11	19
Season													
Winter	107	14	51	6	6	5	*	2	7	2	*	2	12
Spring	240	10	134	17	10	20	1	2	21	2	*	10	13
Summer	262	17	143	19	12	19	*	1	25	2	1	8	15
Fall	91	12	52	9	1	4	*	1	7	1	*	1	3
Asthma													
No	638	48	354	47	25	41	1	5	50	7	1	19	40
Yes	61	5	25	4	4	7	*	1	10	*	*	2	3
DK	1	*	1	*	*	*	*	*	*	*	*	*	*
Anngina													
No	699	53	380	51	29	48	1	6	60	6	1	21	43
DK	1	*	*	*	*	*	*	*	*	1	*	*	*
Bronchitis/Emphysema													
No	679	52	368	51	28	46	1	5	57	7	1	21	42
Yes	21	1	12	*	1	2	*	1	3	*	*	*	1

Note: "*" Signifies missing data. "DK"k = Respondents answered don't know. Refused = Respondents refused to answer. N = Doer sample size in specified range of number of minutes spent. A value of "121" for number of minutes signifies that more than 120 minutes were spent.
Source: Tsang and Klepeis, 1996.

Table 15-60. Number of Minutes Spent Playing on Sand, Gravel, Dirt, or Grass When Fill Dirt Was Present (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		647	0	0	0	0	0	0	30	100	121	121	121	121
Gender	Male	326	0	0	0	0	0	0	30	120	121	121	121	121
Gender	Female	320	0	0	0	0	0	0	30	60	121	121	121	121
Age (years)	1-4	205	0	0	0	0	0	0	30	120	121	121	121	121
Age (years)	5-11	185	0	0	0	0	0	0	30	120	121	121	121	121
Age (years)	12-17	38	0	0	0	0	0	0.5	30	60	120	120	120	120
Age (years)	18-64	214	0	0	0	0	0	0	15	60	120	121	121	121
Age (years)	> 64	2	0	0	0	0	0	0	0	0	0	0	0	0
Race	White	528	0	0	0	0	0	0	30	120	121	121	121	121
Race	Black	60	0	0	0	0	0	0	30	74	120	121	121	121
Race	Asian	5	0	0	0	0	0	30	30	121	121	121	121	121
Race	Some Others	16	0	0	0	0	0	0	20	40	60	60	60	60
Race	Hispanic	36	0	0	0	0	0	1	60	120	121	121	121	121
Hispanic	No	574	0	0	0	0	0	0	30	90	121	121	121	121
Hispanic	Yes	69	0	0	0	0	0	1	30	120	121	121	121	121
Employment	Full Time	138	0	0	0	0	0	0	15	60	120	121	121	121
Employment	Part Time	25	0	0	0	0	0	0	10	60	60	121	121	121
Employment	Not Employed	52	0	0	0	0	0	0	10	60	60	121	121	121
Education	< High School	17	0	0	0	0	0	0	60	121	121	121	121	121
Education	High School Graduate	67	0	0	0	0	0	0	10	60	88	120	121	121
Education	< College	62	0	0	0	0	0	0	15	60	60	121	121	121
Education	College Graduate	51	0	0	0	0	0	0	15	30	60	121	121	121
Education	Post Graduate	18	0	0	0	0	0	0	0	60	120	120	120	120
Census Region	Northeast	118	0	0	0	0	0	0	30	60	121	121	121	121
Census Region	Midwest	116	0	0	0	0	0	0	20	60	120	121	121	121
Census Region	South	250	0	0	0	0	0	0	30	90	121	121	121	121
Census Region	West	163	0	0	0	0	0	1	60	121	121	121	121	121
Day of Week	Weekday	406	0	0	0	0	0	0	30	88	121	121	121	121
Day of Week	Weekend	241	0	0	0	0	0	0	30	120	121	121	121	121
Season	Winter	93	0	0	0	0	0	0	45	121	121	121	121	121
Season	Spring	230	0	0	0	0	0	0	30	105	121	121	121	121
Season	Summer	245	0	0	0	0	0	0	30	90	121	121	121	121
Season	Fall	79	0	0	0	0	0	0	10	60	120	121	121	121
Asthma	No	590	0	0	0	0	0	0	30	110	121	121	121	121
Asthma	Yes	56	0	0	0	0	0	10	60	60	121	121	121	121
Angina	No	646	0	0	0	0	0	0	30	100	121	121	121	121
Bronchitis/Emphysema	No	627	0	0	0	0	0	0	30	120	121	121	121	121
Bronchitis/Emphysema	Yes	20	0	0	0	0	0	0	37.5	60	90.5	121	121	121

NOTE: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996

Table 15-61. Range of the Time Spent Working in a Garden or Other Circumstances in a Month by the Number of Respondents

		Hours/Month															
	Total N	*-*	0-0	0-24	24-48	48-72	72-96	96-120	120-144	144-168	168-192	192-216	216-240	240-264	264-288	288-312	312-336
Overall	4663	91	2928	1312	145	81	28	23	1	10	5	12	8	3	1	1	14
Gender																	
Male	2163	38	1309	628	77	41	16	9	1	8	4	10	8	2	1	*	11
Female	2498	53	1618	683	68	40	12	14	*	2	1	2	*	1	*	1	3
Refused	2	*	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*
Age (years)																	
*	84	11	51	17	*	2	2	1	*	*	*	*	*	*	*	*	*
1-4	263	7	189	55	4	3	2	2	*	1	*	*	*	*	*	*	*
5-11	348	7	225	100	9	4	*	*	*	*	1	*	*	*	1	*	1
12-17	326	5	236	75	6	1	*	1	*	*	1	1	*	*	*	*	*
18-64	2972	37	1813	900	97	52	16	16	1	7	1	8	8	3	*	*	13
> 64	670	24	414	165	29	19	8	3	*	2	2	3	*	*	*	1	*
Race																	
White	3774	59	2303	1128	127	69	22	21	1	7	4	11	7	3	1	1	10
Black	463	9	351	77	9	8	3	*	*	2	1	*	1	*	*	*	2
Asian	77	1	50	25	1	*	*	*	*	*	*	*	*	*	*	*	*
Some Others	96	2	64	23	2	2	1	*	*	1	*	1	*	*	*	*	*
Hispanic	193	6	126	50	5	1	2	1	*	*	*	*	*	*	*	*	2
Refused	60	14	34	9	1	1	*	1	*	*	*	*	*	*	*	*	*
Hispanic																	
No	4244	65	2669	1206	135	73	25	20	1	8	5	12	8	3	1	1	12
Yes	347	11	218	94	9	6	3	3	*	1	*	*	*	*	*	*	2
DK	26	1	18	5	*	1	*	*	*	1	*	*	*	*	*	*	*
Refused	46	14	23	7	1	1	*	*	*	*	*	*	*	*	*	*	*
Employment																	
*	926	19	638	230	20	8	2	3	*	1	2	1	*	*	1	*	1
Full Time	2017	18	1235	600	68	35	12	9	1	7	1	10	8	2	*	*	11
Part Time	379	4	234	120	9	3	2	4	*	2	*	*	*	*	*	*	1
Not Employed	1309	39	808	354	48	35	12	7	*	*	2	1	*	1	*	1	1
Refused	32	11	13	8	*	*	*	*	*	*	*	*	*	*	*	*	*
Education																	
*	1021	34	699	246	22	8	3	3	*	1	2	1	*	*	1	*	1
< High School	399	18	263	86	11	9	4	4	*	1	*	1	*	*	*	*	2
High School Graduate	1253	25	770	355	41	22	9	7	*	5	2	8	4	*	*	1	4
< College	895	11	545	265	33	18	6	3	*	1	*	2	4	3	*	*	4
College Graduate	650	1	406	200	19	12	3	5	*	1	1	*	*	*	*	*	2
Post Graduate	445	2	245	160	19	12	3	1	1	1	*	*	*	*	*	*	1
Census Region																	
Northeast	1048	17	714	259	24	12	4	8	*	3	*	2	1	*	1	*	3
Midwest	1036	23	687	273	19	18	5	3	*	*	*	3	*	3	*	*	2
South	1601	35	989	446	64	26	11	7	1	4	4	3	6	*	*	1	4
West	978	16	538	334	38	25	8	5	*	3	1	4	1	*	*	*	5
Day of Week																	
Weekday	3156	62	1982	890	96	54	18	15	1	8	3	6	7	2	*	1	11
Weekend	1507	29	946	422	49	27	10	8	*	2	2	6	1	1	1	*	3
Season																	
Winter	1264	9	1038	171	20	9	5	3	*	2	2	2	*	*	*	1	2
Spring	1181	29	614	434	50	20	8	7	*	4	1	4	5	2	*	*	3
Summer	1275	39	690	421	56	33	12	9	1	2	1	3	3	1	*	*	4
Fall	943	14	586	286	19	19	3	4	*	2	1	3	*	*	1	*	5
Asthma																	
No	4287	70	2697	1206	135	77	27	23	1	10	5	12	6	3	1	1	13
Yes	341	6	216	101	10	4	1	*	*	*	*	*	2	*	*	*	1
DK	35	15	15	5	*	*	*	*	*	*	*	*	*	*	*	*	*
Angina																	
No	4500	74	2825	1277	143	77	28	21	1	10	5	12	8	3	1	1	14
Yes	125	4	86	29	1	3	*	2	*	*	*	*	*	*	*	*	*
DK	38	13	17	6	1	1	*	*	*	*	*	*	*	*	*	*	*
Bronchitis/emphysema																	
No	4424	72	2766	1265	140	77	27	22	1	10	5	12	8	3	1	1	14
Yes	203	5	146	43	5	2	1	1	*	*	*	*	*	*	*	*	*
DK	36	14	16	4	*	2	*	*	*	*	*	*	*	*	*	*	*

Note: * Signifies missing data. DK = respondents answered don't know. Refused = respondents refused to answer. N = doer sample size in specified range of number of minutes spent.
Source: Tsang and Klepeis,1996

Table 15-62. Number of Hours Spent Working with Soil in a Garden or Other Circumstances Working (hours/month)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		4572	0	0	0	0	0	0	3	15	40	88	160	320
Gender	Male	2125	0	0	0	0	0	0	3	20	50	150	230	320
Gender	Female	2445	0	0	0	0	0	0	2	12	30	60	90	320
Age (years)	1-4	256	0	0	0	0	0	0	1	7	20	60	120	150
Age (years)	5-11	341	0	0	0	0	0	0	2	10	20	50	60	320
Age (years)	12-17	321	0	0	0	0	0	0	1	5	10	40	60	200
Age (years)	18-64	2935	0	0	0	0	0	0	3	16	40	90	200	320
Age (years)	> 64	646	0	0	0	0	0	0	3	25	60	90	160	300
Race	White	3715	0	0	0	0	0	0	3	16	40	88	160	320
Race	Black	454	0	0	0	0	0	0	0	8	30	60	160	320
Race	Asian	76	0	0	0	0	0	0	1.5	6	15	24	40	40
Race	Some Others	94	0	0	0	0	0	0	2	15	60	150	200	200
Race	Hispanic	187	0	0	0	0	0	0	2	12	25	90	320	320
Hispanic	No	4179	0	0	0	0	0	0	3	15	40	80	180	320
Hispanic	Yes	336	0	0	0	0	0	0	2	15	32	90	120	320
Employment	Full Time	1999	0	0	0	0	0	0	4	20	45	144	240	320
Employment	Part Time	375	0	0	0	0	0	0	3	12	32	90	120	320
Employment	Not Employed	1270	0	0	0	0	0	0	3	20	45	64	100	320
Education	< High School	381	0	0	0	0	0	0	2	16	60	120	160	320
Education	High School Grad	1228	0	0	0	0	0	0	3.5	20	50	120	200	320
Education	< College	884	0	0	0	0	0	0	4	20	40	90	240	320
Education	College Grad.	649	0	0	0	0	0	0	3	16	40	70	100	320
Education	Post Grad.	443	0	0	0	0	0	0	5	20	40	61	90	320
Census Region	Northeast	1031	0	0	0	0	0	0	1	10	30	90	120	320
Census Region	Midwest	1013	0	0	0	0	0	0	2	10	30	60	120	320
Census Region	South	1566	0	0	0	0	0	0	3	18	40	90	180	320
Census Region	West	962	0	0	0	0	0	0	5	20	50	90	200	320
Day of Week	Weekday	3094	0	0	0	0	0	0	3	15	40	80	160	320
Day of Week	Weekend	1478	0	0	0	0	0	0	3	15	40	90	150	320
Season	Winter	1255	0	0	0	0	0	0	0	4	12	50	90	320
Season	Spring	1152	0	0	0	0	0	0	5	20	45	110	200	320
Season	Summer	1236	0	0	0	0	0	0	5	25	50	96	160	320
Season	Fall	929	0	0	0	0	0	0	3	10	30	88	180	320
Asthma	No	4217	0	0	0	0	0	0	3	15	40	90	160	320
Asthma	Yes	335	0	0	0	0	0	0	2	12	30	60	80	320
Angina	No	4426	0	0	0	0	0	0	3	15	40	88	160	320
Angina	Yes	121	0	0	0	0	0	0	2	7	24	60	110	120
Bronchitis/Emphysema	No	4352	0	0	0	0	0	0	3	15	40	88	180	320
Bronchitis/Emphysema	Yes	198	0	0	0	0	0	0	1	7	24	60	80	100

Note: * Signifies missing data. DK = respondents answered don't know. Refused = respondents refused to answer. N = doer sample size.
Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-63. Range of Number of Minutes Spent Playing on Grass in a Day by the Number of Respondents

		Minutes/Day														
	Total N	*-*	0-0	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	121-121
Overall	700	43	79	49	49	85	7	11	125	1	1	21	1	2	66	160
Gender																
Male	352	25	35	23	25	41	3	5	64	*	1	12	*	1	33	84
Female	347	18	44	26	24	44	4	6	61	1	*	9	1	1	33	75
Refused	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1
Age (years)																
*	3	*	*	1	1	*	*	*	*	*	*	*	*	*	*	1
1-4	216	10	24	19	21	25	1	4	35	*	1	8	*	1	18	49
5-11	200	15	24	10	10	19	2	3	38	1	*	8	1	*	20	49
12-17	41	2	5	1	2	8	*	1	8	*	*	1	*	*	8	5
18-64	237	16	26	18	15	32	4	3	44	*	*	4	*	1	20	54
> 64	3	*	*	*	*	1	*	*	*	*	*	*	*	*	*	2
Race																
White	568	36	65	40	39	58	7	9	98	1	1	17	1	1	56	139
Black	68	3	4	6	7	14	*	1	15	*	*	2	*	*	5	11
Asian	5	*	*	1	*	3	*	*	*	*	*	*	*	*	*	1
Some Others	16	*	4	*	1	1	*	*	4	*	*	1	*	*	2	3
Hispanic	41	4	5	2	2	9	*	*	8	*	*	1	*	1	3	6
Refused	2	*	1	*	*	*	*	1	*	*	*	*	*	*	*	*
Hispanic																
No	619	38	65	44	42	73	6	11	110	1	1	18	1	1	62	146
Yes	77	5	13	5	7	11	1	*	14	*	*	3	*	1	4	13
DK	3	*	*	*	*	1	*	*	1	*	*	*	*	*	*	1
Refused	1	*	1	*	*	*	*	*	*	*	*	*	*	*	*	*
Employment																
*	461	27	54	31	34	52	3	8	81	1	1	17	1	1	46	104
Full Time	149	8	16	12	10	21	3	3	25	*	*	2	*	*	13	36
Part Time	29	2	5	1	1	6	*	*	4	*	*	2	*	*	3	5
Not Employed	60	5	4	5	4	6	1	*	15	*	*	*	*	1	4	15
Refused	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Education																
*	461	27	54	31	34	52	3	8	81	1	1	17	1	1	46	104
< High School	22	2	2	1	1	4	*	*	3	*	*	*	*	1	3	5
High School Graduate	73	4	8	9	4	6	1	1	9	*	*	3	*	*	6	22
< College	66	2	7	4	6	13	2	*	20	*	*	*	*	*	3	9
College Graduate	54	3	5	3	4	6	1	1	10	*	*	*	*	*	6	15
Post Graduate	24	5	3	1	*	4	*	1	2	*	*	1	*	*	2	5
Census Region																
Northeast	124	5	14	10	4	13	*	3	26	*	*	2	1	*	10	36
Midwest	128	8	7	10	10	15	1	3	23	*	1	4	*	*	15	31
South	273	21	22	20	25	30	5	4	52	1	*	11	*	2	23	57
West	175	9	36	9	10	27	1	1	24	*	*	4	*	*	18	36
Day of Week																
Weekday	445	33	55	35	32	55	3	7	82	*	1	15	1	1	38	87
Weekend	255	10	24	14	17	30	4	4	43	1	*	6	*	1	28	73
Season																
Winter	107	12	22	6	6	15	2	*	15	*	*	5	*	*	5	19
Spring	240	9	23	16	13	28	1	5	49	*	*	7	1	1	26	61
Summer	262	12	20	20	18	36	2	5	48	1	*	7	*	1	29	63
Fall	91	10	14	7	12	6	2	1	13	*	1	2	*	*	6	17
Asthma																
No	638	38	73	46	44	78	7	9	114	1	1	18	1	2	60	146
Yes	61	5	6	3	5	7	*	2	10	*	*	3	*	*	6	14
DK	1	*	*	*	*	*	*	*	1	*	*	*	*	*	*	*
Angina																
No	699	43	79	49	48	85	7	11	125	1	1	21	1	2	66	160
DK	1	*	*	*	1	*	*	*	*	*	*	*	*	*	*	*
Bronchitis/emphysema																
No	679	43	76	49	47	83	7	11	120	1	1	20	1	2	65	153
Yes	21	*	3	*	2	2	*	*	5	*	*	1	*	*	1	7

NOTE: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes. Refused = respondent refused to answer.
Source: Tsang and Klepeis,1996.

Table 15-64. Number of Minutes Spent Playing on Grass (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		657	0	0	0	0	20	60	120	121	121	121	121	121
Gender	Male	327	0	0	0	0	20	60	121	121	121	121	121	121
Gender	Female	329	0	0	0	0	15	60	120	121	121	121	121	121
Age (years)	1-4	206	0	0	0	0	15	60	120	121	121	121	121	121
Age (years)	5-11	185	0	0	0	0	30	60	121	121	121	121	121	121
Age (years)	12-17	39	0	0	0	0	30	60	120	121	121	121	121	121
Age (years)	18-64	221	0	0	0	0	20	60	120	121	121	121	121	121
Age (years)	> 64	3	30	30	30	30	30	121	121	121	121	121	121	121
Race	White	532	0	0	0	0	20	60	121	121	121	121	121	121
Race	Black	65	0	0	0	3	20	58	90	121	121	121	121	121
Race	Asian	5	10	10	10	10	30	30	30	121	121	121	121	121
Race	Some Others	16	0	0	0	0	10	60	120	121	121	121	121	121
Race	Hispanic	37	0	0	0	0	30	60	110	121	121	121	121	121
Hispanic	No	581	0	0	0	0	20	60	121	121	121	121	121	121
Hispanic	Yes	72	0	0	0	0	10	35	100	121	121	121	121	121
Employment	Full Time	141	0	0	0	0	20	60	121	121	121	121	121	121
Employment	Part Time	27	0	0	0	0	15	60	120	121	121	121	121	121
Employment	Not Employed	55	0	0	0	5	23	60	121	121	121	121	121	121
Education	< High School	20	0	0	0	5	30	60	120.5	121	121	121	121	121
Education	High School Graduate	69	0	0	0	0	15	60	121	121	121	121	121	121
Education	< College	64	0	0	0	0	17.5	46.5	60	121	121	121	121	121
Education	College Graduate	51	0	0	0	1	30	60	121	121	121	121	121	121
Education	Post Graduate	19	0	0	0	0	25	60	121	121	121	121	121	121
Census Region	Northeast	119	0	0	0	0	30	60	121	121	121	121	121	121
Census Region	Midwest	120	0	0	0	7.5	30	60	121	121	121	121	121	121
Census Region	South	252	0	0	0	1	20	60	120	121	121	121	121	121
Census Region	West	166	0	0	0	0	10	45	120	121	121	121	121	121
Day of Week	Weekday	412	0	0	0	0	15	60	120	121	121	121	121	121
Day of Week	Weekend	245	0	0	0	1	30	60	121	121	121	121	121	121
Season	Winter	95	0	0	0	0	4	30	120	121	121	121	121	121
Season	Spring	231	0	0	0	1	30	60	121	121	121	121	121	121
Season	Summer	250	0	0	0	1.5	30	60	121	121	121	121	121	121
Season	Fall	81	0	0	0	0	10	35	120	121	121	121	121	121
Asthma	No	600	0	0	0	0	20	60	120	121	121	121	121	121
Asthma	Yes	56	0	0	0	0	22.5	60	120.5	121	121	121	121	121
Angina	No	656	0	0	0	0	20	60	120	121	121	121	121	121
Bronchitis/Emphysema	No	636	0	0	0	0	20	60	120	121	121	121	121	121
Bronchitis/Emphysema	Yes	21	0	0	0	0	30	60	121	121	121	121	121	121

NOTE: A value of "121" for number of minutes signifies that more than 120 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis,1996

Table 15-65. Number of Times Swimming in a Month in Freshwater Swimming Pool by the Number of Respondents

		Times/Month															
	Total N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Overall	653	147	94	73	47	42	26	11	26	2	38	3	27	2	2	27	2
Gender																	
Male	300	62	47	37	20	16	17	5	9	2	16	2	13	1	*	16	1
Female	352	85	47	36	27	26	9	6	17	*	22	1	14	1	1	11	1
Refused	1	*	*	*	*	*	*	*	*	*	*	*	*	*	1	*	*
Age (years)																	
*	8	2	2	1	1	1	1	*	*	*	*	*	*	*	*	*	*
1-4	63	11	14	7	3	3	4	1	3	1	4	*	2	1	1	2	*
5-11	100	16	15	7	9	6	4	2	4	*	7	*	5	*	*	11	2
12-17	84	21	13	7	4	8	4	2	3	1	8	*	1	*	*	2	*
18-64	360	86	48	50	27	22	11	5	14	*	18	3	15	1	1	10	*
> 64	38	11	2	1	3	2	2	1	2	*	1	*	4	*	*	2	*
Race																	
White	555	126	74	64	44	32	25	10	23	2	36	1	23	2	2	21	1
Black	30	8	7	1	*	2	*	*	1	*	*	2	*	*	*	2	1
Asian	13	3	2	2	*	1	*	1	1	*	1	*	1	*	*	*	*
Some Others	12	2	*	2	2	1	*	*	*	*	*	*	*	*	*	4	*
Hispanic	35	5	8	4	1	6	1	*	1	*	1	*	3	*	*	*	*
Refused	8	3	3	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Hispanic																	
No	591	135	81	68	44	35	25	10	25	2	36	3	24	1	2	24	2
Yes	55	10	11	5	2	6	1	1	1	*	2	*	3	1	*	3	*
DK	2	*	*	*	1	1	*	*	*	*	*	*	*	*	*	*	*
Refused	5	2	2	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Employment																	
*	243	47	41	21	17	15	12	5	10	2	18	*	8	1	1	15	2
Full Time	240	56	38	38	15	13	10	3	8	*	10	1	8	1	1	6	*
Part Time	43	13	2	4	3	8	*	1	1	*	4	2	2	*	*	1	*
Not Employed	122	30	12	10	12	6	3	2	7	*	6	*	9	*	*	5	*
Refused	5	1	1	*	*	*	1	*	*	*	*	*	*	*	*	*	*
Education																	
*	257	51	43	21	18	17	12	5	11	2	19	*	8	1	1	15	2
< High School	16	2	2	3	*	3	1	1	1	*	*	1	*	*	*	*	*
High School Graduate	112	28	15	16	11	6	5	1	1	*	5	1	5	*	1	3	*
<College	104	29	11	11	2	9	2	3	7	*	4	1	7	*	*	3	*
College Graduate	93	22	12	14	10	2	3	*	2	*	5	*	6	*	*	4	*
Post Graduate	71	15	11	8	6	5	3	1	4	*	5	*	1	1	*	2	*
Census Region																	
Northeast	136	32	15	10	16	9	4	1	4	*	13	1	8	1	2	4	*
Midwest	130	35	21	17	8	6	7	2	4	*	9	*	4	1	*	6	*
South	235	46	36	29	13	15	12	7	10	2	10	2	8	*	*	9	2
West	152	34	22	17	10	12	3	1	8	*	6	*	7	*	*	8	*
Day of Week																	
Weekday	445	97	67	52	36	25	15	9	14	1	24	2	18	2	2	21	1
Weekend	208	50	27	21	11	17	11	2	12	1	14	1	9	*	*	6	1
Season																	
Winter	62	19	12	5	3	1	2	*	6	*	2	1	3	*	*	*	*
Spring	174	55	25	19	13	9	7	3	7	*	8	*	7	*	*	2	1
Summer	363	61	45	41	29	26	15	8	12	2	27	2	14	2	2	24	1
Fall	54	12	12	8	2	6	2	*	1	*	1	*	3	*	*	1	*
Asthma																	
No	590	132	81	67	43	38	25	10	24	2	37	3	25	2	2	22	2
Yes	56	14	11	5	4	3	1	1	2	*	1	*	2	*	*	5	*
DK	7	1	2	1	*	1	*	*	*	*	*	*	*	*	*	*	*
Angina																	
No	639	143	90	73	47	41	26	10	26	2	37	3	27	2	2	26	2
Yes	8	3	1	*	*	1	*	1	*	*	*	*	*	*	*	1	*
DK	6	1	3	*	*	*	*	*	*	*	1	*	*	*	*	*	*
Bronchitis/Emphysema																	
No	621	138	91	71	45	40	25	10	24	2	38	2	27	2	2	25	2
Yes	26	8	1	2	1	2	1	1	1	*	*	1	*	*	*	2	*
DK	6	1	2	*	1	*	*	*	1	*	*	*	*	*	*	*	*

Table 15-65. Number of Times Swimming in a Month in Freshwater Swimming Pool by the Number of Respondents (continued)

	Times/Month																
	18	20	23	24	25	26	28	29	30	31	32	40	42	45	50	60	DK
Overall	2	25	1	1	9	2	1	1	26	2	1	2	2	1	1	2	5
Gender																	
Male	*	10	*	*	4	2	1	*	10	2	1	1	1	*	*	*	4
Female	2	15	1	1	5	*	*	1	16	*	*	1	1	1	1	2	1
Refused	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Age (years)																	
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
1-4	*	2	*	*	*	*	*	1	2	*	1	*	*	*	*	*	*
5-11	*	3	*	1	2	*	*	*	5	*	*	*	*	*	1	*	*
12-17	1	4	*	*	*	1	*	*	2	*	*	*	*	*	*	1	1
18-64	*	15	1	*	7	1	1	*	15	2	*	2	1	1	*	*	3
> 64	1	1	*	*	*	*	*	*	2	*	*	*	1	*	*	1	1
Race																	
White	2	19	1	1	9	2	1	1	19	2	1	2	2	*	*	2	5
Black	*	3	*	*	*	*	*	*	3	*	*	*	*	*	*	*	*
Asian	*	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Some Others	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1	*	*
Hispanic	*	1	*	*	*	*	*	*	3	*	*	*	*	1	*	*	*
Refused	*	1	*	*	*	*	*	*	1	*	*	*	*	*	*	*	*
Hispanic																	
No	2	23	1	1	9	2	1	1	20	2	1	2	2	*	1	2	4
Yes	*	1	*	*	*	*	*	*	6	*	*	*	*	1	*	*	1
DK	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Refused	*	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Employment																	
*	1	9	*	1	2	1	*	1	9	*	1	*	*	*	1	1	1
Full Time	*	8	*	*	5	*	1	*	10	2	*	2	1	1	*	*	2
Part Time	*	*	*	*	1	*	*	*	1	*	*	*	*	*	*	*	*
Not Employed	1	7	1	*	1	1	*	*	6	*	*	*	1	*	*	1	1
Refused	*	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	1
Education																	
*	1	11	*	1	2	2	*	1	9	*	1	*	*	*	1	1	1
< High School	*	1	*	*	*	*	*	*	1	*	*	*	*	*	*	*	*
High School Graduate	*	6	*	*	1	*	*	*	4	*	*	*	1	*	*	1	1
< College	*	3	1	*	4	*	*	*	4	*	*	*	*	1	*	*	2
College Graduate	*	2	*	*	2	*	*	*	3	2	*	2	1	*	*	*	1
Post Graduate	1	2	*	*	*	*	1	*	5	*	*	*	*	*	*	*	*
Census Region																	
Northeast	*	7	*	*	2	1	*	*	2	1	*	1	1	*	*	*	1
Midwest	*	4	*	*	1	*	*	*	4	*	*	*	1	*	*	*	*
South	2	7	1	1	4	*	1	1	9	1	*	1	*	*	1	1	4
West	*	7	*	*	2	1	*	*	11	*	1	*	*	1	*	1	*
Day of Week																	
Weekday	1	18	1	1	7	1	1	*	19	*	1	1	*	1	1	2	4
Weekend	1	7	*	*	2	1	*	1	7	2	*	1	2	*	*	*	1
Season																	
Winter	1	3	*	*	*	1	1	*	*	1	*	*	1	*	*	*	*
Spring	*	8	*	*	2	*	*	*	3	*	*	*	1	*	1	1	2
Summer	1	10	1	1	7	1	*	1	21	1	1	2	*	1	*	1	3
Fall	*	4	*	*	*	*	*	*	2	*	*	*	*	*	*	*	*
Asthma																	
No	2	21	1	1	9	1	1	1	23	2	1	2	2	1	*	2	5
Yes	*	3	*	*	*	1	*	*	2	*	*	*	*	*	1	*	*
DK	*	1	*	*	*	*	*	*	1	*	*	*	*	*	*	*	*
Angina																	
No	2	24	1	1	9	2	1	1	26	2	1	2	1	1	1	2	5
Yes	*	*	*	*	*	*	*	*	*	*	*	*	1	*	*	*	*
DK	*	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Bronchitis/Emphysema																	
No	2	22	1	1	9	2	1	1	23	2	1	2	2	1	1	2	4
Yes	*	2	*	*	*	*	*	*	3	*	*	*	*	*	*	*	1
DK	*	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Note: * Signifies missing data; "DK" = respondent answered don't know; N= sample size; Refused = respondent refused to answer.
Source: Tsang And Klepeis, 1996

Table 15-66. Range of the Average Amount of Time Actually Spent in the Water by Swimmers by the Number of Respondents

	Total N	Minutes/Month														
		-	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	110-120	150-150	180-180	181-181
Overall	653	13	62	75	120	20	39	131	8	2	31	2	68	10	32	40
Gender																
Male	300	5	31	38	60	6	17	55	3	*	18	1	28	6	17	15
Female	352	7	31	37	60	14	22	76	5	2	13	1	40	4	15	25
Refused	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Age (years)																
*	8	1	2	1	2	*	*	*	*	*	*	*	2	*	*	*
1-4	63	3	5	12	12	1	4	8	*	*	2	*	7	1	3	5
5-11	100	5	3	2	12	5	4	25	*	*	7	*	16	2	11	8
12-17	84	1	3	7	10	2	6	15	*	1	8	1	14	4	6	6
18-64	360	3	45	50	75	8	22	74	8	*	13	1	26	3	12	20
> 64	38	*	4	3	9	4	3	9	*	1	1	*	3	*	*	1
Race																
White	555	7	53	67	105	18	36	109	8	2	24	2	59	9	26	30
Black	30	3	1	1	4	*	*	8	*	*	5	*	1	1	1	5
Asian	13	*	1	1	3	1	*	4	*	*	1	*	1	*	*	1
Some Others	12	*	1	2	1	*	*	3	*	*	*	*	2	*	1	2
Hispanic	35	1	5	4	4	1	2	7	*	*	1	*	4	*	4	2
Refused	8	2	1	*	3	*	1	*	*	*	*	*	1	*	*	*
Hispanic																
No	591	11	57	67	108	19	35	120	8	2	29	2	62	9	28	34
Yes	55	1	5	8	10	1	3	10	*	*	2	*	5	1	4	5
DK	2	*	*	*	*	*	*	1	*	*	*	*	*	*	*	1
Refused	5	1	*	*	2	*	1	*	*	*	*	*	1	*	*	*
Employment																
*	243	9	11	20	34	8	13	48	*	1	16	1	37	7	19	19
Full Time	240	3	31	29	51	4	14	51	3	*	8	*	21	3	10	12
Part Time	43	*	3	10	12	1	3	2	1	*	5	*	2	*	*	4
Not Employed	122	1	16	16	21	7	8	30	4	1	2	1	7	*	3	5
Refused	5	*	1	*	2	*	1	*	*	*	*	*	1	*	*	*
Education																
*	257	9	13	22	35	8	15	50	*	1	17	1	39	7	20	20
< High School	16	*	4	2	3	*	*	3	1	*	1	*	*	*	*	2
High School Graduate	112	1	12	10	16	5	8	26	1	1	5	1	11	*	5	10
< College	104	2	15	16	27	2	4	20	3	*	4	*	6	1	2	2
College Graduate	93	1	8	15	21	2	6	17	1	*	1	*	10	2	4	5
Post Graduate	71	*	10	10	18	3	6	15	2	*	3	*	2	*	1	1
Census Region																
Northeast	136	2	12	17	28	5	9	20	3	1	4	*	13	3	9	10
Midwest	130	3	10	17	27	4	8	24	1	*	6	*	17	1	7	5
South	235	8	20	19	37	6	15	56	*	*	13	1	26	4	12	18
West	152	*	20	22	28	5	7	31	4	1	8	1	12	2	4	7
Day of Week																
Weekday	445	11	45	52	82	14	23	87	7	2	19	*	46	8	22	27
Weekend	208	2	17	23	38	6	16	44	1	*	12	2	22	2	10	13
Season																
Winter	62	2	6	6	10	5	3	14	*	*	3	1	7	1	1	3
Spring	174	3	21	24	37	7	12	32	*	2	6	1	13	3	6	7
Summer	363	7	29	36	64	6	20	77	6	*	20	*	44	6	23	25
Fall	54	1	6	9	9	2	4	8	2	*	2	*	4	*	2	5
Asthma																
No	590	12	52	71	114	19	33	117	8	2	26	2	64	9	26	35
Yes	56	1	9	3	4	*	5	14	*	*	5	*	3	1	6	5
DK	7	*	1	1	2	1	1	*	*	*	*	*	1	*	*	*
Angina																
No	639	13	60	73	118	19	37	130	8	2	30	2	66	10	32	39
Yes	8	*	*	2	1	1	1	1	*	*	1	*	1	*	*	*
DK	6	*	2	*	1	*	1	*	*	*	*	*	1	*	*	1
Bronchitis/emphysema																
No	621	13	56	72	115	19	37	123	7	2	31	2	67	10	30	37
Yes	26	*	5	3	4	1	1	7	*	*	*	*	*	*	2	3
DK	6	*	1	*	1	*	1	1	1	*	*	*	1	*	*	*

Note: * Signifies missing data. DK = respondents answered don't know. Ref = respondents refused to answer. N = doer sample size in specified range of number of minutes spent. Values of 120 , 150 , and 180 for number of minutes signify that 2 hours, 2.5 hours, and 3 hours, respectively, were spent.
Source: Tsang and Klepeis,1996.

Table 15-67. Number of Minutes Spent Swimming in a Month in Freshwater Swimming Pool (minutes/month)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		640	2	3	10	15	30	60	90	180	181	181	181	181
Gender	Male	295	3	4	8	10	30	45	90	180	181	181	181	181
Gender	Female	345	2	3	10	15	30	60	90	180	181	181	181	181
Age (years)	1-4	60	3	3	7.5	15	20	42.5	120	180	181	181	181	181
Age (years)	5-11	95	2	3	20	30	45	60	120	180	181	181	181	181
Age (years)	12-17	83	4	5	15	20	40	60	120	180	181	181	181	181
Age (years)	18-64	357	2	3	5	10	20	45	60	120	181	181	181	181
Age (years)	> 64	38	5	5	8	10	30	40	60	120	120	181	181	181
Race	White	548	2	3	10	15	30	45	90	180	181	181	181	181
Race	Black	27	10	10	15	30	60	60	150	181	181	181	181	181
Race	Asian	13	4	4	4	20	30	60	60	120	181	181	181	181
Race	Some Others	12	2	2	2	15	25	60	150	181	181	181	181	181
Race	Hispanic	34	3	3	5	10	20	60	120	180	181	181	181	181
Hispanic	No	580	2	3	10	15	30	60	90	180	181	181	181	181
Hispanic	Yes	54	3	5	5	15	30	52.5	120	180	181	181	181	181
Employment	Full Time	237	3	4	5	10	20	45	60	150	181	181	181	181
Employment	Part Time	43	2	2	5	15	20	30	90	120	181	181	181	181
Employment	Not Employed	121	2	2	8	10	20	45	60	120	180	181	181	181
Education	< High School	16	1	1	1	2	12.5	30	60.5	181	181	181	181	181
Education	High School Graduate	111	3	5	8	10	30	60	90	180	181	181	181	181
Education	< College	102	3	3	5	10	20	30	60	120	120	180	181	181
Education	College Graduate	92	2	3	10	15	22.5	42.5	60.5	150	181	181	181	181
Education	Post Graduate	71	5	10	10	10	20	30	60	70	120	180	181	181
Census Region	Northeast	134	4	8	10	15	30	45	120	180	181	181	181	181
Census Region	Midwest	127	5	5	10	15	30	45	90	150	180	181	181	181
Census Region	South	227	2	3	5	15	30	60	120	180	181	181	181	181
Census Region	West	152	2	3	5	10	20	45	61	120	180	181	181	181
Day of Week	Weekday	434	2	3	8	10	30	60	90	180	181	181	181	181
Day of Week	Weekend	206	4	5	10	15	30	60	90	180	181	181	181	181
Season	Winter	60	2	3	5	12.5	30	52.5	90	120	180.5	181	181	181
Season	Spring	171	2	4	5	10	20	40	60	120	180	181	181	181
Season	Summer	356	3	3	10	15	30	60	120	180	181	181	181	181
Season	Fall	53	2	10	10	10	20	45	70	180	181	181	181	181
Asthma	No	578	2	3	10	15	30	55	90	180	181	181	181	181
Asthma	Yes	55	2	3	4	10	30	60	120	180	181	181	181	181
Angina	No	626	2	3	10	15	30	60	90	180	181	181	181	181
Angina	Yes	8	15	15	15	15	25	42.5	75	120	120	120	120	120
Bronchitis/Emphysema	No	608	3	3	10	15	30	60	90	180	181	181	181	181
Bronchitis/Emphysema	Yes	26	2	2	5	5	15	42.5	60	181	181	181	181	181

Note: A Value of 181 for number of minutes signifies that more than 180 minutes were spent. N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis,1996.

Table 15-68. Statistics for 24-Hour Cumulative Number of Minutes Spent Working in a Main Job

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		3259	475.909	179.067	3.1367	1	1440	120	395	500	570	660	740	840	930
Gender	Male	1733	492.305	186.996	4.4919	1	1440	120	417	510	595	690	770	890	955
Gender	Female	1526	457.288	167.74	4.294	2	1440	120	390	485	543	620	690	785	850
Age (years)	*	80	472.375	183.298	20.4933	5	940	117.5	377.5	482.5	560	672.5	850	900	940
Age (years)	1-4	3	16.667	11.547	6.6667	10	30	10	10	10	30	30	30	30	30
Age (years)	5-11	10	150.4	185.796	58.754	2	550	2	10	67.5	264	447.5	550	550	550
Age (years)	12-17	38	293.158	180.681	29.3103	5	840	15	185	269	390	510	675	840	840
Age (years)	18-64	2993	484.822	173.083	3.1638	1	1440	140	420	505	570	660	745	840	930
Age (years)	> 64	135	366.148	208.656	17.9582	5	990	30	185	395	500	600	660	840	940
Race	White	2630	477.536	179.01	3.4906	1	1440	120	400	500	570	660	735	845	933
Race	Black	343	466.551	175.989	9.5025	5	1037	105	390	490	550	655	735	880	990
Race	Asian	57	464.053	177.305	23.4846	5	870	45	390	493	553	660	750	780	870
Race	Some Others	56	477.411	181.661	24.2754	45	855	75	415	510	570	680	765	780	855
Race	Hispanic	125	465.88	185.322	16.5757	2	840	95	360	485	580	720	750	825	840
Race	Refused	48	492.083	191.623	27.6584	50	957	120	410	507.5	575	810	840	957	957
Hispanic	No	2980	475.393	179.214	3.2829	1	1440	120	395	500	570	660	740	850	940
Hispanic	Yes	221	481.493	174.32	11.726	2	1106	150	405	505	580	670	740	825	840
Hispanic	DK	12	529.583	146.226	42.2117	295	757	295	425	554	610	710	757	757	757
Hispanic	Refused	46	468.522	201.347	29.687	10	860	115	350	497.5	585	780	818	860	860
Employment	*	47	257.915	202.833	29.5863	2	840	5	65	245	390	540	625	840	840
Employment	Full Time	2679	504.35	164.818	3.1843	1	1440	180	450	510	582	675	750	855	950
Employment	Part Time	395	364.587	159.361	8.0183	5	945	80	250	365	480	540	600	675	795
Employment	Not Employed	112	270.946	216.024	20.4123	4	990	9	82.5	245	377.5	600	675	795	870
Employment	Refused	26	513.577	155.456	30.4875	170	840	225	440	510	570	778	790	840	840
Education	*	108	343.037	211.879	20.3881	2	860	10	176.5	342.5	510	610	675	840	840
Education	< High School	217	473.502	216.729	14.7125	4	1440	85	360	485	568	710	795	940	1080
Education	High School Graduate	1045	482.03	180.638	5.5879	1	1440	120	405	500	565	670	765	890	979
Education	< College	795	475.585	174.025	6.172	2	1440	140	409	495	563	648	750	825	905
Education	College Graduate	627	484.526	159.816	6.3824	5	1005	120	424	510	570	645	720	765	815
Education	Post Graduate	467	483.041	169.574	7.847	1	945	125	400	510	590	660	730	810	860
Census Region	Northeast	721	475.964	180.84	6.7348	1	1440	120	405	495	570	669	740	890	950
Census Region	Midwest	755	477.008	182.167	6.6297	2	1440	120	395	495	570	660	750	825	940
Census Region	South	1142	478.231	176.739	5.23	1	1440	105	405	505	570	660	735	840	900
Census Region	West	641	470.415	177.801	7.0227	5	1080	120	390	500	570	657	730	850	880
Day Of Week	Weekday	2788	487.858	166.167	3.147	1	1440	155	425	505	570	660	740	840	930
Day Of Week	Weekend	471	405.18	229.526	10.576	2	1440	30	245	415	555	670	770	870	960
Season	Winter	864	475.784	172.828	5.8797	5	1440	150	390	495	570	660	735	835	900
Season	Spring	791	472.972	195.425	6.9485	1	1440	75	390	495	570	670	765	850	915
Season	Summer	910	477.185	179.907	5.9639	1	1215	120	400	500	565	670	750	890	979
Season	Fall	694	477.739	165.961	6.2998	2	1005	130	405	510	570	645	720	780	840
Asthma	No	3042	477.013	176.967	3.2086	1	1440	120	400	500	570	660	740	840	930
Asthma	Yes	195	453.354	204.227	14.625	5	1440	45	345	480	550	668	793	855	979
Asthma	DK	22	523.182	216.952	46.2542	170	1215	225	430	500	565	780	860	1215	1215
Angina	No	3192	475.735	178.389	3.1574	1	1440	120	395	500	570	660	740	840	930
Angina	Yes	44	472.068	200.68	30.2536	10	990	60	386	500	572.5	679	730	990	990
Angina	DK	23	507.391	230.296	48.02	80	1215	170	430	500	565	780	860	1215	1215
Bronchitis/Emphysema	No	3120	476.547	178.194	3.1902	1	1440	120	400	500	570	660	740	840	930
Bronchitis/Emphysema	Yes	116	446.991	189.381	17.5836	5	985	30	367.5	480	557.5	644	720	800	855
Bronchitis/Emphysema	DK	23	535.217	226.256	47.1777	170	1215	225	430	500	600	860	875	1215	1215

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-69. Statistics for 24-Hour Cumulative Number of Minutes Spent in Food Preparation

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		4278	52.35	52.877	0.8084	1	555	5	20	35	65	115	150	210	265
Gender	Male	1342	37.77	42.133	1.1501	1	480	5	13	30	50	80	105	150	210
Gender	Female	2936	59.02	55.872	1.0311	1	555	5	25	45	75	120	155	224	272
Age (years)	*	94	52	43.217	4.4575	5	215	5	20	40	60	110	150	195	215
Age (years)	1-4	24	56.46	60.37	12.3229	5	240	5	22.5	30	75	150	180	240	240
Age (years)	5-11	60	25.17	29.688	3.8327	1	120	2	5	11	30	60	107	120	120
Age (years)	12-17	131	21.7	37.69	3.293	1	385	2	5	10	30	55	70	90	90
Age (years)	18-64	3173	52.07	52.872	0.9386	1	555	5	20	35	65	110	145	210	265
Age (years)	> 64	796	60.5	54.669	1.9377	1	525	5	25	45	80	120	150	240	270
Race	White	3584	51.62	53.259	0.8896	1	555	5	19	35	65	110	145	210	265
Race	Black	377	57.03	52.289	2.693	1	390	5	20	40	75	120	150	210	240
Race	Asian	62	54	41.822	5.3115	2	210	5	20	50	70	105	130	175	210
Race	Some Others	66	50.59	53.237	6.553	1	295	5	15	33.5	70	115	150	210	295
Race	Hispanic	132	58.76	49.73	4.3285	2	315	5	23.5	52.5	79.5	110	135	225	285
Race	Refused	57	53.14	49.297	6.5295	2	210	5	20	40	60	120	180	195	210
Hispanic	No	3960	51.84	52.603	0.8359	1	555	5	20	35	65	111	145	205	255
Hispanic	Yes	254	58.99	56.694	3.5573	2	420	5	20	45	75	120	155	240	315
Hispanic	DK	20	54.95	53.2	11.8959	6	240	8	25	45	60	112.5	180	240	240
Hispanic	Refused	44	58.61	53.296	8.0346	2	210	5	27.5	37.5	80	150	180	210	210
Employment	*	210	27.17	40.549	2.7981	1	385	2	5	15	30	60	90	120	180
Employment	Full Time	1988	45.46	46.66	1.0465	1	480	5	15	30	60	90	130	180	240
Employment	Part Time	419	53.85	55.413	2.7071	2	520	5	20	40	65	105	125	205	255
Employment	Not Employed	1626	63.62	57.743	1.432	1	555	5	29	45	90	125	170	240	275
Employment	Refused	35	53.54	66.78	11.2879	2	340	2	20	30	60	120	195	340	340
Education	*	291	31.71	42.621	2.4985	1	385	2	5	15	37	75	120	155	195
Education	< High School	450	61.26	53.232	2.5094	1	555	5	30	45	90	120	150	197	225
Education	High School Graduate	1449	58.84	56.665	1.4886	1	520	5	22	45	75	120	155	240	310
Education	< College	954	51.99	52.238	1.6913	1	525	5	20	34.5	65	110	150	210	245
Education	College Graduate	659	46.2	48.078	1.8728	1	515	5	15	30	60	100	125	180	224
Education	Post Graduate	475	46.04	48.686	2.2339	1	375	5	15	30	60	95	135	200	270
Census Region	Northeast	953	52.3	53.178	1.7226	1	480	5	20	40	60	110	140	205	255
Census Region	Midwest	956	53.23	51.814	1.6758	1	520	5	20	35	65	120	150	210	265
Census Region	South	1452	53.35	53.471	1.4032	1	555	5	15.5	35	70	120	150	195	245
Census Region	West	917	49.91	52.72	1.741	1	515	5	15	31	60	105	135	225	265
Day Of Week	Weekday	2995	50.05	49.979	0.9132	1	555	5	19	35	60	105	132	180	240
Day Of Week	Weekend	1283	57.72	58.762	1.6405	1	420	5	20	40	75	130	180	240	300
Season	Winter	1174	50.62	48.626	1.4192	1	480	5	18	35	65	110	135	195	240
Season	Spring	1038	54.39	54.484	1.6911	1	525	5	20	38.5	70	120	150	224	265
Season	Summer	1147	51.34	54.194	1.6002	1	555	5	20	35	60	110	137	208	300
Season	Fall	919	53.54	54.535	1.7989	1	520	5	20	37	67	120	155	200	265
Asthma	No	3948	52.02	53.176	0.8463	1	555	5	20	35	65	110	145	210	265
Asthma	Yes	300	57.14	49.443	2.8546	1	272	5	20.5	45	75	120	160	199	240
Asthma	DK	30	47.63	44.812	8.1815	2	195	5	10	32.5	60	117.5	120	195	195
Angina	No	4091	52.18	52.97	0.8282	1	555	5	20	35	65	115	150	210	265
Angina	Yes	149	56.81	48.238	3.9518	1	340	5	25	45	80	120	135	180	210
Angina	DK	38	53.97	60.417	9.8009	2	240	2	10	32.5	60	120	240	240	240
Bronchitis/Emphysema	No	4024	52.01	53.092	0.837	1	555	5	20	35	65	110	145	210	265
Bronchitis/Emphysema	Yes	216	56.91	46.683	3.1764	3	240	5	20	45	85	120	150	198	210
Bronchitis/Emphysema	DK	38	62.39	61.703	10.0096	2	240	2	20	42.5	90	150	240	240	240

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-70. Statistics for 24-Hour Cumulative Number of Minutes Spent in Food Cleanup

Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		1143	32.9948	40.379	1.1944	1	825	8	15	30	35	60	85	120	135
Gender	Male	204	27.4951	20.398	1.4282	1	180	10	15	25	30	50	60	80	85
Gender	Female	939	34.1896	43.44	1.4176	1	825	5	15	30	35	60	90	120	150
Age (years)	*	24	31.0417	28.013	5.7182	10	120	10	15	30	30	60	105	120	120
Age (years)	1-4	5	41.6	48.04	21.4839	3	120	3	15	15	55	120	120	120	120
Age (years)	5-11	9	28.4444	21.634	7.2113	1	75	1	15	30	30	75	75	75	75
Age (years)	12-17	28	26.75	20.573	3.8879	2	90	5	12.5	20	30	60	65	90	90
Age (years)	18-64	808	31.3317	27.053	0.9517	1	330	10	15	30	30	60	80	120	120
Age (years)	> 64	269	38.8067	67.357	4.1068	1	825	5	15	30	40	60	105	130	270
Race	White	976	32.9652	41.685	1.3343	1	825	8	15	30	35	60	84	120	130
Race	Black	82	33.2805	28.602	3.1585	5	180	10	15	30	30	65	90	120	180
Race	Asian	11	27.0909	22.047	6.6476	3	75	3	15	15	30	60	75	75	75
Race	Some Others	17	29.7059	34.797	8.4396	5	150	5	10	15	30	60	150	150	150
Race	Hispanic	42	35.6429	39.899	6.1565	3	255	10	15	30	40	50	60	255	255
Race	Refused	15	34	28.234	7.2899	5	90	5	10	30	60	90	90	90	90
Hispanic	No	1057	32.7351	40.353	1.2412	1	825	5	15	30	35	60	85	120	130
Hispanic	Yes	68	38.9265	44.877	5.4422	3	270	10	15	30	40	60	120	255	270
Hispanic	DK	6	24.1667	9.704	3.9616	10	35	10	15	27.5	30	35	35	35	35
Hispanic	Refused	12	26.6667	18.257	5.2705	5	60	5	12.5	25	32.5	60	60	60	60
Employment	*	39	28.1538	25.77	4.1265	1	120	2	15	15	30	65	90	120	120
Employment	Full Time	432	28.4236	22.686	1.0915	2	255	8	15	25	30	50	60	90	120
Employment	Part Time	134	28.903	21.322	1.842	3	150	10	15	25	30	60	60	95	100
Employment	Not Employed	528	38.2254	53.763	2.3398	1	825	5	15	30	45	60	105	120	250
Employment	Refused	10	28	21.884	6.9202	10	60	10	10	17.5	55	60	60	60	60
Education	*	59	27.2542	22.695	2.9546	1	120	3	10	20	30	60	75	90	120
Education	< High School	135	41.8593	58.603	5.0437	2	570	5	15	30	45	85	120	180	270
Education	High School Graduate	445	33.3483	45.827	2.1724	1	825	10	15	30	30	60	90	120	120
Education	< College	259	33.5907	30.026	1.8657	5	255	10	15	30	45	60	85	105	150
Education	College Graduate	142	27.7254	21.846	1.8333	1	180	10	15	22.5	30	50	60	90	120
Education	Post Graduate	103	28.9029	34.476	3.397	3	330	5	15	25	30	50	60	60	120
Census Region	Northeast	295	32.6169	28.347	1.6504	3	270	5	15	30	40	60	90	120	120
Census Region	Midwest	252	28.4643	22.677	1.4285	1	210	5	15	30	30	50	60	85	120
Census Region	South	343	35.9242	52.496	2.8345	1	825	10	15	30	40	65	90	120	180
Census Region	West	253	33.9763	46.539	2.9259	3	570	10	15	27	30	60	75	120	255
Day Of Week	Weekday	782	32.1957	43.579	1.5584	1	825	8	15	30	30	60	75	120	120
Day Of Week	Weekend	361	34.7258	32.371	1.7037	5	270	8	15	30	40	60	90	120	180
Season	Winter	303	33.1188	51.809	2.9763	1	825	8	15	30	30	60	85	120	120
Season	Spring	245	30.2939	26.108	1.668	2	250	10	15	30	30	60	65	105	120
Season	Summer	293	33.157	29.932	1.7487	2	270	5	15	30	40	60	90	120	135
Season	Fall	302	34.904	45.406	2.6128	1	570	8	15	30	40	60	90	120	180
Asthma	No	1047	32.7708	40.408	1.2488	1	825	6	15	30	35	60	85	120	120
Asthma	Yes	91	35.956	40.996	4.2975	2	255	8	15	30	40	60	90	250	255
Asthma	DK	5	26	20.736	9.2736	10	60	10	10	20	30	60	60	60	60
Angina	No	1092	32.9661	40.95	1.2392	1	825	8	15	30	35	60	85	120	150
Angina	Yes	45	32.3111	22.926	3.4175	5	120	5	15	30	45	60	60	120	120
Angina	DK	6	43.3333	41.793	17.062	10	120	10	10	30	60	120	120	120	120
Bronchitis/Emphysema	No	1065	31.77	28.195	0.864	1	330	8	15	30	35	60	80	120	120
Bronchitis/Emphysema	Yes	71	50.8592	118.417	14.0535	3	825	5	15	29	35	70	105	570	825
Bronchitis/Emphysema	DK	7	38.1429	41.119	15.5417	2	120	2	10	30	60	120	120	120	120

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-71. Statistics for 24-Hour Cumulative Number of Minutes Spent Cleaning House

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		1910	114.798	111.683	2.5555	1	810	10	30	80	150	255	335	465	525
Gender	Male	351	100.353	110.445	5.8951	1	810	10	30	60	120	240	310	400	495
Gender	Female	1559	118.051	111.737	2.8299	1	790	15	40	90	160	255	340	465	540
Age (years)	*	45	136.2	114.124	17.0127	10	480	10	55	105	180	297	320	480	480
Age (years)	1-4	11	74.091	69.42	20.9308	10	270	10	40	60	90	90	270	270	270
Age (years)	5-11	49	42.633	35.19	5.0271	1	180	5	20	30	53	90	120	180	180
Age (years)	12-17	67	78.746	79.357	9.695	1	300	5	20	55	105	240	240	285	300
Age (years)	18-64	1307	115.55	111.597	3.0868	1	810	15	30	85	150	270	350	435	510
Age (years)	> 64	431	125.132	118.341	5.7003	3	790	10	45	90	170	250	340	540	570
Race	White	1614	115.85	111.348	2.7716	1	790	10	35	85	155	255	330	435	540
Race	Black	139	108.712	106.826	9.0609	1	490	5	30	80	135	270	358	480	484
Race	Asian	32	97.656	101.091	17.8705	15	425	15	30	60	127.5	265	345	425	425
Race	Some Others	26	80.5	58.059	11.3864	5	210	10	35	60	115	185	190	210	210
Race	Hispanic	73	99.781	110.669	12.9528	5	548	10	30	60	120	210	345	470	548
Race	Refused	26	179.615	176.878	34.6886	10	810	20	30	135	240	390	465	810	810
Hispanic	No	1740	114.153	109.99	2.6368	1	790	10	30	80	150	255	330	435	525
Hispanic	Yes	134	110.134	115.754	9.9996	5	658	10	34	60	135	240	360	480	548
Hispanic	DK	14	136.071	131.591	35.1691	10	510	10	30	92.5	210	240	510	510	510
Hispanic	Refused	22	180.682	177.33	37.8069	10	810	20	45	138	240	340	390	810	810
Employment	*	128	64.453	66.811	5.9053	1	300	5	22.5	45	77.5	180	240	270	285
Employment	Full Time	673	100.944	99.87	3.8497	1	655	10	30	60	120	240	310	410	480
Employment	Part Time	195	119.415	115.568	8.276	1	660	15	45	85	175	265	390	480	540
Employment	Not Employed	901	129.566	118.009	3.9314	3	790	15	50	95	180	285	360	480	570
Employment	Refused	13	235	218.908	60.7142	10	810	10	120	180	255	450	810	810	810
Education	*	161	81.379	98.129	7.7337	1	810	5	28	45	100	225	265	300	375
Education	< High School	234	135.731	121.618	7.9504	3	715	10	50	115	180	297	390	540	560
Education	High School Graduate	665	121.899	118.814	4.6074	2	790	15	40	90	160	270	360	484	610
Education	< College	432	108.343	100.456	4.8332	1	570	10	30	85	149	240	315	420	470
Education	College Graduate	247	101.097	96.605	6.1468	1	525	15	30	60	127	240	315	390	465
Education	Post Graduate	171	126.105	118.897	9.0923	5	655	15	45	90	180	280	390	495	540
Census Region	Northeast	454	116.969	117.268	5.5037	2	790	10	30	90	164	240	330	480	655
Census Region	Midwest	406	114.086	111.049	5.5113	1	720	10	30	80	150	240	325	475	495
Census Region	South	636	114.36	112.921	4.4776	1	810	10	30	80	150	270	360	435	525
Census Region	West	414	113.79	104.234	5.1228	5	720	15	40	82.5	160	240	330	400	470
Day Of Week	Weekday	1287	108.319	108.542	3.0256	1	790	10	30	70	150	240	315	465	540
Day Of Week	Weekend	623	128.185	116.861	4.682	1	810	15	45	90	180	290	370	435	525
Season	Winter	464	105.554	98.348	4.5657	1	810	10	30	75	150	240	285	360	465
Season	Spring	445	114.202	109.757	5.203	3	720	15	30	75	165	240	340	465	525
Season	Summer	546	109.908	113.686	4.8653	1	690	10	30	71	135	245	365	465	548
Season	Fall	455	130.677	122.137	5.7259	1	790	15	45	90	180	300	390	480	560
Asthma	No	1764	114.32	110.119	2.6219	1	790	10	30	82.5	150	255	330	450	525
Asthma	Yes	133	114.699	117.523	10.1905	5	690	10	33	64	150	270	390	470	480
Asthma	DK	13	180.769	214.533	59.5007	10	810	10	45	120	240	340	810	810	810
Angina	No	1826	113.702	110.563	2.5874	1	790	14	30	80	150	255	330	465	525
Angina	Yes	70	120.371	103.11	12.324	5	394	5	30	90	190	262.5	320	370	394
Angina	DK	14	230	210.868	56.3569	10	810	10	120	210	255	480	810	810	810
Bronchitis/Emphysema	No	1791	113.894	111.025	2.6234	1	790	10	30	80	150	255	340	450	540
Bronchitis/Emphysema	Yes	100	118.11	104.363	10.4363	5	480	7.5	32.5	90	180	262.5	297.5	467.5	475
Bronchitis/Emphysema	DK	19	182.632	179.253	41.1234	5	810	5	50	150	240	340	810	810	810

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-72. Statistics for 24-Hour Cumulative Number of Minutes Spent in Outdoor Cleaning

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		692	145.9	121.42	4.616	2	720	25	60	120	180	300	405	510	570
Gender	Male	417	160.8	131.68	6.448	10	720	30	60	120	200	345	480	533	600
Gender	Female	275	123.2	99.98	6.029	2	635	10	60	90	160	268	330	390	465
Age (years)	*	13	210.5	157.91	43.796	30	600	30	112	140	250	395	600	600	600
Age (years)	1-4	4	138.3	116.84	58.421	30	285	30	45	119	231.5	285	285	285	285
Age (years)	5-11	12	104.6	62.921	18.164	30	210	30	58	80	165	190	210	210	210
Age (years)	12-17	20	142.3	96.274	21.527	30	385	32.5	75	127	157.5	300	372.5	385	385
Age (years)	18-64	479	147.4	125.22	5.721	2	690	15	60	120	180	310	435	520	570
Age (years)	> 64	164	139.9	112.13	8.756	2	720	30	60	120	172.5	300	350	480	510
Race	White	621	146.4	122.18	4.903	2	720	25	60	120	180	305	410	510	560
Race	Black	30	134.2	99.049	18.084	2	405	10	60	117.5	190	262.5	330	405	405
Race	Asian	6	65	27.568	11.255	30	90	30	30	77.5	85	90	90	90	90
Race	Some Others	12	163.5	97.091	28.028	39	380	39	90	157.5	187.5	290	380	380	380
Race	Hispanic	14	128.2	82.593	22.074	30	300	30	65	105	180	255	300	300	300
Race	Refused	9	206.7	213.95	71.317	30	600	30	60	120	300	600	600	600	600
Hispanic	No	652	145.6	121.19	4.746	2	720	25	60	120	180	300	405	510	560
Hispanic	Yes	26	115.3	76.402	14.984	10	300	25	60	116.5	145	240	255	300	300
Hispanic	DK	5	218	103.05	46.087	120	380	120	140	210	240	380	380	380	380
Hispanic	Refused	9	216.7	206.64	68.88	60	600	60	60	120	300	600	600	600	600
Employment	*	38	132.1	88.152	14.3	30	385	30	60	115	165	255	360	385	385
Employment	Full Time	315	147.7	123.2	6.942	4	690	30	60	120	180	300	435	530	560
Employment	Part Time	52	135.1	103.74	14.387	2	470	15	60	112.5	180	300	325	325	470
Employment	Not Employed	280	145.1	122.82	7.34	2	720	20	60	120	180	310	412.5	480	655
Employment	Refused	7	252.9	216.41	81.794	15	600	15	120	120	465	600	600	600	600
Education	*	46	136.8	115.99	17.101	2	600	30	60	112.5	165	285	360	600	600
Education	< High School	96	146	124.59	12.716	2	510	10	60	119.5	180	330	465	480	510
Education	High School Graduate	237	154.2	126.38	8.209	5	720	30	60	120	180	310	415	520	660
Education	< College	142	146.7	119.87	10.059	4	655	30	60	120	185	270	375	560	570
Education	College Graduate	99	137.3	124.43	12.505	10	555	15	60	95	175	325	475	533	555
Education	Post Graduate	72	134.3	103.25	12.168	10	495	30	60	120	165	290	345	465	495
Census Region	Northeast	144	135.2	113.42	9.451	* 5	600	15	60	110	185	300	330	510	555
Census Region	Midwest	155	131	111.34	8.943	4	655	15	60	95	150	270	360	510	560
Census Region	South	218	158.7	117.58	7.964	2	635	30	70	120	195	330	415	510	520
Census Region	West	175	151.8	138.65	10.481	2	720	25	60	120	180	355	475	530	690
Day Of Week	Weekday	420	132.5	109.32	5.334	4	660	20	60	105	175	285	360	475	530
Day Of Week	Weekend	272	166.6	135.66	8.225	2	720	30	60	120	227.5	345	495	533	635
Season	Winter	128	149.5	135.12	11.943	4	600	15	59.5	102.5	225	345	465	510	520
Season	Spring	252	151.3	116.12	7.315	5	690	30	70	120	180	300	410	510	530
Season	Summer	205	133	104.23	7.28	5	635	20	60	120	180	270	325	475	555
Season	Fall	107	153.4	144.65	13.984	2	720	15	60	120	180	360	480	655	660
Asthma	No	640	147.3	121.44	4.8	2	720	27.5	60	120	180	307.5	400	510	560
Asthma	Yes	47	109.1	87.096	12.704	5	510	15	60	90	135	210	240	510	510
Asthma	DK	5	312	230.04	102.879	60	600	60	120	300	480	600	600	600	600
Angina	No	665	143.6	118.92	4.611	2	720	25	60	120	180	300	385	510	560
Angina	Yes	18	144.7	96.703	22.793	30	330	30	60	135	165	330	330	330	330
Angina	DK	9	318.9	213.67	71.223	10	600	10	120	325	480	600	600	600	600
Bronchitis/emphysema	No	661	146.2	120.68	4.694	2	720	30	60	120	180	300	395	510	560
Bronchitis/emphysema	Yes	26	104.8	85.282	16.725	5	375	10	60	90	135	225	300	375	375
Bronchitis/emphysema	DK	5	312	230.04	102.879	60	600	60	120	300	480	600	600	600	600

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-73. Statistics for 24-Hour Cumulative Number of Minutes Spent in Clothes Care

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		893	79.479	73.355	2.455	2	535	10	30	60	118	175	210	300	375
Gender	Male	117	72.248	67.028	6.197	5	360	7	20	60	90	150	210	300	335
Gender	Female	776	80.57	74.241	2.665	2	535	10	30	60	120	180	225	300	375
Age (years)	*	10	59.5	34.757	10.991	15	120	15	25	60	90	105	120	120	120
Age (years)	1-4	4	70	94.251	47.126	5	210	5	17.5	32.5	122.5	210	210	210	210
Age (years)	5-11	11	39	33.856	10.208	2	92	2	5	30	60	90	92	92	92
Age (years)	12-17	21	37.476	39.447	8.608	3	150	5	10	20	60	80	120	150	150
Age (years)	18-64	702	80.474	74.354	2.806	2	535	10	28	60	120	180	210	300	360
Age (years)	> 64	145	85.455	73.545	6.108	2	375	10	30	60	120	180	245	300	375
Race	White	737	80.096	73.392	2.703	2	535	10	30	60	118	175	223	300	375
Race	Black	99	68.636	65.289	6.562	5	300	5	15	45	110	165	210	240	300
Race	Asian	7	107.857	48.807	18.447	60	210	60	80	90	120	210	210	210	210
Race	Some Others	10	62.4	39.09	12.361	18	120	18	21	65	90	120	120	120	120
Race	Hispanic	33	92.879	78.01	13.58	5	265	5	20	90	150	210	225	265	265
Race	Refused	7	100.714	166.018	62.749	15	475	15	20	45	60	475	475	475	475
Hispanic	No	836	78.248	72.306	2.501	2	535	10	30	60	115	165	210	300	360
Hispanic	Yes	51	91.176	71.178	9.967	5	265	5	20	90	150	190	225	225	265
Hispanic	DK	3	118.333	62.517	36.094	55	180	55	55	120	180	180	180	180	180
Hispanic	Refused	3	185	251.942	145.459	20	475	20	20	60	475	475	475	475	475
Employment	*	34	43.412	46.313	7.943	2	210	3	10	30	60	92	150	210	210
Employment	Full Time	402	73.443	73.706	3.676	2	535	5	20	60	100	155	223	300	360
Employment	Part Time	116	80.724	68.545	6.364	2	335	10	30	67.5	117.5	180	225	240	330
Employment	Not Employed	336	89.804	75.166	4.101	2	475	10	35	60	120	185	235	300	375
Employment	Refused	5	87.4	74.725	33.418	2	180	2	45	60	150	180	180	180	180
Education	*	43	47.488	48.217	7.353	2	210	5	10	30	60	92	150	210	210
Education	< High School	102	86.51	60.048	5.946	10	265	15	38	65	120	175	210	240	245
Education	High School Graduate	337	85.19	82.249	4.48	2	535	10	30	60	120	180	240	375	445
Education	< College	193	85.87	78.466	5.648	2	475	5	21	60	120	190	240	300	375
Education	College Graduate	127	67.756	56.995	5.058	5	260	10	20	60	90	150	190	225	225
Education	Post Graduate	91	68.374	64.714	6.784	5	360	5	20	60	90	145	210	245	360
Census Region	Northeast	222	76.905	67.875	4.555	2	535	10	30	60	120	150	200	245	300
Census Region	Midwest	201	78.448	75.998	5.36	2	475	5	20	60	115	170	210	265	420
Census Region	South	304	81.839	75.654	4.339	5	450	10	30	60	115	170	235	330	375
Census Region	West	166	79.849	73.398	5.697	2	405	5	20	60	120	180	223	300	360
Day Of Week	Weekday	607	75.853	72.909	2.959	2	475	5	25	60	105	160	210	300	375
Day Of Week	Weekend	286	87.175	73.832	4.366	5	535	10	30	65	120	180	223	300	335
Season	Winter	254	82.291	80.245	5.035	2	475	7	23	60	120	190	225	330	445
Season	Spring	213	86.103	79.325	5.435	2	450	10	30	60	120	180	240	335	375
Season	Summer	259	76.722	68.328	4.246	2	535	8	30	60	115	154	190	240	360
Season	Fall	167	71.03	60.463	4.679	3	300	5	25	60	105	150	195	240	300
Asthma	No	829	79.534	74.024	2.571	2	535	10	30	60	118	180	225	300	360
Asthma	Yes	62	79.855	65.269	8.289	5	375	10	30	66.5	120	154	180	200	375
Asthma	DK	2	45	21.213	15	30	60	30	30	45	60	60	60	60	60
Angina	No	867	79.516	73.48	2.496	2	535	10	30	60	120	178	210	300	375
Angina	Yes	22	81.591	75.756	16.151	5	335	10	30	60	120	155	195	335	335
Angina	DK	4	60	24.495	12.247	30	90	30	45	60	75	90	90	90	90
Bronchitis/emphysema	No	834	78.45	73.617	2.549	2	535	8	25	60	115	170	210	300	375
Bronchitis/emphysema	Yes	58	94.621	68.927	9.051	5	335	15	60	77.5	120	190	240	300	335
Bronchitis/emphysema	DK	1	60	0	0	60	60	60	60	60	60	60	60	60	60

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-74. Statistics for 24-Hour Cumulative Number of Minutes Spent in Car Repair/Maintenance

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		145	123.407	147.198	12.224	5	700	5	30	60	150	300	495	670	690
Gender	Male	110	135.582	152.737	14.563	5	700	5	30	85	170	300	505	600	670
Gender	Female	35	85.143	122.441	20.696	5	690	5	15	45	120	180	270	690	690
Age (years)	*	1	60	*	*	60	60	60	60	60	60	60	60	60	60
Age (years)	1-4	1	150	*	*	150	150	150	150	150	150	150	150	150	150
Age (years)	5-11	1	300	*	*	300	300	300	300	300	300	300	300	300	300
Age (years)	12-17	8	106.875	163.837	57.925	20	505	20	30	45	90	505	505	505	505
Age (years)	18-64	114	130.342	156.511	14.659	5	700	5	30	77.5	165	300	520	670	690
Age (years)	> 64	20	83.5	68.347	15.283	10	300	12.5	30	70	120	150	240	300	300
Race	White	112	139.607	158.66	14.992	5	700	10	30	90	175	300	520	670	690
Race	Black	19	85.789	93.516	21.454	5	300	5	20	60	95	300	300	300	300
Race	Asian	2	10	7.071	5	5	15	5	5	10	15	15	15	15	15
Race	Some Others	6	43.333	42.387	17.304	5	120	5	10	32.5	60	120	120	120	120
Race	Hispanic	6	58	51.595	21.063	5	120	5	13	45	120	120	120	120	120
Hispanic	No	133	123.617	144.993	12.573	5	700	5	30	80	150	300	495	670	690
Hispanic	Yes	10	98.8	153.362	48.497	5	520	5	30	45	120	320	520	520	520
Hispanic	DK	2	232.5	321.734	227.5	5	460	5	5	233	460	460	460	460	460
Employment	*	10	130.5	156.87	49.607	20	505	20	30	52.5	150	402.5	505	505	505
Employment	Full Time	77	122.091	150.192	17.116	5	700	5	30	60	165	300	520	670	700
Employment	Part Time	12	123.167	138.769	40.059	8	495	8	40	72.5	150	270	495	495	495
Employment	Not Employed	46	124.13	146.952	21.667	5	690	10	30	90	120	300	480	690	690
Education	*	13	120	139.523	38.697	15	505	15	30	60	120	300	505	505	505
Education	< High School	17	185.882	224.418	54.429	5	670	5	30	90	220	555	670	670	670
Education	High School Graduate	50	111.52	128.261	18.139	5	690	5	30	67.5	120	270	350	585	690
Education	< College	31	138.226	169.231	30.395	5	700	10	30	85	180	280	600	700	700
Education	College Graduate	20	93.25	99.344	22.214	10	300	10	15	45	135	285	300	300	300
Education	Post Graduate	14	103.429	97.566	26.076	5	300	5	30	75	120	300	300	300	300
Census Region	Northeast	28	130.75	163.729	30.942	8	690	10	30	60	200	300	520	690	690
Census Region	Midwest	31	149.839	173.193	31.106	10	670	10	45	90	120	350	600	670	670
Census Region	South	45	106.778	131.409	19.589	5	700	5	30	60	120	240	300	700	700
Census Region	West	41	116.659	132.206	20.647	5	505	5	30	60	120	300	460	505	505
Day Of Week	Weekday	79	108.519	125.914	14.166	5	690	5	15	60	150	280	350	480	690
Day Of Week	Weekend	66	141.227	168.477	20.738	5	700	10	45	82.5	150	495	555	670	700
Season	Winter	49	130.673	167.715	23.959	5	690	5	30	60	165	350	600	690	690
Season	Spring	39	136.667	156.042	24.987	5	700	5	45	85	150	300	555	700	700
Season	Summer	35	121.514	137.704	23.276	5	505	5	30	60	150	300	480	505	505
Season	Fall	22	86.727	87.502	18.655	5	300	8	10	70	120	240	270	300	300
Asthma	No	137	117.657	139.579	11.925	5	700	5	30	60	120	300	495	600	690
Asthma	Yes	8	221.875	235.553	83.281	15	670	15	30	150	365	670	670	670	670
Angina	No	139	125.712	149.156	12.651	5	700	5	30	75	150	300	505	670	690
Angina	Yes	5	51	72.921	32.611	5	180	5	15	20	35	180	180	180	180
Angina	DK	1	165	*	*	165	165	165	165	165	165	165	165	165	165
Bronchitis/Emphysema	No	140	122.279	145.67	12.311	5	700	5	30	67.5	135	300	500	670	690
Bronchitis/Emphysema	Yes	5	155	203.347	90.94	5	460	5	10	30	270	460	460	460	460

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-75. Statitstics for 24-Hour Cumulative Number of Minutes Spent in Other Repairs

Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		288	184.816	184.111	10.849	2	1080	10	36.5	120	300	425	525	690	840
Gender	Male	200	205.045	187.704	13.273	2	1080	10	60	150	327.5	460	555	680	810
Gender	Female	88	138.841	167.784	17.886	3	900	5	17.5	72.5	192.5	360	425	750	900
Age (years)	*	1	540	*	*	540	540	540	540	540	540	540	540	540	540
Age (years)	5-11	3	66.667	55.076	31.798	10	120	10	10	70	120	120	120	120	120
Age (years)	12-17	14	119.5	103.383	27.63	15	345	15	30	90	180	285	345	345	345
Age (years)	18-64	221	198.471	192.928	12.978	2	1080	10	45	120	325	434	570	750	840
Age (years)	> 64	49	141.878	146.868	20.981	2	526	10	30	75	209	390	480	526	526
Race	White	264	186.367	184.944	11.382	2	1080	10	36.5	120	300	430	525	670	840
Race	Black	13	150.385	207.961	57.678	10	750	10	30	90	120	390	750	750	750
Race	Asian	3	321.667	89.489	51.667	270	425	270	270	270	425	425	425	425	425
Race	Some Others	3	173.667	165.228	95.395	45	360	45	45	116	360	360	360	360	360
Race	Hispanic	4	127.5	122.848	61.424	10	290	10	35	105	220	290	290	290	290
Race	Refused	1	75	*	*	75	75	75	75	75	75	75	75	75	75
Hispanic	No	278	184.917	184.467	11.064	2	1080	10	35	120	300	425	525	690	840
Hispanic	Yes	9	160.556	180.666	60.222	10	575	10	60	60	210	575	575	575	575
Hispanic	DK	1	375	*	*	375	375	375	375	375	375	375	375	375	375
Employment	*	17	110.176	97.439	23.632	10	345	10	30	90	180	285	345	345	345
Employment	Full Time	140	199.993	206.025	17.412	5	1080	8.5	60	120	297.5	470	600	840	900
Employment	Part Time	27	167.963	153.74	29.587	5	490	10	25	120	302	390	434	490	490
Employment	Not Employed	102	183.314	169.14	16.747	2	670	10	30	120	315	420	480	526	600
Employment	Refused	2	61	83.439	59	2	120	2	2	61	120	120	120	120	120
Education	*	18	110.722	94.558	22.287	10	345	10	30	90	180	285	345	345	345
Education	< High School	23	214.348	215.017	44.834	15	900	30	45	120	360	480	490	900	900
Education	High School Graduate	90	194.4	196.472	20.71	3	840	5	30	132.5	300	447	575	780	840
Education	< College	64	202.156	200.764	25.095	2	1080	10	32.5	130	355	420	480	600	1080
Education	College Graduate	54	169	154.537	21.03	5	525	10	60	97.5	270	425	490	510	525
Education	Post Graduate	39	172.923	174.213	27.896	2	690	7	38	120	270	420	600	690	690
Census Region	Northeast	55	166.164	181.344	24.452	3	840	5	30	75	210	415	525	600	840
Census Region	Midwest	77	188.909	170.219	19.398	10	780	15	60	120	315	420	460	670	780
Census Region	South	89	202.281	212.332	22.507	2	1080	10	30	120	315	480	570	900	1080
Census Region	West	67	172.224	161.66	19.75	2	750	7	60	120	243	340	526	690	750
Day Of Week	Weekday	188	178.213	171.94	12.54	2	780	10	42.5	110	300	430	490	600	750
Day Of Week	Weekend	100	197.23	205.392	20.539	3	1080	5	32.5	145	296.5	420	585	870	990
Season	Winter	62	167.097	172.076	21.854	3	600	5	15	90	300	445	490	540	600
Season	Spring	65	203.123	216.629	26.87	5	900	10	45	120	300	480	670	840	900
Season	Summer	95	180.442	182.013	18.674	2	1080	10	60	120	290	390	510	750	1080
Season	Fall	66	189.727	164.551	20.255	2	600	10	55	120	330	420	435	600	600
Asthma	No	264	180.33	183.699	11.306	2	1080	10	36.5	120	288.5	420	525	690	840
Asthma	Yes	24	234.167	185.283	37.821	5	670	10	45	210	352.5	480	510	670	670
Angina	No	281	179.687	175.258	10.455	2	900	10	30	120	295	420	490	670	780
Angina	Yes	6	448.333	369.995	151.05	90	1080	90	100	410	600	1080	1080	1080	1080
Angina	DK	1	45	*	*	45	45	45	45	45	45	45	45	45	45
Bronchitis/emphysema	No	276	184.681	185.591	11.171	2	1080	10	36.5	120	299	430	526	690	840
Bronchitis/emphysema	Yes	12	187.917	152.591	44.049	5	405	5	45	165	350	360	405	405	405

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-76. Statistics for 24-Hour Cumulative Number of Minutes Spent in Plant Care

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		254	103.602	108.761	6.824	3	630	10	30	60	130	225	300	480	570
Gender	Male	84	146.274	145.969	15.926	10	630	15	32.5	105	195	380	480	570	630
Gender	Female	170	82.518	76.759	5.887	3	630	10	30	60	120	180	210	270	325
Age (years)	*	4	51.25	24.622	12.311	15	70	15	37.5	60	65	70	70	70	70
Age (years)	5-11	5	121	120.955	54.093	35	330	35	60	60	120	330	330	330	330
Age (years)	12-17	3	51	61.262	35.369	3	120	3	3	30	120	120	120	120	120
Age (years)	18-64	157	100.49	104.921	8.374	5	570	10	30	60	135	225	300	475	565
Age (years)	> 64	85	112.647	118.439	12.846	5	630	10	35	75	135	240	280	630	630
Race	White	233	102.124	106.695	6.99	3	630	10	30	60	120	225	300	480	570
Race	Black	8	81.25	90.149	31.872	15	280	15	15	50	112.5	280	280	280	280
Race	Asian	3	140	45.826	26.458	90	180	90	90	150	180	180	180	180	180
Race	Some Others	2	137.5	187.383	132.5	5	270	5	5	138	270	270	270	270	270
Race	Hispanic	6	164.167	209.796	85.649	15	565	15	15	90	210	565	565	565	565
Race	Refused	2	95	49.497	35	60	130	60	60	95	130	130	130	130	130
Hispanic	No	244	102.971	106.161	6.796	3	630	10	30	60	132.5	225	280	480	570
Hispanic	Yes	7	149.286	195.521	73.9	15	565	15	15	60	210	565	565	565	565
Hispanic	DK	1	60	*	*	60	60	60	60	60	60	60	60	60	60
Hispanic	Refused	2	42.5	24.749	17.5	25	60	25	25	42.5	60	60	60	60	60
Employment	*	8	94.75	103.657	36.648	3	330	3	32.5	60	120	330	330	330	330
Employment	Full Time	94	94.436	111.848	11.536	5	630	10	30	60	120	195	325	570	630
Employment	Part Time	25	112.2	104.812	20.962	15	485	15	30	90	150	210	270	485	485
Employment	Not Employed	124	108.387	108.655	9.758	5	630	10	40	72.5	127.5	240	270	480	565
Employment	Refused	3	145	99.875	57.663	60	255	60	60	120	255	255	255	255	255
Education	*	9	86.444	100.113	33.371	3	330	3	30	60	120	330	330	330	330
Education	< High School	30	92.333	108.753	19.855	10	475	10	15	60	120	170	420	475	475
Education	High School Graduate	93	87.656	95.248	9.877	5	565	10	30	60	120	180	255	480	565
Education	< College	47	118.298	112.855	16.462	5	630	10	50	90	150	240	240	630	630
Education	College Graduate	35	139	107.818	18.225	15	485	15	55	120	195	280	325	485	485
Education	Post Graduate	40	104.75	131.036	20.719	15	630	15	30	60	120	217.5	420	630	630
Census Region	Northeast	55	116.055	116.677	15.733	3	485	10	30	70	150	250	420	480	485
Census Region	Midwest	41	101.659	109.248	17.062	5	630	30	30	60	120	195	270	630	630
Census Region	South	77	82.078	76.081	8.67	5	475	10	30	60	120	175	225	300	475
Census Region	West	81	116.593	126.602	14.067	10	630	14	30	75	150	240	330	570	630
Day Of Week	Weekday	170	104.559	105.561	8.096	3	630	14	30	60	130	225	280	480	565
Day Of Week	Weekend	84	101.667	115.595	12.612	5	630	10	30	60	127.5	240	325	570	630
Season	Winter	15	135.333	170.592	44.047	5	565	5	30	60	175	485	565	565	565
Season	Spring	96	124.323	108.656	11.09	5	570	15	45	90	150	270	330	475	570
Season	Summer	111	89.82	100.882	9.575	3	630	10	30	60	120	190	225	420	630
Season	Fall	32	74.375	87.894	15.538	5	480	10	25	47.5	102.5	135	195	480	480
Asthma	No	239	105	108.541	7.021	3	630	10	30	60	135	235	300	485	570
Asthma	Yes	15	81.333	113.68	29.352	5	450	5	15	55	90	175	450	450	450
Angina	No	240	103.083	107.762	6.956	3	630	10	30	60	125	225	290	480	570
Angina	Yes	13	120.769	130.286	36.135	15	485	15	55	60	135	270	485	485	485
Angina	DK	1	5	*	*	5	5	5	5	5	5	5	5	5	5
Bronchitis/emphysema	No	248	105.202	109.525	6.955	3	630	10	30	60	135	235	300	485	570
Bronchitis/emphysema	Yes	6	37.5	24.238	9.895	5	60	5	15	42.5	60	60	60	60	60

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-77. Statistics for 24-Hour Cumulative Number of Minutes Spent in Animal Care

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		764	48.168	65.029	2.3527	1	760	5	10	30	60	120	155	230	312
Gender	Male	282	57.291	81.786	4.8703	1	760	5	15	30	65	120	180	308	340
Gender	Female	482	42.83	52.182	2.3768	1	450	3	10	28.5	60	105	140	187	273
Age (years)	*	13	37.462	38.606	10.7074	2	135	2	5	30	55	80	135	135	135
Age (years)	1-4	9	59.222	44.291	14.7637	3	140	3	30	60	90	140	140	140	140
Age (years)	5-11	27	47.296	43.1	8.2946	2	179	8	15	38	65	120	150	179	179
Age (years)	12-17	49	55.204	68.276	9.7537	3	308	5	10	25	90	175	180	308	308
Age (years)	18-64	530	45.928	66.581	2.8921	1	760	3	10	30	60	109	150	230	280
Age (years)	> 64	136	54.824	64.527	5.5331	1	383	5	15	30	60	135	180	340	340
Race	White	696	47.757	62.011	2.3505	1	760	4	10	30	60	120	155	240	312
Race	Black	26	37.577	39.832	7.8117	1	145	1	10	25	45	120	120	145	145
Race	Asian	5	30.4	21.87	9.7806	10	60	10	15	20	47	60	60	60	60
Race	Some Others	12	100	193.567	55.878	5	690	5	17.5	30	65	205	690	690	690
Race	Hispanic	17	37.765	44.992	10.9123	5	180	5	15	30	35	120	180	180	180
Race	Refused	8	73.75	58.478	20.675	5	180	5	32.5	55	115	180	180	180	180
Hispanic	No	712	47.81	61.479	2.304	1	760	4	10	30	60	120	151	230	308
Hispanic	Yes	39	50.872	112.78	18.0593	2	690	3	10	20	35	120	180	690	690
Hispanic	DK	6	50	77.071	31.4643	10	205	10	10	15	45	205	205	205	205
Hispanic	Refused	7	67.857	62.039	23.4485	5	180	5	20	60	120	180	180	180	180
Employment	*	86	51.221	56.803	6.1252	2	308	5	15	30	70	120	175	240	308
Employment	Full Time	376	44.918	71.458	3.6852	1	760	3	10	25	60	90	145	240	340
Employment	Part Time	60	48.883	56.285	7.2664	3	230	5	12.5	20	60	152.5	176.5	205	230
Employment	Not Employed	233	52.459	59.357	3.8886	1	383	5	15	30	60	120	180	273	330
Employment	Refused	9	38.889	53.897	17.9656	5	180	5	20	30	30	180	180	180	180
Education	*	98	52.347	57.02	5.7599	2	308	5	15	30	70	140	180	240	308
Education	< High School	63	51.492	68.122	8.5825	1	383	5	15	30	60	120	225	273	383
Education	High School Graduate	231	52.913	75.819	4.9885	1	760	5	10	30	70	120	165	245	330
Education	< College	150	40.593	49.247	4.021	1	280	4	10	20	55	97.5	155	205	230
Education	College Graduate	121	51.273	79.213	7.2012	1	690	3	15	30	60	110	135	340	340
Education	Post Graduate	101	38.713	40.069	3.987	1	240	5	12	30	57	80	105	150	185
Census Region	Northeast	171	39.789	44.88	3.432	1	273	3	10	25	60	90	120	205	245
Census Region	Midwest	181	49.773	58.716	4.3644	1	330	4	14	30	60	120	180	240	312
Census Region	South	247	51.389	75.022	4.7736	1	760	5	15	30	60	120	165	308	383
Census Region	West	165	50.267	72.551	5.6481	1	690	3	10	30	60	120	155	210	340
Day Of Week	Weekday	527	46.602	66.468	2.8954	1	760	4	10	30	60	115	155	195	280
Day Of Week	Weekend	237	51.65	61.703	4.0081	1	383	5	15	30	60	120	180	273	330
Season	Winter	221	44.62	66.372	4.4647	1	690	4	10	25	55	95	160	225	245
Season	Spring	201	52.99	60.351	4.2568	1	340	5	15	30	60	120	175	240	330
Season	Summer	216	51.426	76.405	5.1987	1	760	5	15	30	64	120	165	240	383
Season	Fall	126	41.111	45.413	4.0457	1	280	3	10	25	60	110	135	180	180
Asthma	No	705	48.401	65.505	2.4671	1	760	4	10	30	60	120	155	225	308
Asthma	Yes	57	45.386	60.468	8.0091	1	330	5	10	30	55	105	195	240	330
Asthma	DK	2	45	21.213	15	30	60	30	30	45	60	60	60	60	60
Angina	No	734	47.834	64.308	2.3737	1	760	5	10	30	60	120	155	225	280
Angina	Yes	27	58.704	85.601	16.474	2	340	3	15	30	60	135	330	340	340
Angina	DK	3	35	22.913	13.2288	15	60	15	15	30	60	60	60	60	60
Bronchitis/emphysema	No	718	48.357	65.56	2.4467	1	760	4	10	30	60	120	160	230	308
Bronchitis/emphysema	Yes	43	45.395	58.522	8.9245	2	330	5	10	30	55	90	150	330	330
Bronchtis/emphysema	DK	3	42.667	15.535	8.9691	30	60	30	30	38	60	60	60	60	60

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-78. Statistics for 24-Hour Cumulative Number of Minutes Spent in Other Household Work

Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	Percentiles 5	25	50	75	90	95	98	99
All		1322	68.6354	98.697	2.7145	1	905	5	15	30	75	195	255	360	480
Gender	Male	478	70.3661	101.833	4.6577	1	905	5	10	30	90	195	265	375	480
Gender	Female	844	67.6552	96.923	3.3362	1	720	5	15	30	75	190	255	360	496
Age (years)	*	21	93.4286	113.994	24.8756	4	403	5	15	30	180	225	300	403	403
Age (years)	1-4	15	57.1333	85.7	22.1277	1	290	1	6	25	60	230	290	290	290
Age (years)	5-11	56	24.9464	30.134	4.0269	1	150	2	5	12.5	30	60	90	120	150
Age (years)	12-17	84	39.4762	51.785	5.6502	1	230	2	5	16.5	50	120	150	210	230
Age (years)	18-64	918	71.2353	101.54	3.3513	1	905	5	15	30	90	195	265	375	540
Age (years)	> 64	228	78.114	106.158	7.0305	1	665	5	14.5	30	90	225	295	420	480
Race	White	1118	70.6977	98.015	2.9314	1	720	5	15	30	80	195	265	375	480
Race	Black	102	46.1176	65.201	6.4558	1	300	3	10	15	50	120	210	255	260
Race	Asian	20	71.9	76.619	17.1324	1	315	1.5	22.5	60	105	162.5	260	315	315
Race	Some Others	22	67.7727	190.288	40.5695	1	905	2	10	15	30	90	155	905	905
Race	Hispanic	43	65.6512	118.419	18.0587	5	660	5	10	20	60	155	270	660	660
Race	Refused	17	72.9412	108.744	26.3742	5	420	5	15	20	75	210	420	420	420
Hispanic	No	1218	67.8342	93.324	2.674	1	720	5	15	30	75	195	255	358	420
Hispanic	Yes	81	80.5185	159.202	17.6891	1	905	5	10	20	60	155	360	665	905
Hispanic	DK	7	54.1429	74.627	28.2062	1	210	1	10	25	90	210	210	210	210
Hispanic	Refused	16	75.8125	113.469	28.3673	5	420	5	15	25	82.5	233	420	420	420
Employment	*	153	37.0196	52.694	4.2601	1	290	2	5	15	45	90	150	225	230
Employment	Full Time	555	70.0342	103.005	4.3723	1	905	5	15	30	85	195	265	375	540
Employment	Part Time	124	62.0726	86.315	7.7513	2	420	5	15	30	65	190	240	400	403
Employment	Not Employed	482	78.3008	105.529	4.8067	1	685	5	15	30	100	224	270	420	575
Employment	Refused	8	95.625	110.014	38.8959	5	300	5	17.5	32.5	180	300	300	300	300
Education	*	175	42.7086	64.901	4.906	1	450	2	5	15	45	120	192	233	300
Education	< High School	96	82.5313	114.62	11.6983	1	660	5	15	30	117.5	240	328	420	660
Education	High School Graduate	418	75.5574	105.946	5.182	1	720	5	15	30	90	215	270	420	540
Education	< College	290	71.3724	100.836	5.9213	1	905	5	15	30	100	192.5	270	330	375
Education	College Graduate	196	73.6173	104.18	7.4414	1	600	5	15	30	85	190	330	400	585
Education	Post Graduate	147	58.7007	81.662	6.7354	1	570	4	10	30	65	150	210	315	420
Census Region	Northeast	307	62.8632	91.306	5.2111	1	665	5	15	30	63	180	255	360	400
Census Region	Midwest	318	70.8679	98.179	5.5056	1	590	5	15	30	90	180	270	375	570
Census Region	South	394	74.7056	106.703	5.3756	1	720	5	10	30	85	215	296	380	600
Census Region	West	303	64.2475	95.504	5.4866	1	905	5	13	30	75	180	240	330	420
Day Of Week	Weekday	857	71.5496	106.351	3.6329	1	905	5	10	30	85	210	295	380	570
Day Of Week	Weekend	465	63.2645	82.596	3.8303	1	600	5	15	30	75	170	225	296	403
Season	Winter	353	64.1558	91.547	4.8726	1	590	5	15	30	65	195	240	345	480
Season	Spring	327	82.844	118.992	6.5803	1	905	5	15	30	115	240	305	420	585
Season	Summer	391	62.1125	97.341	4.9227	1	685	5	10	30	60	160	255	400	570
Season	Fall	251	66.5857	77.867	4.9149	1	480	5	15	35	90	180	230	292	345
Asthma	No	1211	67.8423	98.123	2.8197	1	905	5	15	30	75	190	255	360	480
Asthma	Yes	103	75.6893	104.033	10.2507	1	575	5	15	30	100	210	240	400	480
Asthma	DK	8	97.875	120.21	42.5006	5	300	5	15	17.5	206.5	300	300	300	300
Angina	No	1269	68.2041	99.025	2.7798	1	905	5	15	30	75	190	255	375	496
Angina	Yes	44	77.1364	86.104	12.9807	5	300	5	10	30	132.5	220	240	300	300
Angina	DK	9	87.8889	116.368	38.7895	5	300	5	15	15	180	300	300	300	300
Bronchitis/Emphysema	No	1247	67.8043	97.936	2.7734	1	905	5	15	30	75	190	255	360	480
Bronchitis/Emphysema	Yes	64	83.4844	111.726	13.9658	1	575	5	15	32.5	117.5	220	265	480	575
Bronchitis/Emphysema	DK	11	76.4545	107.17	32.3131	5	300	5	15	20	180	233	300	300	300

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-79. Statistics for 24-Hour Cumulative Number of Minutes Spent in Indoor Playing

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		188	105	82.7	6.03	2	510	20	55	90	127.5	190	270	390	435
Gender	Male	65	117	97.1	12	10	510	20	60	90	135	255	300	435	510
Gender	Female	123	99.5	73.8	6.65	2	420	20	55	76	120	190	225	340	375
Age (years)	*	3	127	47.3	27.3	90	180	90	90	110	180	180	180	180	180
Age (years)	1-4	11	130	80.2	24.2	15	270	15	60	115	180	255	270	270	270
Age (years)	5-11	11	93.6	64.3	19.4	30	195	30	30	60	175	180	195	195	195
Age (years)	12-17	4	82.5	45	22.5	30	120	30	45	90	120	120	120	120	120
Age (years)	18-64	149	103	86	7.05	2	510	20	55	76	120	190	292	420	435
Age (years)	> 64	10	124	76.4	24.2	20	270	20	75	100	150	248	270	270	270
Race	White	153	110	84.3	6.82	2	510	20	60	90	130	190	270	390	435
Race	Black	13	95	84.8	23.5	15	255	15	30	60	180	220	255	255	255
Race	Asian	5	71	56.8	25.4	10	150	10	30	60	105	150	150	150	150
Race	Some Others	7	108	96.5	36.5	30	300	30	55	60	175	300	300	300	300
Race	Hispanic	8	68.4	46.4	16.4	42	180	42	45	50	67.5	180	180	180	180
Race	Refused	2	64	65.1	46	18	110	18	18	64	110	110	110	110	110
Hispanic	No	172	107	83.9	6.4	2	510	20	60	90	132.5	190	270	390	435
Hispanic	Yes	15	88.1	71.4	18.4	42	300	42	45	60	100	180	300	300	300
Hispanic	Refused	1	110	*	*	110	110	110	110	110	110	110	110	110	110
Employment	*	26	108	69.9	13.7	15	270	30	55	105	160	195	255	270	270
Employment	Full Time	74	102	95	11	2	510	15	45	70	125	195	300	435	510
Employment	Part Time	20	124	74	16.6	30	340	36	60	120	165	200	280	340	340
Employment	Not Employed	68	102	76	9.21	15	420	30	60	85	120	180	245	390	420
Education	*	27	108	68.6	13.2	15	270	30	55	110	160	195	255	270	270
Education	< High School	16	89.4	58.8	14.7	20	220	20	52.5	60	125	180	220	220	220
Education	High School Graduate	59	102	83.6	10.9	2	435	20	55	75	135	180	340	375	435
Education	< College	33	112	97.7	17	10	510	20	55	90	120	190	300	510	510
Education	College Graduate	37	125	96.1	15.8	15	420	15	60	105	155	270	390	420	420
Education	Post Graduate	16	72.5	40.4	10.1	10	150	10	37.5	65	102.5	120	150	150	150
Census Region	Northeast	46	110	94.4	13.9	2	420	20	60	75	120	245	375	420	420
Census Region	Midwest	40	111	75.8	12	15	340	17.5	50	95	175	193	256	340	340
Census Region	South	64	100	73	9.13	10	435	30	52.5	87.5	127.5	180	225	270	435
Census Region	West	38	102	92.2	15	10	510	18	60	60	120	180	300	510	510
Day Of Week	Weekday	128	99.4	71	6.27	2	435	20	55	90	120	180	245	300	340
Day Of Week	Weekend	60	118	13	13.3	15	510	30	60	90	150	245	382.5	420	510
Season	Winter	49	130	99.2	14.2	18	420	20	60	105	180	300	375	420	420
Season	Spring	36	85.7	55.7	9.28	2	270	20	45	77.5	112.5	155	180	270	270
Season	Summer	47	92.7	77	11.2	10	435	30	45	60	120	180	195	435	435
Season	Fall	56	107	82.7	11	10	510	15	60	90	127.5	195	255	270	510
Asthma	No	174	107	84.1	6.38	2	510	20	55	90	130	190	270	390	435
Asthma	Yes	13	88.5	66.4	18.4	20	245	20	30	75	120	180	245	245	245
Asthma	DK	1	110	*	*	110	110	110	110	110	110	110	110	110	110
Angina	No	184	104	80.7	5.95	2	510	20	55	90	122.5	190	270	375	435
Angina	Yes	3	210	167	96.4	60	390	60	60	180	390	390	390	390	390
Angina	DK	1	110	*	*	110	110	110	110	110	110	110	110	110	110
Bronchitis/emphysema	No	177	107	83.5	6.27	2	510	20	60	90	130	190	270	390	435
Bronchitis/emphysema	Yes	10	80.1	72.5	22.9	10	245	10	30	60	76	208	245	245	245
Bronchitis/emphysema	DK	1	110	*	*	110	110	110	110	110	110	110	110	110	110

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-80. Statistics for 24-Hour Cumulative Number of Minutes Spent in Outdoor Playing

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles 5	25	50	75	90	95	98	99
All		59	97.373	95.372	12.416	5	435	15	45	60	110	210	360	420	435
Gender	Male	26	108.192	94.783	18.588	15	360	15	60	75	135	280	345	360	360
Gender	Female	33	88.848	96.425	16.785	5	435	5	45	60	100	150	420	435	435
Age (years)	*	1	170	*	*	170	170	170	170	170	170	170	170	170	170
Age (years)	1-4	4	83.25	89.66	44.83	15	210	15	20	54	146.5	210	210	210	210
Age (years)	5-11	9	148.333	144.265	48.088	5	360	5	55	60	280	360	360	360	360
Age (years)	12-17	1	15	*	*	15	15	15	15	15	15	15	15	15	15
Age (years)	18-64	40	92.05	86.358	13.654	20	435	27.5	52.5	65	102.5	142.5	307	435	435
Age (years)	> 64	4	52.5	15	7.5	30	60	30	45	60	60	60	60	60	60
Race	White	50	93.94	90.208	12.757	5	420	15	45	60	100	202	345	390	420
Race	Black	2	86.5	37.477	26.5	60	113	60	60	86.5	113	113	113	113	113
Race	Asian	1	100	*	*	100	100	100	100	100	100	100	100	100	100
Race	Some Others	1	30	*	*	30	30	30	30	30	30	30	30	30	30
Race	Hispanic	5	149	164.864	73.729	20	435	20	60	110	120	435	435	435	435
Hispanic	No	51	93.333	89.747	12.567	5	420	15	45	60	100	194	345	360	420
Hispanic	Yes	8	123.125	130.218	46.039	20	435	20	60	90	115	435	435	435	435
Employment	*	15	123.533	124.379	32.115	5	360	5	15	60	210	345	360	360	360
Employment	Full Time	15	67.2	30.887	7.975	20	135	20	45	60	85	113	135	135	135
Employment	Part Time	7	87.714	54.129	20.459	30	194	30	60	60	110	194	194	194	194
Employment	Not Employed	22	103.182	110.136	23.481	25	435	30	45	60	105	150	420	435	435
Education	*	15	123.533	124.379	32.115	5	360	5	15	60	210	345	360	360	360
Education	< High School	5	57	6.708	3	45	60	45	60	60	60	60	60	60	60
Education	High School Graduate	10	148.5	150.482	47.586	30	435	30	60	95	135	427.5	435	435	435
Education	< College	18	74.667	45.169	10.646	20	194	20	45	60	95	150	194	194	194
Education	College Graduate	8	75.375	35.492	12.548	30	120	30	45	75	106.5	120	120	120	120
Education	Post Graduate	3	58.333	24.664	14.24	30	75	30	30	70	75	75	75	75	75
Census Region	Northeast	17	114.059	103.26	25.044	15	360	15	60	70	120	345	360	360	360
Census Region	Midwest	12	78.583	32.354	9.34	30	150	30	60	65	97.5	113	150	150	150
Census Region	South	15	109.667	109.536	28.282	30	420	30	30	60	135	280	420	420	420
Census Region	West	15	81.2	107.674	27.801	5	435	5	20	60	105	165	435	435	435
Day Of Week	Weekday	42	86.81	79.211	12.223	5	360	15	30	60	100	165	280	360	360
Day Of Week	Weekend	17	123.471	126.007	30.561	25	435	25	45	60	120	420	435	435	435
Season	Winter	10	66.5	46.251	14.626	5	150	5	30	60	105	135	150	150	150
Season	Spring	10	135.3	114.735	36.283	45	435	45	60	108	165	302.5	435	435	435
Season	Summer	31	92.355	94.966	17.056	5	420	15	45	60	100	210	345	420	420
Season	Fall	8	108	115.681	40.899	25	360	25	30	67.5	142	360	360	360	360
Asthma	No	56	94.821	91.447	12.22	5	435	15	45	60	107.5	194	360	420	435
Asthma	Yes	3	145	173.853	100.374	30	345	30	30	60	345	345	345	345	345
Angina	No	58	96.983	96.158	12.626	5	435	15	45	60	105	210	360	420	435
Angina	Yes	1	120	*	*	120	120	120	120	120	120	120	120	120	120
Bronchitis/Emphysema	No	55	90.018	87.056	11.739	5	435	15	45	60	100	170	345	360	435
Bronchitis/Emphysema	Yes	4	198.5	157.509	78.754	60	420	60	90	157	307	420	420	420	420

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-81. Statistics for 24-Hour Cumulative Number of Minutes Spent for Car Repair Services

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		259	33.7876	53.772	3.3413	1	358	5	5	10	30	90	180	195	270
Gender	Male	128	41.6953	65.45	5.7851	1	358	4	5	15	45	120	180	270	280
Gender	Female	131	26.0611	37.84	3.3061	2	180	5	5	10	30	65	105	180	180
Age (years)	*	2	88	2.828	2	86	90	86	86	88	90	90	90	90	90
Age (years)	1-4	8	33.125	43.666	15.438	5	115	5	5	12.5	55	115	115	115	115
Age (years)	5-11	6	18.3333	20.897	8.531	5	60	5	5	12.5	15	60	60	60	60
Age (years)	12-17	13	31.3077	32.638	9.0521	3	95	3	5	10	55	79	95	95	95
Age (years)	18-64	204	32.4853	52.731	3.6919	1	280	5	5	10	30	85	180	195	265
Age (years)	> 64	26	44.8462	75.446	14.796	1	358	2	10	15	50	105	180	358	358
Race	White	226	33.8451	51.028	3.3943	1	280	5	5	10	35	90	175	195	265
Race	Black	19	49.3158	90.675	20.802	1	358	1	5	10	44	180	358	358	358
Race	Asian	3	11.6667	11.547	6.6667	5	25	5	5	5	25	25	25	25	25
Race	Some Others	5	11	8.944	4	5	25	5	5	5	15	25	25	25	25
Race	Hispanic	6	12.5	6.124	2.5	5	20	5	5	15	15	20	20	20	20
Hispanic	No	247	34.6154	54.728	3.4822	1	358	5	5	10	35	90	180	245	270
Hispanic	Yes	12	16.75	22.471	6.4867	5	86	5	5	12.5	15	20	86	86	86
Employment	*	26	27.7692	33.586	6.5868	3	115	5	5	10	50	90	95	115	115
Employment	Full Time	137	31.8759	52.912	4.5206	1	280	4	5	10	30	85	175	265	270
Employment	Part Time	25	32.96	49.672	9.9344	5	180	5	7	15	30	105	180	180	180
Employment	Not Employed	70	40.4714	62.833	7.51	1	358	4	10	15	35	103	180	245	358
Employment	Refused	1	5	*	*	5	5	5	5	5	5	5	5	5	5
Education	*	28	28.4643	32.992	6.2349	3	115	5	5	12.5	52.5	90	95	115	115
Education	< High School	20	36.15	51.714	11.564	5	180	5	10	15	45	117.5	177.5	180	180
Education	High School Graduate	64	41.0781	62.959	7.8698	2	280	5	5	15	47.5	105	180	265	280
Education	< College	68	36.2206	59.709	7.2407	1	358	2	5	15	37.5	90	180	180	358
Education	College Graduate	41	29.6829	54.536	8.5171	1	270	4	5	10	25	60	160	270	270
Education	Post Graduate	38	24.2632	36.541	5.9277	5	195	5	5	10	20	70	95	195	195
Census Region	Northeast	45	40.4889	58.498	8.7204	2	270	5	5	15	60	105	180	270	270
Census Region	Midwest	66	34.6364	56.367	6.9383	2	280	5	5	10	35	70	180	265	280
Census Region	South	88	34.8182	60.547	6.4543	1	358	3	5	10	30	95	180	245	358
Census Region	West	60	26.3167	33.054	4.2673	4	175	5	5	12.5	30	80	95.5	115	175
Day Of Week	Weekday	176	36.0227	57.142	4.3072	1	358	5	5	15	30	101	180	265	280
Day Of Week	Weekend	83	29.0482	45.78	5.025	1	245	3	5	10	30	79	95	195	245
Season	Winter	70	19.4857	27.784	3.3208	1	180	2	5	10	20	60	60	90	180
Season	Spring	70	36.5286	48.821	5.8352	2	245	5	5	15	50	105	150	180	245
Season	Summer	79	41.5316	66.665	7.5004	2	358	5	5	15	30	160	180	270	358
Season	Fall	40	38.725	64.266	10.161	2	280	5	5	12.5	39.5	90.5	222.5	280	280
Asthma	No	238	34.7731	55.08	3.5703	1	358	4	5	10	35	90	180	245	270
Asthma	Yes	21	22.619	34.735	7.5799	5	150	5	5	15	15	35	90	150	150
Angina	No	253	32.6324	51.888	3.2622	1	358	5	5	10	30	90	160	180	270
Angina	Yes	6	82.5	102.896	42.007	10	245	10	15	22.5	180	245	245	245	245
Bronchitis/emphysema	No	247	33.0607	52.903	3.3661	1	358	5	5	10	30	90	175	195	270
Bronchitis/emphysema	Yes	12	48.75	70.522	20.358	5	245	5	5	15	77.5	95	245	245	245

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-82. Statistics for 24-Hour Cumulative Number of Minutes Spent Washing, etc.

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		6029	23.9338	25.5661	0.3293	1	705	5	10	20	30	45	60	75	90
Gender	Male	2785	23.4154	28.8168	0.5461	1	705	5	10	15	30	45	55	65	90
Gender	Female	3242	24.3816	22.4026	0.3935	1	555	5	10	20	30	45	60	80	90
Gender	Refused	2	20	14.1421	10	10	30	10	10	20	30	30	30	30	30
Age (years)	*	110	25.9182	30.4752	2.9057	3	300	5	10	20	30	41.5	60	60	80
Age (years)	1-4	318	29.2673	16.5524	0.9282	5	125	10	15	30	30	50	60	75	85
Age (years)	5-11	407	26.5184	35.9626	1.7826	2	690	7	15	20	30	45	60	60	75
Age (years)	12-17	411	22.4088	14.6309	0.7217	1	90	5	10	18	30	42	50	60	60
Age (years)	18-64	4154	22.7939	21.6279	0.3356	1	555	5	10	15	30	45	60	75	90
Age (years)	> 64	629	27.7424	43.1415	1.7202	1	705	5	12	20	30	45	65	90	120
Race	White	4794	23.1558	26.1288	0.3774	1	705	5	10	15	30	45	60	70	90
Race	Black	664	28.7816	24.2016	0.9392	3	270	5	15	20	35	60	65	90	105
Race	Asian	110	24.4727	17.5493	1.6733	5	90	5	15	20	30	47.5	60	85	90
Race	Some Others	119	28.6471	27.4768	2.5188	3	240	8	15	25	30	50	60	100	150
Race	Hispanic	269	23.8364	19.8318	1.2092	1	210	5	10	20	30	45	60	75	90
Race	Refused	73	22.7945	20.46	2.3947	3	105	5	10	15	30	60	75	90	105
Hispanic	No	5476	23.8088	25.0872	0.339	1	705	5	10	20	30	45	60	75	90
Hispanic	Yes	465	25.7312	31.6942	1.4698	1	570	5	15	20	30	45	60	75	90
Hispanic	DK	30	23.8	15.0319	2.7444	5	60	10	15	17.5	30	50	60	60	60
Hispanic	Refused	58	21.3966	18.5708	2.4385	5	105	5	10	15	25	30	60	80	105
Employment	*	1116	25.9758	25.169	0.7534	1	690	7	15	20	30	45	60	60	75
Employment	Full Time	2975	22.0733	21.4639	0.3935	1	555	5	10	15	30	45	60	65	85
Employment	Part Time	518	22.3996	17.1137	0.7519	1	135	5	10	15	30	45	60	70	90
Employment	Not Employed	1378	26.9354	34.8572	0.939	1	705	5	10	20	30	50	60	90	120
Employment	Refused	42	21.9048	15.8865	2.4513	5	90	5	10	15	30	30	45	90	90
Education	*	1245	25.3888	24.2988	0.6887	1	690	6	15	20	30	45	60	60	80
Education	< High School	440	30.6	46.38	2.2111	1	570	5	15	20	30	50	60	90	240
Education	High School Graduate	1634	23.7699	20.0081	0.495	1	270	5	10	20	30	45	60	75	90
Education	< College	1228	22.8575	19.6959	0.5621	1	255	5	10	15	30	45	60	75	90
Education	College Graduate	844	22.5936	32.3617	1.1139	1	705	5	10	15	30	40	60	75	110
Education	Post Graduate	638	20.7618	18.4597	0.7308	2	240	5	10	15	30	45	60	65	85
Census Region	Northeast	1356	23.3274	21.7583	0.5909	1	360	5	10	15	30	45	60	75	90
Census Region	Midwest	1303	22.9294	27.432	0.76	1	570	5	10	15	30	45	60	70	85
Census Region	South	2136	25.2116	21.6627	0.4687	1	300	5	15	20	30	45	60	85	105
Census Region	West	1234	23.4489	32.6116	0.9284	1	705	5	10	15	30	45	60	65	85
Day Of Week	Weekday	4184	22.9441	25.7284	0.3978	1	705	5	10	15	30	45	60	65	90
Day Of Week	Weekend	1845	26.1783	25.0567	0.5833	1	555	5	15	20	30	50	60	90	100
Season	Winter	1688	24.6226	20.295	0.494	1	300	5	10	20	30	45	60	75	90
Season	Spring	1584	26.3295	38.468	0.9665	1	705	5	13	20	30	45	60	90	125
Season	Summer	1636	21.8264	15.5411	0.3842	1	150	5	10	15	30	40	55	60	75
Season	Fall	1121	22.587	20.8871	0.6238	1	340	5	10	15	30	45	60	75	90
Asthma	No	5559	23.9538	26.1095	0.3502	1	705	5	10	20	30	45	60	75	90
Asthma	Yes	437	24.2288	18.3575	0.8782	1	145	5	15	20	30	45	60	90	95
Asthma	DK	33	16.6667	8.7202	1.518	5	30	5	10	15	25	30	30	30	30
Angina	No	5866	23.9529	25.8029	0.3369	1	705	5	10	20	30	45	60	75	90
Angina	Yes	125	25.176	15.6613	1.4008	3	100	6	15	25	30	45	60	60	75
Angina	DK	38	16.8947	8.5481	1.3867	5	35	5	10	15	25	30	30	35	35
Bronchitis/Emphysema	No	5749	23.8629	25.8064	0.3404	1	705	5	10	20	30	45	60	75	90
Bronchitis/Emphysema	Yes	249	26.49	20.7475	1.3148	1	150	5	15	20	30	60	60	95	105
Bronchitis/Emphysema	DK	31	16.5484	8.0616	1.4479	5	30	5	10	15	25	30	30	30	30

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-83. Statistics for 24-Hour Cumulative Number of Minutes Spent Sleeping/Napping

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		9362	526.287	134.435	1.3894	30	1430	345	445	510	600	690	760	850	925
Gender	Male	4283	523.333	135.183	2.0656	30	1295	330	435	510	600	690	765	860	925
Gender	Female	5075	528.685	133.743	1.8774	30	1430	350	450	510	600	690	750	840	925
Gender	Refused	4	645	123.693	61.8466	540	780	540	540	630	750	780	780	780	780
Age (years)	*	185	502.281	125.424	9.2214	195	908	330	420	480	555	655	745	865	900
Age (years)	1-4	499	732.363	124.328	5.5657	270	1320	540	655	720	810	900	930	1005	1110
Age (years)	5-11	702	625.058	100.656	3.799	120	1110	480	570	630	680	725	780	840	875
Age (years)	12-17	588	563.719	110.83	4.5706	150	1015	395	484	550	630	705	750	810	900
Age (years)	18-64	6041	496.93	123.019	1.5828	30	1420	330	420	480	555	630	705	780	868
Age (years)	> 64	1347	517.084	117.477	3.2009	30	1430	345	450	510	570	660	720	780	860
Race	White	7576	523.598	129.545	1.4883	30	1430	350	445	510	600	690	750	840	900
Race	Black	940	541.303	162.726	5.3076	60	1415	315	424	530	630	737.5	822.5	940	1020
Race	Asian	156	537.09	118.072	9.4533	300	920	345	467.5	540	600	690	735	840	870
Race	Some Others	181	528.823	142.25	10.5734	60	905	300	420	525	630	720	769	810	842
Race	Hispanic	383	537.966	148.886	7.6077	60	1125	315	450	540	630	720	765	870	930
Race	Refused	126	523.421	143.695	12.8014	180	1140	330	420	510	600	720	780	870	930
Hispanic	No	8514	525.205	133.218	1.4438	30	1430	345	445	510	600	690	750	855	925
Hispanic	Yes	700	540.053	147.143	5.5615	60	1125	320	450	540	630	720	777.5	842.5	915
Hispanic	DK	45	527.467	139.269	20.7609	195	842	345	420	515	659	690	710	842	842
Hispanic	Refused	103	521.592	138.874	13.6837	240	930	330	420	510	590	720	780	865	870
Employment	*	1771	636.604	128.545	3.0545	120	1320	440	555	630	705	802	860	930	975
Employment	Full Time	4085	487.152	118.9	1.8603	30	1420	325	420	480	540	628	685	770	840
Employment	Part Time	798	502.764	117.416	4.1565	60	1005	330	435	495	570	645	720	780	860
Employment	Not Employed	2638	520.277	125.549	2.4444	30	1430	345	450	510	590	660	720	800	885
Employment	Refused	70	513.671	136.491	16.3138	210	930	320	420	490	570	696.5	780	900	930
Education	*	1966	625.586	133.976	3.0216	120	1420	420	540	628	699	790	855	926	975
Education	< High School	832	515.445	135.697	4.7045	30	1317	300	435	510	585	670	750	860	900
Education	High School Graduate	2604	505.367	123.006	2.4105	30	1430	330	420	495	570	659	720	780	840
Education	< College	1791	496.616	119.862	2.8323	60	1350	315	420	480	565	630	690	779	845
Education	College Graduate	1245	492.516	117.558	3.3317	75	1404	330	420	480	540	629	690	775	900
Education	Post Graduate	924	486.737	110.394	3.6317	105	1295	345	420	480	540	615	660	725	800
Census Region	Northeast	2068	523.129	133.703	2.9401	55	1420	345	435	510	600	690	760	860	930
Census Region	Midwest	2096	520.846	127.642	2.788	30	1215	330	440	510	598	690	745	840	870
Census Region	South	3234	529.019	135.651	2.3854	30	1430	345	450	510	600	699	765	855	925
Census Region	West	1964	530.918	139.966	3.1583	60	1404	345	449.5	510	600	690	769	862	940
Day Of Week	Weekday	6303	511.13	131.826	1.6605	30	1430	330	420	495	570	670	745	840	920
Day Of Week	Weekend	3059	557.517	134.392	2.4299	30	1420	360	480	540	630	720	780	870	925
Season	Winter	2514	534.911	134.719	2.6869	55	1404	355	450	520	600	700	780	870	930
Season	Spring	2431	526.839	130.49	2.6466	30	1175	345	445	510	600	690	750	840	900
Season	Summer	2533	527.653	139.46	2.771	30	1430	330	435	510	600	699	765	840	930
Season	Fall	1884	512.228	131.14	3.0213	60	1420	330	430	505	570	660	735	840	900
Asthma	No	8608	525.05	133.571	1.4397	30	1430	345	445	510	600	690	750	840	915
Asthma	Yes	692	540.061	143.571	5.4577	30	1404	330	450	537.5	617.5	715	780	900	945
Asthma	DK	62	544.194	140.992	17.906	300	1035	330	465	535	600	720	780	930	1035
Angina	No	9039	526.754	134.235	1.4119	30	1420	345	445	510	600	690	760	855	925
Angina	Yes	249	513.743	137.698	8.7263	60	1430	300	445	510	595	660	735	795	845
Angina	DK	74	511.392	146.297	17.0067	30	930	300	420	510	600	720	780	840	930
Bronchitis/Emphysema	No	8860	526.549	134.267	1.4264	30	1430	345	445	510	600	690	760	850	924
Bronchitis/Emphysema	Yes	432	521.713	138.459	6.6616	80	1110	300	420	510	600	705	765	840	930
Bronchitis/Emphysema	DK	70	521.243	131.857	15.7599	210	930	300	450	510	600	690	745	840	930

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-84. Statistics for 24-Hour Cumulative Number of Minutes Spent Attending Full Time School

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles 5	25	50	75	90	95	98	99
All		884	358.537	130.347	4.384	1	840	95	300	390	435	483	550	600	640
Gender	Male	468	369.301	123.186	5.6943	20	840	120	320	390	435	485	555	595	645
Gender	Female	416	346.428	137.1	6.7219	1	710	75	262.5	385	430	480	535	600	628
Age (years)	*	7	232.143	148.123	55.9853	10	495	10	180	210	320	495	495	495	495
Age (years)	1-4	56	365.036	199.152	26.6128	20	710	30	172.5	427.5	530	595	628	665	710
Age (years)	5-11	297	387.811	98.013	5.6873	60	645	170	360	390	435	485	555	600	630
Age (years)	12-17	271	392.28	84.986	5.1625	10	605	200	375	405	435	460	485	510	555
Age (years)	18-64	247	292.194	154.58	9.8357	1	840	60	180	289	400	480	535	645	785
Age (years)	> 64	6	203.333	147.366	60.1618	75	480	75	120	152.5	240	480	480	480	480
Race	White	665	362.913	128.548	4.9849	1	825	107	310	392	435	485	550	600	630
Race	Black	92	351.793	129.647	13.5166	40	710	70	286.5	387.5	432.5	465	526	645	710
Race	Asian	33	346.303	156.009	24.1576	90	840	120	225	365	435	500	565	840	840
Race	Some Others	29	337.828	148.115	27.5043	58	553	70	212	360	445	502	540	553	553
Race	Hispanic	58	345.259	124.048	16.2883	30	565	85	260	377.5	430	480	510	510	565
Race	Refused	7	285	157.03	59.3517	60	440	60	150	290	440	440	440	440	440
Hispanic	No	771	359.565	130.825	4.7116	1	840	100	300	390	435	483	550	600	645
Hispanic	Yes	103	353.107	126.354	12.4501	30	630	85	269	385	425	483	510	595	600
Hispanic	DK	4	315.5	167.773	83.8863	65	416	65	221	391	410	415	415	415	415
Hispanic	Refused	6	348.333	140.594	57.3973	150	445	150	185	435	440	445	445	445	445
Employment	*	608	386.497	107.308	4.3519	10	710	165	361	400	440	485	550	595	625
Employment	Full Time	49	206.551	133.583	19.0833	5	502	15	115	180	305	430	461	502	502
Employment	Part Time	89	304.652	134.791	14.2879	25	695	90	210	295	395	480	500	585	695
Employment	Not Employed	135	325.274	161.049	13.8609	1	840	60	215	340	420	500	605	785	825
Employment	Refused	3	270	147.224	85	185	440	185	185	440	440	440	440	440	440
Education	*	666	384.985	107.925	4.182	10	710	160	360	400	440	485	550	595	625
Education	< High School	14	267.071	129.31	34.5595	5	415	5	175	310	357	385	415	415	415
Education	High School Graduate	54	238.481	141.148	19.2079	58	785	60	125	212	330	400	480	480	785
Education	< College	100	303.35	170.598	17.0598	1	840	60	185	272.5	415	525.5	613.5	760	832.5
Education	College Graduate	24	238.417	145.897	29.781	25	565	30	135	200	360	430	460	565	565
Education	Post Graduate	26	302.808	144.149	28.2699	10	535	95	210	300	461	500	502	535	535
Census Region	Northeast	186	351.597	127.019	9.3135	60	825	120	268	375	420	483	520	600	785
Census Region	Midwest	200	358.07	123.934	8.7634	5	645	87.5	307.5	392.5	425	470	527.5	577.5	602
Census Region	South	322	373.879	139.7	7.7852	10	840	60	330	405	450	500	565	625	645
Census Region	West	176	338.335	120.469	9.0807	1	630	120	262.5	375	410	465	540	555	600
Day Of Week	Weekday	858	363.66	126.018	4.3022	1	840	120	310	390	435	485	550	600	640
Day Of Week	Weekend	26	189.5	158.415	31.0677	15	465	20	60	120	300	460	465	465	465
Season	Winter	302	375.113	118.518	6.8199	5	695	150	330	395	440	495	550	612	640
Season	Spring	287	353.359	133.705	7.8924	10	840	90	290	390	430	475	500	570	710
Season	Summer	125	332.448	142.088	12.7088	40	630	70	217	375	425	470	550	600	600
Season	Fall	170	357.018	132.833	10.1878	1	785	120	285	380	430	510	565	605	645
Asthma	No	784	357.969	130.658	4.6663	1	840	95	295	390	435	485	550	595	630
Asthma	Yes	96	362.958	127.895	13.0533	20	695	95	334	390	427.5	475	540	645	695
Asthma	DK	4	363.75	162.551	81.2756	120	450	120	280	442.5	447.5	450	450	450	450
Angina	No	875	358.57	130.546	4.4133	1	840	95	300	390	435	483	550	600	640
Angina	Yes	4	382.5	87.702	43.8511	255	455	255	330	410	435	455	455	455	455
Angina	DK	5	333.6	140.481	62.8248	120	460	120	270	378	440	460	460	460	460
Bronchitis/Emphysema	No	851	359.132	130.435	4.4713	1	840	95	300	390	435	485	550	600	640
Bronchitis/Emphysema	Yes	27	340.111	132.683	25.5349	30	605	60	305	365	435	450	460	605	605
Bronchitis/Emphysema	DK	6	357.167	121.491	49.5987	120	440	120	350	396.5	440	440	440	440	440

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-85. Statistics for 24-Hour Cumulative Number of Minutes Spent in Active Sports

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		1384	123.994	112.825	3.0328	1	1130	15	50	90	165	267	330	435	525
Gender	Male	753	136.781	120.777	4.4014	1	1130	20	60	105	180	285	375	500	558
Gender	Female	629	108.628	100.648	4.0131	1	1065	15	38	75	150	240	300	370	435
Gender	Refused	2	142.5	38.891	27.5	115	170	115	115	142.5	170	170	170	170	170
Age (years)	*	23	108.696	78.628	16.395	5	290	30	40	90	155	220	225	290	290
Age (years)	1-4	105	115.848	98.855	9.6472	10	630	30	45	90	159	250	330	345	390
Age (years)	5-11	247	148.87	126.627	8.0571	2	975	20	60	120	188	320	390	510	558
Age (years)	12-17	215	137.46	124.516	8.4919	5	1065	15	60	110	180	265	375	470	520
Age (years)	18-64	642	120.315	110.376	4.3562	1	1130	15	45	90	160	250	330	450	525
Age (years)	> 64	152	88.007	80.207	6.5056	1	380	15	30	60	120	220	285	315	330
Race	White	1139	125.994	116.168	3.4421	1	1130	15	50	90	165	270	340	452	530
Race	Black	109	113.431	96.788	9.2706	5	440	10	45	86	150	240	332	430	435
Race	Asian	30	89.933	79.214	14.4625	5	310	10	30	60	145	215	235	310	310
Race	Some Others	35	135.371	112.206	18.9663	15	553	20	60	105	195	270	330	553	553
Race	Hispanic	59	116.288	91.326	11.8897	1	520	15	45	115	145	240	305	345	520
Race	Refused	12	120	86.576	24.9924	40	300	40	60	95	130	290	300	300	300
Hispanic	No	1250	124.471	113.469	3.2094	1	1130	15	45	90	165	270	330	435	515
Hispanic	Yes	120	121.2	110.791	10.1138	1	630	15	50	90	147.5	240	335	520	553
Hispanic	DK	4	113.75	57.5	28.75	60	185	60	67.5	105	160	185	185	185	185
Hispanic	Refused	10	102	72.119	22.8059	40	290	40	60	82.5	105	215	290	290	290
Employment	*	561	137.073	120.838	5.1018	2	1065	20	60	110	180	285	370	452	558
Employment	Full Time	375	117.579	107.304	5.5412	5	1130	20	45	90	155	240	305	380	525
Employment	Part Time	87	116.207	87.553	9.3867	1	450	15	60	95	160	235	285	355	450
Employment	Not Employed	352	112.537	109.99	5.8625	1	600	10	30	70	150	270	330	475	520
Employment	Refused	9	99.444	77.235	25.7451	30	280	30	45	90	120	280	280	280	280
Education	*	610	137.702	121.227	4.9083	2	1065	20	60	110	180	285	370	470	558
Education	< High School	86	101.047	99.745	10.7558	10	570	15	30	60	135	225	270	510	570
Education	High School Graduate	233	116.794	116.802	7.652	1	1130	20	45	85	150	240	300	420	530
Education	< College	178	115.781	100.276	7.516	1	525	15	45	90	160	270	340	418	475
Education	College Graduate	165	116.218	97.925	7.6235	1	600	15	50	90	150	250	310	380	450
Education	Post Graduate	112	106.446	97.879	9.2487	5	375	10	40	60	142.5	270	330	360	375
Census Region	Northeast	333	131.967	129.1	7.0746	1	1130	15	60	100	170	275	345	485	558
Census Region	Midwest	254	116.882	101.859	6.3912	5	570	18	45	90	150	255	315	430	440
Census Region	South	479	119.476	108.664	4.965	1	975	15	45	90	160	265	330	410	462
Census Region	West	318	128.132	108.811	6.1018	1	625	25	55	92.5	175	295	330	500	525
Day Of Week	Weekday	902	115.47	97.84	3.2577	1	650	15	45	90	150	240	300	395	485
Day Of Week	Weekend	482	139.946	135.196	6.158	1	1130	20	59	100	180	300	380	500	565
Season	Winter	316	115.589	115.201	6.4806	1	1065	15	45	85	155	240	305	370	475
Season	Spring	423	130.775	105.017	5.1061	5	650	30	60	105	175	270	330	435	515
Season	Summer	425	129.541	115.123	5.5843	1	625	15	45	95	178	290	375	462	530
Season	Fall	220	112.314	118.325	7.9775	1	1130	15	43	77.5	143.5	240	290	460	565
Asthma	No	1266	122.461	109.594	3.0801	1	1130	15	45	90	162	266	330	430	515
Asthma	Yes	105	144.829	145.828	14.2314	1	1065	15	60	110	180	300	390	553	565
Asthma	DK	13	105	110.416	30.6239	30	450	30	60	60	90	165	450	450	450
Angina	No	1343	125.491	113.589	3.0995	1	1130	15	50	90	165	270	332	440	525
Angina	Yes	33	72.091	73.998	12.8815	5	330	5	30	50	60	180	275	330	330
Angina	DK	8	86.875	41.139	14.5448	40	155	40	60	75	115	155	155	155	155
Bronchitis/Emphysema	No	1331	124.101	113.19	3.1026	1	1130	15	50	90	165	267	330	435	520
Bronchitis/Emphysema	Yes	43	130	112.663	17.181	10	553	30	45	110	165	270	340	553	553
Bronchitis/Emphysema	DK	10	84	39.847	12.6007	40	155	40	60	75	105	147.5	155	155	155

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-86. Statistics for 24-Hour Cumulative Number of Minutes Spent in Outdoor Recreation

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		253	211.23	185.48	11.661	5	1440	20	60	165	300	480	574	670	690
Gender	Male	140	231.78	207.41	17.529	5	1440	17.5	67.5	177	330	502.5	600	690	735
Gender	Female	112	183.67	150.15	14.188	5	645	20	60	150	255	380	525	585	630
Gender	Refused	1	420	*	*	420	420	420	420	420	420	420	420	420	420
Age (years)	*	2	337.5	201.53	142.5	195	480	195	195	337.5	480	480	480	480	480
Age (years)	1-4	13	166.54	177.06	49.109	15	630	15	30	130	180	370	630	630	630
Age (years)	5-11	21	206.14	156.17	34.078	30	585	60	90	165	245	360	574	585	585
Age (years)	12-17	27	155.07	128.28	24.687	5	465	5	60	135	225	420	420	465	465
Age (years)	18-64	158	223.61	192.97	15.352	5	1440	30	80	172.5	310	505	585	690	690
Age (years)	> 64	32	211.06	206.59	36.521	5	735	5	30	171	375	495	600	735	735
Race	White	225	209.77	182.74	12.183	5	1440	20	60	165	300	460	570	670	690
Race	Black	16	233.88	231.3	57.825	5	690	5	42.5	150	450	585	690	690	690
Race	Asian	3	203.33	262.22	151.39	30	505	30	30	75	505	505	505	505	505
Race	Some Others	2	327.5	130.82	92.5	235	420	235	235	327.5	420	420	420	420	420
Race	Hispanic	4	77.5	53.929	26.964	20	150	20	42.5	70	112.5	150	150	150	150
Race	Refused	3	308.33	209.42	120.91	180	550	180	180	195	550	550	550	550	550
Hispanic	No	238	211.8	187.07	12.126	5	1440	20	60	165	300	480	585	690	690
Hispanic	Yes	12	175.5	149.06	43.029	15	511	15	70	150	255	340	511	511	511
Hispanic	Refused	3	308.33	209.42	120.91	180	550	180	180	195	550	550	550	550	550
Employment	*	60	177.1	150.02	19.368	5	630	12.5	60	147.5	230	395	519.5	585	630
Employment	Full Time	104	210.74	153.37	15.039	5	670	30	82.5	180	294	419	511	600	645
Employment	Part Time	19	205.26	204.04	46.81	30	690	30	60	150	180	570	690	690	690
Employment	Not Employed	68	244.44	245.03	29.715	5	1440	15	60	179.5	375	525	690	735	1440
Employment	Refused	2	187.5	10.607	7.5	180	195	180	180	187.5	195	195	195	195	195
Education	*	64	176.73	145.32	18.165	5	630	15	60	152.5	225	370	465	585	630
Education	< High School	22	259.41	177.97	37.943	5	600	30	105	247.5	380	525	600	600	600
Education	High School Graduate	59	238.2	228.99	29.812	15	1440	20	90	175	310	511	670	690	1440
Education	< College	54	218.09	172.21	23.434	5	690	25	65	172.5	345	460	550	570	690
Education	College Graduate	31	224.71	193.06	34.675	20	690	30	60	150	325	505	645	690	690
Education	Post Graduate	23	157.61	178.18	37.153	5	735	10	50	80	200	370	480	735	735
Census Region	Northeast	52	189.6	160.88	22.31	5	690	30	60	162.5	231.5	370	574	670	690
Census Region	Midwest	54	212.09	228.41	31.083	5	1440	20	60	177.5	280	419	600	735	1440
Census Region	South	84	217.26	175.27	19.123	5	645	15	62.5	150	347.5	495	525	600	645
Census Region	West	63	220.29	179.71	22.642	10	690	30	75	165	280	545	585	690	690
Day Of Week	Weekday	129	197.21	195.32	17.197	5	1440	15	60	150	275	465	525	670	735
Day Of Week	Weekend	124	225.81	174.26	15.649	5	690	20	85	180	310	480	600	690	690
Season	Winter	31	196.61	165.52	29.728	5	585	5	60	165	280	440	550	585	585
Season	Spring	75	198.85	161.67	18.668	5	690	25	75	180	270	465	545	670	690
Season	Summer	102	228.16	204.18	20.217	5	1440	30	75	179.5	325	459	585	690	690
Season	Fall	45	203.53	193.83	28.895	5	735	20	60	120	330	505	574	735	735
Asthma	No	232	208.24	187.69	12.323	5	1440	20	60	159	294	480	585	690	690
Asthma	Yes	19	250.21	166.64	38.23	15	570	15	80	255	350	525	570	570	570
Asthma	DK	2	187.5	10.607	7.5	180	195	180	180	187.5	195	195	195	195	195
Angina	No	245	206.82	184.85	11.81	5	1440	20	60	160	288	480	570	670	690
Angina	Yes	6	399.17	151.21	61.731	285	690	285	310	345	420	690	690	690	690
Angina	DK	2	187.5	10.607	7.5	180	195	180	180	187.5	195	195	195	195	195
Bronchitis/Emphysema	No	238	212.24	189.23	12.266	5	1440	20	60	165	300	495	585	690	690
Bronchitis/Emphysema	Yes	13	196.31	122.22	33.896	5	370	5	117	160	310	340	370	370	370
Bronchitis/Emphysema	DK	2	187.5	10.607	7.5	180	195	180	180	187.5	195	195	195	195	195

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-87. Statistics for 24-Hour Cumulative Number of Minutes Spent in Exercise

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		564	77.429	70.438	2.966	4	670	15	30	60	100	150	195	275	420
Gender	Male	262	84.676	75.778	4.6816	5	670	20	30	60	117	165	205	285	450
Gender	Female	302	71.142	64.927	3.7361	4	525	15	30	60	90	125	175	265	360
Age (years)	*	10	76.5	74.014	23.405	15	270	15	30	60	90	187.5	270	270	270
Age (years)	1-4	11	127.273	187.18	56.437	15	670	15	30	60	150	160	670	670	670
Age (years)	5-11	26	132.5	126.31	24.772	15	525	25	60	90	180	275	450	525	525
Age (years)	12-17	35	67.829	41.589	7.0298	15	180	20	30	60	100	120	150	180	180
Age (years)	18-64	407	77.572	63.597	3.1524	4	480	20	30	60	100	145	185	265	300
Age (years)	> 64	75	54.853	44.455	5.1332	6	195	10	25	40	70	120	150	193	195
Race	White	480	78.015	71.517	3.2643	4	670	15	30	60	100	150	194	285	450
Race	Black	34	74.706	44.67	7.6608	15	250	15	45	60	105	120	130	250	250
Race	Asian	10	46.3	25.038	7.9177	15	95	15	30	41.5	60	82.5	95	95	95
Race	Some Others	14	80.214	73.944	19.762	30	275	30	30	47.5	90	179	275	275	275
Race	Hispanic	19	63	60.658	13.916	15	265	15	30	45	60	160	265	265	265
Race	Refused	7	128.571	130.47	49.313	30	360	30	55	60	270	360	360	360	360
Hispanic	No	516	76.872	70.111	3.0865	4	670	15	30	60	99	145	193	275	420
Hispanic	Yes	38	76.553	59.516	9.6548	15	265	20	30	60	110	160	250	265	265
Hispanic	DK	3	65	69.462	40.104	20	145	20	20	30	145	145	145	145	145
Hispanic	Refused	7	128.571	130.47	49.313	30	360	30	55	60	270	360	360	360	360
Employment	*	72	99.014	111.6	13.153	15	670	20	30	60	120	180	275	525	670
Employment	Full Time	300	72.663	55.618	3.2111	5	460	20	30	60	90	130	179.5	240	291
Employment	Part Time	50	85.98	83.568	11.818	10	420	20	30	60	92	167.5	300	390	420
Employment	Not Employed	139	72.683	63.36	5.3742	4	480	10	30	60	90	135	195	240	265
Employment	Refused	3	113.333	135.77	78.387	30	270	30	30	40	270	270	270	270	270
Education	*	83	101.976	110.97	12.18	15	670	25	30	60	120	205	275	525	670
Education	< High School	21	58.238	66.062	14.416	10	300	10	28	30	60	90	165	300	300
Education	High School Graduate	124	81.048	63.037	5.6609	4	298	15	30	60	115	179	205	250	265
Education	< College	104	80.856	70.181	6.8818	15	480	20	30	60	112.5	150	170	240	420
Education	College Graduate	110	73.627	62.548	5.9637	5	460	20	30	60	98	130	180	285	297
Education	Post Graduate	122	60.861	38.368	3.4737	5	240	15	30	60	80	110	127	165	185
Census Region	Northeast	130	88.423	77.649	6.8102	10	450	15	30	60	120	200	240	297	420
Census Region	Midwest	101	63.564	44.33	4.411	10	300	15	30	60	89	115	120	170	215
Census Region	South	177	75.311	71.62	5.3833	5	525	15	30	60	90	150	185	298	480
Census Region	West	156	79.647	75.331	6.0313	4	670	20	30	60	104	130	183	270	460
Day Of Week	Weekday	426	73.096	63.872	3.0946	4	670	15	30	60	90	130	180	240	298
Day Of Week	Weekend	138	90.804	86.574	7.3697	6	525	15	30	60	120	200	265	420	460
Season	Winter	150	67.387	49.859	4.071	8	285	15	30	60	90	127.5	175	212.5	240
Season	Spring	140	74.871	55.395	4.6817	10	360	17.5	30	60	90	147.5	181	220	298
Season	Summer	192	93.188	91.294	6.5886	5	670	20	30	62.5	120	180	250	450	525
Season	Fall	82	63.268	63.277	6.9878	4	460	15	30	45	75	120	135	300	460
Asthma	No	523	76.625	70.247	3.0717	4	670	15	30	60	100	150	185	265	420
Asthma	Yes	37	78.243	51.454	8.459	20	275	20	45	65	100	120	200	275	275
Asthma	DK	4	175	167.03	83.517	10	360	10	35	165	315	360	360	360	360
Angina	No	553	77.259	69.366	2.9497	4	670	15	30	60	100	145	193	265	420
Angina	Yes	7	27.286	19.576	7.3992	6	60	6	10	25	45	60	60	60	60
Angina	DK	4	188.75	150.35	75.177	60	360	60	62.5	167.5	315	360	360	360	360
Bronchitis/Emphysema	No	542	77.098	69.465	2.9838	4	670	15	30	60	100	145	185	265	420
Bronchitis/Emphysema	Yes	17	64.588	60.635	14.706	10	275	10	30	50	63	120	275	275	275
Bronchitis/EMphysema	DK	5	157	149.57	66.888	15	360	15	60	80	270	360	360	360	360

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-88. Statistics for 24-Hour Cumulative Number of Minutes Spent in Food Preparation[a]

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		4278	52.37	52.8802	0.8085	1	555	5	20	35	65	115	150	210	265
Gender	Male	1341	37.8106	42.1779	1.1518	1	480	5	13	30	50	80	105	150	210
Gender	Female	2937	59.0177	55.862	1.0308	1	555	5	25	45	75	120	155	224	272
Age (years)	*	94	52	43.2171	4.4575	5	215	5	20	40	60	110	150	195	215
Age (years)	1-4	24	56.4583	60.3699	12.3229	5	240	5	22.5	30	75	150	180	240	240
Age (years)	5-11	60	25.1667	29.6877	3.8327	1	120	2	5	11	30	60	107	120	120
Age (years)	12-17	131	21.7023	37.6902	3.293	1	385	2	5	10	30	55	70	90	90
Age (years)	18-64	3173	52.0905	52.8766	0.9387	1	555	5	20	35	65	110	145	210	265
Age (years)	> 64	796	60.5025	54.669	1.9377	1	525	5	25	45	80	120	150	240	270
Race	White	3584	51.6205	53.2589	0.8896	1	555	5	19	35	65	110	145	210	265
Race	Black	377	57.0265	52.2893	2.693	1	390	5	20	40	75	120	150	210	240
Race	Asian	62	54	41.8224	5.3115	2	210	5	20	50	70	105	130	175	210
Race	Some Others	66	50.5909	53.2368	6.553	1	295	5	15	33.5	70	115	150	210	295
Race	Hispanic	132	59.2121	49.7947	4.3341	2	315	5	23.5	55	80	110	135	225	285
Race	Refused	57	53.1404	49.297	6.5295	2	210	5	20	40	60	120	180	195	210
Hispanic	No	3960	51.848	52.6035	0.8359	1	555	5	20	35	65	111	145	205	255
Hispanic	Yes	254	59.2244	56.7225	3.5591	2	420	5	20	45	75	120	155	240	315
Hispanic	DK	20	54.95	53.2002	11.8959	6	240	8	25	45	60	112.5	180	240	240
Hispanic	Refused	44	58.6136	53.2957	8.0346	2	210	5	27.5	37.5	80	150	180	210	210
Employment	*	210	27.1667	40.5487	2.7981	1	385	2	5	15	30	60	90	120	180
Employment	Full Time	1988	45.4874	46.6734	1.0468	1	480	5	15	30	60	90	130	180	240
Employment	Part Time	420	53.8643	55.3474	2.7007	2	520	5	20	40	65	105	125	205	255
Employment	Not Employed	1625	63.6357	57.7587	1.4328	1	555	5	29	45	90	125	170	240	275
Employment	Refused	35	53.5429	66.7803	11.2879	2	340	2	20	30	60	120	195	340	340
Education	*	291	31.7079	42.6211	2.4985	1	385	2	5	15	37	75	120	155	195
Education	< High School	450	61.2556	53.2321	2.5094	1	555	5	30	45	90	120	150	197	225
Education	High School Graduate	1449	58.8392	56.6653	1.4886	1	520	5	22	45	75	120	155	240	310
Education	< College	954	52.0073	52.2377	1.6913	1	525	5	20	34.5	65	110	150	210	245
Education	College Graduate	659	46.2018	48.0775	1.8728	1	515	5	15	30	60	100	125	180	224
Education	Post Graduate	475	46.1621	48.7374	2.2362	1	375	5	15	30	60	96	135	200	270
Census Region	Northeast	952	52.312	53.2054	1.7244	1	480	5	20	40	61	110	140	205	255
Census Region	Midwest	956	53.2333	51.8139	1.6758	1	520	5	20	35	65	120	150	210	265
Census Region	South	1453	53.3944	53.4621	1.4025	1	555	5	16	35	70	120	150	195	245
Census Region	West	917	49.9073	52.7204	1.741	1	515	5	15	31	60	105	135	225	265
Day Of Week	Weekday	2995	50.0571	49.979	0.9132	1	555	5	19	35	60	105	132	180	240
Day Of Week	Weekend	1283	57.7693	58.7687	1.6407	1	420	5	20	40	75	130	180	240	300
Season	Winter	1173	50.6206	48.6464	1.4204	1	480	5	18	35	65	110	135	195	240
Season	Spring	1038	54.3892	54.484	1.6911	1	525	5	20	38.5	70	120	150	224	265
Season	Summer	1148	51.3972	54.1854	1.5992	1	555	5	20	35	60	110	137	208	300
Season	Fall	919	53.5375	54.5349	1.7989	1	520	5	20	37	67	120	155	200	265
Asthma	No	3948	52.0433	53.1805	0.8464	1	555	5	20	35	65	110	145	210	265
Asthma	Yes	300	57.1433	49.4425	2.8546	1	272	5	20.5	45	75	120	160	199	240
Asthma	DK	30	47.6333	44.8119	8.1815	2	195	5	10	32.5	60	117.5	120	195	195
Angina	No	4091	52.1936	52.9733	0.8282	1	555	5	20	35	65	115	150	210	265
Angina	Yes	149	56.8054	48.2377	3.9518	1	340	5	25	45	80	120	135	180	210
Angina	DK	38	53.9737	60.4168	9.8009	2	240	2	10	32.5	60	120	240	240	240
Bronchitis/Emphysema	No	4024	52.0318	53.0963	0.837	1	555	5	20	35	65	110	145	210	265
Bronchitis/Emphysema	Yes	216	56.9074	46.6833	3.1764	3	240	5	20	45	85	120	150	198	210
Bronchitis/Emphysema	DK	38	62.3947	61.7031	10.0096	2	240	2	20	42.5	90	150	240	240	240

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-89. Statistics for 24-Hour Cumulative Number of Minutes Spent Doing Dishes/Laundry[a]

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		1865	61.7882	68.894	1.5953	1	825	10	20	30	80	150	190	255	335
Gender	Male	324	46.1142	50.179	2.7877	1	360	10	15	30	60	120	135	210	260
Gender	Female	1541	65.0837	71.793	1.8289	1	825	10	20	35	90	150	200	270	340
Age (years)	*	32	43.75	46.49	8.2183	10	225	10	15	30	55	90	150	225	225
Age (years)	1-4	10	49.3	66.545	21.0434	3	210	3	5	22.5	55	165	210	210	210
Age (years)	5-11	20	34.25	28.799	6.4395	1	92	1.5	15	30	58	82.5	91	92	92
Age (years)	12-17	47	32.6809	30.603	4.4639	2	150	5	10	20	45	65	90	150	150
Age (years)	18-64	1371	63.2356	67.104	1.8123	1	565	10	20	30	90	150	198	245	335
Age (years)	> 64	385	63.4416	79.738	4.0638	1	825	9	20	35	80	135	195	285	375
Race	White	1560	62.2173	69.493	1.7595	1	825	10	20	30	85	147.5	190	270	335
Race	Black	170	57.8471	60.026	4.6038	5	390	5	17	30	75	150	180	235	240
Race	Asian	19	56.7368	51.705	11.862	3	210	3	15	30	90	120	210	210	210
Race	Some Others	25	45.96	41.361	8.2721	5	150	10	15	30	80	120	120	150	150
Race	Hispanic	71	69.0141	75.626	8.9752	3	325	5	20	35	105	200	225	275	325
Race	Refused	20	60.75	104.217	23.3037	5	475	7.5	15	30	60	127.5	305	475	475
Hispanic	No	1732	61.3077	68.206	1.6389	1	825	10	20	30	80	140	180	250	335
Hispanic	Yes	112	68.2589	71.468	6.7531	3	325	5	20	30	103	180	225	270	275
Hispanic	DK	7	75.7143	66.548	25.1526	10	180	10	15	55	150	180	180	180	180
Hispanic	Refused	14	62.5	122.266	32.677	5	475	5	15	25	35	120	475	475	475
Employment	*	73	35.3288	37.364	4.3732	1	210	3	15	20	50	80	120	150	210
Employment	Full Time	776	56.9549	63.42	2.2766	2	565	10	20	30	70	125	180	240	335
Employment	Part Time	214	63.7243	64.791	4.429	2	340	10	15	30	90	151	205	240	275
Employment	Not Employed	789	68.5234	76.296	2.7162	1	825	10	25	40	90	158	210	285	375
Employment	Refused	13	58.2308	59.448	16.4878	10	180	10	10	30	100	150	180	180	180
Education	*	99	37.5253	38.655	3.885	1	210	3	10	30	55	90	120	180	210
Education	< High School	216	69.7824	69.956	4.7599	2	570	10	26.5	45	90	151	195	245	315
Education	High School Graduate	683	67.3616	76.746	2.9366	1	825	10	20	40	90	150	205	285	405
Education	< College	422	64.3033	72.277	3.5184	2	475	10	20	30	85	155	210	285	360
Education	College Graduate	262	51.4466	49.386	3.0511	1	260	10	15	30	70	120	158	200	225
Education	Post Graduate	183	53.6831	60.208	4.4507	3	360	5	15	30	60	120	190	245	330
Census Region	Northeast	471	59.5223	60.067	2.7677	2	565	10	20	35	75	135	180	210	285
Census Region	Midwest	405	60.3235	68.244	3.3911	1	480	5	15	30	75	150	198	240	285
Census Region	South	602	65.8156	75.076	3.0599	1	825	10	20	35	90	150	210	270	360
Census Region	West	387	59.814	69.562	3.536	2	570	10	15	30	70	150	210	270	345
Day Of Week	Weekday	1270	59.5402	68.798	1.9305	1	825	9	20	30	75	137.5	190	245	330
Day Of Week	Weekend	595	66.5866	68.909	2.825	5	565	10	20	40	90	150	210	275	340
Season	Winter	503	65.3479	79.461	3.543	1	825	10	20	30	90	150	210	300	360
Season	Spring	438	62.7763	67.751	3.2373	2	450	10	20	35	75	150	190	285	335
Season	Summer	510	61.7294	62.801	2.7809	2	565	10	20	40	90	140	180	240	270
Season	Fall	414	56.4903	63.125	3.1024	1	570	8	15	30	65	130	195	230	270
Asthma	No	1712	61.9533	69.64	1.6831	1	825	10	20	30	85	150	195	270	335
Asthma	Yes	147	60.8912	60.62	4.9999	2	375	10	20	30	76	151	180	250	255
Asthma	DK	6	36.6667	41.793	17.062	10	120	10	10	25	30	120	120	120	120
Angina	No	1790	62.0788	69.212	1.6359	1	825	10	20	30	85	150	190	255	335
Angina	Yes	66	54.7576	62.985	7.7529	5	335	9	25	30	60	120	200	315	335
Angina	DK	9	55.5556	44.19	14.7301	10	120	10	30	30	90	120	120	120	120
Bronchitis/Emphysema	No	1746	60.5063	65.326	1.5634	1	565	10	20	30	80	140	190	250	325
Bronchitis/Emphysema	Yes	112	82.7143	109.505	10.3473	3	825	5	20	57.5	103	170	240	360	570
Bronchitis/Emphysema	DK	7	46.7143	51.403	19.4284	2	120	2	10	30	120	120	120	120	120

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.

a Includes food cleanup, clothes care.
Source: Tsang and Klepeis, 1996.

Table 15-90. Statistics for 24-Hour Cumulative Number of Minutes Spent in Housekeeping[a]

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		1943	118.833	113.369	2.5719	1	810	10	40	90	165	270	345	465	540
Gender	Male	370	109.419	116.541	6.0587	1	810	10	30	60	150	270	360	425	560
Gender	Female	1573	121.047	112.533	2.8374	1	790	15	45	90	165	270	345	465	540
Age (years)	*	47	146.043	121.3	17.6935	10	480	10	45	115	240	300	375	480	480
Age (years)	1-4	11	74.091	69.42	20.9308	10	270	10	40	60	90	90	270	270	270
Age (years)	5-11	54	42.852	34.096	4.6399	1	180	5	20	30	53	80	120	150	180
Age (years)	12-17	72	78.111	75.546	8.9031	1	300	5	27.5	60	105	210	240	285	300
Age (years)	18-64	1316	120.422	113.654	3.133	1	810	15	40	90	165	270	360	465	525
Age	> 64	443	128.217	118.925	5.6503	3	790	10	55	90	180	270	345	540	570
Race	White	1649	119.056	112.184	2.7626	1	790	10	40	90	165	265	340	465	540
Race	Black	137	116.555	109.394	9.3462	1	490	5	30	90	150	300	358	480	484
Race	Asian	32	98.75	100.467	17.7602	15	425	15	30	60	127.5	265	345	425	425
Race	Some Others	26	82.423	56.436	11.0681	5	210	15	40	60	115	185	190	210	210
Race	Hispanic	71	112.648	129.335	15.3492	5	660	8	30	60	135	270	465	518	660
Race	Refused	28	189.286	176.198	33.2983	10	810	20	52.5	147.5	247.5	420	465	810	810
Hispanic	No	1771	117.443	110.586	2.6278	1	790	10	40	90	165	265	335	425	525
Hispanic	Yes	134	121.657	129.578	11.1939	5	660	10	35	85	135	270	470	540	658
Hispanic	DK	15	146.867	127.912	33.0268	10	510	10	30	120	210	240	510	510	510
Hispanic	Refused	23	191.087	180.296	37.5944	10	810	20	45	150	255	390	420	810	810
Employment	*	138	65.565	68.838	5.8599	1	375	5	25	45	80	180	240	285	300
Employment	Full Time	673	106.579	102.376	3.9463	1	655	10	30	70	145	240	325	413	490
Employment	Part Time	193	124.72	117.48	8.4564	1	660	15	45	90	180	270	390	480	540
Employment	Not Employed	925	132.681	119.442	3.9272	3	790	15	55	105	180	295	370	484	600
Employment	Refused	14	236.786	208.221	55.6495	10	810	10	120	182.5	300	430	810	810	810
Education	*	171	82.164	96.944	7.4135	1	810	5	30	45	105	220	270	300	375
Education	< High School	246	140.736	125.356	7.9924	3	715	10	60	120	180	300	400	540	660
Education	High School Graduate	677	125.078	120.495	4.631	2	790	15	45	90	175	270	375	490	610
Education	< College	433	112.898	100.145	4.8127	1	570	10	40	90	150	240	320	420	470
Education	College Graduate	245	107.302	102.244	6.5321	1	585	15	30	60	150	240	328	405	465
Education	Post Graduate	171	130.813	117.998	9.0236	5	655	15	60	90	180	280	390	495	540
Census Region	Northeast	464	119.235	116.368	5.4022	2	790	10	35	90	165	245	330	480	655
Census Region	Midwest	413	117.855	112.595	5.5405	1	715	10	34	88	165	255	345	480	525
Census Region	South	648	119.912	116.159	4.5631	1	810	10	40	90	165	285	370	435	540
Census Region	West	418	117.679	106.559	5.212	5	720	15	40	90	165	255	340	420	470
Day Of Week	Weekday	1316	113.21	111.913	3.085	1	790	10	30	75	150	255	330	470	550
Day Of Week	Weekend	627	130.635	115.567	4.6153	1	810	15	55	90	180	290	370	435	525
Season	Winter	470	111.4	100.617	4.6411	1	810	10	45	85	160	240	290	390	480
Season	Spring	451	122.621	114.024	5.3692	3	720	15	40	90	180	270	360	465	540
Season	Summer	563	111.803	114.5	4.8256	1	690	10	30	75	135	255	365	465	610
Season	Fall	459	131.344	122.391	5.7127	1	790	15	45	90	180	300	390	480	560
Asthma	No	1789	118.529	112.075	2.6497	1	790	10	40	90	165	270	345	465	540
Asthma	Yes	140	115.664	115.811	9.7878	5	690	10	36.5	67	150	277.5	377.5	470	480
Asthma	DK	14	189.286	208.565	55.7414	10	810	10	45	122.5	255	340	810	810	810
Angina	No	1853	117.731	112.346	2.6099	1	790	13	40	90	160	265	345	465	540
Angina	Yes	75	122.88	103.762	11.9814	5	394	5	30	90	210	270	320	370	394
Angina	DK	15	234.667	204	52.6725	10	810	10	120	240	300	480	810	810	810
Bronchitis/Emphysema	No	1816	118.073	112.929	2.65	1	790	10	40	90	160	270	355	465	540
Bronchitis/Emphysema	Yes	107	118.701	102.942	9.9518	5	480	10	30	90	180	255	290	465	470
Bronchitis/Emphysema	DK	20	188.5	176.435	39.452	5	810	7.5	85	155	240	320	575	810	810

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.

a Includes cleaning house, other repairs, and household work.
Source: Tsang and Klepeis, 1996.

Table 15-91. Statistics for 24-Hour Cumulative Number of Minutes Spent in Bathing (a)

Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		6416	26.0842	29.6711	0.3704	1	705	5	10	20	30	50	60	90	120
Gender	Male	2930	24.2416	31.0251	0.5732	1	705	5	10	20	30	45	60	75	100
Gender	Female	3484	27.6372	28.4021	0.4812	1	555	5	10	20	30	60	75	105	135
Gender	Refused	2	20	14.1421	10	10	30	10	10	20	30	30	30	30	30
Age (years)	*	114	29.0088	38.9855	3.6513	2	300	5	10	20	30	60	60	105	275
Age (years)	1-4	330	29.9727	19.4226	1.0692	1	170	10	15	30	31	54.5	60	85	90
Age (years)	5-11	438	25.7511	35.3164	1.6875	1	690	5	15	20	30	45	60	60	75
Age (years)	12-17	444	23.1216	18.7078	0.8878	1	210	5	10	18	30	45	60	65	90
Age (years)	18-64	4383	25.4312	27.1553	0.4102	1	555	5	10	20	30	50	60	90	120
Age (years)	> 64	707	29.9123	44.502	1.6737	1	705	5	10	20	30	60	85	120	150
Race	White	5117	25.0233	28.5494	0.3991	1	705	5	10	20	30	45	60	90	115
Race	Black	707	31.4851	31.5524	1.1866	1	295	5	15	22	40	60	80	120	170
Race	Asian	112	28.1786	29.7661	2.8126	5	270	5	15	20	30	60	75	90	90
Race	Some Others	122	30.2213	27.2726	2.4691	1	240	8	15	27.5	35	50	60	100	150
Race	Hispanic	280	28.7786	39.2648	2.3465	2	546	5	15	20	31.5	54.5	62.5	90	155
Race	Refused	78	27.5769	40.3235	4.5657	3	275	5	10	15	30	60	100	195	275
Hispanic	No	5835	25.8833	28.5411	0.3736	1	705	5	10	20	30	50	60	90	120
Hispanic	Yes	486	28.751	40.5582	1.8398	2	570	5	15	20	30	50	60	90	140
Hispanic	DK	33	25.7576	16.7724	2.9197	5	65	10	15	20	30	55	65	65	65
Hispanic	Refused	62	24.2581	37.2268	4.7278	3	275	5	10	15	25	30	60	105	275
Employment	*	1189	26.1329	26.4288	0.7665	1	690	5	15	20	30	45	60	75	90
Employment	Full Time	3095	24.1499	25.0984	0.4511	1	555	5	10	15	30	45	60	85	110
Employment	Part Time	558	24.7616	23.2468	0.9841	1	295	5	10	20	30	46	60	90	110
Employment	Not Employed	1528	30.3161	39.9341	1.0216	1	705	5	10	20	30	60	85	120	155
Employment	Refused	46	30.4348	45.176	6.6608	3	275	5	10	15	30	55	105	275	275
Education	*	1330	25.6759	26.4094	0.7242	1	690	5	15	20	30	45	60	75	90
Education	< High School	474	33.3122	53.0129	2.435	1	570	5	15	20.5	33	60	85	110	300
Education	High School Graduate	1758	25.822	23.5699	0.5621	1	270	5	10	20	30	50	60	90	120
Education	< College	1288	26.4099	27.0338	0.7533	1	255	5	10	20	30	55	75	105	150
Education	College Graduate	897	25.3813	34.8197	1.1626	1	705	5	10	15	30	50	65	105	135
Education	Post Graduate	669	22.7788	23.0661	0.8918	1	257	5	10	15	30	45	60	85	100
Census Region	Northeast	1444	25.0478	24.2512	0.6382	1	360	5	10	20	30	50	60	90	105
Census Region	Midwest	1402	24.602	30.2958	0.8091	1	570	5	10	15	30	45	60	85	115
Census Region	South	2266	27.4086	26.0895	0.5481	1	300	5	15	20	30	55	65	100	135
Census Region	West	1304	26.5238	38.8092	1.0747	1	705	5	10	20	30	48	60	90	133
Day Of Week	Weekday	4427	25.2896	30.2913	0.4553	1	705	5	10	20	30	45	60	90	115
Day Of Week	Weekend	1989	27.8527	28.1689	0.6316	1	555	5	15	20	30	60	68	100	130
Season	Winter	1796	26.858	26.9167	0.6351	1	546	5	11	20	30	50	60	90	110
Season	Spring	1645	28.5854	41.0512	1.0121	1	705	5	15	20	30	60	70	115	150
Season	Summer	1744	23.9295	20.7343	0.4965	1	270	5	10	19.5	30	45	60	80	100
Season	Fall	1231	24.6653	25.5885	0.7293	1	340	5	10	17	30	50	60	95	120
Asthma	No	5912	26.0658	30.0373	0.3907	1	705	5	10	20	30	50	60	90	120
Asthma	Yes	468	26.5427	22.9543	1.0611	1	210	5	15	20	30	46	60	100	120
Asthma	DK	36	23.1389	44.0728	7.3455	3	275	5	10	15	25	30	30	275	275
Angina	No	6243	26.0042	29.0175	0.3673	1	705	5	10	20	30	50	60	90	120
Angina	Yes	131	31.145	49.5427	4.3286	5	546	5	15	25	30	50	60	105	131
Angina	DK	42	22.1905	40.9153	6.3134	3	275	5	10	15	25	30	30	275	275
Bronchitis/Emphysema	No	6112	26.0545	29.857	0.3819	1	705	5	10	20	30	50	60	90	120
Bronchitis/Emphysema	Yes	268	27.2463	22.162	1.3538	1	150	5	13	20	30	60	60	95	131
Bronchitis/Emphysema	DK	36	22.4722	44.0859	7.3477	3	275	5	10	15	22.5	30	30	275	275

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.

a Includes baby and child care, personal care services, washing and personal hygiene (bathing, showering, etc.)
Source: Tsang and Klepeis, 1996.

Table 15-92. Statistics for 24-Hour Cumulative Number of Minutes Spent in Yardwork/Maintenance (a)

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		1414	147.69	148.216	3.942	1	1080	5	45	100	205	360	470	570	655
Gender	Male	804	174.84	160.191	5.649	2	1080	10	60	120	249.5	415	510	600	670
Gender	Female	610	111.91	121.979	4.939	1	900	5	30	75	145	277.5	360	465	510
Age (years)	*	20	181.85	170.345	38.09	5	600	10	60	116	240	467.5	570	600	600
Age (years)	1-4	12	93.167	80.805	23.326	5	285	5	30	82.5	132.5	178	285	285	285
Age (years)	5-11	26	96.154	85.532	16.774	5	330	5	39	60	120	210	300	330	330
Age (years)	12-17	54	116	116.758	15.889	3	505	5	30	90	150	285	385	450	505
Age (years)	18-64	1015	150.22	154.486	4.849	1	1080	5	35	100	210	360	480	585	670
Age (years)	> 64	287	149.3	133.834	7.9	2	810	10	60	120	205	330	420	525	630
Race	White	1249	151.52	150.205	4.25	1	1080	5	45	105	210	360	480	575	660
Race	Black	77	114.53	127.124	14.487	2	750	5	20	65	165	285	355	405	750
Race	Asian	13	140	150.111	41.633	5	425	5	15	85	210	360	425	425	425
Race	Some Others	26	117.23	110.647	21.7	5	380	5	30	88	178	290	360	380	380
Race	Hispanic	37	102.11	113.508	18.661	5	565	5	20	60	120	255	300	565	565
Race	Refused	12	177.08	190.793	55.077	30	600	30	60	97.5	215	510	600	600	600
Hispanic	No	1331	148.69	147.962	4.056	1	1080	5	45	105	209	360	465	570	660
Hispanic	Yes	65	106.17	127.4	15.802	5	575	5	20	60	120	255	300	565	575
Hispanic	DK	8	248.75	206.48	73.002	5	585	5	90	190	420	585	585	585	585
Hispanic	Refused	10	203.5	200.056	63.263	60	600	60	60	120	300	555	600	600	600
Employment	*	92	106.82	101.779	10.611	3	505	5	31.5	77	147.5	240	330	450	505
Employment	Full Time	664	146.73	155.488	6.034	1	1080	5	35	90	202.5	360	490	575	690
Employment	Part Time	121	134.51	130.79	11.89	2	554	5	30	90	200	317	390	490	495
Employment	Not Employed	526	157.76	147.022	6.41	2	810	10	60	120	220	370	480	595	655
Employment	Refused	11	211.55	198.724	59.918	2	600	2	60	120	375	465	600	600	600
Education	*	105	113.47	113.854	11.111	2	600	5	33	79	150	285	360	450	505
Education	< High School	160	158.46	164.764	13.026	2	900	7.5	45	111	210	412.5	492.5	595	810
Education	High School Graduate	465	151.39	146.985	6.816	3	840	5	50	110	210	345	460	575	690
Education	< College	305	152.84	157.011	8.99	2	1080	5	45	95	210	360	473	600	630
Education	College Graduate	211	145.36	138.849	9.559	1	625	5	40	105	225	330	465	525	533
Education	Post Graduate	168	142.2	147.773	11.401	2	690	5	30	90	180	340	470	570	630
Census Region	Northeast	291	140.5	139.641	8.186	3	840	5	40	90	200	330	450	525	600
Census Region	Midwest	314	145.1	143.219	8.082	2	780	10	55	95	195	360	445	560	655
Census Region	South	438	152.69	156.36	7.471	2	1080	5	45	111	205	375	480	585	635
Census Region	West	371	149.63	149.345	7.754	1	750	5	40	104	210	350	480	575	690
Day Of Week	Weekday	878	140.86	140.753	4.75	1	810	5	40	92.5	190	345	460	560	625
Day Of Week	Weekend	536	158.88	159.193	6.876	2	1080	5	50	116.5	225	380	510	600	690
Season	Winter	289	139.35	151.711	8.924	1	690	5	30	75	195	360	480	565	600
Season	Spring	438	162.23	150.477	7.19	3	900	10	60	120	220	360	480	570	700
Season	Summer	458	137.92	140.291	6.555	2	1080	5	40	90	180	310	440	555	630
Season	Fall	229	149.97	153.398	10.137	2	720	5	40	97	210	390	480	600	655
Asthma	No	1311	146.95	147.084	4.062	1	1080	5	45	100	200	355	465	570	635
Asthma	Yes	98	149.27	155.758	15.734	5	670	5	30	90	210	445	480	670	670
Asthma	DK	5	312	230.043	102.879	60	600	60	120	300	480	600	600	600	600
Angina	No	1360	145.34	145.05	3.933	1	900	5	45	100	200	355	465	570	655
Angina	Yes	42	192.62	203.363	31.38	5	1080	15	60	142.5	255	465	485	1080	1080
Angina	DK	12	257.08	216.716	62.56	5	600	5	52.5	232.5	472.5	510	600	600	600
Bronchitis/Emphysema	No	1352	148.48	148.534	4.04	1	1080	5	45	105	205	360	470	570	660
Bronchitis/Emphysema	Yes	57	114.65	121.376	16.077	5	460	5	30	60	135	340	375	405	460
Bronchitis/Emphysema	DK	5	312	230.043	102.879	60	600	60	120	300	480	600	600	600	600

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.

a Includes car repair services, other repairs services, outdoor cleaning, car repair maintenance, other repairs, plant care, other household work, domestic crafts, domestic arts.

Source: Tsang and Klepeis, 1996.

Table 15-93. Statistics for 24-Hour Cumulative Number of Minutes Spent in Sports/Exercise (a)

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		1852	116.322	107.947	2.5084	1	1130	17	45	85	150	253	316	420	515
Gender	Male	958	130.669	117.216	3.7871	1	1130	20	55	97.5	175	270	355	475	558
Gender	Female	892	100.854	94.795	3.174	1	1065	15	35	65	130	230	285	370	435
Gender	Refused	2	142.5	38.891	27.5	115	170	115	115	143	170	170	170	170	170
Age (years)	*	32	102.031	79.32	14.022	5	290	15	40	80	137.5	225	270	290	290
Age (years)	1-4	114	118.982	109.17	10.2247	10	670	25	45	90	159	250	330	390	630
Age (years)	5-11	262	153.496	130.58	8.0673	2	975	20	60	120	200	330	415	525	580
Age (years)	12-17	237	134.717	122.228	7.9396	5	1065	15	60	110	179	265	360	470	520
Age (years)	18-64	992	109.692	100.801	3.2004	1	1130	20	45	75	145	240	300	405	510
Age (years)	> 64	215	82.051	75.995	5.1828	1	380	10	30	60	110	195	270	310	316
Race	White	1541	117.524	110.622	2.818	1	1130	20	45	85	150	255	320	435	525
Race	Black	135	110.4	93.06	8.0094	5	440	15	45	85	150	220	340	430	435
Race	Asian	37	85.432	73.897	12.1486	5	310	10	30	60	95	210	235	310	310
Race	Some Others	47	124.702	106.397	15.5196	15	553	30	40	85	180	270	325	553	553
Race	Hispanic	74	108.892	89.177	10.3667	1	520	15	45	90	145	225	270	345	520
Race	Refused	18	130	111.698	26.3275	30	420	30	60	82.5	140	300	420	420	420
Hispanic	No	1678	116.451	108.276	2.6432	1	1130	17	45	85	150	253	316	430	510
Hispanic	Yes	151	115.583	106.428	8.661	1	630	15	45	90	145	240	325	415	553
Hispanic	DK	7	92.857	62.773	23.726	20	185	20	30	75	145	185	185	185	185
Hispanic	Refused	16	120	110	27.5	30	420	30	60	70	122.5	290	420	420	420
Employment	*	606	138.658	123.665	5.0235	2	1065	20	60	110	180	285	375	470	580
Employment	Full Time	644	102.315	94.146	3.7099	5	1130	20	45	67.5	130	225	280	360	405
Employment	Part Time	125	115.272	91.33	8.1688	1	450	15	45	90	160	220	300	420	420
Employment	Not Employed	465	107.239	104.105	4.8277	1	600	10	31	70	135	250	310	462	515
Employment	Refused	12	102.917	87.917	25.3794	30	280	30	40	75	130	270	280	280	280
Education	*	663	139.46	123.813	4.8085	2	1065	20	60	110	180	285	383	510	580
Education	< High School	103	96.243	97.046	9.5622	10	570	15	30	60	135	210	270	305	510
Education	High School Graduate	341	109.276	106.483	5.7664	1	1130	15	40	75	150	235	285	405	485
Education	< College	265	110.068	94.836	5.8257	1	525	17	45	80	145	240	305	418	475
Education	College Graduate	258	105.717	92.204	5.7404	1	600	20	45	70	130	240	297	343	450
Education	Post Graduate	222	87.149	79.704	5.3494	5	375	15	30	60	105	208	290	355	360
Census Region	Northeast	437	126.865	122.905	5.8793	1	1130	15	50	95	165	270	338	470	558
Census Region	Midwest	341	105.889	94.38	5.111	5	570	20	40	75	135	240	280	430	438
Census Region	South	627	112.774	104.846	4.1872	1	975	15	45	80	150	250	313	410	462
Census Region	West	447	118.951	105.629	4.9961	4	670	22	48	85	160	250	325	475	525
Day Of Week	Weekday	1264	107.154	94.026	2.6447	1	670	15	45	75	140	235	285	375	485
Day Of Week	Weekend	588	136.029	130.966	5.401	1	1130	20	51.5	90	180	297	380	462	558
Season	Winter	448	104.094	104.108	4.9187	1	1065	15	40	70	130	230	280	360	420
Season	Spring	533	123.452	100.904	4.3706	5	650	25	60	90	162	267	330	420	500
Season	Summer	579	125.988	114.358	4.7525	1	670	15	45	90	160	283	360	470	545
Season	Fall	292	102.901	110.416	6.4616	4	1130	15	40	60	127.5	225	275	460	565
Asthma	No	1699	114.927	105.239	2.5532	1	1130	17	45	85	150	250	310	420	510
Asthma	Yes	137	132.131	134.238	11.4687	1	1065	15	60	90	165	265	390	553	565
Asthma	DK	16	129.063	134.786	33.6966	10	450	10	60	60	152.5	420	450	450	450
Angina	No	1801	117.3	108.373	2.5537	1	1130	20	45	89	150	254	316	430	515
Angina	Yes	40	68	70.942	11.217	5	330	5.5	30	47.5	60	172.5	235	330	330
Angina	DK	11	131.818	116.023	34.9823	40	420	40	60	90	155	270	420	420	420
Bronchitis/Emphysema	No	1782	116.226	107.987	2.5581	1	1130	17	45	85	150	250	315	430	515
Bronchitis/Emphysema	Yes	56	119.429	108.516	14.501	10	553	20	42.5	75	172.5	270	340	410	553
Bronchitis/Emphysema	DK	14	116.071	108.187	28.9143	15	420	15	60	85	140	270	420	420	420

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.

a Includes active sports, exercise, hobbies.
Source: Tsang and Klepeis, 1996.

Table 15-94. Statistics for 24-Hour Cumulative Number of Minutes Eating or Drinking

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles 5	25	50	75	90	95	98	99
All		8627	74.8821	54.8419	0.5904	1	900	15	35	60	96	140	175	215	270
Gender	Male	3979	75.8316	56.2313	0.8914	1	900	15	39	60	96	140	180	210	270
Gender	Female	4644	74.0814	53.6353	0.7871	2	640	15	34	60	98	140	170	225	270
Gender	Refused	4	60	21.2132	10.6066	30	75	30	45	67.5	75	75	75	75	75
Age (years)	*	157	75.3248	50.1255	4.0005	10	315	15	30	65	100	145	150	195	285
Age (years)	1-4	492	93.4837	52.8671	2.3834	2	345	20	60	90	120	160	190	225	270
Age (years)	5-11	680	68.5412	38.9518	1.4937	5	255	15	40	65	90	120	142.5	165	195
Age (years)	12-17	538	55.8587	34.9903	1.5085	2	210	10	30	50	75	105	125	150	170
Age (years)	18-64	5464	71.8673	55.1199	0.7457	1	900	15	30	60	90	135	170	220	270
Age (years)	> 64	1296	91.7014	62.6665	1.7407	5	750	20	50	80	120	165	200	270	295
Race	White	7049	77.0058	55.6564	0.6629	1	900	15	40	64	100	145	180	225	270
Race	Black	808	59.9047	46.5954	1.6392	2	505	15	30	50	75	119	140	200	225
Race	Asian	148	80.4054	47.8283	3.9315	2	305	15	45	72.5	106.5	150	160	200	200
Race	Some Others	168	66.0417	52.0928	4.019	7	525	15	30	59.5	83	120	135	190	200
Race	Hispanic	345	68.7043	51.8926	2.7938	2	435	12	30	60	90	125	165	195	225
Race	Refused	109	74.2477	60.8473	5.8281	8	410	20	30	60	90	130	180	290	315
Hispanic	No	7861	75.5599	55.2306	0.6229	1	900	15	35	60	100	140	175	220	270
Hispanic	Yes	639	68.2754	50.1994	1.9859	2	435	15	30	60	90	120	155	195	225
Hispanic	DK	41	60.4146	37.1039	5.7947	5	150	15	30	55	90	120	130	150	150
Hispanic	Refused	86	68.9186	55.4732	5.9818	8	410	15	30	60	90	115	155	210	410
Employment	*	1695	72.2083	44.9086	1.0908	2	345	15	40	65	90	133	150	195	210
Employment	Full Time	3684	70.6097	55.0998	0.9078	1	900	15	30	60	90	135	165	225	270
Employment	Part Time	715	72.2112	55.4476	2.0736	2	509	15	30	60	90	135	170	230	260
Employment	Not Employed	2472	83.9498	59.1281	1.1892	2	750	15	45	75	110	150	185	235	285
Employment	Refused	61	71.0492	60.9843	7.8082	8	385	15	30	55	90	120	145	235	385
Education	*	1867	70.85	45.3955	1.0506	2	375	15	38	60	90	130	150	190	210
Education	< High School	758	72.3206	57.4352	2.0861	2	460	15	30	60	90	135	180	230	315
Education	High School Graduate	2363	74.8565	57.1005	1.1746	1	900	15	35	60	96	140	175	220	270
Education	< College	1612	73.9237	56.5324	1.408	2	525	15	30	60	90	145	175	230	275
Education	College Graduate	1160	78.4991	55.4196	1.6272	1	640	15	40	65	105	145	180	220	265
Education	Post Graduate	867	82.8166	59.6871	2.0271	2	750	15	40	70	110	150	185	240	270
Census Region	Northeast	1916	78.2766	59.1627	1.3516	1	750	15	37	65	102.5	145	180	240	285
Census Region	Midwest	1928	75.8117	51.3702	1.1699	1	435	15	40	64	100	140	175	210	255
Census Region	South	2960	71.3916	55.0903	1.0126	2	900	15	30	60	90	135	165	210	270
Census Region	West	1823	75.9989	52.9755	1.2407	2	500	15	35	60	100	150	180	210	240
Day Of Week	Weekday	5813	71.2069	52.0446	0.6826	1	900	15	33	60	90	130	165	210	250
Day Of Week	Weekend	2814	82.4741	59.5052	1.1217	2	630	15	40	70	110	150	190	240	297
Season	Winter	2332	76.0931	56.4379	1.1687	2	640	15	38.5	65	95.5	140	175	240	275
Season	Spring	2222	76.3096	55.207	1.1712	1	630	15	35	60	100	145	178	220	275
Season	Summer	2352	73.4787	53.2506	1.098	1	750	15	35	60	95	135	170	210	260
Season	Fall	1721	73.3161	54.2737	1.3083	2	900	15	30	60	95	140	175	210	232
Asthma	No	7937	75.2016	54.8093	0.6152	1	900	15	35	60	100	140	175	215	270
Asthma	Yes	635	71.3732	55.0353	2.184	2	460	15	30	60	90	133	170	225	285
Asthma	DK	55	69.2909	56.5874	7.6302	8	335	15	30	60	90	120	210	215	335
Angina	No	8318	74.5795	54.4372	0.5969	1	900	15	35	60	95	140	175	210	265
Angina	Yes	243	85.0288	63.5335	4.0757	2	500	15	45	75	115	160	180	285	330
Angina	DK	66	75.6667	67.304	8.2845	5	435	15	30	60	90	150	195	215	435
Bronchitis/Emphysema	No	8169	74.6605	54.3234	0.601	1	900	15	35	60	95	140	170	210	260
Bronchitis/Emphysema	Yes	397	80.6599	65.2442	3.2745	2	460	15	30	60	110	150	180	285	360
Bronchitis/Emphysema	DK	61	66.9508	47.7188	6.1098	8	230	15	30	60	90	120	155	215	230

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-95. Statistics for 24-Hour Cumulative Number of Minutes Spent Indoors at an Auto Repair Shop/Gas Station

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		153	190.693	234.506	18.959	1	930	5	15	60	360	565	645	695	748
Gender	Male	105	241.476	250.274	24.424	2	930	5	15	115	495	600	675	700	748
Gender	Female	48	79.604	144.512	20.858	1	595	3	10	15	70	295	485	595	595
Age (years)	*	3	161.667	115.578	66.729	90	295	90	90	100	295	295	295	295	295
Age (years)	1-4	4	40	50.166	25.083	10	115	10	12.5	17.5	67.5	115	115	115	115
Age (years)	5-11	5	22	21.679	9.695	5	60	5	15	15	15	60	60	60	60
Age (years)	12-17	7	153.857	205.069	77.509	3	505	3	5	55	390	505	505	505	505
Age (years)	18-64	118	223.847	249.335	22.953	1	930	5	15	75	480	600	675	700	748
Age (years)	> 64	16	58.125	96.889	24.222	2	358	2	15	20	42.5	225	358	358	358
Race	White	130	195.538	237.537	20.833	1	930	5	15	60	390	587.5	645	700	748
Race	Black	12	149.667	203.31	58.691	2	565	2	6.5	75	229	495	565	565	565
Race	Asian	5	173	231.236	103.412	5	525	5	15	25	295	525	525	525	525
Race	Some Others	3	15	10	5.774	5	25	5	5	15	25	25	25	25	25
Race	Hispanic	3	350	330.114	190.591	15	675	15	15	360	675	675	675	675	675
Hispanic	No	148	188.926	233.749	19.214	1	930	5	15	60	369.5	565	630	700	748
Hispanic	Yes	5	243	279.701	125.086	15	675	15	15	150	360	675	675	675	675
Employment	*	16	84.188	146.714	36.678	3	505	3	12.5	17.5	69.5	390	505	505	505
Employment	Full Time	84	283.571	263.755	28.778	3	930	5	17.5	230	540	630	680	748	930
Employment	Part Time	16	104.188	147.369	36.842	5	390	5	12.5	17.5	187.5	359	390	390	390
Employment	Not Employed	35	65.914	94.745	16.015	1	432	2	15	30	90	160	358	432	432
Employment	Refused	2	17.5	17.678	12.5	5	30	5	5	17.5	30	30	30	30	30
Education	*	18	95.056	153.879	36.27	3	505	3	10	17.5	79	390	505	505	505
Education	< High School	16	327.188	301.181	75.295	5	930	5	60	278	615	675	930	930	930
Education	High School Graduate	51	233.353	243.089	34.039	2	748	5	20	120	480	565	675	695	748
Education	< College	32	253.469	252.8	44.689	2	700	5	15	157	517.5	595	680	700	700
Education	College Graduate	19	72.895	126.321	28.98	1	508	1	5	20	90	295	508	508	508
Education	Post Graduate	17	49	73.388	17.799	5	235	5	10	15	35	225	235	235	235
Census Region	Northeast	29	247.31	257.069	47.737	2	930	3	30	120	432	600	748	930	930
Census Region	Midwest	48	230.896	251.622	36.318	1	700	5	17.5	74.5	510	600	680	700	700
Census Region	South	43	165.721	211.591	32.267	3	675	5	15	50	358	555	595	675	675
Census Region	West	33	115	198.907	34.625	5	675	5	10	15	100	505	645	675	675
Day Of Week	Weekday	121	204.645	244.861	22.26	1	930	5	15	60	390	595	675	700	748
Day Of Week	Weekend	32	137.938	184.175	32.558	2	540	3	15	40	200	505	510	540	540
Season	Winter	28	177.143	258.088	48.774	2	930	5	15	30	355	595	700	930	930
Season	Spring	44	189.636	223.267	33.659	2	645	5	15	79.5	384.5	565	600	645	645
Season	Summer	52	171.692	223.809	31.037	1	680	3	10	30	347.5	540	675	675	680
Season	Fall	29	239.448	251.391	46.682	5	748	8	35	95	445	605	695	748	748
Asthma	No	145	191.29	235.288	19.54	1	930	5	15	60	360	565	645	700	748
Asthma	Yes	8	179.875	234.838	83.028	5	600	5	5	37.5	374.5	600	600	600	600
Angina	No	149	191.047	235.262	19.273	1	930	5	15	60	360	585	645	700	748
Angina	Yes	4	177.5	235.744	117.872	5	510	5	10	97.5	345	510	510	510	510
Bronchitis/Emphysema	No	146	189.048	234.959	19.445	1	930	5	15	57.5	360	585	645	700	748
Bronchitis/Emphysema	Yes	7	225	239.948	90.692	5	555	5	5	95	510	555	555	555	555

Note: A "*" Signifies missing data. Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-96. Statistics for 24-Hour Cumulative Numbr of Minutes Spent Indoors at a Gym/Health Club

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		364	129.651	104.343	5.4691	5	686	30	60	110	155	240	320	525	600
Gender	Male	176	147.193	115.554	8.7102	5	686	30	77.5	120	175	285	360	533	660
Gender	Female	188	113.229	89.876	6.5549	5	660	30	60	92.5	135	200	279	420	560
Age (years)	*	6	202.5	227.854	93.0211	30	560	30	55	75	420	560	560	560	560
Age (years)	1-4	5	156	29.875	13.3604	105	180	105	160	160	175	180	180	180	180
Age (years)	5-11	28	105.286	69.537	13.1413	5	325	30	58	82.5	141	165	270	325	325
Age (years)	12-17	39	165.385	122.056	19.5447	15	660	30	90	138	206	330	440	660	660
Age (years)	18-64	254	123.134	98.827	6.2009	5	686	30	60	100	150	210	295	475	600
Age (years)	> 64	32	141.375	114.216	20.1907	10	533	30	60	103	173	292	340	533	533
Race	White	307	134.261	109.36	6.2415	5	686	30	65	110	164	255	330	533	600
Race	Black	30	117.7	75.418	13.7693	5	320	10	60	115	145	235	285	320	320
Race	Asian	10	75.2	36.484	11.5372	30	145	30	54	60	95	133	145	145	145
Race	Some Others	11	112.909	69.077	20.8276	25	270	25	65	90	153	179	270	270	270
Race	Hispanic	4	83.75	42.696	21.3478	40	140	40	52.5	77.5	115	140	140	140	140
Race	Refused	2	57.5	3.536	2.5	55	60	55	55	57.5	60	60	60	60	60
Hispanic	No	345	132.017	105.901	5.7015	5	686	30	65	110	160	240	325	533	600
Hispanic	Yes	17	90.118	58.765	14.2527	5	255	5	60	90	115	140	255	255	255
Hispanic	Refused	2	57.5	3.536	2.5	55	60	55	55	57.5	60	60	60	60	60
Employment	*	72	139.625	103.274	12.171	5	660	30	76	120	165	265	330	440	660
Employment	Full Time	176	131.193	112.511	8.4808	5	686	30	60	110	150	240	330	560	660
Employment	Part Time	40	129.25	92.836	14.6787	25	420	35	60	95	168	285	325	420	420
Employment	Not Employed	75	117.867	91.345	10.5477	5	533	25	60	90	145	230	285	475	533
Employment	Refused	1	40	*	*	40	40	40	40	40	40	40	40	40	40
Education	*	81	136.877	99.66	11.0733	5	660	30	75	120	164	215	325	440	660
Education	< High School	9	110.556	97.706	32.5688	10	300	10	30	80	165	300	300	300	300
Education	High School Graduate	61	128.475	110.005	14.0847	5	660	25	75	105	145	210	310	525	660
Education	< College	71	145.634	129.073	15.3181	5	600	35	65	110	170	285	533	560	600
Education	College Graduate	81	121.975	99.467	11.0519	15	686	30	60	98	135	220	285	420	686
Education	Post Graduate	61	115.639	76.916	9.8481	10	415	40	60	90	145	225	265	320	415
Census Region	Northeast	83	140.53	107.244	11.7716	20	660	40	70	120	170	240	330	600	660
Census Region	Midwest	62	127	88.661	11.26	5	440	25	60	113	170	285	300	340	440
Census Region	South	118	125.669	107.038	9.8537	5	660	15	60	105	150	240	330	533	540
Census Region	West	101	126.99	108.452	10.7914	5	686	50	60	92	135	225	292	525	560
Day Of Week	Weekday	281	121.26	96.577	5.7613	5	686	30	60	98	145	210	295	475	560
Day Of Week	Weekend	83	158.06	123.652	13.5726	5	660	30	77	120	180	285	415	600	660
Season	Winter	127	139.795	108.258	9.6063	5	686	25	75	120	177	240	330	533	660
Season	Spring	85	141.459	115.229	12.4983	10	600	30	65	102	164	285	340	560	600
Season	Summer	81	109.864	87.411	9.7123	5	525	30	60	90	130	160	310	440	525
Season	Fall	71	119.944	98.963	11.7447	20	660	30	56	98	150	215	295	420	660
Asthma	No	333	132.39	106.796	5.8524	5	686	30	62	110	160	255	325	533	600
Asthma	Yes	28	100.071	69.387	13.113	5	330	25	60	86	118	210	230	330	330
Asthma	DK	3	101.667	55.752	32.1887	60	165	60	60	80	165	165	165	165	165
Angina	No	357	130.499	104.98	5.5561	5	686	30	62	110	155	240	325	525	600
Angina	Yes	4	90	47.61	23.8048	60	160	60	60	70	120	160	160	160	160
Angina	DK	3	81.667	65.256	37.6755	30	155	30	30	60	155	155	155	155	155
Bronchitis/Emphysema	No	352	130.696	104.843	5.5882	5	686	30	61	110	158	240	320	525	600
Bronchitis/Emphysema	Yes	10	97.3	92.848	29.361	10	330	10	45	76.5	120	245	330	330	330
Bronchitis/Emphysema	DK	2	107.5	67.175	47.5	60	155	60	60	108	155	155	155	155	155

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-97. Statistics for 24-Hour Cumulative Number of Minutes Spent Indoors at the Laundromat

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		40	99.275	85.209	13.4727	2	500	5	54.5	91	120	153	238	500	500
Gender	Male	9	150.222	146.822	48.9407	2	500	2	115	120	150	500	500	500	500
Gender	Female	31	84.484	51.822	9.3075	5	265	5	50	80	115	137	155	265	265
Age (years)	5-11	3	80.667	17.926	10.3494	60	92	60	60	90	92	92	92	92	92
Age (years)	18-64	33	101.182	91.724	15.967	2	500	5	50	90	120	155	265	500	500
Age (years)	> 64	4	97.5	63.574	31.7871	5	150	5	60	118	135	150	150	150	150
Race	White	31	102.161	93.832	16.8527	2	500	5	50	90	120	155	265	500	500
Race	Black	6	75.667	50.306	20.5372	5	130	5	34	85	115	130	130	130	130
Race	Hispanic	3	116.667	30.551	17.6383	90	150	90	90	110	150	150	150	150	150
Hispanic	No	37	97.865	88.241	14.5068	2	500	5	50	90	120	155	265	500	500
Hispanic	Yes	3	116.667	30.551	17.6383	90	150	90	90	110	150	150	150	150	150
Employment	*	3	80.667	17.926	10.3494	60	92	60	60	90	92	92	92	92	92
Employment	Full Time	20	97.6	104.739	23.4203	2	500	4	42	83.5	115	143	328	500	500
Employment	Part Time	4	127.5	91.879	45.9393	75	265	75	77.5	85	178	265	265	265	265
Employment	Not Employed	13	97.462	60.852	16.8772	5	210	5	45	115	137	150	210	210	210
Education	*	3	80.667	17.926	10.3494	60	92	60	60	90	92	92	92	92	92
Education	< High School	6	95	53.292	21.7562	5	150	5	60	113	130	150	150	150	150
Education	High School Graduate	17	101.353	64.434	15.6275	5	265	5	59	90	120	210	265	265	265
Education	< College	6	91.5	56.387	23.0199	10	155	10	34	115	120	155	155	155	155
Education	College Graduate	7	126.429	168.219	63.5808	5	500	5	45	70	110	500	500	500	500
Education	Post Graduate	1	2	*	*	2	2	2	2	2	2	2	2	2	2
Census Region	Northeast	6	168.667	166.465	67.9591	45	500	45	75	126	140	500	500	500	500
Census Region	Midwest	8	94	60.328	21.3291	5	210	5	57.5	93.5	118	210	210	210	210
Census Region	South	18	85.944	61.82	14.5711	2	265	2	50	76	115	155	265	265	265
Census Region	West	8	82.5	52.915	18.7083	5	150	5	35	100	118	150	150	150	150
Day Of Week	Weekday	25	103.32	100.663	20.1326	2	500	5	50	90	115	155	265	500	500
Day Of Week	Weekend	15	92.533	52.697	13.6063	10	210	10	60	92	130	150	210	210	210
Season	Winter	11	86.455	57.98	17.4816	2	210	2	45	80	120	140	210	210	210
Season	Spring	12	85.583	71.678	20.6916	5	265	5	35	73.5	120	130	265	265	265
Season	Summer	12	118.667	125.78	36.3096	5	500	5	55	101	113	137	500	500	500
Season	Fall	5	113.8	48.422	21.655	34	155	34	115	115	150	155	155	155	155
Asthma	No	37	95.459	83.88	13.7897	2	500	5	50	90	120	150	210	500	500
Asthma	Yes	3	146.333	106.514	61.4962	59	265	59	59	115	265	265	265	265	265
Angina	No	40	99.275	85.209	13.4727	2	500	5	54.5	91	120	153	238	500	500
Bronchitis/Emphysema	No	35	92.314	84.343	14.2565	2	500	5	50	90	115	130	210	500	500
Bronchitis/Emphysema	Yes	5	148	83.262	37.2357	30	265	30	140	150	155	265	265	265	265

Note: A "*" Signifies missing data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-98. Statistics for 24-Hour Cumulative Number of Minutes Spent Indoors at Work (non-specific)

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		137	393.949	242.649	20.731	5	979	15	180	440	555	662	810	940	960
Gender	Male	96	435.271	243.979	24.901	10	979	20	245	473	598	765	840	960	979
Gender	Female	41	297.195	212.415	33.174	5	780	15	90	280	495	550	590	780	780
Age (years)	*	4	568.75	394.723	197.362	90	940	90	248	623	890	940	940	940	940
Age (years)	1-4	2	200	70.711	50	150	250	150	150	200	250	250	250	250	250
Age (years)	5-11	4	33.75	11.087	5.543	20	45	20	25	35	42.5	45	45	45	45
Age (years)	12-17	2	207.5	166.17	117.5	90	325	90	90	208	325	325	325	325	325
Age (years)	18-64	121	409.678	230.934	20.994	5	979	15	240	450	560	660	793	850	960
Age (years)	> 64	4	293.75	289.464	144.732	10	610	10	50	278	538	610	610	610	610
Race	White	113	397.903	235.199	22.126	5	979	15	210	450	555	660	780	940	960
Race	Black	13	379.231	286.501	79.461	10	850	10	85	405	510	810	850	850	850
Race	Some Others	1	405	*	*	405	405	405	405	405	405	405	405	405	405
Race	Hispanic	9	314.778	266.161	88.72	30	793	30	95	245	440	793	793	793	793
Race	Refused	1	840	*	*	840	840	840	840	840	840	840	840	840	840
Hispanic	No	121	388.702	242.092	22.008	5	979	15	180	405	550	660	795	940	960
Hispanic	Yes	12	361.083	242.06	69.877	30	793	30	138	370	510	660	793	793	793
Hispanic	DK	2	585	35.355	25	560	610	560	560	585	610	610	610	610	610
Hispanic	Refused	2	717.5	173.241	122.5	595	840	595	595	718	840	840	840	840	840
Employment	*	8	118.75	113.916	40.275	20	325	20	35	67.5	200	325	325	325	325
Employment	Full Time	97	440.732	237.56	24.121	10	979	15	300	480	585	690	815	960	979
Employment	Part Time	21	341.19	188.235	41.076	30	795	115	240	330	435	590	610	795	795
Employment	Not Employed	9	250.556	218.567	72.856	5	630	5	95	150	360	630	630	630	630
Employment	Refused	2	425	586.899	415	10	840	10	10	425	840	840	840	840	840
Education	*	11	234.091	266.306	80.294	20	840	20	40	150	325	610	840	840	840
Education	< High School	12	460.417	181.727	52.46	115	795	115	330	495	558	615	795	795	795
Education	High School Graduate	50	409.6	273.717	38.709	5	979	15	150	463	619	735	940	969.5	979
Education	< College	29	368.897	237.58	44.117	10	850	10	160	405	510	660	765	850	850
Education	College Graduate	22	405.682	184.225	39.277	90	815	150	240	375	540	595	645	815	815
Education	Post Graduate	13	443.692	218.128	60.498	10	793	10	360	500	585	630	793	793	793
Census Region	Northeast	22	405.545	193.817	41.322	15	765	90	320	398	540	660	662	765	765
Census Region	Midwest	26	418.577	250.898	49.205	10	940	13	180	473	610	690	780	940	940
Census Region	South	58	379.707	233.179	30.618	5	979	10	150	420	540	619	810	815	979
Census Region	West	31	391.71	289.538	52.003	10	960	20	90	405	630	795	850	960	960
Day Of Week	Weekday	121	401.843	242.472	22.043	5	979	15	210	450	560	660	810	940	960
Day Of Week	Weekend	16	334.25	243.28	60.82	13	795	13	97.5	340	495	690	795	795	795
Season	Winter	42	390.81	241.456	37.257	10	960	30	175	405	550	660	765	960	960
Season	Spring	34	361.324	236.996	40.644	10	840	30	150	360	525	660	815	840	840
Season	Summer	41	400.902	262.9	41.058	5	979	13	210	450	570	690	810	979	979
Season	Fall	20	441.75	219.411	49.062	10	793	12.5	285	490	620	661	727.5	793	793
Asthma	No	124	393.218	237.29	21.309	5	960	20	180	440	553	660	795	850	940
Asthma	Yes	13	400.923	300.15	83.247	10	979	10	240	320	590	793	979	979	979
Angina	No	133	397.677	243.291	21.096	5	979	15	190	440	555	662	810	940	960
Angina	Yes	3	266.667	255.799	147.686	90	560	90	90	150	560	560	560	560	560
Angina	DK	1	280	*	*	280	280	280	280	280	280	280	280	280	280
Bronchitis/Emphysema	No	131	397.13	242.048	21.148	5	979	20	180	440	555	662	810	940	960
Bronchitis/Emphysema	Yes	5	333.4	299.365	133.88	10	619	10	13	460	565	619	619	619	619
Bronchitis/Emphysema	DK	1	280	*	*	280	280	280	280	280	280	280	280	280	280

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-99. Statistics for 24-Hour Cumulative Number of Minutes Spent Indoors at the Dry Cleaners

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		34	82.029	151.651	26.008	2	515	5	5	10	90	325	500	515	515
Gender	Male	11	105.545	166.006	50.053	2	515	2	5	10	103	325	515	515	515
Gender	Female	23	70.783	146.839	30.618	5	500	5	5	10	35	300	485	500	500
Age (years)	*	1	485	*	*	485	485	485	485	485	485	485	485	485	485
Age (years)	1-4	2	20	21.213	15	5	35	5	5	20	35	35	35	35	35
Age (years)	18-64	28	61.036	120.923	22.852	2	515	5	5	10	55	300	325	515	515
Age (years)	> 64	3	185	273.359	157.824	10	500	10	10	45	500	500	500	500	500
Race	White	25	70.72	143.744	28.749	2	515	5	5	10	35	300	485	515	515
Race	Black	7	131.429	198.95	75.196	5	500	5	10	20	325	500	500	500	500
Race	Some Others	1	10	*	*	10	10	10	10	10	10	10	10	10	10
Race	Hispanic	1	91	*	*	91	91	91	91	91	91	91	91	91	91
Hispanic	No	31	83.806	158.483	28.464	2	515	5	5	10	45	325	500	515	515
Hispanic	Yes	3	63.667	46.479	26.835	10	91	10	10	90	91	91	91	91	91
Employment	*	2	20	21.213	15	5	35	5	5	20	35	35	35	35	35
Employment	Full Time	25	83.12	151.81	30.362	2	515	5	5	10	90	325	485	515	515
Employment	Part Time	1	500	*	*	500	500	500	500	500	500	500	500	500	500
Employment	Not Employed	6	28.5	33.934	13.853	5	91	5	10	10	45	91	91	91	91
Education	*	2	20	21.213	15	5	35	5	5	20	35	35	35	35	35
Education	< High School	4	234	209.191	104.595	45	500	45	68	196	400	500	500	500	500
Education	High School Graduate	8	84.125	165.008	58.339	5	485	5	13	17.5	62	485	485	485	485
Education	< College	6	146.333	220.347	89.956	5	515	5	10	11.5	325	515	515	515	515
Education	College Graduate	12	13.5	24.247	6.999	2	90	2	5	5	10	10	90	90	90
Education	Post Graduate	2	50	63.64	45	5	95	5	5	50	95	95	95	95	95
Census Region	Northeast	8	110	187.293	66.218	5	485	5	5	10	180	485	485	485	485
Census Region	Midwest	10	19.1	30.101	9.519	5	103	5	5	7.5	20	61.5	103	103	103
Census Region	South	8	197	211.975	74.945	15	515	15	30	93	400	515	515	515	515
Census Region	West	8	17.75	29.359	10.38	2	90	2	5	10	10	90	90	90	90
Day Of Week	Weekday	23	93.957	172.77	36.025	2	515	5	5	10	90	485	500	515	515
Day Of Week	Weekend	11	57.091	95.985	28.941	5	325	5	5	10	95	103	325	325	325
Season	Winter	12	74.583	158.092	45.637	5	485	5	5	10	13	325	485	485	485
Season	Spring	4	44.5	41.685	20.843	10	103	10	15	32.5	74	103	103	103	103
Season	Summer	8	20.25	32.012	11.318	2	95	2	5	5	23	95	95	95	95
Season	Fall	10	155.4	205.739	65.061	5	515	5	13	55	300	507.5	515	515	515
Asthma	No	32	86.688	155.244	27.443	2	515	5	5	11.5	91	325	500	515	515
Asthma	Yes	2	7.5	3.536	2.5	5	10	5	5	7.5	10	10	10	10	10
Angina	No	33	83.909	153.599	26.738	2	515	5	5	10	90	325	500	515	515
Angina	Yes	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Bronchitis/Emphysema	No	33	84.061	153.532	26.726	2	515	5	5	10	90	325	500	515	515
Bronchitis/Emphysema	Yes	1	15	*	*	15	15	15	15	15	15	15	15	15	15

Note: A "*" Signifies missing data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-100. Statistics for 24-Hour Cumulative Number of Minutes Spent Indoors at a Bar/Nightclub/Bowling Alley

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles 5	25	50	75	90	95	98	99
All		352	175.818	132.206	7.047	3	870	30	90	150	222.5	328	487	570	615
Gender	Male	213	174.319	133.151	9.123	5	870	30	90	140	220	340	479	568	615
Gender	Female	139	178.115	131.191	11.127	3	630	30	95	150	225	300	530	600	605
Age (years)	*	4	158.75	98.011	49.006	75	300	75	98	130	220	300	300	300	300
Age (years)	5-11	4	98.75	57.5	28.75	45	170	45	53	90	145	170	170	170	170
Age (years)	12-17	8	151.25	77.678	27.463	50	270	50	80	160	205	270	270	270	270
Age (years)	18-64	313	180.192	136.706	7.727	3	870	30	90	150	225	370	498	590	615
Age (years)	> 64	23	141.217	85.243	17.774	5	328	30	75	135	180	240	325	328	328
Race	White	297	173.623	132.592	7.694	3	870	30	90	140	220	328	487	590	630
Race	Black	25	205.44	126.551	25.31	50	540	60	120	180	240	417	498	540	540
Race	Asian	8	169.875	153.311	54.204	5	479	5	38	175	225	479	479	479	479
Race	Some Others	7	197.286	187.607	70.909	70	615	70	110	135	185	615	615	615	615
Race	Hispanic	10	121.3	52.326	16.547	5	198	5	105	117.5	160	179	198	198	198
Race	Refused	5	246.6	127.153	56.864	73	410	73	180	270	300	410	410	410	410
Hispanic	No	327	177.131	134.457	7.435	3	870	30	90	150	225	340	489	590	615
Hispanic	Yes	20	144.9	85.08	19.024	5	440	38	110	120	160	221.5	342.5	440	440
Hispanic	DK	2	142.5	31.82	22.5	120	165	120	120	142.5	165	165	165	165	165
Hispanic	Refused	3	261	171.852	99.219	73	410	73	73	300	410	410	410	410	410
Employment	*	12	133.75	73.55	21.232	45	270	45	60	135	177.5	225	270	270	270
Employment	Full Time	223	182.439	138.308	9.262	5	870	30	90	150	228	340	525	600	630
Employment	Part Time	43	201.233	155.454	23.706	5	615	45	90	150	270	455	520	615	615
Employment	Not Employed	70	146.3	97.375	11.639	3	479	30	73	122.5	180	255	328	462	479
Employment	Refused	4	176.25	115.136	57.568	45	300	45	83	180	270	300	300	300	300
Education	*	13	146.538	84.172	23.345	45	300	45	60	150	185	270	300	300	300
Education	< High School	28	218.036	170.225	32.17	60	870	75	120	174.5	235	420	568	870	870
Education	High School Graduate	117	177.778	130.078	12.026	3	630	25	90	150	225	360	489	540	570
Education	< College	95	205.274	152.829	15.68	5	650	30	105	180	240	462	590	615	650
Education	College Graduate	55	141.764	92.766	12.509	10	417	20	75	120	205	265	340	410	417
Education	Post Graduate	44	131.364	90.209	13.599	30	400	30	60	110	177.5	265	290	400	400
Census Region	Northeast	83	179.337	137.039	15.042	5	650	45	89	140	240	328	489	630	650
Census Region	Midwest	88	169.818	126.238	13.457	5	615	30	90	147.5	211.5	299	487	568	615
Census Region	South	91	175.714	132.028	13.84	3	870	35	90	148	225	270	462	570	870
Census Region	West	90	178.544	135.533	14.286	5	605	30	85	152.5	225	407	479	590	605
Day Of Week	Weekday	192	167.458	133.473	9.633	5	650	30	80	120	210	340	520	590	605
Day Of Week	Weekend	160	185.85	130.378	10.307	3	870	45	108	165	228	321.5	474.5	568	630
Season	Winter	93	182.667	131.674	13.654	5	650	40	87	150	240	410	455	560	650
Season	Spring	83	186.12	147.597	16.201	5	870	30	90	140	230	380	498	570	870
Season	Summer	99	160.313	130.672	13.133	3	630	30	75	120	189	285	530	605	630
Season	Fall	77	176.377	117.154	13.351	15	615	30	100	165	220	299	410	600	615
Asthma	No	331	176.308	133.715	7.35	3	870	30	90	150	225	340	487	590	615
Asthma	Yes	18	169.444	108.978	25.686	60	530	60	105	135	210	270	530	530	530
Asthma	DK	3	160	124.9	72.111	60	300	60	60	120	300	300	300	300	300
Angina	No	345	176.98	132.759	7.148	3	870	30	90	150	225	340	487	590	615
Angina	Yes	5	82	47.249	21.131	5	120	5	75	90	120	120	120	120	120
Angina	DK	2	210	127.279	90	120	300	120	120	210	300	300	300	300	300
Bronchitis/Emphysema	No	333	177.273	133.27	7.303	3	870	30	90	150	225	340	487	590	615
Bronchitis/Emphysema	Yes	17	148.588	108.499	26.315	50	530	50	110	120	175	210	530	530	530
Bronchitis/Emphysema	DK	2	165	190.919	135	30	300	30	30	165	300	300	300	300	300

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-101. Statistics for 24-Hour Cumulative Number of Minutes Spent Indoors at a Restaurant

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		2059	94.539	119.93	2.643	1	925	10	30	60	95	185	351	548	660
Gender	Male	986	87.498	114.17	3.6358	1	900	10	30	60	90	160	305	550	660
Gender	Female	1073	101.01	124.69	3.8065	1	925	10	40	60	105	230	380	540	670
Age (years)	*	30	126.13	138.22	25.2349	15	495	30	45	60	150	397.5	490	495	495
Age (years)	1-4	61	62.705	47.701	6.1075	4	330	10	35	55	85	115	120	130	330
Age (years)	5-11	84	56.69	38.144	4.1618	5	180	10	30	45	85	120	120	140	180
Age (years)	12-17	122	69.836	78.361	7.0945	2	455	10	30	45	65	165	250	325	360
Age (years)	18-64	1503	101.21	131.22	3.3846	1	925	10	30	60	105	211	400	570	675
Age (years)	> 64	259	83.583	83.517	5.1895	3	750	19	45	60	90	150	215	315	520
Race	White	1747	91.658	114.69	2.744	1	925	10	30	60	95	175	320	535	640
Race	Black	148	102.82	141.28	11.613	3	805	5	30	60	95	295	430	555	735
Race	Asian	37	81.297	78.948	12.979	15	480	18	30	60	90	135	200	480	480
Race	Some Others	30	145.17	194.83	35.5705	5	765	10	45	82.5	120	432.5	750	765	765
Race	Hispanic	78	123	156.78	17.7518	10	700	15	40	60	110	375	585	660	700
Race	Refused	19	123.84	127.64	29.2833	20	480	20	30	70	210	330	480	480	480
Hispanic	No	1911	92.945	117.6	2.6901	1	925	10	30	60	95	180	330	542	645
Hispanic	Yes	129	116.7	147.95	13.0261	1	765	15	40	60	115	360	435	660	700
Hispanic	DK	5	76	134.32	60.0708	5	315	5	10	10	40	315	315	315	315
Hispanic	Refused	14	114.5	134.74	36.0117	30	480	30	30	60	90	330	480	480	480
Employment	*	263	62.251	57.907	3.5707	2	455	10	30	45	80	120	140	273	330
Employment	Full Time	1063	105.48	142.37	4.3668	1	925	10	35	60	105	235	485	630	735
Employment	Part Time	208	122.61	144.83	10.0423	1	805	5	32.5	65	122.5	320	441	595	660
Employment	Not Employed	515	76.33	61.418	2.7064	3	490	15	40	60	90	145	195	260	315
Employment	Refused	10	135	133.52	42.223	30	425	30	60	82.5	135	377.5	425	425	425
Education	*	299	72.177	79.595	4.6031	1	548	10	30	50	85	130	250	360	480
Education	< High School	132	134.77	171.84	14.9567	5	925	10	30	60	151.5	375	535	700	750
Education	High School Graduate	590	99.439	136.32	5.612	3	910	10	35	60	90	202.5	435	645	680
Education	< College	431	94.935	114.88	5.5338	1	770	10	35	60	105	180	340	550	640
Education	College Graduate	359	89.515	104.13	5.4957	1	765	10	35	60	100	165	295	490	570
Education	Post Graduate	248	95.012	109.37	6.9452	3	765	15	40	60	115	180	260	560	675
Census Region	Northeast	409	94.379	113.64	5.619	2	765	15	35	60	100	210	330	507	585
Census Region	Midwest	504	96.895	120.86	5.3833	1	805	10	30	60	105	190	340	560	675
Census Region	South	680	92.666	125.1	4.7972	2	910	10	30	60	90	194.5	365	550	650
Census Region	West	466	94.863	116.88	5.4145	1	925	10	30	60	110	175	375	535	640
Day Of Week	Weekday	1291	97.338	128.83	3.5855	1	925	10	30	60	93	210	377	555	700
Day Of Week	Weekend	768	89.833	103.16	3.7224	1	770	10	36	60	105	155	280	510	620
Season	Winter	524	97.735	125.69	5.491	3	875	15	35	60	105	178	351	595	685
Season	Spring	559	91.642	109.7	4.6399	2	925	10	35	60	95	180	360	505	555
Season	Summer	556	95.121	123.03	5.2177	1	910	10	30	60	94	210	360	555	675
Season	Fall	420	93.636	121.74	5.9401	1	900	10	30	60	95	185	325	540	653
Asthma	No	1903	94.081	117.41	2.6915	1	910	10	35	60	100	180	330	545	653
Asthma	Yes	150	96.267	143.56	11.7219	4	925	10	30	45.5	90	237.5	485	590	670
Asthma	DK	6	196.33	220.89	90.1782	30	480	30	30	79	480	480	480	480	480
Angina	No	1998	94.926	120.73	2.701	1	925	10	30	60	100	190	355	550	660
Angina	Yes	50	68.98	53.608	7.5813	3	340	15	45	60	90	105	120	286	340
Angina	DK	11	140.27	171.27	51.6393	30	480	30	30	70	120	480	480	480	480
Bronchitis/Emphysema	No	1945	93.746	117.67	2.668	1	910	10	30	60	97	180	335	548	653
Bronchitis/Emphysema	Yes	104	96.077	130.13	12.7602	5	925	15	30	60	90	235	360	500	620
Bronchitis/Emphysema	DK	10	232.8	288.24	91.1492	10	875	10	30	79	480	677.5	875	875	875

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-102. Statistics for 24-Hour Cumulative Number of Minutes Spent Indoors at School

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		1224	343.35	179.099	5.119	1	995	10	210	395	454	540	585	660	723
Gender	Male	581	358.599	167.7	6.957	1	995	30	255	400	450	540	600	690	778
Gender	Female	643	329.572	187.875	7.409	1	855	5	180	390	455	540	582	640	683
Age (years)	*	18	314.056	230.927	54.43	5	713	5	165	247.5	520	625	713	713	713
Age (years)	1-4	43	288.465	217.621	33.187	5	665	10	60	269	500	580	595	665	665
Age (years)	5-11	302	396.308	109.216	6.285	5	665	170	365	403	445	535	565	625	640
Age (years)	12-17	287	402.551	125.512	7.409	15	855	120	383	420	450	500	565	710	778
Age (years)	18-64	550	295.422	207.294	8.839	1	995	5	104	300	460	552.5	612	683	785
Age (years)	> 64	24	187.708	187.012	38.174	2	585	3	45	120	327.5	480	510	585	585
Race	White	928	348.525	180.458	5.924	1	995	10	212.5	400	458	545	600	665	723
Race	Black	131	339.809	169.282	14.79	2	855	15	230	390	445	510	580	624	645
Race	Asian	39	332.385	179.918	28.81	5	840	20	190	365	450	560	580	840	840
Race	Some Others	36	363.583	155.557	25.926	10	820	105	272.5	366	457.5	502	598	820	820
Race	Hispanic	76	294.039	175.697	20.154	2	565	10	142.5	362.5	432	495	525	540	565
Race	Refused	14	279.714	221.268	59.136	5	681	5	60	260	440	625	681	681	681
Hispanic	No	1082	344.924	179.58	5.459	1	995	10	210	395	455	540	598	665	730
Hispanic	Yes	127	333.016	173.803	15.423	2	820	15	200	390	445	500	565	600	630
Hispanic	DK	5	293	244.672	109.42	3	562	3	65	415	420	562	562	562	562
Hispanic	Refused	10	329.5	180.053	56.938	5	625	5	200	350	445	537.5	625	625	625
Employment	*	616	390.294	130.206	5.246	5	855	115	365	410	450	525	570	640	665
Employment	Full Time	275	331.269	222.021	13.388	1	995	5	115	405	510	575	625	690	755
Employment	Part Time	138	280.891	174.844	14.884	1	800	10	160	285	412	480	537	660	683
Employment	Not Employed	190	258.674	199.529	14.475	1	855	5	60	262.5	410	527.5	572	778	840
Employment	Refused	5	166	179.074	80.084	5	440	5	5	180	200	440	440	440	440
Education	*	679	388.943	132.842	5.098	5	855	100	360	410	450	525	580	640	710
Education	< High School	24	233.333	179.648	36.67	1	540	2	30	297.5	373.5	460	465	540	540
Education	High School Graduate	114	186.649	193.608	18.133	1	785	4	20	107.5	295	480	580	645	690
Education	< College	173	281.41	209.872	15.956	1	995	5	120	255	425	550	640	820	855
Education	College Graduate	93	300.43	208.704	21.642	1	755	5	115	320	470	540	580	730	755
Education	Post Graduate	141	373.525	193.443	16.291	1	683	15	250	442	510	575	615	655	680
Census Region	Northeast	261	345.724	181.522	11.236	1	995	11	210	385	455	535	620	710	855
Census Region	Midwest	290	334.445	176.652	10.373	1	730	10	180	390	440	530	585	645	683
Census Region	South	427	354.037	178.547	8.641	1	855	10	235	415	462	540	575	640	755
Census Region	West	246	332.78	180.277	11.494	1	820	15	195	377.5	440	555	595	681	713
Day Of Week	Weekday	1179	346.838	177.477	5.169	1	995	10	222	395	455	540	585	655	723
Day Of Week	Weekend	45	251.978	198.543	29.597	20	820	40	105	180	360	555	632	820	820
Season	Winter	392	369.298	164.363	8.302	1	855	20	285	405	457	545	600	680	710
Season	Spring	353	355.057	165.488	8.808	1	855	12	250	400	455	535	575	636	713
Season	Summer	207	316.763	196.364	13.648	2	995	10	125	365	445	557	585	640	723
Season	Fall	272	310.996	195.332	11.844	1	855	5	120	365	445	540	595	660	778
Asthma	No	1095	342.779	179.195	5.415	1	995	10	200	390	455	540	585	660	723
Asthma	Yes	124	350.669	178.785	16.055	1	855	10	250	401.5	445	535	605	645	800
Asthma	DK	5	287	190.676	85.273	5	445	5	180	365	440	445	445	445	445
Angina	No	1209	344.629	178.874	5.144	1	995	10	210	395	455	540	595	660	723
Angina	Yes	9	205.778	169.545	56.515	15	510	15	90	180	275	510	510	510	510
Angina	DK	6	292.167	178.908	73.039	5	480	5	180	324	440	480	480	480	480
Bronchitis/Emphysema	No	1175	344.826	178.845	5.217	1	995	10	212	395	455	540	595	660	730
Bronchitis/Emphysema	Yes	42	306.714	188.249	29.047	3	632	10	120	377.5	444	465	580	632	632
Bronchitis/Emphysema	DK	7	315.429	163.691	61.869	5	440	5	180	378	440	440	440	440	440

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-103. Statistics for 24-Hour Cumulative Number of Minutes Spent Indoors at a Plant/Factory/Warehouse

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		383	450.896	204.367	10.443	2	997	30	350	510	568	670	705	770	855
Gender	Male	271	460.458	205.102	12.459	2	997	30	365	515	575	675	720	780	870
Gender	Female	112	427.759	201.609	19.05	5	820	15	314.5	510	555	600	675	705	720
Age (years)	*	6	405.667	304.05	124.13	30	780	30	120	414.5	675	780	780	780	780
Age (years)	1-4	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Age (years)	5-11	2	107.5	123.744	87.5	20	195	20	20	107.5	195	195	195	195	195
Age (years)	12-17	4	108	136.404	68.202	10	307	10	20	57.5	196	307	307	307	307
Age (years)	18-64	353	463.683	196.321	10.449	5	997	30	385	520	570	670	705	770	855
Age (years)	> 64	17	347.765	210.909	51.153	2	705	2	180	450	495	550	705	705	705
Race	White	322	451.789	201.135	11.209	5	890	30	355	517.5	568	650	690	770	840
Race	Black	32	466.438	172.559	30.504	2	750	30	382.5	497.5	550	675	720	750	750
Race	Asian	3	263.333	378.462	218.51	30	700	30	30	60	700	700	700	700	700
Race	Some Others	6	585.333	156.91	64.058	310	780	310	565	591	675	780	780	780	780
Race	Hispanic	15	385.8	231.348	59.734	5	765	5	230	435	515	760	765	765	765
Race	Refused	5	440.4	387.419	173.26	30	997	30	115	520	540	997	997	997	997
Hispanic	No	350	454.137	202.78	10.839	2	997	30	365	512.5	570	666.5	700	770	855
Hispanic	Yes	26	419.615	213.155	41.803	5	765	15	240	482.5	550	675	760	765	765
Hispanic	DK	2	425	162.635	115	310	540	310	310	425	540	540	540	540	540
Hispanic	Refused	5	397	314.833	140.8	30	780	30	115	520	540	780	780	780	780
Employment	*	7	95.286	113.83	43.024	10	307	10	20	30	195	307	307	307	307
Employment	Full Time	333	481.417	185.222	10.15	5	997	50	440	525	580	675	720	780	855
Employment	Part Time	23	359.87	170.619	35.577	40	585	45	240	390	505	527	535	585	585
Employment	Not Employed	19	179.316	221.341	50.779	2	705	2	25	60	295	640	705	705	705
Employment	Refused	1	30	*	*	30	30	30	30	30	30	30	30	30	30
Education	*	13	184	234.182	64.95	10	780	10	20	85	270	510	780	780	780
Education	< High School	38	491.237	195.919	31.782	2	855	5	435	525	600	705	765	855	855
Education	High School Graduate	190	465.374	188.699	13.69	5	997	30	380	520	565	667.5	705	760	890
Education	< College	85	450.494	199.674	21.658	15	870	40	375	510	565	635	680	820	870
Education	College Graduate	43	463.163	206.51	31.492	5	840	60	405	520	600	670	690	840	840
Education	Post Graduate	14	357.5	255.702	68.339	10	700	10	90	355	550	675	700	700	700
Census Region	Northeast	71	449.423	207.98	24.683	5	890	15	300	510	565	675	725	780	890
Census Region	Midwest	113	462.035	196.506	18.486	2	997	30	405	520	570	640	700	770	820
Census Region	South	136	465.912	199.315	17.091	5	870	20	382	522.5	570	670	720	840	855
Census Region	West	63	400.159	221.13	27.86	10	760	30	185	490	550	675	690	710	760
Day Of Week	Weekday	319	476.445	190.875	10.687	5	997	30	435	525	580	675	710	770	855
Day Of Week	Weekend	64	323.547	222.63	27.829	2	820	10	107.5	357.5	507.5	560	620	780	820
Season	Winter	89	468.157	188.472	19.978	10	997	30	360	520	565	660	690	780	997
Season	Spring	91	445.198	212.648	22.292	10	870	30	270	505	570	675	760	840	870
Season	Summer	127	440.646	210.285	18.66	2	890	15	370	510	560	645	700	765	855
Season	Fall	76	454.632	204.721	23.483	5	760	30	352.5	520	591	675	690	720	760
Asthma	No	364	452.948	203.838	10.684	2	997	30	355	512.5	570	675	705	770	855
Asthma	Yes	17	412.353	187.025	45.36	20	580	20	340	495	540	550	580	580	580
Asthma	DK	2	405	530.33	375	30	780	30	30	405	780	780	780	780	780
Angina	No	375	453.928	202.31	10.447	2	997	30	360	515	570	670	705	770	855
Angina	Yes	5	231	168.389	75.306	60	475	60	90	230	300	475	475	475	475
Angina	DK	3	438.333	379.418	219.06	30	780	30	30	505	780	780	780	780	780
Bronchitis/Emphysema	No	362	450.235	204.588	10.753	2	997	30	350	510	565	663	700	770	855
Bronchitis/Emphysema	Yes	19	468.316	175.293	40.215	50	720	50	375	510	568	690	720	720	720
Bronchitis/Emphysema	DK	2	405	530.33	375	30	780	30	30	405	780	780	780	780	780

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-104. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors on a Sidewalk, Street, or in the Neighborhood

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		896	85.785	133.828	4.4709	1	1440	2	15	40	90	223	405	565	615
Gender	Male	409	108.775	168.11	8.3125	1	1440	3	20	45	120	330	525	615	710
Gender	Female	487	66.476	91.863	4.1627	1	580	1	15	35	75	152	255	435	465
Age (years)	*	15	72.533	69.418	17.9236	1	290	1	40	55	90	120	290	290	290
Age (years)	1-4	30	54.8	52.731	9.6274	1	235	2	10	42.5	78	125	158	235	235
Age (years)	5-11	75	110.813	116.76	13.4823	1	540	5	20	65	178	240	410	465	540
Age (years)	12-17	74	52.554	74.776	8.6925	1	435	2	15	30	60	125	200	338	435
Age (years)	18-64	580	94.279	153.933	6.3917	1	1440	2	15	40	82.5	277.5	480	600	690
Age (years)	> 64	122	59.418	61.519	5.5696	1	380	2	20	40	75	120	190	235	270
Race	White	727	85.735	136.504	5.0627	1	1440	2	15	41	90	215	405	570	675
Race	Black	87	89.184	132.669	14.2236	1	565	2	10	35	120	324	426	540	565
Race	Asian	11	88.727	114.01	34.3752	2	405	2	30	45	120	149	405	405	405
Race	Some Others	18	80.556	105.981	24.98	10	420	10	20	40	75	240	420	420	420
Race	Hispanic	42	71.357	110.769	17.092	1	525	1	20	40	75	135	290	525	525
Race	Refused	11	122.909	117.699	35.4876	2	310	2	40	60	290	300	310	310	310
Hispanic	No	807	87.482	136.129	4.792	1	1440	2	15	45	90	225	410	565	600
Hispanic	Yes	79	67.797	110.301	12.4098	1	615	1	15	30	62	140	300	525	615
Hispanic	DK	1	2	*	*	2	2	2	2	2	2	2	2	2	2
Hispanic	Refused	9	100.778	115.933	38.6443	2	310	2	40	60	90	310	310	310	310
Employment	*	176	79.182	96.345	7.2622	1	540	2	15	45	110	200	260	435	465
Employment	Full Time	384	102.221	169.534	8.6515	1	1440	3	15	40.5	75	330	525	600	710
Employment	Part Time	74	74.446	113.86	13.2359	1	795	1	15	42.5	86	180	255	390	795
Employment	Not Employed	255	69.996	94.045	5.8893	1	615	1	15	40	85	152	270	380	485
Employment	Refused	7	45.143	36.64	13.8485	2	90	2	4	40	90	90	90	90	90
Education	*	198	74.914	92.253	6.5561	1	540	2	15	40.5	90	185	240	435	465
Education	< High School	56	131.232	247.289	33.0454	1	1440	1	15	40	118	465	710	735	1440
Education	High School Graduate	223	100.233	146.92	9.8385	1	795	5	20	45	95	275	480	600	680
Education	< College	172	77.186	128.752	9.8173	1	675	1	10	30	75	180	435	570	600
Education	College Graduate	138	76.275	106.589	9.0734	1	600	3	20	45	70	205	310	485	565
Education	Post Graduate	109	78.229	121.311	11.6195	1	710	5	20	45	60	200	330	560	570
Census Region	Northeast	202	89.134	132.343	9.3116	1	735	3	15	45	90	235	410	530	570
Census Region	Midwest	193	87.855	153.329	11.0369	1	1440	2	15	30	85	240	355	565	600
Census Region	South	298	79.943	125.46	7.2677	1	710	2	15	35	75	185	420	532	680
Census Region	West	203	89.059	127.909	8.9775	1	795	1	20	45	105	210	300	570	615
Day Of Week	Weekday	642	86.684	143.938	5.6808	1	1440	2	15	40	80	223	426	585	680
Day Of Week	Weekend	254	83.512	104.207	6.5385	1	565	2	25	45	90	220	310	440	480
Season	Winter	210	73.548	144.308	9.9582	1	1440	1	15	33	60	160	270	560	710
Season	Spring	242	97.913	137.243	8.8223	1	795	4	25	45	120	240	435	570	675
Season	Summer	276	83.989	123.086	7.4089	1	690	4	15	45	90	200	420	525	580
Season	Fall	168	86.56	131.855	10.1729	1	710	2	15	40	90	240	405	600	615
Asthma	No	832	86.108	129.455	4.488	1	795	2	15	40	90	225	418	565	600
Asthma	Yes	57	85.596	193.133	25.5811	1	1440	1	15	35	90	180	235	260	1440
Asthma	DK	7	48.857	27.973	10.5727	2	90	2	30	60	60	90	90	90	90
Angina	No	857	86.177	134.897	4.608	1	1440	2	15	40	90	223	410	565	615
Angina	Yes	33	81.727	117.393	20.4356	1	465	1	17	45	60	250	380	465	465
Angina	DK	6	52	29.257	11.9443	2	90	2	40	60	60	90	90	90	90
Bronchitis/Emphysema	No	855	84.837	132.316	4.5251	1	1440	2	15	40	85	225	405	560	600
Bronchitis/Emphysema	Yes	34	117.735	176.429	30.2574	3	735	8	30	45	120	215	690	735	735
Bronchitis/Emphysema	DK	7	46.286	27.482	10.3871	2	90	2	32	40	60	90	90	90	90

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-105. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors in a Parking Lot

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		226	70.721	126.651	8.425	1	910	2	10	20	60	190	309	510	580
Gender	Male	106	100.34	167.159	16.236	1	910	5	15	30	110	315	495	580	720
Gender	Female	120	44.558	64.826	5.918	1	295	1	5	20	46.5	167.5	187.5	248	285
Age (years)	*	3	135	195	112.58	15	360	15	15	30	360	360	360	360	360
Age (years)	1-4	11	39.818	38.449	11.593	5	110	5	10	20	90	90	110	110	110
Age (years)	5-11	5	62	63.699	28.487	5	170	5	30	45	60	170	170	170	170
Age (years)	12-17	12	93.75	90.81	26.214	5	248	5	17.5	52	163	238	248	248	248
Age (years)	18-64	182	69.984	132.655	9.833	1	910	2	10	20	60	190	309	550	720
Age (years)	> 64	13	74.462	127.9	35.473	1	465	1	10	25	60	180	465	465	465
Race	White	180	72.122	128.299	9.563	1	910	2	10	20.5	64	205	302	510	720
Race	Black	18	102.444	167.776	39.545	2	580	2	6	27.5	130	495	580	580	580
Race	Asian	3	21.667	7.638	4.41	15	30	15	15	20	30	30	30	30	30
Race	Some Others	5	50	46.098	20.616	5	115	5	10	45	75	115	115	115	115
Race	Hispanic	17	25.706	39.365	9.547	1	165	1	10	10	20	60	165	165	165
Race	Refused	3	135	195	112.58	15	360	15	15	30	360	360	360	360	360
Hispanic	No	196	69.26	114.078	8.148	1	720	2	10	24	67.5	190	295	495	580
Hispanic	Yes	25	42.92	103.34	20.668	1	510	1	5	10	20	75	165	510	510
Hispanic	DK	2	465	629.325	445	20	910	20	20	465	910	910	910	910	910
Hispanic	Refused	3	135	195	112.58	15	360	15	15	30	360	360	360	360	360
Employment	*	26	55.577	59.88	11.743	5	238	5	15	30	90	145	170	238	238
Employment	Full Time	117	83.325	155.119	14.341	1	910	2	10	20	60	240	495	580	720
Employment	Part Time	37	75.378	114.734	18.862	1	465	1	5	21	90	180	450	465	465
Employment	Not Employed	43	37.093	46.8	7.137	1	210	1	10	20	60	90	134	210	210
Employment	Refused	3	135	195	112.58	15	360	15	15	30	360	360	360	360	360
Education	*	33	69.697	85.644	14.909	1	360	5	15	30	90	180	248	360	360
Education	< High School	16	73.25	176.778	44.194	2	720	2	7.5	22.5	32.5	165	720	720	720
Education	High School Graduate	83	83	124.358	13.65	1	580	5	10	25	90	215	315	495	580
Education	< College	49	75.898	162.674	23.239	1	910	2	10	20	60	210	450	910	910
Education	College Graduate	23	48.783	107.169	22.346	1	510	2	5	10	30	130	135	510	510
Education	Post Graduate	22	35.5	54.472	11.613	1	185	1	5	15	30	115	180	185	185
Census Region	Northeast	56	57.357	82.622	11.041	1	495	1	12.5	27.5	75	135	180	295	495
Census Region	Midwest	48	73.438	118.574	17.115	1	550	5	10	25	62.5	248	315	550	550
Census Region	South	75	57.92	106.421	12.288	1	720	2	7	20	50	185	238	360	720
Census Region	West	47	104.298	189.916	27.702	3	910	5	10	20	90	450	510	910	910
Day Of Week	Weekday	154	64.851	136.686	11.014	1	910	2	7	20	43	180	450	550	720
Day Of Week	Weekend	72	83.278	101.675	11.982	1	465	5	15	35	113	240	309	360	465
Season	Winter	45	50.533	64.702	9.645	2	309	5	15	30	63	130	180	309	309
Season	Spring	57	82.912	131.245	17.384	1	495	1	10	20	90	240	465	495	495
Season	Summer	75	72.027	146.21	16.883	1	910	2	10	20	60	205	315	580	910
Season	Fall	49	73.082	133.165	19.024	1	720	1	10	20	75	205	295	720	720
Asthma	No	204	62.98	109.369	7.657	1	720	2	10	20	60	180	248	495	510
Asthma	Yes	18	149.722	238.456	56.205	1	910	1	15	45	145	580	910	910	910
Asthma	DK	4	110	166.883	83.442	15	360	15	22.5	32.5	198	360	360	360	360
Angina	No	217	69.263	127.076	8.626	1	910	2	10	20	60	185	309	510	580
Angina	Yes	5	99.6	83.056	37.144	35	238	35	40	75	110	238	238	238	238
Angina	DK	4	113.75	164.792	82.396	15	360	15	22.5	40	205	360	360	360	360
Bronchitis/Emphysema	No	211	65.555	114.21	7.863	1	720	2	10	20	60	180	295	495	550
Bronchitis/Emphysema	Yes	11	142.364	265.976	80.195	1	910	1	10	40	180	240	910	910	910
Bronchitis/Emphysema	DK	4	146.25	160.799	80.399	15	360	15	22.5	105	270	360	360	360	360

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-106. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors at a Service Station or Gas Station

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		191	50.597	125.489	9.0801	1	790	5	5	10	20	105	365	570	645
Gender	Male	90	73.522	149.969	15.8082	1	645	5	5	10	30	325	495	600	645
Gender	Female	101	30.168	94.915	9.4444	2	790	5	5	10	15	44	105	180	510
Age (years)	*	1	86	*	*	86	86	86	86	86	86	86	86	86	86
Age (years)	1-4	3	6.667	2.887	1.6667	5	10	5	5	5	10	10	10	10	10
Age (years)	5-11	3	66.667	98.277	56.7401	5	180	5	5	15	180	180	180	180	180
Age (years)	12-17	11	7.818	4.513	1.3606	1	15	1	5	5	10	15	15	15	15
Age (years)	18-64	157	54.185	135.636	10.8249	2	790	5	5	10	15	110	390	570	645
Age (years)	> 64	16	47.813	69.497	17.3744	5	240	5	10	18	55	180	240	240	240
Race	White	170	50.941	124.015	9.5115	2	790	5	5	10	20	107.5	365	520	600
Race	Black	11	80.727	191.433	57.7192	4	645	4	5	5	44	140	645	645	645
Race	Asian	1	5	*	*	5	5	5	5	5	5	5	5	5	5
Race	Some Others	3	16.667	20.207	11.6667	5	40	5	5	5	40	40	40	40	40
Race	Hispanic	5	10.2	7.596	3.3971	1	20	1	5	10	15	20	20	20	20
Race	Refused	1	10	*	*	10	10	10	10	10	10	10	10	10	10
Hispanic	No	179	53.056	129.15	9.6531	2	790	5	5	10	20	130	380	570	645
Hispanic	Yes	12	13.917	23.008	6.6418	1	86	1	5	7.5	10	15	86	86	86
Employment	*	16	18.813	43.196	10.799	1	180	1	5	7.5	12.5	15	180	180	180
Employment	Full Time	110	55.827	136.782	13.0417	2	645	5	5	10	15	99	495	570	600
Employment	Part Time	26	34.731	71.829	14.0868	3	355	5	5	10	25	100	130	355	355
Employment	Not Employed	38	40.237	76.973	12.4867	4	380	5	5	10	20	140	240	380	380
Employment	Refused	1	790	*	*	790	790	790	790	790	790	790	790	790	790
Education	*	18	17.833	40.712	9.5958	1	180	1	5	7.5	15	15	180	180	180
Education	< High School	16	103	164.12	41.03	5	520	5	10	15	140	365	520	520	520
Education	High School Graduate	46	85.739	162.855	24.0116	3	645	5	5	10	85	380	495	645	645
Education	< College	58	41.759	121.08	15.8986	2	790	4	5	13	20	60	110	510	790
Education	College Graduate	30	36.633	111.641	20.3828	2	570	4	5	6.5	15	30	270	570	570
Education	Post Graduate	23	10	6.396	1.3337	5	30	5	5	10	10	20	20	30	30
Census Region	Northeast	33	59.697	149.173	25.9677	2	600	3	5	10	20	105	570	600	600
Census Region	Midwest	48	28.563	77.552	11.1936	2	510	5	5	10	15	60	110	510	510
Census Region	South	68	49.882	133.967	16.2459	1	790	5	5	10	15	130	295	645	790
Census Region	West	42	69.786	135.545	20.9151	4	520	5	5	13	40	270	390	520	520
Day Of Week	Weekday	122	58.402	145.085	13.1354	2	790	5	5	10	20	130	495	600	645
Day Of Week	Weekend	69	36.797	79.004	9.5109	1	390	4	5	10	15	88	240	380	390
Season	Winter	56	37.536	100.602	13.4435	2	600	4	5	10	15	60	270	355	600
Season	Spring	54	80.13	157.514	21.4349	1	645	5	5	10	60	380	510	570	645
Season	Summer	51	46.51	137.689	19.2804	2	790	5	5	10	15	35	365	520	790
Season	Fall	30	28.767	58.93	10.7591	3	295	5	5	8.5	15	93	130	295	295
Asthma	No	174	53.517	130.777	9.9141	1	790	5	5	10	20	130	380	570	645
Asthma	Yes	16	15.75	25.736	6.434	2	110	2	5	7.5	15	20	110	110	110
Asthma	DK	1	100	*	*	100	100	100	100	100	100	100	100	100	100
Angina	No	184	46.788	120.622	8.8923	1	790	5	5	10	15	88	295	570	645
Angina	Yes	7	150.714	206.81	78.1667	10	510	10	15	20	380	510	510	510	510
Bronchitis/Emphysema	No	181	47.122	123.971	9.2147	1	790	5	5	10	15	85	295	570	645
Bronchitis/Emphysema	Yes	10	113.5	142.946	45.2036	5	380	5	10	58	140	367.5	380	380	380

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-107. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors at a Construction Site

								Percentiles							
Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		143	437.098	242.073	20.243	1	1190	10	240	510	600	675	740	930	985
Gender	Male	130	461.531	232.511	20.393	1	1190	10	300	522.5	600	688.5	745	930	985
Gender	Female	13	192.769	202.794	56.245	5	630	5	60	135	165	535	630	630	630
Age (years)	*	1	510	*	*	510	510	510	510	510	510	510	510	510	510
Age (years)	1-4	2	240	254.558	180	60	420	60	60	240	420	420	420	420	420
Age (years)	12-17	1	10	*	*	10	10	10	10	10	10	10	10	10	10
Age (years)	18-64	133	444.549	243.017	21.072	1	1190	10	240	520	600	687	745	930	985
Age (years)	> 64	6	396.667	188.75	77.057	60	560	60	300	460	540	560	560	560	560
Race	White	125	430.872	247.432	22.131	5	1190	10	240	510	600	687	740	930	985
Race	Black	10	430.1	233.307	73.778	1	630	1	170	550	585	615	630	630	630
Race	Some Others	2	492.5	60.104	42.5	450	535	450	450	492.5	535	535	535	535	535
Race	Hispanic	3	501.667	170.318	98.333	305	600	305	305	600	600	600	600	600	600
Race	Refused	3	618.333	166.458	96.105	510	810	510	510	535	810	810	810	810	810
Hispanic	No	129	426.202	247.087	21.755	1	1190	10	180	510	600	665	735	930	985
Hispanic	Yes	9	496.111	166.429	55.476	240	765	240	410	505	600	765	765	765	765
Hispanic	DK	2	577.5	180.312	127.5	450	705	450	450	577.5	705	705	705	705	705
Hispanic	Refused	3	635	156.125	90.139	510	810	510	510	585	810	810	810	810	810
Employment	*	3	163.333	223.681	129.142	10	420	10	10	60	420	420	420	420	420
Employment	Full Time	127	456.803	236.198	20.959	1	1190	15	285	520	605	690	745	930	985
Employment	Part Time	6	495.833	171.389	69.969	155	600	155	510	555	600	600	600	600	600
Employment	Not Employed	7	146.571	162.79	61.529	5	430	5	6	60	300	430	430	430	430
Education	*	4	250	251.794	125.897	10	510	10	35	240	465	510	510	510	510
Education	< High School	12	500.833	227.035	65.539	60	930	60	375	525	592.5	735	930	930	930
Education	High School Graduate	68	482.162	228.976	27.767	5	1190	20	395	522.5	592.5	720	780	985	1190
Education	< College	41	417.683	241.023	37.641	1	745	10	170	520	615	645	687	745	745
Education	College Graduate	14	372.357	247.278	66.088	15	660	15	120	440	585	643	660	660	660
Education	Post Graduate	4	92.5	137.265	68.632	5	295	5	7.5	35	177.5	295	295	295	295
Census Region	Northeast	28	481.714	238.306	45.036	5	985	6	357.5	532.5	650	695	740	985	985
Census Region	Midwest	30	343.967	231.025	42.179	5	810	10	120	342	525	637.5	660	810	810
Census Region	South	57	474.018	248.301	32.888	1	1190	10	410	535	615	720	765	780	1190
Census Region	West	28	417.107	226.287	42.764	15	930	60	235	500	570	630	656	930	930
Day Of Week	Weekday	121	455.116	238.494	21.681	5	1190	15	285	525	600	687	745	930	985
Day Of Week	Weekend	22	338	243.022	51.813	1	705	5	60	407.5	525	600	645	705	705
Season	Winter	34	418.5	268.44	46.037	1	1190	5	155	505	570	645	695	1190	1190
Season	Spring	33	412.242	223.533	38.912	10	810	60	230	490	570	635	740	810	810
Season	Summer	46	477.739	221.422	32.647	10	985	60	325	515	630	705	745	985	985
Season	Fall	30	423.2	264.183	48.233	5	930	6	135	532.5	585	700	780	930	930
Asthma	No	137	437.161	243.531	20.806	1	1190	10	240	510	600	675	745	930	985
Asthma	Yes	6	435.667	225.957	92.247	60	690	60	354	440	630	690	690	690	690
Angina	No	139	439.108	242.331	20.554	1	1190	10	240	510	600	687	745	930	985
Angina	Yes	4	367.25	256.288	128.144	10	570	10	182	444.5	552.5	570	570	570	570
Bronchitis/Emphysema	No	140	433.257	240.003	20.284	1	1190	10	240	510	600	670	737.5	810	930
Bronchitis/Emphysema	Yes	3	616.333	328.664	189.755	354	985	354	354	510	985	985	985	985	985

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-108. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors on School Grounds/Playground

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		259	98.386	110.056	6.839	1	690	5	30	70	120	208	300	540	570
Gender	Male	0.136	118.007	126.395	10.84	1	690	10	35	85	148.5	255	370	555	625
Gender	Female	123	76.691	83.861	7.562	1	570	5	20	51	120	180	225	270	440
Age (years)	*	2	275	374.767	265	10	540	10	10	275	540	540	540	540	540
Age (years)	1-4	9	85	61.084	20.36	10	175	10	30	65	140	175	175	175	175
Age (years)	5-11	64	88.016	95.638	11.96	5	625	10	30	60	120	170	220	315	625
Age (years)	12-17	76	78.658	88.179	10.12	3	570	5	25	55	105	165	225	370	570
Age (years)	18-64	101	119.812	127.563	12.69	1	690	5	30	85	165	240	360	540	555
Age (years)	> 64	7	65	47.258	17.86	5	150	5	30	60	95	150	150	150	150
Race	White	208	98.212	106.512	7.385	1	690	9	30	70	125	190	281	510	555
Race	Black	23	128.435	157.54	32.85	5	570	5	25	67	170	300	540	570	570
Race	Asian	6	59	66.076	26.98	10	179	10	10	35	85	179	179	179	179
Race	Some Others	7	70	59.652	22.55	10	180	10	10	60	105	180	180	180	180
Race	Hispanic	15	83.733	102.972	26.59	1	370	1	10	30	120	228	370	370	370
Hispanic	No	225	102.613	113.686	7.579	3	690	9	30	70	125	210	300	540	570
Hispanic	Yes	32	71.219	79.899	14.12	1	370	1	12.5	32.5	110	150	228	370	370
Hispanic	DK	2	57.5	31.82	22.5	35	80	35	35	57.5	80	80	80	80	80
Employment	*	143	80.161	88.031	7.362	3	625	9	25	55	115	160	215	315	570
Employment	Full Time	48	130.271	127.162	18.35	1	555	10	40	85	180	300	360	555	555
Employment	Part Time	24	129.708	158.934	32.44	3	690	10	35	85	143.5	228	510	690	690
Employment	Not Employed	42	95.429	94.776	14.62	1	440	5	30	80	120	180	235	440	440
Employment	Refused	2	322.5	307.591	217.5	105	540	105	105	323	540	540	540	540	540
Education	*	162	86.593	94.553	7.429	3	625	10	27	60	120	170	220	370	570
Education	< High School	11	124.818	171.918	51.84	1	540	1	5	45	180	345	540	540	540
Education	High School Graduate	33	113.636	110.669	19.27	3	555	5	30	90	160	240	290	555	555
Education	< College	19	129.842	147.389	33.81	5	510	5	33	70	210	440	510	510	510
Education	College Graduate	19	122.105	149.938	34.4	5	690	5	50	85	125	235	690	690	690
Education	Post Graduate	15	102.933	98.093	25.33	1	360	1	30	75	125	235	360	360	360
Census Region	Northeast	66	105.955	115.248	14.19	5	690	10	30	85	150	190	281	540	690
Census Region	Midwest	53	86.057	109.203	15	3	540	5	20	50	115	190	290	510	540
Census Region	South	82	85.463	92.353	10.2	1	570	5	30	60	115	180	255	360	570
Census Region	West	58	119.31	125.638	16.5	1	625	10	30	85	160	235	440	555	625
Day Of Week	Weekday	205	87.02	105.524	7.37	1	625	5	25	55	115	180	240	540	555
Day Of Week	Weekend	54	141.537	117.065	15.93	10	690	25	67	113	180	290	345	440	690
Season	Winter	53	72.189	101.951	14	1	555	3	20	35	85	130	315	440	/555
Season	Spring	88	108.614	96.502	10.29	5	540	10	45	85	147.5	215	255	510	540
Season	Summer	65	116.446	137.897	17.1	5	690	10	30	75	135	270	360	625	690
Season	Fall	53	85.453	96.241	13.22	5	540	5	20	55	120	180	235	345	540
Asthma	No	237	100.941	113.236	7.355	1	690	5	30	70	120	215	315	540	570
Asthma	Yes	22	70.864	61.977	13.21	5	179	10	15	45	145	160	165	179	179
Angina	No	254	99.118	110.809	6.953	1	690	5	30	68.5	120	208	300	540	570
Angina	Yes	5	61.2	53.383	23.87	1	130	1	15	70	90	130	130	130	130
Bronchitis/Emphysema	No	248	100.565	111.621	7.088	1	690	5	30	71	125	210	300	540	570
Bronchitis/Emphysema	Yes	10	52.7	45.363	14.35	9	160	9	22	44	60	125	160	160	160
Bronchitis/Emphysema	DK	1	15	0	0	15	15	15	15	15	15	15	15	15	15

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-109. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors at a Park/Golf Course

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		506	198.603	190.248	8.4575	1	1065	20	60	135	270	465	590	748	870
Gender	Male	291	205.825	183.101	10.7336	1	1015	25	60	150	285	510	590	730	755
Gender	Female	214	187.748	199.367	13.6284	5	1065	15	55	120	250	435	590	870	930
Gender	Refused	1	420	*	*	420	420	420	420	420	420	420	420	420	420
Age (years)	*	10	122.4	60.183	19.0317	30	225	30	60	120	160	202	225	225	225
Age (years)	1-4	21	149.857	176.25	38.4609	21	755	25	50	85	150	360	425	755	755
Age (years)	5-11	54	207.556	184.496	25.1068	25	665	35	70	125	275	555	635	660	665
Age (years)	12-17	52	238.462	242.198	33.5869	15	1065	15	60	147.5	337.5	590	840	915	1065
Age (years)	18-64	314	197.838	185.939	10.4931	1	1015	20	60	150	270	440	580	748	870
Age (years)	> 64	55	188.964	182.919	24.6648	10	735	20	30	120	300	510	570	590	735
Race	White	441	205.338	195.266	9.2984	1	1065	20	60	150	275	480	605	795	915
Race	Black	19	114.474	103.667	23.7829	15	425	15	30	90	155	240	425	425	425
Race	Asian	8	185.625	233.398	82.5186	30	665	30	32.5	47.5	315	665	665	665	665
Race	Some Others	16	171.25	154.229	38.5572	30	560	30	58	119.5	235	405	560	560	560
Race	Hispanic	20	169.45	135.803	30.3664	30	555	32.5	77	145	205	372.5	495	555	555
Race	Refused	2	75	63.64	45	30	120	30	30	75	120	120	120	120	120
Hispanic	No	469	202.706	193.555	8.9376	1	1065	20	60	135	270	480	605	755	915
Hispanic	Yes	34	154.824	135.043	23.1596	15	555	30	60	137.5	175	310	555	555	555
Hispanic	DK	1	10	*	*	10	10	10	10	10	10	10	10	10	10
Hispanic	Refused	2	75	63.64	45	30	120	30	30	75	120	120	120	120	120
Employment	*	128	208.242	209.644	18.5301	15	1065	25	60	120	275	555	645	840	915
Employment	Full Time	201	195.831	188.984	13.3299	8	1015	25	60	135	270	450	570	748	930
Employment	Part Time	41	213.488	215.602	33.6714	20	870	20	60	132	260	540	660	870	870
Employment	Not Employed	132	190.932	166.019	14.4501	1	810	15	60	160	270	420	525	730	735
Employment	Refused	4	130	106.771	53.3854	30	280	30	60	105	200	280	280	280	280
Education	*	140	202.743	204.676	17.2983	15	1065	20.5	60	120	270	498.5	640	840	915
Education	< High School	32	180.844	207.784	36.7315	30	995	30	30	110	245	385	570	995	995
Education	High School Graduate	108	219.676	197.223	18.9778	10	1015	20	77.5	162.5	281	545	625	730	810
Education	<College	93	191.57	171.177	17.7502	1	870	15	60	150	275	440	510	748	870
Education	College Graduate	83	203.53	183.095	20.0973	5	930	23	60	145	270	450	590	795	930
Education	Post Graduate	50	157.76	166.568	23.5562	10	735	20	45	75	255	337.5	555	703	735
Census Region	Northeast	106	184.858	177.429	17.2334	1	1065	20	60	124	240	450	574	635	660
Census Region	Midwest	124	194.629	188.667	16.9428	10	1015	30	60	135	255	420	590	735	995
Census Region	South	136	218.846	211.474	18.1337	10	930	20	60	150	325	525	720	840	915
Census Region	West	140	192.864	179.421	15.1639	5	870	17.5	58	131	272.5	430	575	755	810
Day Of Week	Weekday	276	195.996	189.287	11.3938	5	1015	20	60	145	252.5	510	625	748	840
Day Of Week	Weekend	230	201.73	191.76	12.6443	1	1065	20	60	130	280	454.5	580	810	915
Season	Winter	83	209.072	195.228	21.429	15	1065	30	60	165	275	440	660	795	1065
Season	Spring	163	168.479	159.071	12.4594	8	930	20	50	120	235	360	510	570	755
Season	Summer	192	219.615	199.872	14.4245	5	1015	20	65	155	290	535	630	840	915
Season	Fall	68	198.706	217.911	26.4256	1	995	20	60	117.5	280	555	735	810	995
Asthma	No	466	192.127	178.759	8.2808	1	1015	20	60	135	270	450	580	700	755
Asthma	Yes	38	284.526	288.727	46.8377	30	1065	35	90	170	390	870	995	1	65 1065
Asthma	DK	2	75	63.64	45	30	120	30	30	75	120	120	120	120	120
Angina	No	494	197.881	189.761	8.5378	1	1065	20	60	135	270	459	590	755	915
Angina	Yes	9	247.778	235.267	78.4224	35	730	35	60	120	330	730	730	730	730
Angina	DK	3	170	170.587	98.4886	30	360	30	30	120	360	360	360	360	360
Bronchitis/Emphysema	No	490	196.978	184.633	8.3409	1	1065	20	60	145	270	454.5	585	735	840
Bronchitis/Emphysema	Yes	14	273.143	339.073	90.6211	20	995	20	75	100	280	930	995	995	995
Bronchitis/Emphysema	DK	2	75	63.64	45	30	120	30	30	75	120	120	120	120	120

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-110. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors at a Pool/River/Lake

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		283	209.555	185.668	11.037	5	1440	25	60	150	296	480	570	670	690
Gender	Male	152	229.829	202.702	16.441	10	1440	30	82.5	174	305	510	600	690	900
Gender	Female	131	186.031	161.293	14.092	5	645	20	60	135	280	440	550	630	630
Age (years)	*	6	175	156.971	64.083	60	480	60	85	115	195	480	480	480	480
Age (years)	1-4	14	250.571	177.508	47.441	90	630	90	130	167.5	370	560	630	630	630
Age (years)	5-11	29	175.448	117.875	21.889	25	390	30	60	145	293	365	375	390	390
Age (years)	12-17	22	128.318	94.389	20.124	40	420	58	60	82.5	210	225	235	420	420
Age (years)	18-64	187	224.492	203.822	14.905	5	1440	20	60	150	320	511	615	690	900
Age (years)	> 64	25	194.2	161.757	32.351	20	525	30	60	115	277	480	510	525	525
Race	White	246	201.565	182.298	11.623	5	1440	25	60	145	285	440	560	670	690
Race	Black	12	380.583	231.89	66.941	20	690	20	177.5	450	562.5	615	690	690	690
Race	Asian	4	265	247.083	123.54	30	505	30	52.5	262.5	477.5	505	505	505	505
Race	Some Others	5	237	129.933	58.108	70	435	70	220	225	235	435	435	435	435
Race	Hispanic	12	161	131.699	38.018	20	390	20	52.5	112.5	265	375	390	390	390
Race	Refused	4	243.75	208.621	104.31	90	550	90	115	167.5	372.5	550	550	550	550
Hispanic	No	259	208.923	187.792	11.669	5	1440	25	60	150	295	480	585	670	690
Hispanic	Yes	20	210.9	160.142	35.809	20	540	28.5	87.5	155	337.5	450.5	525.5	540	540
Hispanic	Refused	4	243.75	208.621	104.31	90	550	90	115	167.5	372.5	550	550	550	550
Employment	*	66	176.879	131.256	16.156	25	630	40	70	142.5	235	370	420	560	630
Employment	Full Time	119	210.748	176.089	16.142	10	900	20	65	150	298	510	600	645	670
Employment	Part Time	26	217.038	199.926	39.209	20	670	30	60	120	320	570	580	670	670
Employment	Not Employed	69	238.884	236.16	28.43	5	1440	20	65	145	370	510	630	690	1440
Employment	Refused	3	141.667	52.52	30.322	90	195	90	90	140	195	195	195	195	195
Education	*	73	172.932	129.988	15.214	20	630	30	70	140	225	370	420	560	630
Education	< High School	18	267.611	159.382	37.567	40	600	40	145	247.5	375	525	600	600	600
Education	High School Graduate	69	213.217	224.126	26.982	10	1440	20	60	145	285	511	670	690	1440
Education	< College	62	233.258	192.408	24.436	5	690	30	65	150	360	550	580	615	690
Education	College Graduate	37	230.919	187.271	30.787	14	645	20	70	173	400	505	630	645	645
Education	Post Graduate	24	172.708	196.977	40.208	20	900	25	45	112.5	240	370	480	900	900
Census Region	Northeast	61	220.689	172.373	22.07	30	900	30	60	180	325	390	510	670	900
Census Region	Midwest	41	219.22	257.201	40.168	10	1440	20	60	120	280	480	600	1440	1440
Census Region	South	111	182.198	161.288	15.309	5	670	20	60	118	280	420	525	630	645
Census Region	West	70	237.571	181.838	21.734	25	690	40	90	180	300	547.5	615	690	690
Day Of Week	Weekday	165	188.77	179.894	14.005	10	1440	30	60	125	255	420	511	615	670
Day Of Week	Weekend	118	238.619	190.432	17.531	5	900	20	75	187.5	350	555	630	690	690
Season	Winter	30	173.167	181.68	33.17	20	630	20	40	102.5	270	492.5	585	630	630
Season	Spring	77	206.468	163.551	18.638	15	690	30	80	180	288	480	555	670	690
Season	Summer	151	219.709	196.809	16.016	5	1440	26	65	155	300	445	580	630	900
Season	Fall	25	201.4	189.663	37.933	20	670	45	70	105	310	510	510	670	670
Asthma	No	262	209.004	188.208	11.628	5	1440	25	60	150	295	480	580	670	690
Asthma	Yes	17	238.824	161.966	39.282	15	570	15	105	225	350	525	570	570	570
Asthma	DK	4	121.25	59.214	29.607	60	195	60	75	115	167.5	195	195	195	195
Angina	No	272	205.897	185.199	11.229	5	1440	25	60	145	290.5	480	570	645	690
Angina	Yes	8	359.375	178.774	63.206	60	690	60	287.5	340	435	690	690	690	690
Angina	DK	3	141.667	52.52	30.322	90	195	90	90	140	195	195	195	195	195
Bronchitis/Emphysema	No	266	210.974	189.082	11.593	5	1440	25	60	150	296	480	580	670	690
Bronchitis/Emphysema	Yes	14	197.143	131.54	35.156	15	440	15	90	172.5	300	370	440	440	440
Bronchitis/Emphysema	DK	3	141.667	52.52	30.322	90	195	90	90	140	195	195	195	195	195

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-111. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors at a Restaurant/Picnic

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		64	81.016	114.7	14.337	3	540	5	12.5	30	107.5	165	270	540	540
Gender	Male	31	111.839	148.921	26.747	5	540	5	20	60	150	270	540	540	540
Gender	Female	33	52.061	57.66	10.037	3	210	3	8	30	80	135	180	210	210
Age (years)	1-4	6	57.5	61.38	25.058	5	160	5	15	30	105	160	160	160	160
Age (years)	5-11	5	112.8	202.59	90.601	5	473	5	6	20	60	473	473	473	473
Age (years)	12-17	6	60	55.408	22.62	5	150	5	30	35	105	150	150	150	150
Age (years)	18-64	46	84.804	116.85	17.229	3	540	5	10	50	120	180	270	540	540
Age (years)	> 64	1	15	*	*	15	15	15	15	15	15	15	15	15	15
Race	White	54	76	105.032	14.293	3	540	5	15	30	105	165	270	473	540
Race	Black	4	57.75	83.108	41.554	5	180	5	5.5	23	110	180	180	180	180
Race	Asian	1	75	*	*	75	75	75	75	75	75	75	75	75	75
Race	Some Others	2	97.5	31.82	22.5	75	120	75	75	97.5	120	120	120	120	120
Race	Hispanic	2	20	14.142	10	10	30	10	10	20	30	30	30	30	30
Race	Refused	1	540	*	*	540	540	540	540	540	540	540	540	540	540
Hispanic	No	60	81.833	117.521	15.172	3	540	5	12.5	30	107.5	172.5	371.5	540	540
Hispanic	Yes	4	68.75	66.63	33.315	10	160	10	20	52.5	117.5	160	160	160	160
Employment	*	17	74.647	114.206	27.699	5	473	5	15	30	105	160	473	473	473
Employment	Full Time	37	70.838	67.86	11.156	3	270	5	15	55	120	165	210	270	270
Employment	Part Time	4	42	32.031	16.016	3	75	3	16.5	45	67.5	75	75	75	75
Employment	Not Employed	6	187.833	272.841	111.387	5	540	5	7	17.5	540	540	540	540	540
Education	*	18	70.667	112.076	26.416	3	473	3	6	30	105	160	473	473	473
Education	< High School	1	540	*	*	540	540	540	540	540	540	540	540	540	540
Education	High School Graduate	11	56.182	84.536	25.489	3	270	3	10	20	60	165	270	270	270
Education	< College	10	108.6	164.611	52.055	5	540	5	7	30	150	352.5	540	540	540
Education	College Graduate	11	68.636	59.544	17.953	10	210	10	20	55	110	120	210	210	210
Education	Post Graduate	13	70.308	53.494	14.836	6	180	6	15	75	80	140	180	180	180
Census Region	Northeast	19	88.105	116.181	26.654	3	473	3	10	60	120	270	473	473	473
Census Region	Midwest	15	102.6	140.685	36.325	3	540	3	15	45	165	210	540	540	540
Census Region	South	16	48.563	47.25	11.812	5	140	5	8.5	30	92.5	120	140	140	140
Census Region	West	14	85.357	138.737	37.079	10	540	10	15	30	75	160	540	540	540
Day Of Week	Weekday	35	51.2	52.665	8.902	3	180	3	15	30	75	150	165	180	180
Day Of Week	Weekend	29	117	154.21	28.636	5	540	5	10	60	135	473	540	540	540
Season	Winter	8	79.375	75.187	26.583	10	210	10	20	52.5	135	210	210	210	210
Season	Spring	14	138.429	172.811	46.186	5	540	5	30	65	180	473	540	540	540
Season	Summer	28	71	105.063	19.855	3	540	3	7.5	35	100	150	160	540	540
Season	Fall	14	44.571	52.2	13.951	5	165	5	10	20	60	150	165	165	165
Asthma	No	61	82.131	117.182	15.004	3	540	5	10	30	110	165	270	540	540
Asthma	Yes	3	58.333	40.723	23.511	30	105	30	30	40	105	105	105	105	105
Angina	No	63	82.222	115.211	14.515	3	540	5	15	30	110	165	270	540	540
Angina	Yes	1	5	*	*	5	5	5	5	5	5	5	5	5	5
Bronchitis/Emphysema	No	63	81.667	115.502	14.552	3	540	5	10	30	110	165	270	540	540
Bronchitis/Emphysema	Yes	1	40	*	*	40	40	40	40	40	40	40	40	40	40

Note: A "*" Signifies missing data. Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-112. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors at a Farm

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		128	252.703	232.537	20.554	5	955	20	75	176.5	427.5	600	730	855	933
Gender	Male	86	305.186	251.432	27.113	5	955	29	90	230	500	660	780	933	955
Gender	Female	42	145.238	137.207	21.171	5	600	20	50	105	210	265	482	600	600
Age (years)	*	1	510	*	*	510	510	510	510	510	510	510	510	510	510
Age (years)	1-4	3	121.667	52.52	30.322	70	175	70	70	120	175	175	175	175	175
Age (years)	5-11	7	111.286	76.952	29.085	25	264	25	50	100	130	264	264	264	264
Age (years)	12-17	9	157.778	85.416	28.472	29	265	29	90	175	265	265	265	256	265
Age (years)	18-64	91	296.67	252.209	26.439	5	955	20	80	230	500	635	780	933	955
Age (years)	> 64	17	133.824	134.182	32.544	5	495	5	50	85	160	360	495	495	495
Race	White	120	260.217	236.226	21.564	5	955	20	75	180	472.5	607.5	745	855	933
Race	Black	4	58.75	30.923	15.462	25	85	25	32.5	62.5	85	85	85	85	85
Race	Some Others	2	165	21.213	15	150	180	150	150	165	180	180	180	180	180
Race	Hispanic	2	277.5	222.739	157.5	120	435	120	120	277.5	435	435	435	435	435
Hispanic	No	123	252.61	234.762	21.168	5	955	20	70	178	420	600	730	855	933
Hispanic	Yes	4	297.5	189.143	94.571	120	485	120	135	292..5	460	485	485	485	485
Hispanic	Refused	1	85	*	*	85	85	85	85	85	85	85	85	85	85
Employment	*	19	134.947	77.658	17.816	25	265	25	86	120	180	264	265	265	265
Employment	Full Time	73	314.781	258.07	30.205	5	955	20	85	240	525	660	780	933	955
Employment	Part Time	11	283	183.589	55.354	45	525	45	150	230	490	495	525	525	525
Employment	Not Employed	24	152.917	183.977	37.554	5	825	5	35	90	205	280	495	825	825
E mployment	Refused	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Education	*	20	137.2	76.255	17.051	25	265	27	88	120	180	262	264.5	265	265
Education	< High School	12	305	211.058	60.927	30	635	30	97.5	325	492.5	510	635	635	635
Education	High School Graduate	50	314.54	280.31	39.642	5	955	20	85	215	525	745	855	944	955
Education	< College	25	186.6	165.994	33.199	5	555	15	60	155	255	482	525	555	555
Education	College Graduate	12	290.417	242.903	70.12	30	615	30	67.5	202.5	530	600	615	615	615
Education	Post Graduate	9	229.444	246.062	82.021	5	780	5	80	150	210	780	780	780	780
Census Region	Northeast	11	238.182	299.143	90.195	5	955	5	30	100	490	520	955	955	955
Census Region	Midwest	42	202.31	196.644	30.343	15	780	20	654	125	265	510	635	780	780
Census Region	South	57	279.702	239.345	31.702	5	933	25	85	195	482	635	760	825	933
Census Region	West	18	293.667	242.324	57.116	5	855	5	120	220	525	615	855	855	855
Day Of Week	Weekday	78	276.859	243.801	27.605	5	955	15	85	180	485	615	780	933	955
Day Of Week	Weekend	50	215.02	210.635	29.788	5	855	25	60	120	290	525	700	792.5	855
Season	Winter	32	205.25	207.666	36.711	5	955	22	77.5	120	245	495	540	955	955
Season	Spring	40	224.4	213.304	33.726	5	825	25	60	152.5	342.5	525	625	825	825
Season	Summer	43	276.093	247.758	37.783	5	933	20	70	230	435	660	760	933	933
Season	Fall	13	379.231	264.904	73.471	15	780	15	200	280	600	730	780	780	780
Asthma	No	120	256.983	235.209	21.472	5	955	21	75	180	427.5	607.5	745	855	933
Asthma	Yes	8	188.5	188.481	66.638	5	500	5	700	110	321.5	500	500	500	500
Angina	No	127	253.039	233.426	20.713	5	955	20	75	175	435	600	730	855	933
Angina	Yes	1	210	*	*	210	210	210	210	210	210	210	210	210	210
Bronchitis/Emphysema	No	125	256.208	233.892	20.92	5	955	22	75	178	435	600	730	855	933
Bronchitis/Emphysema	Yes	3	106.667	95.699	55.252	5	195	5	5	120	195	195	195	195	195

Note: A "*" Signifies missing data. Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-113. Statistics for 24-Hour Cumulative Number of Minutes Spent at Home in the Kitchen

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		7063	92.646	94.207	1.121	1	1320	10	30	60	120	205	270	365	460
Gender	Male	2988	74.998	80.79	1.478	1	840	10	30	55	90	155	215	300	392
Gender	Female	4072	105.636	101.03	1.5832	1	1320	10	35	75	145	230	295	395	475
Gender	Refused	3	40	31.225	18.028	15	75	15	15	30	75	75	75	75	75
Age (years)	*	144	102.688	110.82	9.235	5	840	15	30	70	130	215	260	485	540
Age (years)	1-4	335	73.719	54.382	2.9712	5	392	15	30	60	100	140	180	225	240
Age (years)	5-11	477	60.468	52.988	2.4262	1	690	10	30	50	75	120	150	180	235
Age (years)	12-17	396	55.02	58.111	2.9202	1	450	5	15	36	65	125	155	240	340
Age (years)	18-64	4531	90.313	90.893	1.3503	1	1320	10	30	60	120	200	260	345	420
Age (years)	> 64	1180	131.388	119.55	3.4802	3	825	15	49	100	172	275	360	490	620
Race	White	5827	95.076	95.151	1.2465	1	840	10	30	65	120	210	273	380	465
Race	Black	641	79.376	91.989	3.6333	2	1320	10	30	60	100	175	230	275	380
Race	Asian	113	89.363	95.45	8.9792	5	690	10	30	75	115	150	220	265	650
Race	Some Others	119	69.059	60.786	5.5722	2	315	7	30	55	90	150	195	210	315
Race	Hispanic	266	84.203	77.297	4.7394	1	585	10	30	60	110	190	240	305	360
Race	Refused	97	90.33	113.55	11.53	5	880	7	30	60	90	190	275	480	880
Hispanic	No	6458	93.422	94.778	1.1794	1	1320	10	30	60	120	210	270	370	460
Hispanic	Yes	497	83.889	82.921	3.7195	1	675	10	30	60	110	180	240	315	415
Hispanic	DK	32	82.25	71.901	12.71	5	300	10	35	60	112.5	185	240	300	300
Hispanic	Refused	76	88.421	118.56	13.6	5	880	7	30	60	90	190	240	480	880
Employment	*	1200	62.348	55.431	1.6001	1	690	10	30	50	85	125	152.5	212.5	260
Employment	Full Time	2965	77.748	77.466	1.4227	1	840	10	30	60	100	165	225	300	376
Employment	Part Time	608	97.699	94.046	3.8141	1	755	10	30	70	133.5	213	270	405	445
Employment	Not Employed	2239	126.929	115.78	2.4468	1	1320	12	45	95	175	270	342	470	545
Employment	Refused	51	106.373	168.46	23.589	2	880	5	30	48	130	210	250	840	880
Education	*	1346	63.922	62.315	1.6985	1	880	10	30	50	85	130	165	235	285
Education	< High School	678	108.114	102.88	3.9511	1	775	10	34	80	150	230	295	405	545
Education	High School Graduate	2043	107.208	102.33	2.264	1	840	10	35	75	150	235	300	415	500
Education	< College	1348	94.359	101.17	2.7555	1	1320	10	30	60	120	210	280	380	450
Education	College Graduate	933	91.874	92.098	3.0152	2	840	10	30	60	120	200	261	330	410
Education	Post Graduate	715	88.227	87.661	3.2783	1	770	10	30	60	113	190	260	380	405
Census Region	Northeast	1645	99.632	99.739	2.4591	1	840	10	30	70	130	210	300	390	465
Census Region	Midwest	1601	96.066	93.567	2.3384	1	833	10	30	65	125	213	270	355	450
Census Region	South	2383	86.253	87.055	1.7833	1	880	10	30	60	115	190	245	330	420
Census Region	West	1434	91.441	99.061	2.6159	1	1320	10	30	60	119	195	255	380	480
Day Of Week	Weekday	4849	90.068	92.218	1.3243	1	1320	10	30	60	119	195	255	360	450
Day Of Week	Weekend	2214	98.294	98.207	2.0871	1	840	10	30	65.5	135	220	280	390	480
Season	Winter	1938	96.575	100.32	2.2787	1	1320	10	30	65	120	210	285	390	485
Season	Spring	1780	89.02	90.187	2.1376	1	840	10	30	60	120	195	255	350	420
Season	Summer	1890	89.316	90.984	2.0928	1	880	10	30	60	120	195	255	362	430
Season	Fall	1455	96.177	94.494	2.4773	1	770	10	30	65	125	210	275	375	470
Asthma	No	6510	92.448	93.602	1.1601	1	1320	10	30	60	120	205	270	365	450
Asthma	Yes	503	94.038	96.001	4.2805	1	785	10	30	60	120	210	270	345	450
Asthma	DK	50	104.44	143.73	20.326	7	880	10	30	60	120	195	240	712.5	880
Angina	No	6798	91.625	93.03	1.1283	1	1320	10	30	60	120	200	265	360	450
Angina	Yes	207	122.469	111.41	7.7437	4	657	10	45	100	155	255	360	415	620
Angina	DK	58	105.948	138.38	18.17	2	880	10	30	60	135	240	240	545	880
Bronchitis/Emphysema	No	6671	91.827	92.587	1.1336	1	1320	10	30	60	120	200	265	360	445
Bronchitis/Emphysema	Yes	338	104.784	113.39	6.1676	1	825	10	30	71	135	225	300	480	657
Bronchitis/Emphysema	DK	54	117.889	142.41	19.38	2	880	10	30	76	160	240	275	545	880

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-114. Statistics for 24-Hour Cumulative Number of Minutes Spent in the Bathroom

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		6661	35.0237	48.796	0.5979	1	870	5	15	25	40	60	90	137	255
Gender	Male	3006	32.689	50.366	0.9186	1	870	5	15	20.5	35	60	75	150	300
Gender	Female	3653	36.9491	47.399	0.7842	1	665	5	15	30	45	70	90	135	240
Gender	Refused	2	27.5	3.536	2.5	25	30	25	25	27.5	30	30	30	30	30
Age (years)	*	122	43.8689	67.007	6.0665	2	530	5	15	30	45	85	120	300	360
Age (years)	1-4	328	35.939	46.499	2.5675	1	600	10	15	30	40	60	75	125	270
Age (years)	5-11	490	30.9673	38.609	1.7442	1	535	5	15	27	35	52.5	60	100	200
Age (years)	12-17	445	29.0517	32.934	1.5612	1	547	5	15	20	35	60	65	90	100
Age (years)	18-64	4486	34.4884	46.067	0.6878	1	665	5	15	25	40	60	90	135	250
Age (years)	> 64	790	42.1975	69.431	2.4703	1	870	5	15	30	45	75	120	240	360
Race	White	5338	34.3164	48.628	0.6656	1	870	5	15	25	40	60	85	135	255
Race	Black	711	36.8678	39.559	1.4836	1	460	5	15	30	45	70	98	135	186
Race	Asian	117	33.5556	41.449	3.8319	5	375	5	15	25	40	60	90	110	210
Race	Some Others	134	47.306	69.649	6.0167	1	535	5	15	30	45	95	120	315	422
Race	Hispanic	283	38.6396	61.494	3.6554	1	546	5	15	24	45	60	80	270	425
Race	Refused	78	34.6026	49.182	5.5687	3	360	5	10	20	35	60	135	165	360
Hispanic	No	6067	34.5332	45.887	0.5891	1	705	5	15	25	40	60	90	135	240
Hispanic	Yes	498	39.2309	68.582	3.0733	1	870	5	15	25	45	60	90	270	425
Hispanic	DK	33	44.4242	72.269	12.58	5	422	10	15	30	45	60	120	422	422
Hispanic	Refused	63	44.0794	95.224	11.997	3	665	5	10	20	35	60	150	360	665
Employment	*	1240	31.9645	39.652	1.1261	1	600	5	15	30	35	60	70	100	180
Employment	Full Time	3130	33.4086	44.827	0.8012	1	595	5	15	25	40	60	80	123	240
Employment	Part Time	583	35.5232	43.932	1.8195	1	430	5	15	29	45	60	90	140	270
Employment	Not Employed	1661	40.1854	61.587	1.5111	1	870	5	15	30	45	75	110	210	340
Employment	Refused	47	34.6809	54.835	7.9986	3	360	5	15	25	30	55	75	360	360
Education	*	1386	32.1717	42.788	1.1493	1	665	5	15	25	35	60	70	110	200
Education	< High School	522	40.8736	64.533	2.8245	1	870	5	15	30	45	70	100	240	350
Education	High School Graduate	1857	35.832	50.155	1.1639	1	600	5	15	25	40	63	90	135	270
Education	< College	1305	36.0797	44.121	1.2214	1	540	5	15	25	45	70	95	150	225
Education	College Graduate	913	34.9912	54.071	1.7895	1	705	5	15	20	40	60	90	150	340
Education	Post Graduate	678	32.1475	42.82	1.6445	1	460	5	15	22	40	60	75	110	300
Census Region	Northeast	1497	34.3287	51.244	1.3244	1	600	5	15	25	40	60	80	140	335
Census Region	Midwest	1465	35.7802	54.521	1.4245	1	870	5	15	25	40	60	90	145	315
Census Region	South	2340	35.0739	42.003	0.8683	1	510	5	15	30	40	60	90	135	214
Census Region	West	1359	34.8874	50.399	1.3671	1	705	5	15	25	40	60	90	140	250
Day Of Week	Weekday	4613	33.9035	46.663	0.687	1	870	5	15	25	40	60	85	135	240
Day Of Week	Weekend	2048	37.5469	53.214	1.1759	1	600	5	15	30	45	65	90	150	300
Season	Winter	1853	37.0232	50.658	1.1768	1	665	5	15	30	42	65	90	150	270
Season	Spring	1747	36.6474	50.536	1.2091	1	870	5	15	30	45	60	90	135	240
Season	Summer	1772	32.7788	44.543	1.0582	1	570	5	15	25	38	60	80	135	210
Season	Fall	1289	33.0349	49.108	1.3678	1	540	5	11	20	35	60	90	140	303
Asthma	No	6132	34.9204	48.833	0.6236	1	870	5	15	25	40	60	90	135	255
Asthma	Yes	493	35.2495	38.157	1.7185	1	410	5	15	30	45	65	90	140	220
Asthma	DK	36	49.5278	121.114	20.186	3	665	5	10	17.5	30	60	360	665	665
Angina	No	6473	34.5801	46.79	0.5816	1	870	5	15	25	40	60	90	135	240
Angina	Yes	145	51.9103	88.284	7.3316	3	600	7	20	30	45	75	185	546	570
Angina	DK	43	44.8605	111.216	16.96	3	665	5	10	15	30	50	110	665	665
Bronchitis/Emphysema	No	6327	34.8211	48.073	0.6044	1	870	5	15	25	40	60	90	135	255
Bronchitis/Emphysema	Yes	296	36.8378	47.481	2.7598	1	600	5	15	30	43.5	60	90	180	250
Bronchitis/Emphysema	DK	38	54.6316	122.723	19.908	3	665	5	10	17.5	30	110	360	665	665

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-115. Statistics for 24-Hour Cumulative Number of Minutes Spent at Home in the Bedroom

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		9151	563.12	184.644	1.9302	3	1440	300	460	540	660	780	880	1005	1141
Gender	Male	4157	549.648	182.976	2.8379	3	1440	285	450	540	640	780	860	980	1095
Gender	Female	4990	574.274	185.332	2.6236	5	1440	312	470	555	660	790	900	1030	1185
Gender	Refused	4	648.75	122.772	61.386	540	785	540	545	635	752.5	785	785	785	785
Age (years)	*	184	525.065	193.498	14.265	15	1440	195	420	513	600	720	860	950	1295
Age (years)	1-4	488	741.988	167.051	7.562	30	1440	489	635	740	840	930	990	1095	1200
Age (years)	5-11	689	669.144	162.888	6.2055	35	1440	435	600	665	740	840	915	1065	1140
Age (years)	12-17	577	636.189	210.883	8.7792	15	1375	165	542	645	750	875	970	1040	1210
Age (years)	18-64	5891	532.699	172.964	2.2535	3	1440	295	440	520	610	723	820	975	1110
Age (years)	> 64	1322	550.8	171.997	4.7305	15	1440	315	475	540	610	735	840	1000	1140
Race	White	7403	553.424	175.912	2.0445	3	1440	300	455	540	640	760	850	975	1105
Race	Black	923	612.33	219.9	7.2381	15	1440	300	480	597	725	895	990	1160	1323
Race	Asian	153	612.261	187.417	15.152	25	1285	345	510	600	705	830	950	1005	1245
Race	Some Others	174	590.713	200.214	15.178	15	1405	300	464	580	700	830	960	1050	1152
Race	Hispanic	378	602.577	214.353	11.025	25	1440	265	480	587.5	720	865	958	1095	1213
Race	Refused	120	555.842	198.564	18.126	30	1405	285	440	534	630	762.5	875	1290	1295
Hispanic	No	8326	560.878	182.574	2.0009	3	1440	300	460	540	650	780	870	1000	1140
Hispanic	Yes	684	597.402	206.333	7.8893	15	1440	300	480	585	713	840	958	1095	1200
Hispanic	DK	43	542.279	169.881	25.907	135	1002	300	420	555	660	756	830	1002	1002
Hispanic	Refused	98	523.439	180.194	18.202	30	1295	255	415	515	600	735	795	930	1295
Employment	*	1736	679.52	185.535	4.453	15	1440	390	590	675	785	892	960	1065	1170
Employment	Full Time	3992	513.454	157.599	2.4943	3	1440	283	435	510	585	680	765	890	1000
Employment	Part Time	777	551.613	169.425	6.0781	15	1335	330	455	540	630	750	835	1005	1100
Employment	Not Employed	2578	566.409	191.218	3.7661	5	1440	300	478	540	650	780	905	1095	1223
Employment	Refused	68	513.971	209.558	25.413	30	1440	210	420	497.5	585	725	795	1200	1440
Education	*	1925	668.265	188.751	4.302	15	1440	360	575	663	780	885	960	1060	1170
Education	< High School	807	554.809	180.581	6.3567	5	1440	300	450	540	630	775	860	1015	1160
Education	High School Graduate	2549	534.057	176.208	3.4901	3	1440	285	447	520	607	720	835	975	1151
Education	< College	1740	539.07	176.123	4.2222	5	1440	282	450	530	615	735	825	1005	1135
Education	College Graduate	1223	526.025	164.899	4.7152	15	1404	300	445	515	600	713	785	965	1070
Education	Post Graduate	907	525.192	160.567	5.3315	3	1355	315	445	510	600	690	780	950	1095
Census Region	Northeast	2037	561.515	185.273	4.105	5	1440	300	457	540	655	781	885	1020	1139
Census Region	Midwest	2045	552.402	179.232	3.9634	3	1440	280	450	540	643	765	860	965	1035
Census Region	South	3156	570.023	186.38	3.3177	10	1440	300	465	552	660	790	900	1055	1155
Census Region	West	1913	564.897	186.373	4.2611	5	1440	305	460	540	660	793	875	995	1152
Day Of Week	Weekday	6169	552.611	174.489	2.2216	3	1440	325	450	539	635	760	855	975	1130
Day Of Week	Weekend	2982	584.861	202.361	3.7057	3	1440	223	480	570	690	825	920	1055	1170
Season	Winter	2475	576	183.782	3.6942	5	1440	305	475	555	660	805	900	1035	1148
Season	Spring	2365	558.956	176.729	3.6341	15	1440	315	455	540	655	770	855	960	1095
Season	Summer	2461	566.114	195.229	3.9354	3	1440	285	455	545	660	810	900	1030	1190
Season	Fall	1850	547.23	179.924	4.1832	3	1440	270	450	537.5	630	750	850	960	1100
Asthma	No	8420	560.814	182.769	1.9918	3	1440	300	460	540	655	780	870	1000	1140
Asthma	Yes	671	593.846	201.517	7.7795	30	1440	300	475	580	690	835	946	1060	1327
Asthma	DK	60	543.117	218.404	28.196	30	1295	223	423	540	605	760	982.5	1275	1295
Angina	No	8836	564.211	183.935	1.9568	3	1440	300	460	540	660	785	880	1005	1140
Angina	Yes	244	535.545	203.888	13.053	20	1440	215	450	522.5	612.5	770	840	1135	1230
Angina	DK	71	522.113	193.937	23.016	30	1295	180	420	540	600	690	820	990	1295
Bronchitis/Emphysema	No	8660	563.08	184.244	1.9799	3	1440	300	460	540	660	780	880	1005	1141
Bronchitis/Emphysema	Yes	423	570.102	192.041	9.3373	15	1440	294	450	555	660	795	900	1055	1110
Bronchitis/Emphysema	DK	68	524.765	186.701	22.641	30	1295	240	420	540	600	700	820	930	1295

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-116. Statistics for 24-Hour Cumulative Number of Minutes Spent at Home in the Garage

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		193	117.782	144.451	10.398	1	790	5	20	60	150	296	480	665	690
Gender	Male	120	144.058	162.612	14.844	2	790	10	30	93.5	182.5	315	518	675	690
Gender	Female	73	74.589	94.322	11.04	1	530	5	15	30	120	180	240	450	530
Age (years)	*	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Age (years)	1-4	4	83.5	47.459	23.729	15	120	15	52	99.5	115	120	120	120	120
Age (years)	5-11	6	63.333	63.377	25.874	10	165	10	25	30	120	165	165	165	165
Age (years)	12-17	12	80.833	78.383	22.627	10	240	10	20	50.5	147.5	185	240	240	240
Age (years)	18-64	130	134.508	165.117	14.482	1	790	5	20	67.5	180	360	526	675	690
Age (years)	> 64	40	88.55	84.108	13.299	5	300	7.5	25	60	142.5	227.5	270	300	300
Race	White	165	109.509	127.523	9.928	1	690	5	20	60	135	240	315	526	675
Race	Black	12	205	219.483	63.359	5	570	5	37.5	90	405	530	570	570	570
Race	Asian	1	5	*	*	5	5	5	5	5	5	5	5	5	5
Race	Some Others	6	186.333	308.416	125.91	10	790	10	18	30	240	790	790	790	790
Race	Hispanic	8	120	164.859	58.287	15	510	15	22.5	60	135	510	510	510	510
Race	Refused	1	120	*	*	120	120	120	120	120	120	120	120	120	120
Hispanic	No	174	116.615	138.452	10.496	1	690	5	20	60	155	296	460	570	675
Hispanic	Yes	17	128.588	207.294	50.276	5	790	5	20	60	110	510	790	790	790
Hispanic	Refused	2	127.5	10.607	7.5	120	135	120	120	127.5	135	135	135	135	135
Employment	*	21	79.714	67.545	14.74	10	240	15	25	51	120	165	185	240	240
Employment	Full Time	85	145.259	175.17	19	1	790	5	20	65	180	405	530	675	790
Employment	Part Time	17	50.118	51.967	12.604	5	194	5	15	30	60	135	194	194	194
Employment	Not Employed	70	112.271	127.392	15.226	5	690	5	30	75	135	255	450	480	690
Education	*	22	76.545	67.572	14.406	10	240	10	20	50.5	120	165	185	240	240
Education	< High School	14	188.929	195.036	52.126	5	675	5	30	120	235	510	675	675	675
Education	High School Graduate	63	127.286	159.283	20.068	2	690	5	25	60	165	300	530	665	690
Education	< College	48	121.583	147.764	21.328	5	790	10	30	60	140	296	450	790	790
Education	College Graduate	25	118.2	145.773	29.155	5	480	5	20	60	120	405	460	480	480
Education	Post Graduate	21	75.857	88.067	19.218	1	300	2	10	30	120	195	260	300	300
Census Region	Northeast	23	137.174	159.451	33.248	5	510	15	30	60	195	460	510	510	510
Census Region	Midwest	42	131.381	166.398	25.676	10	690	20	40	87.5	120	260	665	690	690
Census Region	South	60	103.683	128.598	16.602	2	570	5	12.5	52.5	127.5	283	427.5	480	570
Census Region	West	68	115.265	139.682	16.939	1	790	5	20	72.5	152.5	300	315	530	790
Day Of Week	Weekday	116	128.664	158.968	14.76	1	790	5	25	60	165	315	510	665	690
Day Of Week	Weekend	77	101.39	118.416	13.495	2	675	10	20	60	120	240	300	526	675
Season	Winter	51	115.608	161.848	22.663	2	690	5	15	50	150	240	526	665	690
Season	Spring	59	136.763	163.341	21.265	5	790	10	30	90	165	315	570	675	790
Season	Summer	51	101.078	121.329	16.989	1	530	5	20	60	120	260	450	460	530
Season	Fall	32	112.875	110.217	19.484	5	480	10	25	85	157.5	240	315	480	480
Asthma	No	184	118.598	146.349	10.789	1	790	5	25	60	150	300	480	665	690
Asthma	Yes	9	101.111	102.585	34.195	5	270	5	15	60	180	270	270	270	270
Angina	No	187	118.219	146.174	10.689	1	790	5	20	60	150	300	480	665	690
Angina	Yes	6	104.167	78.639	32.104	10	220	10	25	110	150	220	220	220	220
Bronchitis/Emphysema	No	185	114.146	142.947	10.51	1	790	5	20	60	135	260	480	665	690
Bronchitis/Emphysema	Yes	8	201.875	163.64	57.856	15	450	15	60	177.5	337.5	450	450	450	450

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-117. Statistics for 24-Hour Cumulative Number of Minutes Spent in the Basement

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		274	142.15	162.882	9.84	1	931	10	30	90	180	330	535	705	765
Gender	Male	132	160.386	180.747	15.732	1	931	10	40	90	202.5	490	565	720	765
Gender	Female	141	125.66	143.283	12.067	2	810	10	30	75	175	265	420	705	720
Gender	Refused	1	60	*	*	60	60	60	60	60	60	60	60	60	60
Age (years)	*	3	171.667	122.712	70.848	30	245	30	30	240	245	245	245	245	245
Age (years)	1-4	8	94.75	55.695	19.691	28	180	28	47.5	90	137.5	180	180	180	180
Age (years)	5-11	25	135.4	145.945	29.189	15	705	15	60	105	140	270	420	705	705
Age (years)	12-17	26	97.462	113.063	22.173	1	515	10	30	60	150	240	275	515	515
Age (years)	18-64	170	151.271	172.66	13.242	1	810	5	30	90	210	410	555	720	765
Age (years)	> 64	42	143.833	173.502	26.772	5	931	10	40	90	170	330	455	931	931
Race	White	248	133.75	154.08	9.784	1	810	10	30	90	167.5	315	510	705	720
Race	Black	15	183.8	165.472	42.725	12	515	12	40	150	270	450	515	515	515
Race	Asian	2	135	106.066	75	60	210	60	60	135	210	210	210	210	210
Race	Some Others	3	468.667	455.654	263.072	20	931	20	20	455	931	931	931	931	931
Race	Hispanic	1	30	*	*	30	30	30	30	30	30	30	30	30	30
Race	Refused	5	263.2	173.071	77.4	60	540	60	231	240	245	540	540	540	540
Hispanic	No	263	139.046	161.666	9.969	1	931	10	30	90	180	330	510	705	765
Hispanic	Yes	6	185	197.332	80.561	15	555	15	30	150	210	555	555	555	555
Hispanic	DK	1	185	*	*	185	185	185	185	185	185	185	185	185	185
Hispanic	Refused	4	271.25	198.762	99.381	60	540	60	150	242.5	392.5	540	540	540	540
Employment	*	57	115.561	124.205	16.451	1	705	12	40	90	150	240	420	515	705
Employment	Full Time	107	149.075	178.633	17.269	1	810	5	30	75	210	450	540	720	765
Employment	Part Time	22	115	114.808	24.477	10	535	25	60	77.5	150	185	290	535	535
Employment	Not Employed	85	157.953	176.347	19.128	5	931	10	35	120	210	330	600	720	931
Employment	Refused	3	151.667	110.265	63.661	30	245	30	30	180	245	245	245	245	245
Education	*	65	129.492	133.447	16.552	1	705	15	45	90	160	270	420	535	705
Education	< High School	15	169.867	203.464	52.534	5	605	5	30	90	255	565	605	605	605
Education	High School Graduate	78	159.385	188.681	21.364	5	810	5	40	90	195	420	720	765	810
Education	< College	48	160.583	184.204	26.588	2	931	10	25	120	202.5	400	600	931	931
Education	College Graduate	39	146.744	150.808	24.149	10	555	10	30	70	210	450	510	555	555
Education	Post Graduate	29	73.138	66.272	12.306	1	245	10	30	60	100	210	210	245	245
Census Region	Northeast	90	115.611	118.744	12.517	5	555	10	40	72.5	150	250	400	540	555
Census Region	Midwest	123	129.024	146.939	13.249	2	765	10	30	90	180	270	510	605	630
Census Region	South	35	187.971	205.847	34.794	10	931	28	45	110	255	450	720	931	931
Census Region	West	26	234.423	247.688	48.576	1	810	1	30	165	325	705	720	810	810
Day Of Week	Weekday	178	135.331	159.404	11.948	1	810	10	30	82.5	180	315	535	720	765
Day Of Week	Weekend	96	154.792	169.263	17.275	5	931	10	50	97.5	190	450	540	600	931
Season	Winter	80	144.475	147.022	16.438	5	630	13.5	30	90	220.5	315	480	610	630
Season	Spring	65	174.215	196.783	24.408	1	931	5	60	105	210	490	555	810	931
Season	Summer	79	142.367	180.698	20.33	1	765	5	30	85	150	455	605	720	765
Season	Fall	50	96.4	83.08	11.749	5	332	10	30	60	145	240	255	301	332
Asthma	No	253	143.126	164.183	10.322	1	931	10	35	90	180	330	540	705	765
Asthma	Yes	20	124.65	150.961	33.756	1	510	5.5	16	72.5	177.5	382.5	510	510	510
Asthma	DK	1	245	*	*	245	245	245	245	245	245	245	245	245	245
Angina	No	269	141.409	163.736	9.983	1	931	10	30	90	180	330	535	705	765
Angina	Yes	3	201.667	122.1	70.494	65	300	65	65	240	300	300	300	300	300
Angina	DK	2	152.5	130.815	92.5	60	245	60	60	152.5	245	245	245	245	245
Bronchitis/Emphysema	No	265	138.996	160.98	9.889	1	931	10	30	90	180	330	515	705	765
Bronchitis/Emphysema	Yes	8	233.75	214.172	75.721	20	605	20	67.5	180	375	605	605	605	605
Bronchitis/Emphysema	DK	1	245	*	*	245	245	245	245	245	245	245	245	245	245

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-118. Statistics for 24-Hour Cumulative Number of Minutes Spent at Home in the Utility Room or Laundry Room

								Percentiles							
Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		458	73.218	71.872	3.358	1	510	5	25	60	100	150	200	300	360
Gender	Male	70	78.443	95.687	11.437	1	510	5	20	60	90	167.5	345	360	510
Gender	Female	388	72.276	66.796	3.391	2	510	5	28	60	105	150	190	240	330
Age (years)	*	6	65.833	34.412	14.049	25	120	25	40	60	90	120	120	120	120
Age (years)	1-4	3	75	116.94	67.515	5	210	5	5	10	210	210	210	210	210
Age (years)	5-11	3	105.667	168.423	97.239	2	300	2	2	15	300	300	300	300	300
Age (years)	12-17	8	55.5	77.107	27.261	1	240	1	17	33	52.5	240	240	240	240
Age (years)	18-64	362	73.58	73.87	3.882	2	510	5	20	60	105	150	195	325	405
Age (years)	> 64	76	72.592	58.092	6.664	2	345	10	30	60	90	150	180	245	345
Race	White	400	69.243	65.801	3.29	2	510	5	25	60	90	150	180	258	352.5
Race	Black	35	100.514	103.238	17.45	1	510	5	20	60	135	240	300	510	510
Race	Asian	4	82.5	37.749	18.875	30	120	30	60	90	105	120	120	120	120
Race	Some Others	6	86.667	27.869	11.377	60	120	60	65	78	120	120	120	120	120
Race	Hispanic	10	95.9	78.827	24.927	4	225	4	20	105	120	217.5	225	225	225
Race	Refused	3	170	264.15	152.507	15	475	15	15	20	475	475	475	475	475
Hispanic	No	435	72.069	69.87	3.35	1	510	5	25	60	90	150	190	300	360
Hispanic	Yes	20	81.7	62.982	14.083	4	225	4.5	40	60	120	182.5	218	225	225
Hispanic	DK	1	55	*	*	55	55	55	55	55	55	55	55	55	55
Hispanic	Refused	2	247.5	321.734	227.5	20	475	20	20	248	475	475	475	475	475
Employment	*	12	76.75	107.831	31.128	1	300	1	4	23	135	240	300	300	300
Employment	Full Time	206	69.184	78.438	5.465	2	510	5	20	60	90	135	203	360	405
Employment	Part Time	51	72.216	62.506	8.753	2	225	5	15	55	120	150	180	225	225
Employment	Not Employed	187	77.679	63.835	4.668	5	475	10	30	60	115	150	180	245	345
Employment	Refused	2	76	104.652	74	2	150	2	2	76	150	150	150	150	150
Education	*	17	72	90.881	22.042	1	300	1	10	35	90	240	300	300	300
Education	< High School	51	71.765	49.445	6.924	15	245	20	30	60	90	120	180	195	245
Education	High School Graduate	163	71.583	71.583	5.607	2	510	6	30	60	90	140	180	325	405
Education	< College	107	77.234	71.721	6.934	2	475	5	20	60	120	155	200	225	240
Education	College Gradutae	60	74.033	77.252	9.973	5	510	10	27	60	97.5	154	190	203	510
Education	Post Graduate	60	71.267	79.857	10.31	5	360	5	18	60	90	155	263	360	360
Census Region	Northeast	105	80.933	84.595	8.256	2	510	5	25	60	120	180	225	345	360
Census Region	Midwest	116	64.948	63.307	5.878	2	475	5	15	60	90	135	155	215	240
Census Region	South	151	72.695	69.541	5.659	1	510	10	30	60	90	150	210	245	330
Census Region	West	86	75.872	69.9	7.537	4	405	5	30	60	115	150	180	360	405
Day Of Week	Weekday	322	68.643	66.724	3.718	1	510	5	23	60	90	140	180	240	345
Day Of Week	Weekend	136	84.051	82.05	7.036	5	510	10	30	60	120	180	240	360	405
Season	Winter	145	75.248	80.989	6.726	1	510	5	17	60	90	165	215	360	475
Season	Spring	89	81.888	83.016	8.8	5	510	10	30	60	100	180	240	405	510
Season	Summer	132	69.25	60.815	5.293	2	360	5	25	60	120	135	155	240	325
Season	Fall	92	67.326	58.613	6.111	3	345	10	22	60	90	125	180	245	345
Asthma	No	432	73.764	73.182	3.521	1	510	5	25	60	105	150	200	325	360
Asthma	Yes	26	64.154	44.791	8.784	10	200	10	25	60	90	120	130	200	200
Angina	No	440	72.134	70.217	3.347	1	510	5	25	60	100	150	185	270	360
Angina	Yes	16	103.125	109.877	27.469	5	360	5	30	60	138	345	360	360	360
Angina	DK	2	72.5	17.678	12.5	60	85	60	60	73	85	85	85	85	85
Bronchitis/emphysema	No	428	73.276	73.484	3.552	1	510	5	24	60	105	150	200	325	360
Bronchitis/emphysema	Yes	30	72.4	43.498	7.942	10	200	15	45	60	90	125	150	200	200

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-119. Statistics for 24-Hour Cumulative Number of Minutes Spent at Home in the Outdoor Pool or Spa

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		85	115.318	103.713	11.249	1	450	15	34	90	150	255	360	450	450
Gender	Male	34	113.676	106.758	18.309	5	450	10	45	75	150	258	360	450	450
Gender	Female	51	116.412	102.691	14.38	1	450	15	30	90	178	240	360	390	450
Age (years)	*	2	60	63.64	45	15	105	15	15	60	105	105	105	105	105
Age (years)	1-4	9	85.556	86.329	28.776	15	255	15	30	60	75	255	255	255	255
Age (years)	5-11	15	164.2	103.969	26.845	25	450	25	105	140	185	300	450	450	450
Age (years)	12-17	5	97	53.805	24.062	40	180	40	60	100	105	180	180	180	180
Age (years)	18-64	44	117.614	112.718	16.993	4	450	15	32	82.5	155	297	360	450	450
Age (years)	> 64	10	78.9	85.318	26.98	1	258	1	20	52.5	90	226.5	258	258	258
Race	White	75	120.893	107.723	12.439	1	450	15	34	90	180	258	360	450	450
Race	Black	5	66	59.729	26.711	10	150	10	20	45	105	150	150	150	150
Race	Some Others	1	105	*	*	105	105	105	105	105	105	105	105	105	105
Race	Hispanic	2	112.5	53.033	37.5	75	150	75	75	112.5	150	150	150	150	150
Race	Refused	2	37.5	31.82	22.5	15	60	15	15	37.5	60	60	60	60	60
Hispanic	No	78	116.821	104.631	11.847	1	450	10	34	90	160	255	360	450	450
Hispanic	Yes	5	123	108.374	48.466	30	300	30	60	75	150	300	300	300	300
Hispanic	Refused	2	37.5	31.82	22.5	15	60	15	15	37.5	60	60	60	60	60
Employment	*	29	128.207	96.956	18.004	15	450	20	60	105	178	255	300	450	450
Employment	Full Time	27	111.889	102.499	19.726	4	390	10	30	90	150	297	360	390	390
Employment	Part Time	2	237.5	300.52	212.5	25	450	25	25	237.5	450	450	450	450	450
Employment	Not Employed	26	98.962	94.835	18.599	1	360	5	30	67.5	130	240	258	360	360
Employment	Refused	1	15	*	*	15	15	15	15	15	15	15	15	15	15
Education	*	30	124.433	97.486	17.798	15	450	15	60	105	178	250	300	450	450
Education	< High School	8	109.375	155.367	54.93	5	450	5	15	37.5	157.5	450	450	450	450
Education	High School Graduate	15	150	130.516	33.699	1	390	1	45	105	240	360	390	390	390
Education	< College	17	80.529	66.66	16.167	4	240	4	30	75	90	225	240	240	240
Education	College Graduate	9	120.556	107.308	35.769	15	297	15	30	85	180	297	297	297	297
Education	Post Graduate	6	81.667	42.032	17.159	30	135	30	60	67.5	130	135	135	135	135
Census Region	Northeast	23	135.348	113.518	23.67	1	450	10	40	100	225	245	297	450	450
Census Region	Midwest	16	64.625	63.636	15.909	4	255	4	25	52.5	82.5	135	255	255	255
Census Region	South	23	114.696	78.499	16.368	15	390	20	60	105	150	185	210	390	390
Census Region	West	23	131.174	129.262	26.953	15	450	25	30	75	195	360	360	450	450
Day Of Week	Weekday	56	114.464	106.726	14.262	1	450	5	30	90	155	255	390	450	450
Day Of Week	Weekend	29	116.966	99.452	18.468	10	360	20	45	85	150	297	360	360	360
Season	Winter	10	118.9	159.415	50.412	4	450	4	20	30	135	405	450	450	450
Season	Spring	24	97.417	74.622	15.232	10	360	30	52.5	80	120	180	195	360	360
Season	Summer	47	124.511	104.25	15.206	1	450	15	40	90	185	255	300	450	450
Season	Fall	4	105.75	107.481	53.741	30	258	30	30	67.5	181.5	258	258	258	258
Asthma	No	73	109.89	105.481	12.346	1	450	10	30	75	140	255	360	450	450
Asthma	Yes	11	160.455	82.355	24.831	85	360	85	90	150	225	225	360	360	360
Asthma	DK	1	15	*	*	15	15	15	15	15	15	15	15	15	15
Angina	No	84	116.512	103.746	11.32	1	450	15	37	90	155	255	360	450	450
Angina	DK	1	15	*	*	15	15	15	15	15	15	15	15	15	15
Bronchitis/Emphysema	No	78	115.731	101.786	11.525	1	450	10	40	90	150	255	360	450	450
Bronchitis/Emphysema	Yes	6	126.667	137.792	56.253	15	360	15	25	67.5	225	360	360	360	360
Bronchitis/Emphysema	DK	1	15	*	*	15	15	15	15	15	15	15	15	15	15

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-120. Statistics for 24-Hour Cumulative Number of Minutes Spent at Home in the Yard or Other Areas Outside the House

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		2308	137.587	144.112	2.9997	1	1290	10	40	90	180	320	420	570	660
Gender	Male	1198	158.448	160.016	4.6231	1	1290	10	60	120	198	360	500	627	730
Gender	Female	1107	114.887	120.869	3.6328	1	1065	5	30	75	150	285	360	450	560
Gender	Refused	3	183.333	60.277	34.801	120	240	120	120	190	240	240	240	240	240
Age (years)	*	27	167.37	164.484	31.6549	2	600	5	60	120	230	395	600	600	600
Age (years)	1-4	151	135.311	111.483	9.0723	5	630	25	60	90	180	305	345	450	480
Age (years)	5-11	271	150.594	135.111	8.2074	2	1250	20	60	120	190	310	405	553	570
Age (years)	12-17	157	113.153	117.746	9.3972	2	660	5	30	80	150	240	405	462	610
Age (years)	18-64	1301	136.382	147.923	4.1011	1	1080	5	30	90	180	330	435	570	715
Age (years)	> 64	401	141.125	155.213	7.751	1	1290	10	45	90	180	302	465	598	660
Race	White	1966	139.037	145.534	3.2823	1	1290	10	40	90	180	330	435	570	670
Race	Black	173	128.416	144.607	10.9943	1	1250	5	30	95	180	270	390	462	745
Race	Asian	21	101.19	88.485	19.3091	12	360	15	35	90	125	210	240	360	360
Race	Some Others	37	183.541	161.858	26.6094	2	750	3	84	120	270	380	553	750	750
Race	Hispanic	83	106.108	96.781	10.6231	2	610	5	35	75	145	240	270	330	610
Race	Refused	28	152.321	151.049	28.5455	5	600	5	60	97.5	210	360	510	600	600
Hispanic	No	2122	137.711	144.33	3.1332	1	1290	10	40	90	180	320	420	570	670
Hispanic	Yes	153	125	134.265	10.8547	1	750	5	30	85	150	270	435	575	630
Hispanic	DK	10	213.8	192.232	60.7892	3	585	3	60	145	380	503	585	585	585
Hispanic	Refused	23	176.739	156.551	32.6431	5	600	5	60	160	240	360	510	600	600
Employment	*	581	137.501	125.562	5.2092	2	1250	15	60	110	180	300	370	480	570
Employment	Full Time	807	131.087	150.703	5.305	1	1080	5	30	80	175	307	450	600	745
Employment	Part Time	166	126.145	134.084	10.407	1	1080	10	30	77.5	180	300	360	450	485
Employment	Not Employed	739	146.097	149.672	5.5058	1	1290	10	45	100	185	360	465	585	655
Employment	Refused	15	198	239.029	61.7171	5	660	5	30	120	465	600	660	660	660
Education	*	615	136.348	125.656	5.0669	2	1250	15	60	105	180	300	370	480	570
Education	< High School	236	161.017	186.469	12.1381	2	1290	10	45	105	195	390	510	765	915
Education	High School Graduate	618	144.706	144.929	5.8299	1	840	5	40	100	195	360	479	555	660
Education	< College	381	128.843	141.194	7.2336	1	1080	5	35	85	175	300	400	585	720
Education	College Graduate	251	122.968	135.802	8.5717	1	750	10	30	75	160	300	390	575	690
Education	Post Graduate	207	127.126	149.975	10.424	1	1065	5	30	78	150	320	435	570	630
Census Region	Northeast	473	137.67	132.769	6.1047	1	750	10	45	90	185	317	420	532	600
Census Region	Midwest	456	138.853	155.656	7.2893	2	1290	10	45	90	180	300	440	575	690
Census Region	South	832	136.472	146.655	5.0843	1	1080	10	35	90	180	310	420	570	730
Census Region	West	547	138.155	139.946	5.9837	1	750	5	36	90	180	330	460	570	630
Day Of Week	Weekday	1453	126.919	131.579	3.4519	1	1250	5	35	90	165	300	395	553	610
Day Of Week	Weekend	855	155.716	161.693	5.5298	1	1290	10	45	110	210	360	475	630	745
Season	Winter	399	112.19	135.967	6.8068	1	1080	5	30	60	140	300	380	540	690
Season	Spring	787	149.738	139.245	4.9635	1	915	10	60	120	195	338	430	555	660
Season	Summer	796	143.681	155.886	5.5252	1	1290	10	45	99	180	330	450	610	715
Season	Fall	326	124.457	130.523	7.229	1	720	10	35	87.5	160	300	380	510	655
Asthma	No	2129	137.746	144.41	3.1297	1	1290	10	40	90	180	315	420	570	690
Asthma	Yes	166	131.566	136.006	10.5561	1	670	10	30	90	165	345	450	553	610
Asthma	DK	13	188.462	192.141	53.2904	5	600	5	60	90	300	480	600	600	600
Angina	No	2228	136.521	141.088	2.989	1	1290	10	41	90	180	315	420	570	660
Angina	Yes	63	158.683	216.341	27.2564	2	1080	5	30	75	180	420	485	1065	1080
Angina	DK	17	199.118	191.305	46.3983	5	600	5	35	120	325	480	600	600	600
Bronchitis/Emphysema	No	2191	138.793	144.994	3.0976	1	1290	10	45	90	180	320	430	570	690
Bronchitis/Emphysema	Yes	105	104.438	111.282	10.86	1	553	5	30	60	145	270	360	415	475
Bronchitis/Emphysema	DK	12	207.5	192.23	55.4919	5	600	5	60	140	330	480	600	600	600

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-121. Statistics for 24-Hour Cumulative Number of Minutes Spent Traveling in a Car

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		6560	87.4261	88.186	1.0888	1	1280	10	34	63	110	175	240	345	450
Gender	Male	2852	90.7398	97.337	1.8227	1	1280	10	30	63	115	185	254	360	526
Gender	Female	3706	84.9069	80.374	1.3203	1	878	10	35	63.5	110	165	220	335	420
Gender	Refused	2	30	14.142	10	20	40	20	20	30	40	40	40	40	40
Age (years)	*	120	94.025	90.218	8.2358	7	593	10	37.5	71.5	120	180	222.5	435	450
Age (years)	1-4	297	63.0101	56.758	3.2934	2	390	10	25	45	80	135	180	235	270
Age (years)	5-11	449	64.6325	81.08	3.8264	1	900	5	20	40	85	145	175	310	345
Age (years)	12-17	393	64.8346	70.974	3.5802	1	630	9	20	41	80	136	185	300	380
Age (years)	18-64	4489	93.8278	92.302	1.3776	1	1280	13	40	70	120	184	250	360	495
Age (years)	> 64	812	83.5283	79.436	2.7877	4	780	10	30	60	110	165	225	315	405
Race	White	5337	87.6283	89.72	1.2281	1	1280	10	31	64	110	175	240	360	460
Race	Black	640	86.8063	74.343	2.9387	1	690	10	35	65	115	180	240	305	330
Race	Asian	117	78.7607	66.315	6.1309	5	360	20	35	60	95	135	225	320	330
Race	Some Others	121	87.6942	84.48	7.68	3	540	10	30	60	120	180	250	330	345
Race	Hispanic	265	90.0717	101.474	6.2335	2	825	15	35	65	100	165	235	465	620
Race	Refused	80	82.4	73.314	8.1967	5	420	12	30	60	120	167.5	229.5	315	420
Hispanic	No	5987	87.4657	87.603	1.1322	1	1280	10	35	65	110	175	240	345	440
Hispanic	Yes	477	88.543	97.206	4.4507	2	825	10	30	60	103	180	240	388	595
Hispanic	DK	29	63.8966	73.131	13.5801	5	325	6	20	40	60	187	200	325	325
Hispanic	Refused	67	86.1194	78.361	9.5733	5	420	14	30	60	120	180	239	315	420
Employment	*	1124	64.2482	72.331	2.1575	1	900	5	20	45	81	136	180	270	345
Employment	Full Time	3134	93.5568	92.167	1.6464	2	1280	15	40	70	120	180	242	360	490
Employment	Part Time	632	90.0506	81.969	3.2605	2	878	10	40	70	116.5	175	230	330	384
Employment	Not Employed	1629	90.3603	90.224	2.2354	1	780	10	35	60	115	195	250	365	465
Employment	Refused	41	97.1707	83.994	13.1176	10	330	15	30	75	120	220	290	330	330
Education	*	1260	66.531	72.305	2.0369	1	900	6	21	45	85	145	186.5	270	350
Education	< High School	434	86.0115	82.143	3.943	5	620	10	35	60	115	165	210	360	455
Education	High School Graduate	1805	91.8476	91.088	2.144	1	870	10	38	65	115	190	255	385	465
Education	< College	1335	93.2427	94.302	2.581	2	1280	10	36	70	120	180	250	380	460
Education	College Graduate	992	95.6683	95.468	3.0311	4	840	14	40	73	120	185	250	370	580
Education	Post Graduate	734	91.5395	82.009	3.027	4	905	20	40	75	115	175	235	330	380
Census Region	Northeast	1412	85.8343	83.847	2.2314	1	780	10	33	60	110	170	240	330	410
Census Region	Midwest	1492	89.0992	86.623	2.2426	4	825	10	35	65	112.5	180	250	360	465
Census Region	South	2251	88.2625	89.347	1.8832	1	900	10	34	65	115	175	235	338	490
Census Region	West	1405	85.9089	92.167	2.4589	2	1280	10	30	60	110	175	235	345	435
Day Of Week	Weekday	4427	83.9248	85.023	1.2779	1	905	10	30	60	105	165	225	330	440
Day Of Week	Weekend	2133	94.6929	94.018	2.0357	1	1280	10	35	70	120	190	265	360	455
Season	Winter	1703	83.4692	82.128	1.9902	1	870	10	30	60	105	165	230	350	425
Season	Spring	1735	88.589	91.537	2.1976	1	905	10	30	60	110	180	250	380	480
Season	Summer	1767	88.0266	86.471	2.0571	1	900	10	35	65	115	170	235	330	450
Season	Fall	1355	90.1269	93.173	2.5312	1	1280	10	35	70	115	170	240	335	545
Asthma	No	6063	87.4143	88.032	1.1306	1	1280	10	34	63	110	175	240	350	450
Asthma	Yes	463	88.2419	92.088	4.2797	4	870	15	34	64	110	165	245	345	505
Asthma	DK	34	78.4118	57.362	9.8376	10	239	10	30	71	100	160	220	239	239
Angina	No	6368	87.54	88.695	1.1115	1	1280	10	34	63.5	110	175	240	350	450
Angina	Yes	154	82.1753	68.568	5.5254	8	365	10	30	60	115	162	214	285	320
Angina	DK	38	89.6053	72.877	11.8221	10	360	10	35	73.5	120	180	239	360	360
Bronchitis/Emphysema	No	6224	87.5517	88.855	1.1263	1	1280	10	34	62	110	175	240	350	450
Bronchitis/Emphysema	Yes	300	85.5833	76.155	4.3968	1	505	10	35	68.5	109	185	237.5	305	435
Bronchitis/Emphysema	DK	36	81.0556	63.142	10.5237	5	239	10	30	71	120	175	220	239	239

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-122. Statistics for 24-Hour Cumulative Number of Minutes Spent Traveling in a Truck (Pick-up/Van)

								Percentiles							
Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		1172	85.3	95.867	2.8003	1	955	10	30	60	110	180	240	395	478
Gender	Male	760	91.097	105.368	3.8221	1	955	10	30	60	115	190	265	450	620
Gender	Female	412	74.607	74.197	3.6554	1	510	10	25	55	95	165	220	300	355
Age (years)	*	13	110.769	129.178	35.8274	10	450	10	35	60	90	300	450	450	450
Age (years)	1-4	41	80.829	154.295	24.0969	1	955	10	15	35	70	206	210	955	955
Age (years)	5-11	89	47.607	44.208	4.6861	1	240	7	15	30	65	110	130	180	240
Age (years)	12-17	80	66.763	71.084	7.9475	5	352	5.5	15	37	93.5	180	222.5	265	352
Age (years)	18-64	859	91.42	97.968	3.3426	2	750	10	30	60	115	189	260	440	555
Age (years)	> 64	90	79	82.42	8.6878	10	453	12	30	48.5	105	185	265	390	453
Race	White	1022	84.717	96.222	3.0099	1	955	10	30	60	110	180	235	390	510
Race	Black	68	91.294	98.465	11.9406	6	453	14	27.5	62.5	105.5	220	295	450	453
Race	Asian	3	138.333	63.311	36.5529	90	210	90	90	115	210	210	210	210	210
Race	Some Others	20	67.2	48.46	10.836	5	165	7.5	25	62.5	102.5	137	154.5	165	165
Race	Hispanic	48	92.792	99.31	14.3341	5	440	10	27.5	60	120	224	330	440	440
Race	Refused	11	88.182	110.754	33.3935	10	390	10	30	60	65	190	390	390	390
Hispanic	No	1069	85.112	95.567	2.9229	1	955	10	30	60	110	180	240	390	478
Hispanic	Yes	87	89.103	100.75	10.8015	5	630	5	29	60	115	210	230	440	630
Hispanic	DK	5	58	36.187	16.1833	20	97	20	20	68	85	97	97	97	97
Hispanic	Refused	11	85.909	111.643	33.6615	10	390	10	30	35	65	190	390	390	390
Employment	*	205	60.176	86.416	6.0355	1	955	7	15	30	75	146	185	240	265
Employment	Full Time	642	93.288	101.354	4.0001	4	750	10	30	60	120	192	270	450	555
Employment	Part Time	97	89.351	88.958	9.0323	2	460	6	30	60	120	190	270	450	460
Employment	Not Employed	217	83.032	85.775	5.8228	5	655	10	30	60	110	180	235	300	355
Employment	Refused	11	96.364	114.26	34.4508	10	390	10	30	35	170	190	390	390	390
Education	*	230	64.043	86.936	5.7324	1	955	7	15	35	85	160	206	245	352
Education	< High School	119	90.471	81.711	7.4904	5	453	14	35	60	120	195	280	295	450
Education	High School Graduate	392	87.594	94.724	4.7843	2	675	10	30	60	115	185	255	450	510
Education	< College	238	91.992	111.776	7.2454	4	750	10	30	60	110	190	290	555	655
Education	College Graduate	127	85.228	74.586	6.6184	5	370	15	30	60	110	180	230	345	355
Education	Post Graduate	66	112.439	117.975	14.5217	10	650	10	35	80	135	220	412	445	650
Census Region	Northeast	170	85.365	104.161	7.9888	2	695	10	20	50	110	186	260	445	630
Census Region	Midwest	268	91.209	94.43	5.7682	1	750	10	30	60	118.5	205	245	390	460
Census Region	South	491	87.279	100.099	4.5174	4	955	10	30	60	111	180	235	445	595
Census Region	West	243	74.741	81.299	5.2153	5	478	10	23	52	90	160	235	395	440
Day Of Week	Weekday	796	80.083	90.569	3.2101	1	750	10	30	55	101	170	230	375	510
Day Of Week	Weekend	376	96.346	105.493	5.4404	2	955	12	30	60.5	120	192	280	430	460
Season	Winter	322	78.543	91.604	5.1049	1	955	10	29	51	95	170	220	355	445
Season	Spring	300	92.477	100.164	5.783	1	695	10	30	60	120	208	267.5	442.5	549
Season	Summer	323	86.133	99.255	5.5227	2	750	10	30	60	110	180	233	430	595
Season	Fall	227	84.216	90.861	6.0306	5	675	10	30	60	105	165	265	395	465
Asthma	No	1092	85.288	93.452	2.828	1	750	10	30	60	110	184	240	412	478
Asthma	Yes	72	83.639	125.252	14.7611	5	955	10	20	46	115	170	235	395	955
Asthma	DK	8	101.875	129.668	45.8446	10	390	10	20	60	127.5	390	390	390	390
Angina	No	1142	84.868	95.219	2.8177	1	955	10	30	60	110	180	235	395	475
Angina	Yes	20	93.4	116.003	25.939	5	555	7.5	37.5	70	103	140.5	350.5	555	555
Angina	DK	10	118.5	128.583	40.6615	10	390	10	30	60	190	340	390	390	390
Bronchitis/Emphysema	No	1128	85.469	96.579	2.8756	1	955	10	30	60	110	180	240	412	478
Bronchitis/Emphysema	Yes	35	77.8	60.527	10.2308	5	240	5	30	60	120	165	220	240	240
Bronchitis/Emphysema	DK	9	93.333	123.92	41.3068	10	390	10	20	60	65	390	390	390	390

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-123. Statistics for 24-Hour Cumulative Number of Minutes Spent Traveling on a Motorcycle, Moped, or Scooter

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		32	100.125	152.222	26.909	1	535	5	25	31	98	375	510	535	535
Gender	Male	29	104.276	158.322	29.4	1	535	5	25	32	80	485	510	535	535
Gender	Female	3	60	74.666	43.108	5	145	5	5	30	145	145	145	145	145
Age (years)	5-11	2	42.5	53.033	37.5	5	80	5	5	42.5	80	80	80	80	80
Age (years)	12-17	1	180	*	*	180	180	180	180	180	180	180	180	180	180
Age (years)	18-64	28	103.893	160.69	30.367	1	535	5	25	31	90.5	485	510	535	535
Age (years)	> 64	1	30	*	*	30	30	30	30	30	30	30	30	30	30
Race	White	31	101.516	154.532	27.755	1	535	5	25	30	116	375	510	535	535
Race	Black	1	57	*	*	57	57	57	57	57	57	57	57	57	57
Hispanic	No	31	102.387	154.191	27.693	1	535	5	25	32	116	375	510	535	535
Hispanic	Yes	1	30	*	*	30	30	30	30	30	30	30	30	30	30
Employment	*	3	88.333	87.797	50.69	5	180	5	5	80	180	180	180	180	180
Employment	Full Time	23	62.783	100.105	20.873	1	485	5	25	30	57	142	145	485	485
Employment	Not Employed	6	249.167	251.663	102.741	10	535	10	30	205	510	535	535	535	535
Education	*	3	88.333	87.797	50.69	5	180	5	5	80	180	180	180	180	180
Education	< High School	3	305	247.538	142.916	30	510	30	30	375	510	510	510	510	510
Education	High School Graduate	15	95.667	170.645	44.06	1	535	1	25	30	57	485	535	535	535
Education	< College	6	45.833	49.54	20.224	10	145	10	20	32.5	35	145	145	145	145
Education	College Graduate	4	70.5	51.423	25.712	20	142	20	37.5	60	103.5	142	142	142	142
Education	Post Graduate	1	32	*	*	32	32	32	32	32	32	32	32	32	32
Census Region	Northeast	6	24.167	8.01	3.27	10	30	10	20	27.5	30	30	30	30	30
Census Region	Midwest	12	191.583	216.501	62.499	1	535	1	28	68.5	430	510	535	535	535
Census Region	South	6	67.167	66.764	27.256	5	180	5	32	35	116	180	180	180	180
Census Region	West	8	44.625	44.654	15.788	5	142	5	15	30	60	142	142	142	142
Day Of Week	Weekday	21	71.333	110.425	24.097	5	510	5	25	32	65	145	180	510	510
Day Of Week	Weekend	11	155.091	205.865	62.071	1	535	1	20	30	375	485	535	535	535
Season	Winter	5	124	230.011	102.864	5	535	5	20	25	35	535	535	535	535
Season	Spring	12	121.833	153.631	44.349	1	485	1	28	43.5	143.5	375	485	485	485
Season	Summer	8	55.875	52.267	18.479	20	180	20	30	33.5	60	180	180	180	180
Season	Fall	7	96.429	184.249	69.639	5	510	5	5	30	80	510	510	510	510
Asthma	No	30	85.1	134.187	24.499	1	510	5	25	30	65	277.5	485	510	510
Asthma	Yes	2	325.5	296.278	209.5	116	535	116	116	325.5	535	535	535	535	535
Angina	No	31	102.387	154.191	27.693	1	535	5	25	32	116	375	510	535	535
Angina	Yes	1	30	*	*	30	30	30	30	30	30	30	30	30	30
Bronchitis/Emphysema	No	31	101.516	154.532	27.755	1	535	5	25	30	116	375	510	535	535
Bronchitis/Emphysema	Yes	1	57	*	*	57	57	57	57	57	57	57	57	57	57

Note: A "*" Signifies missing data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-124. Statistics for 24-Hour Cumulative Number of Minutes Spent Traveling in Other Trucks

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles 5	25	50	75	90	95	98	99
All		124	135.121	235.635	21.16	1	1440	5	25	48	107.5	270	690	960	1080
Gender	Male	80	174.888	283.085	31.65	1	1440	5	27	60	139	640	772.5	1080	1440
Gender	Female	44	62.818	57.438	8.659	1	270	5	20	45	90	145	180	270	270
Age (years)	*	1	35	*	*	35	35	35	35	35	35	35	35	35	35
Age (years)	1-4	4	79	26.47	13.235	46	105	46	58	82.5	100	105	105	105	105
Age (years)	5-11	9	37.875	28.002	9.9	10	95	10	18.5	30	50.5	95	95	95	95
Age (years)	12-17	7	116.857	83.071	31.398	10	250	10	60	90	195	250	250	250	250
Age (years)	18-64	96	153.24	263.424	26.886	1	1440	5	22.5	45	117	600	750	1080	1440
Age (years)	> 64	9	71.5	57.887	20.466	18	186	18	25	60	99	186	186	186	186
Race	White	110	1440	242.807	23.151	1	1440	5	25	60	120	412.5	735	960	1080
Race	Black	8	46.125	36.314	12.839	10	100	10	15	32.5	82	100	100	100	100
Race	Asian	1	40	*	*	40	40	40	40	40	40	40	40	40	40
Race	Some Others	1	95	*	*	95	95	95	95	95	95	95	95	95	95
Race	Hispanic	3	246.333	366.947	211.86	29	670	29	29	40	670	670	670	670	670
Race	Refused	1	35	*	*	35	35	35	35	35	35	35	35	35	35
Hispanic	No	113	133.673	240.595	22.633	1	1440	5	20	45	100	270	735	960	1080
Hispanic	Yes	9	170	200.709	66.903	29	670	29	41	105	180	670	670	670	670
Hispanic	DK	1	85	*	*	85	85	85	85	85	85	85	85	85	85
Hispanic	Refused	1	35	*	*	35	35	35	35	35	35	35	35	35	35
Employment	*	18	79.278	63.15	14.885	10	250	10	35	65	95	195	250	250	250
Employment	Full Time	79	168.468	286.399	32.222	1	1440	5	20	45	114	670	795	1080	1440
Employment	Part Time	6	96	103.894	42.415	2	255	2	5	55	180	255	255	255	255
Employment	Not Employed	19	75.105	57.278	13.14	10	186	10	25	75	120	180	186	186	186
Employment	Refused	2	20	21.213	15	5	35	5	5	20	35	35	35	35	35
Education	*	21	70.333	62.607	13.662	5	250	10	25	60	95	138	195	250	250
Education	< High School	10	389	505.656	159.9	5	1440	5	25	45	750	1117.5	1440	1440	1440
Education	High School Graduate	48	156.958	257.81	37.212	1	1080	5	19	52.5	130	610	690	1080	1080
Education	< College	24	116.25	124.385	25.39	29	600	32	42.5	77.5	120	255	270	600	600
Education	College Graduate	10	53	53.24	16.836	10	180	10	15	30	90	135	180	180	180
Education	Post Graduate	11	48.545	55.111	16.617	1	186	1	15	30	78	103	186	186	186
Census Region	Northeast	28	119.179	237.794	44.939	2	1080	5	27.5	45.5	90	180	795	1080	1080
Census Region	Midwest	36	189.194	318.577	53.096	1	1440	5	17	45	197.5	600	960	1440	1440
Census Region	South	42	100.595	151.868	23.434	1	750	5	22	55	114	186	205	750	750
Census Region	West	18	132.333	194.344	45.807	10	670	10	35	67.5	105	610	670	670	670
Day Of Week	Weekday	82	134.793	197.96	21.861	1	795	5	25	60	120	555	670	750	795
Day Of Week	Weekend	42	135.762	298.573	46.071	1	1440	5	18	45	75	250	960	1440	1440
Season	Winter	36	126.444	219.584	36.597	5	1080	10	26	53	92.5	270	670	1080	1080
Season	Spring	29	199.793	350.125	65.017	1	1440	5	15	35	180	795	960	1440	1440
Season	Summer	38	87.447	125.316	20.329	2	750	5	32	60	95	195	255	750	750
Season	Fall	21	146.952	213.871	46.67	1	735	15	30	74	120	600	600	735	735
Asthma	No	116	133.69	238.543	22.148	1	1440	5	21	48	104	270	735	960	1080
Asthma	Yes	7	173.143	210.169	79.436	32	610	32	35	60	250	610	610	610	610
Asthma	DK	1	35	*	*	35	35	35	35	35	35	35	35	35	35
Angina	No	120	138.725	238.702	21.79	1	1440	5	25	60	112	412.5	712.5	960	1080
Angina	Yes	3	24.333	13.65	7.881	15	40	15	15	18	40	40	40	40	40
Angina	DK	1	35	*	*	35	35	35	35	35	35	35	35	35	35
Bronchitis/Emphysema	No	116	135.612	242.76	22.54	1	1440	5	23.5	45	101.5	555	735	960	1080
Bronchitis/Emphysema	Yes	7	141.286	83.38	31.515	18	250	18	60	180	195	250	250	250	250
Bronchitis/Emphysema	DK	1	35	*	*	35	35	35	35	35	35	35	35	35	35

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-125. Statistics for 24-Hour Cumulative Number of Minutes Spent Traveling on a Bus

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		469	74.648	93.532	4.3189	2	945	10	30	55	90	125	180	435	570
Gender	Male	219	77.251	104.119	7.0357	5	945	10	30	55	90	135	180	460	570
Gender	Female	250	72.368	83.306	5.2688	2	640	15	30	55	90	120	175	420	501
Age (years)	*	14	145	167.177	44.68	10	605	10	60	100	140	435	605	605	605
Age (years)	1-4	5	56	40.218	17.986	15	120	15	30	55	60	120	120	120	120
Age (years)	5-11	133	48.383	29.431	2.552	5	140	10	25	43	67	90	110	120	122
Age (years)	12-17	143	59.413	46.343	3.8754	7	370	10	30	54	75	110	135	179	225
Age (years)	18-64	147	96.639	128.354	10.587	2	945	10	30	60	110	180	405	640	690
Age (years)	> 64	27	131.963	144.641	27.836	10	570	20	45	73	130	435	460	570	570
Race	White	311	70.071	89.462	5.0729	2	945	10	30	54	80	120	147	405	501
Race	Black	101	85.178	92.396	9.1937	5	570	15	35	60	110	140	185	460	468
Race	Asian	15	58	58.487	15.101	5	175	5	20	20	120	155	175	175	175
Race	Some Others	14	107.143	176.48	47.166	20	690	20	30	42.5	100	225	690	690	690
Race	Hispanic	24	65.542	71.515	14.598	15	370	20	30	42.5	87	90	120	370	370
Race	Refused	4	168	196.195	98.098	10	435	10	21	113.5	315	435	435	435	435
Hispanic	No	415	72.839	86.077	4.2253	2	945	10	30	55	90	125	165	420	468
Hispanic	Yes	46	83.913	138.922	20.483	7	690	15	30	37.5	85	145	370	690	690
Hispanic	DK	2	47.5	10.607	7.5	40	55	40	40	47.5	55	55	55	55	55
Hispanic	Refused	6	137.833	159.631	65.169	10	435	10	32	77.5	195	435	435	435	435
Employment	*	274	54.018	39.364	2.3781	5	370	10	29	49.5	70	100	120	150	179
Employment	Full Time	95	122.579	168.8	17.319	5	945	10	30	60	120	405	570	690	945
Employment	Part Time	34	83.265	79.298	13.6	2	468	10	40	60	100	135	185	468	468
Employment	Not Employed	61	80.262	69.212	8.8617	5	460	10	30	65	120	135	165	205	460
Employment	Refused	5	167.4	169.916	75.989	10	435	10	32	165	195	435	435	435	435
Education	*	295	55.302	44.964	2.6179	5	435	10	29	49	70	100	120	155	225
Education	< High School	25	120.4	124.272	24.854	10	570	30	45	90	135	195	405	570	570
Education	High School Graduate	57	111.579	116.718	15.46	10	501	20	45	73	120	225	435	468	501
Education	< College	38	108.842	133.431	21.645	10	640	20	40	75	120	195	605	640	640
Education	College Graduate	30	84.633	128.087	23.385	2	690	5	30	60	90	130	300	690	690
Education	Post Graduate	24	110.458	199.236	40.669	5	945	10	29	60	101.5	125	460	945	945
Census Region	Northeast	145	77.062	75.41	6.2624	7	435	15	30	60	95	135	180	435	435
Census Region	Midwest	102	69.676	103.283	10.227	2	945	10	30	55	85	120	125	175	468
Census Region	South	142	71.718	82.846	6.9523	5	570	10	30	50	80	135	180	460	501
Census Region	West	80	81.813	124.342	13.902	5	690	12.5	30	41.5	90	127.5	297.5	640	690
Day Of Week	Weekday	426	70.61	84.646	4.1011	2	690	10	30	50	85	120	165	435	501
Day Of Week	Weekend	43	114.651	152.229	23.215	10	945	20	45	90	120	180	300	945	945
Season	Winter	158	78.285	98.116	7.8057	5	690	10	30	58	90	125	180	435	605
Season	Spring	140	61.636	53.541	4.525	2	460	10	30	50	75	120	137.5	205	225
Season	Summer	94	86.617	116.695	12.036	5	945	10	30	60	95	155	225	435	945
Season	Fall	77	76.234	107.505	12.251	5	640	10	30	50	80	125	175	570	640
Asthma	No	413	76.448	96.792	4.7628	2	945	10	30	55	90	125	180	435	570
Asthma	Yes	50	55.36	39.329	5.562	5	195	10	30	47.5	71	115	135	165	195
Asthma	DK	6	111.5	161.48	65.924	10	435	10	32	46	100	435	435	435	435
Angina	No	459	73.373	91.312	4.2621	2	945	10	30	55	90	125	179	420	570
Angina	Yes	4	168.75	182.683	91.341	20	435	20	60	110	277.5	435	435	435	435
Angina	DK	6	109.5	162.362	66.284	10	435	10	30	41	100	435	435	435	435
Bronchitis/Emphysema	No	442	74.814	94.281	4.4845	2	945	10	30	55	90	125	180	435	570
Bronchitis/Emphysema	Yes	19	58.158	39.881	9.1493	10	155	10	30	55	65	125	155	155	155
Bronchitis/Emphysema	DK	8	104.625	137.907	48.757	10	435	10	28.5	67.5	100	435	435	435	435

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-126. Statistics for 24-Hour Cumulative Number of Minutes Spent Walking

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		1639	29.6718	41.617	1.028	1	540	2	6	16	39	65	95	151	190
Gender	Male	755	32.4781	48.2611	1.7564	1	540	2	7	20	40	70	100	170	270
Gender	Female	883	27.2831	34.8259	1.172	1	360	2	6	15	35	60	94	140	171
Gender	Refused	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Age (years)	*	38	29.5263	23.7416	3.8514	1	100	2	10	25	40	60	80	100	100
Age (years)	1-4	58	24.3276	26.3268	3.4569	1	160	2	10	15	35	60	60	70	160
Age (years)	5-11	155	18.2129	21.0263	1.6889	1	170	1	5	10	25	40	60	65	100
Age (years)	12-17	223	25.8341	32.3753	2.168	1	190	2	6	15	30	60	100	135	151
Age (years)	18-64	944	31.8252	44.9705	1.4637	1	410	2	6	18.5	40	70	110	171	250
Age (years)	> 64	221	33.81	49.3278	3.3181	1	540	2	10	20	45	73	95	155	180
Race	White	1289	29.5912	43.6801	1.2166	1	540	2	6	15	35	65	100	160	225
Race	Black	175	34.8114	39.7274	3.0031	1	250	2	10	20	50	75	125	160	194
Race	Asian	36	26.5556	24.6535	4.1089	1	100	1	10	20	30	60	78	100	100
Race	Some Others	30	23.7667	21.2192	3.8741	1	60	1	6	17	43	60	60	60	60
Race	Hispanic	88	23.0795	21.1058	2.2499	1	100	2	5.5	15	37	50	60	92	100
Race	Refused	21	33.1905	32.9555	7.1915	4	150	8	15	20	40	65	65	150	150
Hispanic	No	1467	29.8718	41.0288	1.0712	1	410	2	6	16	40	65	100	155	194
Hispanic	Yes	144	26.8403	48.7064	4.0589	1	540	2	5.5	15	35	60	70	100	135
Hispanic	DK	10	30.2	28.8359	9.1187	2	80	2	10	17.5	55	77.5	80	80	80
Hispanic	Refused	18	35.7222	34.7847	8.1988	8	150	8	15	25	55	65	150	150	150
Employment	*	431	22.768	28.0141	1.3494	1	190	2	5	13	30	55	65	131	151
Employment	Full Time	561	30.9519	43.7734	1.8481	1	365	2	7	16	40	70	100	180	250
Employment	Part Time	153	26.8693	37.1231	3.0012	1	295	2	5	15	35	60	92	135	165
Employment	Not Employed	482	35.5249	49.4109	2.2506	1	540	2	10	20	50	75	120	150	250
Employment	Refused	12	18.4167	13.4601	3.8856	5	55	5	10	16.5	20	30	55	55	55
Education	*	472	22.6737	27.6375	1.2721	1	190	2	5	13	30	55	65	130	151
Education	< High School	138	42.7174	71.9429	6.1242	1	540	3	7	20	50	115	145	360	365
Education	High School Graduate	366	29.2596	41.5618	2.1725	1	410	2	5	18	35	65	100	150	240
Education	< College	288	32.5313	39.3063	2.3161	1	295	2	9.5	20	45	75	100	160	180
Education	College Graduate	210	29.7667	38.813	2.6784	1	300	2	8	18.5	40	60	90	140	225
Education	Post Graduate	165	34.5818	44.6107	3.4729	1	360	2	10	20	45	80	95	180	200
Census Region	Northeast	507	34.9172	45.2549	2.0098	1	365	2	10	20	45	75	107	170	250
Census Region	Midwest	321	29.271	46.8743	2.6163	1	540	2	6	15	31	60	105	160	180
Census Region	South	423	24.9976	37.6654	1.8314	1	410	2	5	10	30	60	80	135	171
Census Region	West	388	28.2448	35.029	1.7783	1	285	2	8	15	40	60	90	140	180
Day Of Week	Weekday	1182	29.2902	39.1911	1.1399	1	540	2	7	18	40	65	92	145	180
Day Of Week	Weekend	457	30.6586	47.3511	2.215	1	410	2	5	15	35	60	120	171	200
Season	Winter	412	32.3034	47.7062	2.3503	1	365	2	6	20	38.5	75	120	180	250
Season	Spring	459	28.854	41.54	1.9389	1	540	2	6	16	35	60	90	146	180
Season	Summer	475	26.6084	31.325	1.4373	1	270	2	6	15	35	60	85	123	160
Season	Fall	293	32.2184	46.6936	2.7279	1	410	2	8	20	45	61	105	155	295
Asthma	No	1504	29.6011	41.9939	1.0828	1	540	2	6	16	35.5	65	95	152	190
Asthma	Yes	120	29.7417	38.3451	3.5004	1	250	2	5	15	40	70	117.5	135	150
Asthma	DK	15	36.2	27.8162	7.1821	5	90	5	10	30	60	75	90	90	90
Angina	No	1578	29.5076	41.4718	1.044	1	540	2	6	16	38	65	95	151	190
Angina	Yes	44	29	36.0633	5.4367	2	150	4	6	14.5	36	60	115	150	150
Angina	DK	17	46.6471	63.1456	15.3151	5	270	5	10	30	60	90	270	270	270
Bronchitis/Emphysema	No	1553	29.7173	42.1023	1.0684	1	540	2	6	16	38	65	95	151	194
Bronchitis/Emphysema	Yes	67	26.9851	31.8774	3.8944	1	165	2	5	16	40	60	90	130	165
Bronchitis/Emphysema	DK	19	35.4211	31.3658	7.1958	3	110	3	10	30	60	90	110	110	110

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-127. Statistics for 24-Hour Cumulative Number of Minutes Spent Traveling on a Bicycle/Skateboard/Rollerskate

								Percentiles							
Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		115	45.1217	53.35	4.9749	1	400	5	11	30	60	102	151	195	205
Gender	Male	82	43.2073	56.113	6.1966	1	400	5	10	27.5	50	90	120	195	400
Gender	Female	33	49.8788	46.228	8.0472	5	205	5	15	45	60	105	165	205	205
Age (years)	*	2	15	7.071	5	10	20	10	10	15	20	20	20	20	20
Age (years)	1-4	2	20	14.142	10	10	30	10	10	20	30	30	30	30	30
Age (years)	5-11	18	40.2778	52.985	12.4886	1	195	1	10	15	55	151	195	195	195
Age (years)	12-17	33	31.9697	27.929	4.8618	2	115	5	10	25	45	65	102	115	115
Age (years)	18-64	53	53.2264	62.916	8.6422	5	400	5	20	30	65	105	165	180	400
Age (years)	> 64	7	74	67.295	25.4353	23	205	23	25	35	110	205	205	205	205
Race	White	98	46.7245	56.914	5.7492	1	400	5	11	30	60	110	165	205	400
Race	Black	7	41.1429	21.737	8.2156	5	65	5	25	50	60	65	65	65	65
Race	Asian	2	6	1.414	1	5	7	5	5	6	7	7	7	7	7
Race	Some Others	4	47.5	23.629	11.8145	30	80	30	30	40	65	80	80	80	80
Race	Hispanic	3	33.3333	25.166	14.5297	10	60	10	10	30	60	60	60	60	60
Race	Refused	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Hispanic	No	106	45.8679	55.172	5.3587	1	400	5	10	30	60	105	151	195	205
Hispanic	Yes	8	38.375	23.323	8.2461	10	80	10	23.5	30	55	80	80	80	80
Hispanic	Refused	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Employment	*	52	33.8462	38.258	5.3054	1	195	2	10	20	47.5	65	115	151	195
Employment	Full Time	27	56.8519	76.863	14.7923	5	400	5	15	30	60	115	120	400	400
Employment	Part Time	7	40.8571	24.768	9.3616	10	90	10	30	35	46	90	90	90	90
Employment	Not Employed	27	55.4815	54.258	10.442	5	205	5	20	30	90	165	180	205	205
Employment	Refused	2	55	49.497	35	20	90	20	20	55	90	90	90	90	90
Education	*	56	33.3929	36.945	4.937	1	195	2	10	20	45	65	115	151	195
Education	< High School	3	98.3333	77.835	44.9382	25	180	25	25	90	180	180	180	180	180
Education	High School Graduate	18	41.5556	49.048	11.5606	5	205	5	15	30	46	100	205	205	205
Education	< College	18	42.9444	35.049	8.261	5	120	5	20	30	60	115	120	120	120
Education	College Graduate	11	89.8182	111.308	33.5605	15	400	15	25	53	90	165	400	400	400
Education	Post Graduate	9	57.2222	38.415	12.8049	5	110	5	20	60	90	110	110	110	110
Census Region	Northeast	20	42.05	35.057	7.839	5	102	5	10	32.5	77.5	95	101	102	102
Census Region	Midwest	24	39.125	47.505	9.6969	2	180	5	10	18.5	57.5	90	165	180	180
Census Region	South	26	64.6923	87.03	17.0681	1	400	2	15	32.5	75	195	205	400	400
Census Region	West	45	38.3778	32.614	4.8619	5	151	5	18	30	50	80	115	151	151
Day Of Week	Weekday	83	44.5783	56.02	6.149	5	400	5	15	30	60	90	151	205	400
Day Of Week	Weekend	32	46.5313	46.508	8.2215	1	195	2	10	32.5	75	110	120	195	195
Season	Winter	20	38.6	44.951	10.0513	1	205	3.5	12.5	27.5	47.5	75	147.5	205	205
Season	Spring	46	34.7826	35.036	5.1657	5	195	5	10	22.5	46	80	90	195	195
Season	Summer	34	61.7059	72.243	12.3896	2	400	5	20	42.5	90	115	165	400	400
Season	Fall	15	47.9333	55.663	14.3721	2	180	2	10	20	75	151	180	180	180
Asthma	No	95	48.5368	57.246	5.8733	1	400	5	15	30	60	110	165	205	400
Asthma	Yes	18	29.3333	24.22	5.7086	5	90	5	7	32.5	40	60	90	90	90
Asthma	DK	2	25	7.071	5	20	30	20	20	25	30	30	30	30	30
Angina	No	114	45.3421	53.533	5.0138	1	400	5	11	30	60	102	151	195	205
Angina	DK	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Bronchitis/Emphysema	No	109	45.1284	53.909	5.1636	1	400	5	15	30	60	102	151	195	205
Bronchitis/Emphysema	Yes	5	50	49.624	22.1923	5	115	5	10	30	90	115	115	115	115
Bronchitis/Emphysema	DK	1	20	*	*	20	20	20	20	20	20	20	20	20	20

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-128. Statistics for 24-Hour Cumulative Number of Minutes Spent Waiting on a Bus, Train, etc. Stop

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		151	18.702	18.7513	1.526	1	128	4	7	15	20	40	45	67	120
Gender	Male	61	16.3443	17.9934	2.3038	1	120	4	5	11	20	30	45	65	120
Gender	Female	90	20.3	19.1818	2.02319	1	128	4	10	15	30	42.5	60	75	128
Age (years)	*	2	21	5.6569	4	17	25	17	17	21	25	25	25	25	25
Age (years)	1-4	2	8	9.8995	7	1	15	1	1	8	15	15	15	15	15
Age (years)	5-11	32	12.5	10.7283	1.8965	2	45	2	5	10	15	20	43	45	45
Age (years)	12-17	50	13.78	11.4843	1.6241	1	74	3	5	10	20	23	30	52.5	75
Age (years)	18-64	54	25.5	25.616	3.4859	1	128	5	10	15	30	60	67	120	128
Age (years)	> 64	11	27.2727	13.484	4.0656	5	45	5	20	30	40	45	45	45	45
Race	White	115	18.2522	17.9501	1.6739	1	128	4	5	15	22	40	45	67	75
Race	Black	21	17.4762	11.9901	2.6164	1	45	3	10	15	23	35	40	45	45
Race	Asian	3	10	5	2.8868	5	15	5	5	10	15	15	15	15	15
Race	Some Others	1	15	*	*	15	15	15	15	15	15	15	15	15	15
Race	Hispanic	10	29.8	35.8137	11.3253	5	120	5	10	16.5	20	92.5	120	120	120
Race	Refused	1	15	*	*	15	15	15	15	15	15	15	15	15	15
Hispanic	No	136	18.0956	17.1036	1.4666	1	128	4	6	15	22.5	40	45	67	75
Hispanic	Yes	13	25.2308	32.4427	8.998	1	120	1	10	15	20	65	120	120	120
Hispanic	DK	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Hispanic	Refused	1	15	*	*	15	15	15	15	15	15	15	15	15	15
Employment	*	79	13.1646	11.3707	1.2793	1	75	2	5	10	15	23	35	45	75
Employment	Full Time	31	24.9355	24.8125	4.4565	1	128	5	10	15	30	45	65	128	128
Employment	Part Time	15	31.6667	31.5179	8.1379	5	120	5	10	17	45	67	120	120	120
Employment	Not Employed	26	20.6154	12.7061	2.4919	5	45	5	10	20	30	40	45	45	45
Education	*	87	12.931	10.9723	1.1763	1	75	3	5	10	15	23	30	45	75
Education	< High School	6	32.5	11.726	4.7871	15	45	15	25	32.5	45	45	45	45	45
Education	High School Graduate	25	23.56	24.5749	4.915	5	120	5	10	15	30	45	67	120	120
Education	< College	9	28.333	19.2029	6.401	10	60	10	10	20	45	60	60	60	60
Education	College Graduate	16	33.8125	31.1239	7.781	5	128	5	10	30	37.5	65	128	128	128
Education	Post Graduate	8	14.875	8.3741	2.9607	1	30	1	40.5	15	18.5	30	30	30	30
Census Region	Northeast	63	20.4921	23.43	2.9519	1	128	3	6	15	22	40	65	120	128
Census Region	Midwest	27	17.4074	13.1244	2.5258	3	60	4	5	15	20	35	35	60	60
Census Region	South	39	19.8205	16.6684	2.6691	4	75	5	10	15	28	45	65	75	75
Census Region	West	22	13.1818	11.3458	2.4189	1	45	1	5	10	15	30	30	45	45
Day Of Week	Weekday	128	17.7891	18.9656	1.6763	1	128	3	5.5	15	20	35	45	75	120
Day Of Week	Weekend	23	23.7826	17.0026	3.5453	5	65	5	10	20	35	45	60	65	65
Season	Winter	55	19.9273	15.5693	2.0994	1	75	2	10	15	25	43	60	65	75
Season	Spring	43	17.186	20.6574	3.1502	1	120	4	5	10	20	33	45	120	120
Season	Summer	28	24	25.4675	4.8129	5	128	5	10	15	32.5	45	67	128	128
Season	Fall	25	12.68	9.8815	1.9763	1	45	4	5	10	15	20	35	45	45
Asthma	No	139	18.7698	18.7788	1.5928	1	128	3	10	15	20	40	45	75	120
Asthma	Yes	10	20	20.5372	6.4944	4	65	4	5	12	30	55	65	65	65
Asthma	DK	2	7.5	3.5355	2.5	5	10	5	5	7.5	10	10	10	10	10
Angina	No	151	18.702	18.7513	1.526	1	128	4	7	15	20	40	45	67	120
Bronchitis/Emphysema	No	145	18.6552	18.969	1.5753	1	128	4	6	15	20	40	45	75	120
Bronchitis/Emphysema	Yes	6	19.8333	13.5561	5.5342	9	45	9	10	16	23	45	45	45	45

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-129. Statistics for 24-Hour Cumulative Number of Minutes Spent Traveling on a Train/Subway/Rapid Transit

								Percentiles							
Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		116	97.767	136.346	12.659	1	810	5	27.5	60	120	189	415	690	720
Gender	Male	62	91.613	119.437	15.168	5	720	10	24	60	120	180	240	480	720
Gender	Female	54	104.833	154.349	21.004	1	810	2	30	60	120	195	480	690	810
Age (years)	*	8	191.875	256.82	90.8	20	810	20	55	117.5	180	810	810	810	810
Age (years)	1-4	2	92.5	38.891	27.5	65	120	65	65	92.5	120	120	120	120	120
Age (years)	5-11	3	166.667	271.401	156.693	5	480	5	5	15	480	480	480	480	480
Age (years)	12-17	2	100	56.569	40	60	140	60	60	100	140	140	140	140	140
Age (years)	18-64	92	84.967	106.533	11.107	1	720	5	30	60	104.5	175	240	480	720
Age (years)	> 64	9	122.667	219.531	73.177	10	690	10	10	24	120	690	690	690	690
Race	White	64	89.5	139.691	17.461	1	720	5	22	55	74	195	380	690	720
Race	Black	26	131.385	168.356	33.017	5	810	10	35	117.5	135	195	480	810	810
Race	Asian	3	79.667	17.039	9.838	60	90	60	60	89	90	90	90	90	90
Race	Some Others	4	71.25	47.675	23.838	30	140	30	42.5	57.5	100	140	140	140	140
Race	Hispanic	16	88.625	98.922	24.731	5	415	5	20	70	112.5	165	415	415	415
Race	Refused	3	85	56.347	32.532	20	120	20	20	115	120	120	120	120	120
Hispanic	No	89	101.281	149.687	15.867	1	810	5	25	60	120	195	480	720	810
Hispanic	Yes	22	86.955	85.561	18.242	5	415	10	40	70	120	130	165	415	415
Hispanic	DK	2	79.5	34.648	24.5	55	104	55	55	79.5	104	104	104	104	104
Hispanic	Refused	3	85	56.347	32.532	20	120	20	20	115	120	120	120	120	120
Employment	*	7	126.429	163.598	61.834	5	480	5	15	65	140	480	480	480	480
Employment	Full Time	76	98.526	128.056	14.689	1	720	5	30	60	120	189	380	690	720
Employment	Part Time	10	61.7	46.375	14.665	5	160	5	15	57.5	89	125	160	160	160
Employment	Not Employed	21	101.714	186.201	40.632	1	810	10	10	55	90	165	415	810	810
Employment	Refused	2	107.5	123.744	87.5	20	195	20	20	107.5	195	195	195	195	195
Education	*	10	122	140.024	44.279	5	480	5	20	92.5	140	337.5	480	480	480
Education	< High School	6	181.833	311.76	127.275	1	810	1	5	70	135	810	810	810	810
Education	High School Graduate	30	89.433	109.191	19.935	1	480	2	30	60	120	177.5	415	480	480
Education	< College	26	125.692	189.64	37.192	10	720	10	20	60	120	380	690	720	720
Education	College Graduate	24	66.5	50.332	10.274	5	180	10	24.5	55	102.5	125	175	180	180
Education	Post Graduate	20	74.15	59.415	13.286	10	240	12.5	30	60	97	164.5	214.5	240	240
Census Region	Northeast	72	111.847	134.554	15.857	10	810	20	49	62.5	122.5	189	415	690	810
Census Region	Midwest	14	64.214	109.483	29.261	2	380	2	10	22.5	50	240	380	380	380
Census Region	South	15	75.733	121.139	31.278	1	480	1	10	30	90	160	480	480	480
Census Region	West	15	83.533	179.444	46.332	5	720	5	10	30	75	120	720	720	720
Day Of Week	Weekday	96	101.604	127.189	12.981	1	720	10	30	60	120	195	415	690	720
Day Of Week	Weekend	20	79.35	176.643	39.499	2	810	3.5	7.5	32.5	60	120	465	810	810
Season	Winter	26	138.192	196.327	38.503	5	810	10	30	79.5	130	240	720	810	810
Season	Spring	29	77.276	89.479	16.616	2	480	5	25	60	105	135	175	480	480
Season	Summer	37	106.081	140.735	23.137	5	690	10	30	60	120	195	480	690	690
Season	Fall	24	65.917	82.217	16.782	1	380	1	15	42.5	82.5	160	180	380	380
Asthma	No	106	94.151	122.865	11.934	1	720	5	30	60	120	180	380	480	690
Asthma	Yes	7	146.571	294.036	111.135	1	810	1	10	30	90	810	810	810	810
Asthma	DK	3	111.667	87.797	50.69	20	195	20	20	120	195	195	195	195	195
Angina	No	112	96.527	137.946	13.035	1	810	5	27.5	60	117.5	175	415	690	720
Angina	DK	4	132.5	82.916	41.458	20	195	20	70	157.5	195	195	195	195	195
Bronchitis/Emphysema	No	112	98.179	138.009	13.041	1	810	5	30	60	120	180	415	690	720
Bronchitis/Emphysema	Yes	1	10	*	*	10	10	10	10	10	10	10	10	10	10
Bronchitis/Emphysema	DK	3	111.667	87.797	50.69	20	195	20	20	120	195	195	195	195	195

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-130. Statistics for 24-Hour Cumulative Number of Minutes Spent Traveling on an Airplane

								Percentiles							
Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		53	234	203.736	27.985	10	900	15	70	210	300	480	660	900	900
Gender	Male	28	241.25	230.979	43.651	15	900	20	65	210	292.5	555	900	900	900
Gender	Female	25	225.88	172.581	34.516	10	660	15	110	210	300	480	510	660	660
Age (years)	*	3	175	145.688	84.113	15	300	15	15	210	300	300	300	300	300
Age (years)	12-17	3	113.333	118.568	68.455	15	245	15	15	80	245	245	245	245	245
Age (years)	18-64	42	226.429	193.962	29.929	10	900	20	60	202.5	300	480	555	900	900
Age (years)	> 64	5	405.4	292.392	130.762	195	900	195	210	287	435	900	900	900	900
Race	White	44	241.068	215.555	32.496	10	900	15	65	210	300	510	660	900	900
Race	Black	7	199.286	134.364	50.785	15	435	15	110	210	255	435	435	435	435
Race	Asian	1	60	*	*	60	60	60	60	60	60	60	60	60	60
Race	Hispanic	1	340	*	*	340	340	340	340	340	340	340	340	340	340
Hispanic	No	51	234.745	206.224	28.877	10	900	15	60	210	300	480	660	900	900
Hispanic	Yes	2	215	176.777	125	90	340	90	90	215	340	340	340	340	340
Employment	*	3	113.333	118.568	68.455	15	245	15	15	80	245	245	245	245	245
Employment	Full Time	33	212.424	194.008	33.773	15	900	20	60	180	285	480	555	900	900
Employment	Part Time	3	510	375.899	217.025	150	900	150	150	480	900	900	900	900	900
Employment	Not Employed	13	259.385	168.387	46.702	10	660	10	195	225	300	435	660	660	660
Employment	Refused	1	150	*	*	150	150	150	150	150	150	150	150	150	150
Education	*	4	122.5	98.531	49.265	15	245	15	47.5	115	197.5	245	245	245	245
Education	< High School	4	111.25	179.647	89.823	10	380	10	12.5	27.5	210	380	380	380	380
Education	High School Graduate	9	253.889	191.046	63.682	15	660	15	195	270	285	660	660	660	660
Education	< College	13	293.846	170.784	47.367	20	555	20	180	300	435	510	555	555	555
Education	College Graduate	15	194.8	113.998	29.434	45	480	45	90	210	255	287	480	480	480
Education	Post Graduate	8	305	375.129	132.628	20	900	20	45	137.5	577.5	900	900	900	900
Census Region	Northeast	17	254.706	234.81	56.95	15	900	15	70	245	380	510	900	900	900
Census Region	Midwest	17	235.118	234.348	56.838	15	900	15	60	195	287	660	900	900	900
Census Region	South	9	212.778	103.565	34.522	15	340	15	150	255	270	340	340	340	340
Census Region	West	10	216	181.702	57.459	10	555	10	45	202.5	240	517.5	555	555	555
Day Of Week	Weekday	37	258.919	192.755	31.689	15	900	15	150	230	305	510	660	900	900
Day Of Week	Weekend	16	176.375	222.825	55.706	10	900	10	37.5	95	262.5	360	900	900	900
Season	Winter	17	216.294	172.818	41.914	20	660	20	60	210	275	480	660	660	660
Season	Spring	14	191.786	160.547	42.908	15	555	15	90	150	230	435	555	555	555
Season	Summer	17	230.882	222.171	53.884	10	900	10	60	245	300	480	900	900	900
Season	Fall	5	423	294.398	131.659	180	900	180	240	285	510	900	900	900	900
Asthma	No	51	224.843	201.484	28.213	10	900	15	60	210	287	480	660	900	900
Asthma	Yes	2	467.5	123.744	87.5	380	555	380	380	467.5	555	555	555	555	555
Angina	No	51	233.725	207.562	29.064	10	900	15	60	210	300	480	660	900	900
Angina	Yes	2	241	65.054	46	195	287	195	195	241	287	287	287	287	287
Bronchitis/Emphysema	No	51	231.608	206.7	28.944	10	900	15	60	210	300	480	660	900	900
Bronchitis/Emphysema	Yes	2	295	120.208	85	210	380	210	210	295	380	380	380	380	380

Note: A "*" Signifies missing data. Refuscd = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-131. Statistics for 24-Hour Cumulative Number of Minutes Spent Indoors in a Residence (all rooms)

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		9343	1001.39	275.143	2.8465	8	1440	575	795	985	1235	1395	1440	1440	1440
Gender	Male	4269	945.9	273.498	4.1859	8	1440	540	750	900	1160	1350	1430	1440	1440
Gender	Female	5070	1048.07	267.864	3.7619	30	1440	620	840	1050	1280	1420	1440	1440	1440
Gender	Refused	4	1060	135.647	67.8233	900	1200	900	950	1070	1170	1200	1200	1200	1200
Age (years)	*	187	1001.07	279.866	20.4658	265	1440	565	799	955	1230	1440	1440	1440	1440
Age (years)	1-4	498	1211.64	218.745	9.8022	270	1440	795	1065	1260	1410	1440	1440	1440	1440
Age (years)	5-11	700	1005.13	222.335	8.4035	190	1440	686	845	975	1165	1334	1412.5	1440	1440
Age (years)	12-17	588	969.5	241.776	9.9707	95	1440	585	811.5	950	1155	1310	1405	1440	1440
Age (years)	18-64	6022	947.91	273.033	3.5184	8	1440	540	750	900	1165	1350	1428	1440	1440
Age (years)	> 64	1348	1174.64	229.344	6.2466	60	1440	760	1030	1210	1375	1440	1440	1440	1440
Race	White	7556	999.36	275.678	3.1714	8	1440	570	795	980	1235	1395	1440	1440	1440
Race	Black	941	1015.95	272.54	8.8845	190	1440	600	815	1000	1245	1410	1440	1440	1440
Race	Asian	157	983.52	254.689	20.3264	30	1440	600	810	930	1180	1355	1420	1440	1440
Race	Some Others	181	996.09	268.283	19.9413	10	1440	604	805	975	1198	1380	1440	1440	1440
Race	Hispanic	382	1009.4	281.75	14.4156	55	1440	555	810	1004.5	1250	1410	1440	1440	1440
Race	Refused	126	1019.69	276.578	24.6396	270	1440	575	840	975	1255	1440	1440	1440	1440
Hispanic	No	8498	1000.38	275.436	2.9879	8	1440	575	795	980	1235	1395	1440	1440	1440
Hispanic	Yes	696	1009.84	270.816	10.2653	55	1440	585	810	1000	1230	1405	1440	1440	1440
Hispanic	DK	46	1097.87	286.655	42.265	401	1440	645	835	1172.5	1355	1440	1440	1440	1440
Hispanic	Refused	103	984.08	269.485	26.5531	270	1440	565	810	950	1200	1375	1440	1440	1440
Employment	*	1768	1053.3	248.46	5.909	95	1440	675	870	1030	1255	1413	1440	1440	1440
Employment	Full Time	4068	881.03	259.166	4.0634	8	1440	515	715	835	1045.5	1290	1385	1440	1440
Employment	Part Time	797	982.44	243.085	8.6105	255	1440	600	820	970	1170	1320	1380	1440	1440
Employment	Not Employed	2639	1158.03	233.775	4.5507	60	1440	735	1015	1190	1350	1440	1440	1440	1440
Employment	Refused	71	995.08	268.059	31.8128	445	1440	575	810	940	1255	1440	1440	1440	1440
Education	*	1963	1044.47	251.888	5.6852	95	1440	660	855	1020	1254	1410	1440	1440	1440
Education	< High School	829	1093.37	278.592	9.6759	150	1440	630	870	1130	1345	1440	1440	1440	1440
Education	High School Graduate	2602	1008.1	279.281	5.4751	30	1440	565	803	995	1245	1400	1440	1440	1440
Education	< College	1788	974.34	272.599	6.4468	10	1440	570	775	930	1205	1371	1436	1440	1440
Education	College Graduate	1240	939.49	275.004	7.8096	30	1440	528	745	885	1165	1335	1427.5	1440	1440
Education	Post Graduate	921	943.67	274.27	9.0375	8	1440	540	750	900	1155	1350	1410	1440	1440
Census Region	Northeast	2068	1003.4	278.441	6.1229	30	1440	570	795	980	1245	1405	1440	1440	1440
Census Region	Midwest	2087	1001.73	280.646	6.1432	8	1440	565	790	989	1250	1390	1440	1440	1440
Census Region	South	3230	999	270.19	4.7541	10	1440	585	800	970	1228	1400	1440	1440	1440
Census Region	West	1958	1002.84	273.992	6.192	30	1440	575	800	1000	1230	1390	1440	1440	1440
Day Of Week	Weekday	6286	965.69	272.596	3.4382	30	1440	567	770	911	1190	1380	1440	1440	1440
Day Of Week	Weekend	3057	1074.81	265.676	4.8051	8	1440	615	895	1105	1290	1420	1440	1440	1440
Season	Winter	2513	1034.92	278.237	5.5503	30	1440	590	825	1015	1285	1432	1440	1440	1440
Season	Spring	2424	977.88	267.177	5.4267	10	1440	580	780	955	1185	1370	1435	1440	1440
Season	Summer	2522	980.52	273.962	5.4553	8	1440	555	785	960	1201	1365	1440	1440	1440
Season	Fall	1884	1014.84	277.47	6.3926	30	1440	589	805	997	1260	1405	1440	1440	1440
Asthma	No	8591	999.12	274.377	2.9602	8	1440	576	795	980	1230	1393	1440	1440	1440
Asthma	Yes	689	1027.42	284.437	10.8362	190	1440	555	825	1025	1260	1430	1440	1440	1440
Asthma	DK	63	1025.68	264.342	33.3039	445	1440	630	840	960	1315	1410	1440	1440	1440
Angina	No	9019	997.77	274.112	2.8863	8	1440	575	795	975	1230	1391	1440	1440	1440
Angina	Yes	249	1125.47	281.353	17.83	180	1440	660	925	1185	1380	1440	1440	1440	1440
Angina	DK	75	1024.08	285.059	32.9158	150	1440	560	840	975	1305	1425	1440	1440	1440
Bronchitis/Emphysema	No	8840	997.66	274.78	2.9225	8	1440	575	795	975	1230	1395	1440	1440	1440
Bronchitis/Emphysema	Yes	432	1070.48	273.759	13.1712	205	1440	585	867.5	1110	1292.5	1440	1440	1440	1440
Bronchitis/Emphysema	DK	71	1045.48	273.047	32.4047	445	1440	565	845	975	1320	1440	1440	1440	1440

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-132. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors (outside the residence)

Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		3124	154.03	158.302	2.8322	1	1290	5	40	105	210	362	480	610	715
Gender	Male	1533	174.908	173.671	4.4356	1	1290	10	60	120	240	420	540	680	745
Gender	Female	1588	133.524	138.801	3.4831	1	1065	5	30	90	190	325	415	525	610
Gender	Refused	3	340	140	80.829	240	500	240	240	280	500	500	500	500	500
Age (years)	*	40	163.95	179.615	28.3996	2	720	3.5	40	107.5	212.5	430	600	720	720
Age (years)	1-4	201	195.652	163.732	11.5488	3	715	30	75	135	270	430	535	625	699
Age (years)	5-11	353	187.564	158.575	8.4401	4	1250	20	80	150	265	365	479	600	720
Age (years)	12-17	219	135.26	137.031	9.2597	1	720	5	35	100	190	300	452	545	610
Age (years)	18-64	1809	144.244	155.13	3.6473	1	1080	5	30	90	199	360	470	600	715
Age (years)	> 64	502	156.448	168.259	7.5098	1	1290	5	36	110	210	375	485	645	735
Race	White	2622	156.787	160.173	3.1281	1	1290	5	45	105	215	375	485	625	720
Race	Black	255	141.557	153.169	9.5918	1	1250	5	30	95	195	330	420	535	645
Race	Asian	34	115.765	135.554	23.2474	1	480	5	20	60	150	360	450	480	480
Race	Some Others	53	167	149.049	20.4735	3	750	5	60	130	238	320	475	553	750
Race	Hispanic	125	117.28	128.886	11.5279	1	720	5	30	70	150	270	355	590	610
Race	Refused	35	187.143	163.771	27.6824	5	600	5	60	170	240	450	510	600	600
Hispanic	No	2857	153.812	158.38	2.9631	1	1290	5	40	105	210	362	480	610	720
Hispanic	Yes	222	146.405	154.069	10.3405	1	750	5	30	112.5	200	345	480	640	690
Hispanic	DK	15	191.533	178.278	46.0312	15	585	15	40	140	380	420	585	585	585
Hispanic	Refused	30	212.5	165.335	30.186	5	600	5	60	180	345	457.5	510	600	600
Employment	*	774	175.762	156.127	5.6119	1	1250	15	60	125	245	380	480	610	705
Employment	Full Time	1110	141.308	159.947	4.8008	1	1080	5	30	85	195	358.5	490	660	745
Employment	Part Time	240	134.663	140.78	9.0873	1	1080	5	30	90	182.5	332.5	422.5	485	525
Employment	Not Employed	978	156.052	159.151	5.0891	1	1290	5	40	115	220	375	480	610	701
Employment	Refused	22	152.727	209.828	44.7355	5	660	5	15	60	125	555	600	660	660
Education	*	825	174.105	156.184	5.4376	1	1250	15	60	125	240	380	480	610	699
Education	< High School	306	171.941	188.396	10.7699	1	1290	7	45	120	240	405	510	765	855
Education	High School Graduate	837	153.633	154.781	5.35	1	840	5	35	105	215	380	480	598	701
Education	< College	527	143.362	157.106	6.8436	1	1080	5	30	90	195	360	465	615	720
Education	College Graduate	355	126.868	142.575	7.5671	1	750	5	30	80	170	300	415	615	690
Education	Post Graduate	274	130.504	150.996	9.122	1	1065	5	30	75	180	325	465	570	660
Census Region	Northeast	635	147.967	143.678	5.7017	1	750	5	35	105	215	345	450	575	610
Census Region	Midwest	639	156.028	169.151	6.6915	1	1290	5	45	102	210	360	500	655	750
Census Region	South	1120	158.577	165.201	4.9363	1	1080	5	40	110	210	390	495	640	745
Census Region	West	730	150.579	149.63	5.5381	1	855	5	36	105	213	360	465	575	660
Day Of Week	Weekday	1933	141.157	148.958	3.388	1	1250	5	31	90	190	345	452	598	698
Day Of Week	Weekend	1191	174.924	170.399	4.9375	1	1290	10	50	120	260	400	500	660	745
Season	Winter	548	113.96	138.121	5.9002	1	1080	5	25	60	150	280	380	540	690
Season	Spring	1034	171.915	159.391	4.9568	1	990	10	60	120	240	390	495	645	730
Season	Summer	1098	168.309	168.2	5.076	1	1290	5	50	120	235	400	510	630	715
Season	Fall	444	126.525	140.747	6.6796	1	960	5	30	75	162.5	313	420	575	655
Asthma	No	2869	154.516	159.172	2.9717	1	1290	5	40	105	210	365	480	615	720
Asthma	Yes	236	145.835	145.523	9.4727	1	885	5	45	105	190	360	450	575	610
Asthma	DK	19	182.421	181.024	41.5298	1	600	1	60	120	300	480	600	600	600
Angina	No	3023	153.218	156.257	2.842	1	1290	5	40	105	210	360	479	610	707
Angina	Yes	76	172.855	222.319	25.5017	2	1080	5	30	68.5	252.5	465	660	1065	1080
Angina	DK	25	195	170.434	34.0869	5	600	5	60	150	300	465	480	600	600
Bronchitis/Emphysema	No	2968	154.884	158.787	2.9146	1	1290	5	40	105	210	367	480	615	715
Bronchitis/Emphysema	Yes	139	129.353	142.494	12.0862	1	855	5	30	75	175	327	415	553	735
Bronchitis/Emphysema	DK	17	206.765	179.765	43.5994	5	600	5	60	170	300	480	600	600	600

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-133. Statistics for 24-Hour Cumulative Number of Minutes Spent Traveling Inside a Vehicle

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		7743	97.278	104.938	1.1926	1	1440	12	40	70	120	190	270	425	570
Gender	Male	3603	103.696	119.736	1.9948	1	1440	10	40	70	120	205	295	478	655
Gender	Female	4138	91.721	89.756	1.3953	1	995	12	40	70	115	180	240	385	465
Gender	Refused	2	30	14.142	10	20	40	20	20	30	40	40	40	40	40
Age (years)	*	144	117.035	129.103	10.7586	5	810	20	40	80	142.5	210	435	593	660
Age (years)	1-4	335	68.116	75.531	4.1267	1	955	10	30	47	85	150	200	245	270
Age (years)	5-11	571	71.033	77.62	3.2483	1	900	10	25	51	90	140	171	275	360
Age (years)	12-17	500	81.53	79.8	3.5687	1	790	10	30	60	100	165.5	232.5	345	405
Age (years)	18-64	5286	104.011	111.1	1.5281	1	1440	15	43	75	120	200	285	450	620
Age (years)	> 64	907	90.87	93.881	3.1173	4	900	10	35	60	120	190	258	400	460
Race	White	6288	97.248	107.173	1.3515	1	1440	10	40	70	120	190	270	425	595
Race	Black	766	98.723	91.337	3.3001	2	810	15	45	75	120	195	265	390	485
Race	Asian	133	83.414	74.929	6.4972	5	540	20	35	70	105	150	210	330	360
Race	Some Others	144	96.181	93.965	7.8304	3	690	10	40	69.5	127.5	180	250	345	540
Race	Hispanic	319	101.734	110.376	6.1799	2	825	20	41	70	120	190	335	465	620
Race	Refused	93	93.591	90.073	9.3401	10	480	15	30	65	120	205	255	420	480
Hispanic	No	7050	97.149	104.847	1.2487	1	1440	10	40	70	120	190	270	420	566
Hispanic	Yes	578	100.043	109.048	4.5358	2	825	15	40	70	120	190	285	480	630
Hispanic	DK	34	73	68.279	11.7098	5	325	6	25	60	97	175	200	325	325
Hispanic	Refused	81	98.914	95.273	10.5859	10	480	15	30	65	130	220	255	420	480
Employment	*	1388	73.609	77.782	2.0878	1	955	10	30	55	90	150	195	275	382
Employment	Full Time	3732	105.816	116.18	1.9018	4	1440	16	45	75	124	198	290	475	660
Employment	Part Time	720	98.763	94.999	3.5404	2	960	10	45	75	120	195	260	380	470
Employment	Not Employed	1849	96.561	99.534	2.3147	1	995	10	37	65	120	200	275	420	526
Employment	Refused	54	120.296	108.615	14.7807	10	480	20	35	88	190	290	330	390	480
Education	*	1550	76.39	78.923	2.0047	1	955	10	30	60	95	155	201	302.5	385
Education	< High School	561	100.822	120.246	5.0768	5	1440	15	40	70	120	180	265	460	620
Education	High School Graduate	2166	101.605	107.594	2.3118	1	1210	12	40	70	120	210	286	445	570
Education	< College	1556	103.215	110.128	2.7919	2	1280	15	40	75	120	195	285	460	630
Education	College Graduate	1108	104.532	109.485	3.2891	4	1215	15	45	75	125	200	280	450	675
Education	Post Graduate	802	101.938	108.688	3.8379	4	1357	20	45	75.5	120	195	270	365	480
Census Region	Northeast	1662	98.585	106.64	2.6158	1	1215	15	40	70	120	190	275	425	570
Census Region	Midwest	1759	101.229	114.641	2.7334	1	1440	10	40	70	120	205	290	435	595
Census Region	South	2704	96.051	97.72	1.8792	1	955	13	40	70	120	190	250	420	558
Census Region	West	1618	93.689	103.717	2.5785	2	1280	10	35	65	115	180	260	420	540
Day Of Week	Weekday	5289	94.437	101.435	1.3948	1	1215	10	40	66	115	180	260	435	575
Day Of Week	Weekend	2454	103.399	111.892	2.2587	1	1440	13	40	75	125	205	280	420	540
Season	Winter	2037	94.31	101.375	2.2461	1	1080	10	35	65	116	190	270	425	544
Season	Spring	2032	99.612	110.464	2.4505	1	1440	12	40	70	120	200	275	440	546
Season	Summer	2090	97.792	103.76	2.2696	1	1357	10	40	70	120	190	260	415	558
Season	Fall	1584	97.419	103.714	2.6059	1	1280	14	40	70	120	180	265	420	620
Asthma	No	7152	97.262	104.554	1.2363	1	1440	10	40	70	120	190	270	425	570
Asthma	Yes	544	97.241	110.792	4.7502	4	955	17	40	65	116.5	180	255	460	705
Asthma	DK	47	100	95.192	13.8852	10	480	10	30	75	120	220	239	480	480
Angina	No	7516	97.288	105.235	1.2139	1	1440	11	40	70	120	190	270	425	570
Angina	Yes	172	93.07	93.142	7.102	8	615	15	30	65	120	185	280	420	540
Angina	DK	55	108.945	99.695	13.4429	10	480	20	35	75	150	235	360	390	480
Bronchitis/Emphysema	No	7349	97.559	106.055	1.2371	1	1440	10	40	70	120	190	270	425	580
Bronchitis/Emphysema	Yes	342	90.971	79.287	4.2873	2	505	15	40	70	115	195	240	325	460
Bronchitis/Emphysema	DK	52	98.942	93.767	13.0031	5	480	10	30	73.5	145	195	239	390	480

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-134. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors Near a Vehicle

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		2825	79.828	143.82	2.7059	1	1440	2	10	30	65	200	465	600	675
Gender	Male	1388	111.21	184.96	4.9645	1	1440	3	11	30.5	90	430	570	675	735
Gender	Female	1436	49.541	75.947	2.0042	1	790	2	10	25	60	120	180	290	420
Gender	Refused	1	20	*	*	20	20	20	20	20	20	20	20	20	20
Age (years)	*	51	64.373	90.949	12.7354	1	510	4	20	40	65	125	290	360	510
Age (years)	1-4	102	45.99	59.489	5.8903	1	420	2	10	30	60	105	160	192	245
Age (years)	5-11	230	55.909	86.475	5.702	1	540	2	10	20	60	170	215	360	465
Age (years)	12-17	313	40.879	55.718	3.1494	1	435	3	10	21	45	100	160	220	260
Age (years)	18-64	1787	96.365	169.13	4.0009	1	1440	2	10	30	75	325	539	645	720
Age (years)	> 64	342	57.55	85.255	4.61	1	560	4	10	30	60	120	205	450	510
Race	White	2275	81.787	148.41	3.1116	1	1440	2	10	30	68	210	480	600	695
Race	Black	278	78.374	130.69	7.838	1	645	2	10	30	70	190	435	580	600
Race	Asian	51	42.431	61.693	8.6387	1	405	2	10	28	60	85	120	150	405
Race	Some Others	50	73.06	113.02	15.9836	1	535	2	15	40	60	167.5	420	492.5	535
Race	Hispanic	136	55.066	100.19	8.591	1	600	2	10	25	54.5	110	170	525	600
Race	Refused	35	124.4	186.88	31.5887	4	810	10	20	40	120	360	565	810	810
Hispanic	No	2552	79.761	142.98	2.8303	1	1440	2	10	30	65	200	457	600	665
Hispanic	Yes	230	68.091	125.96	8.3058	1	765	2	10	30	60	147.5	410	565	615
Hispanic	DK	13	185.31	321.29	89.1098	2	985	2	10	25	100	705	985	985	985
Hispanic	Refused	30	129.83	198.28	36.2	10	810	10	20	40	98	435	585	810	810
Employment	*	632	46.989	68.827	2.7378	1	540	2	10	23	55	120	180	265	360
Employment	Full Time	1169	114.86	193.04	5.646	1	1440	2	10	30	90	485	570	690	740
Employment	Part Time	254	67.118	114.34	7.174	1	795	2	10	30	63	165	280	510	600
Employment	Not Employed	751	56.792	84.927	3.099	1	690	2	10	30	60	130	210	360	465
Employment	Refused	19	96.947	185.76	42.616	5	790	5	20	30	90	360	790	790	790
Education	*	702	47.098	70.151	2.6477	1	540	2	10	24	55	120	180	265	360
Education	< High School	222	105.76	193.65	12.9967	1	1440	4	10	30	90	365	540	720	735
Education	High School Graduate	702	113.18	185.75	7.0107	1	1410	2	10	35	90	455	555	665	740
Education	< College	537	87.927	157.3	6.7878	1	985	2	10	30	70	240	540	635	705
Education	College Graduate	367	70.905	117.85	6.1515	1	660	2	10	30	68	170	325	565	600
Education	Post Graduate	295	55.186	86.872	5.0579	1	710	3	10	30	60	120	200	362	560
Census Region	Northeast	749	75.734	130.56	4.7705	1	985	3	10	30	70	179	375	570	665
Census Region	Midwest	586	77.445	141.21	5.8332	1	1440	2	10	30	60	210	390	560	645
Census Region	South	836	86.447	160.31	5.5443	1	1410	2	10	30	61.5	240	525	643	710
Census Region	West	654	78.19	138.28	5.4072	1	985	2	10	30	65	180	435	570	615
Day Of Week	Weekday	2018	84.241	155.61	3.4639	1	1440	2	10	30	65	215	515	625	705
Day Of Week	Weekend	807	68.793	108.2	3.8088	1	705	2	10	30	65	180	310	465	540
Season	Winter	703	70.91	141.83	5.3492	1	1440	2	10	26	60	160	365	570	643
Season	Spring	791	80.542	135.48	4.817	1	810	2	10	30	74	215	435	570	645
Season	Summer	819	84.178	150.3	5.2519	1	985	2	10	30	70	210	510	615	705
Season	Fall	512	84.01	148.27	6.5525	1	930	2	10	30	70	225	510	600	690
Asthma	No	2596	80.366	143.21	2.8107	1	1410	2	10	30	65	205	475	600	675
Asthma	Yes	205	75.088	157.15	10.9756	1	1440	2	10	30	65	160	309	580	690
Asthma	DK	24	62.083	78.548	16.0335	5	360	5	17.5	35	67.5	98	225	360	360
Angina	No	2726	79.57	144.32	2.7642	1	1440	2	10	30	65	196	465	600	687
Angina	Yes	76	92.434	139.38	15.9879	1	570	3	10	35	91	354	465	535	570
Angina	DK	23	68.696	91.209	19.0183	5	360	10	20	40	75	98	330	360	360
Bronchitis/Emphysema	No	2684	79.404	142.84	2.7572	1	1440	2	10	30	65	197	465	600	665
Bronchitis/Emphysema	Yes	115	93.843	175.36	16.3523	1	985	2	10	30	90	225	465	735	985
Bronchitis/Emphysema	DK	26	61.615	72.201	14.1598	5	360	7	27	40	75	110	180	360	360

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-135. Statistics for 24-Hour Cumulative Number of Minutes Spent Outdoors Other Than Near a Residence or Vehicle Such as Parks, Golf Courses, or Farms

								Percentiles							
Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		1383	200.153	202.665	5.45	1	1440	10	60	130	276	510	600	748	915
Gender	Male	789	223.482	208.727	7.431	1	1440	20	60	150	315	540	635	765	900
Gender	Female	593	168.742	189.993	7.802	1	1440	10	40	105	238	420	540	700	930
Gender	Refused	1	420	*	*	420	420	420	420	420	420	420	420	420	420
Age (years)	*	19	183.368	160.349	36.787	10	540	10	60	140	220	510	540	540	540
Age (years)	1-4	54	164.648	177.34	24.133	1	980	10	60	120	175	370	560	630	980
Age (years)	5-11	159	171.34	177.947	14.112	5	1210	15	55	115	221	405	574	660	725
Age (years)	12-17	175	156.903	174.411	13.184	5	1065	10	45	100	210	385	570	735	915
Age (years)	18-64	858	219.425	215.094	7.343	1	1440	10	60	150	310	540	635	780	933
Age (years)	> 64	118	181.932	180.158	16.585	5	900	20	55	112.5	280	480	570	600	735
Race	White	1186	202.615	203.396	5.906	1	1440	14	60	134.5	280	510	615	750	930
Race	Black	81	185.84	195.119	21.68	1	765	5	40	108	240	540	585	690	765
Race	Asian	20	169.45	189.122	42.289	10	665	10	32.5	95	230	477.5	585	665	665
Race	Some Others	30	187.5	161.849	29.549	10	560	10	60	120	270	437.5	535	560	560
Race	Hispanic	57	158.298	203.27	26.924	1	1305	5	30	110	228	370	435	555	1305
Race	Refused	9	380	250.637	83.546	30	810	30	195	435	540	810	810	810	810
Hispanic	No	1267	202.593	203.353	5.713	1	1440	10	60	130	280	510	615	748	915
Hispanic	Yes	103	163.942	185.155	18.244	1	1305	10	30	115	228	400	511	555	555
Hispanic	DK	4	67.5	59.231	29.616	10	145	10	22.5	57.5	112.5	145	145	145	145
Hispanic	Refused	9	330	259.459	86.486	30	810	30	140	210	510	810	810	810	810
Employment	*	383	163.846	176.805	9.034	1	1210	10	51	110	215	385	560	665	915
Employment	Full Time	555	228.526	219.372	9.312	1	1305	14	60	150	335	545	645	825	955
Employment	Part Time	126	202.556	211.673	18.857	3	1440	10	60	125	280	510	580	690	700
Employment	Not Employed	309	191.469	189.268	10.767	1	1440	10	50	125	275	480	565	690	735
Employment	Refused	10	254	240.899	76.179	30	810	30	105	167.5	280	675	810	810	810
Education	*	429	163.949	175.476	8.472	1	1210	10	55	115	210	385	560	665	840
Education	< High School	83	264.482	255.463	28.041	1	1305	30	60	180	480	555	600	1100	1305
Education	High School Graduate	313	228.613	228.235	12.901	3	1440	10	60	160	310	570	690	855	990
Education	< College	250	217.984	202.991	12.838	1	1440	10	60	152.5	330	510	555	715	765
Education	College Graduate	185	207.27	190.178	13.982	1	930	20	60	128	285	505	600	690	795
Education	Post Graduate	123	163.642	173.04	15.603	1	900	10	45	90	240	385	480	735	780
Census Region	Northeast	279	196.824	208.372	12.475	1	1305	10	60	130	265	480	590	900	1130
Census Region	Midwest	309	196.702	211.59	12.037	1	1440	10	50	120	270	510	635	740	900
Census Region	South	468	198.432	195.071	9.017	1	933	15	60	120	285	510	600	748	825
Census Region	West	327	208.716	200.465	11.086	1	1440	15	60	150	285	525	580	725	855
Day Of Week	Weekday	851	183.982	197.931	6.785	1	1440	10	45	119	240	490	585	735	900
Day Of Week	Weekend	532	226.019	207.598	9	1	1440	20	68.5	155	320	525	630	810	915
Season	Winter	241	175.676	192.682	12.412	1	1065	10	35	93	253	450	585	750	810
Season	Spring	412	185.806	174.522	8.598	5	980	15	60	130	240	473	555	665	740
Season	Summer	508	224.996	220.748	9.794	1	1440	15	60	150	305	540	630	840	990
Season	Fall	222	196.5	213.598	14.336	1	1130	10	35	120	280	540	600	780	900
Asthma	No	1283	196.564	196.894	5.497	1	1440	10	60	125	270	495	600	730	855
Asthma	Yes	93	244.344	263.314	27.304	5	1440	15	60	150	350	530	810	1100	1440
Asthma	DK	7	270.714	274.415	103.719	30	810	30	60	195	450	810	810	810	810
Angina	No	1352	199.038	202.274	5.501	1	1440	10	60	130	270	510	600	740	915
Angina	Yes	25	238.64	205.994	41.199	1	730	5	60	210	340	465	690	730	730
Angina	DK	6	290.833	275.979	112.668	30	810	30	140	202.5	360	810	810	810	810
Bronchitis/Emphysema	No	1326	199.761	200.843	5.516	1	1440	10	60	130	275	500	600	735	900
Bronchitis/Emphysema	Yes	51	206.431	239.756	33.573	5	1100	10	50	110	305	540	700	930	1100
Bronchitis/Emphysema	DK	6	233.333	294.035	120.039	15	810	15	30	167.5	210	810	810	810	810

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-136. Statistics for 24-Hour Cumulative Number of Minutes Spent in an Office or Factory

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		1975	393.972	230.763	5.1926	1	1440	9	180	485	550	630	675	765	818
Gender	Male	1012	410.816	233.454	7.3386	1	1440	10	225	495	565	645	710	780	855
Gender	Female	963	376.271	226.676	7.3045	1	855	5	120	480	540	600	645	710	750
Age (years)	*	49	438.918	232.58	33.2257	10	900	20	299	500	555	675	780	900	900
Age (years)	1-4	12	31.583	25.639	7.4013	5	90	5	12.5	25	44.5	60	90	90	90
Age (years)	5-11	14	100.929	155.126	41.4593	2	580	2	10	32.5	178	195	580	580	580
Age (years)	12-17	19	145.421	181.118	41.5512	1	625	1	10	50	240	510	625	625	625
Age (years)	18-64	1749	418.971	218.445	5.2233	1	1440	10	273	500	555	630	680	765	818
Age (years)	> 64	132	145.848	193.973	16.8832	1	705	3	10	40	205	495	540	640	675
Race	White	1612	387.646	231.968	5.7776	1	1440	6	150	480	550	628	675	750	800
Race	Black	191	413.911	218	15.7739	1	1037	10	268	485	540	635	720	803	900
Race	Asian	42	428.024	216.759	33.4466	10	780	30	285	491.5	553	660	745	780	780
Race	Some Others	28	480.893	200.859	37.9588	40	795	75	347.5	540	582.5	715	780	795	795
Race	Hispanic	74	394.459	237.847	27.6492	1	840	5	230	492.5	560	645	720	765	840
Race	Refused	28	482.893	246.079	46.5046	30	997	30	373	532.5	607.5	818	860	997	997
Hispanic	No	1805	393.453	229.593	5.404	1	1440	10	180	483	550	630	675	755	810
Hispanic	Yes	138	393.645	238.608	20.3116	1	840	5	180	497.5	560	644	675	765	795
Hispanic	DK	7	262.571	242.131	91.5168	1	610	1	12	245	540	610	610	610	610
Hispanic	Refused	25	470.04	258.753	51.7505	17	860	30	311	525	615	810	818	860	860
Employment	*	43	121.279	177.984	27.1423	1	685	2	10	40	178	307	580	685	685
Employment	Full Time	1535	455.571	200.299	5.1124	1	1440	15	400	510	570	644	700	775	837
Employment	Part Time	164	293.03	196.95	15.3792	1	750	10	95	342.5	480	525	555	585	615
Employment	Not Employed	213	77.643	122.957	8.4249	1	705	3	10	30	90	215	305	570	640
Employment	Refused	20	449.15	184.813	41.3256	30	675	60	334	522.5	550	645	675	675	675
Education	*	80	225.1	248.547	27.7884	1	860	3	15	105	470	607.5	675	780	860
Education	< High School	104	329.548	264.402	25.9267	2	930	5	50.5	388.5	552.5	640	705	765	855
Education	High School Graduate	631	396.876	228.074	9.0795	1	997	10	210	492	550	615	675	760	800
Education	< College	462	393.108	228.826	10.6459	1	1440	5	210	480	540	615	660	770	820
Education	College Graduate	415	437.231	205.198	10.0728	1	900	10	325	510	570	640	690	750	800
Education	Post Graduate	283	396.883	232.151	13.7999	2	860	5	175	480	565	640	675	780	818
Census Region	Northeast	465	399.075	226.243	10.4918	1	930	10	215	485	550	625	675	765	840
Census Region	Midwest	439	389.31	229.075	10.9331	1	997	8	180	480	550	630	670	750	800
Census Region	South	666	408.637	228.181	8.8418	1	1440	10	225	497.5	555	630	675	760	840
Census Region	West	405	369.052	240.375	11.9443	1	900	5	95	470	550	630	675	760	800
Day Of Week	Weekday	1759	406.795	225.173	5.3689	1	997	10	237	495	555	630	675	755	810
Day Of Week	Weekend	216	289.551	249.076	16.9475	1	1440	3	30	282.5	495	600	670	800	900
Season	Winter	531	390.716	231.677	10.0539	1	997	10	180	480	550	625	675	755	835
Season	Spring	470	385.198	240.678	11.1016	1	1440	5	120	480	553	630	695	775	837
Season	Summer	550	393.524	224.454	9.5708	1	1037	9	200	482.5	540	613.5	675	753	810
Season	Fall	424	408.358	226.578	11.0036	1	840	10	238.5	500	566.5	640	675	750	770
Asthma	No	1845	394.976	230.383	5.3635	1	1440	8	185	490	550	630	675	760	810
Asthma	Yes	114	371.693	231.336	21.6666	3	840	10	120	462.5	540	630	675	800	837
Asthma	DK	16	437	272.067	68.0168	5	860	5	232.5	520	587.5	780	860	860	860
Angina	No	1931	395.718	229.668	5.2265	1	1440	10	195	490	550	630	675	760	811
Angina	Yes	26	265.462	246.766	48.3947	5	650	9	15	175	490	630	645	650	650
Angina	DK	18	392.333	282.64	66.619	5	860	5	30	490	550	780	860	860	860
Bronchitis/Emphysema	No	1873	395.611	229.961	5.3135	1	1440	8	195	490	550	630	675	760	818
Bronchitis/Emphysema	Yes	86	356.43	236.119	25.4614	5	800	10	75	427.5	540	620	660	720	800
Bronchitis/Emphysema	DK	16	403.875	289.456	72.3641	5	860	5	30	490	582.5	780	860	860	860

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-137. Statistics for 24-Hour Cumulative Number of Minutes Spent in Malls, Grocery Stores, or Other Stores

								Percentiles							
Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		2697	114.975	140.961	2.7143	1	1080	10	30	60	135	285	482	570	640
Gender	Male	1020	120.159	157.143	4.9203	1	840	5	30	60	130	375	530	609	658
Gender	Female	1677	111.822	130.088	3.1766	1	1080	10	30	60	135	255	400	550	600
Age (years)	*	50	139.44	137.586	19.4576	15	660	20	45	92.5	180	338.5	420	565	660
Age (years)	1-4	110	90.036	77.887	7.4263	5	420	10	40	65	105	210	250	359	360
Age (years)	5-11	129	77.674	68.035	5.9901	3	320	5	30	60	110	180	225	255	280
Age (years)	12-17	140	88.714	101.361	8.5666	1	530	5	20	45	123.5	222.5	317.5	384	413
Age (years)	18-64	1871	125.927	156.815	3.6253	1	1080	10	30	60	150	360	525	600	658
Age (years)	> 64	397	88.572	88.477	4.4405	1	655	10	30	60	120	180	255	400	470
Race	White	2234	111.563	139.443	2.9502	1	1080	10	30	60	130	265	495	570	640
Race	Black	237	123	152.318	9.8941	2	800	10	25	60	135	370	480	600	613
Race	Asian	37	158.892	151.725	24.9434	2	600	14	50	105	220	410	480	600	600
Race	Some Others	52	150.231	146.737	20.3488	5	660	14	65	102.5	180	280	588	600	660
Race	Hispanic	110	133.145	138.309	13.1872	1	720	10	35	90	195	310	450	535	540
Race	Refused	27	124.741	131.136	25.2372	10	515	10	30	60	207	300	380	515	515
Hispanic	No	2476	114.387	141.819	2.8501	1	1080	10	30	60	131.5	285	495	570	640
Hispanic	Yes	188	126.074	133.15	9.711	1	720	10	30	90	172.5	270	450	540	610
Hispanic	DK	12	49.417	37.689	10.8798	2	122	2	17.5	47.5	69.5	105	122	122	122
Hispanic	Refused	21	122.429	138.488	30.2206	10	515	20	33	60	180	290	380	515	515
Employment	*	372	86.946	86.322	4.4756	1	660	5	30	60	120	206	255	360	384
Employment	Full Time	1170	136.797	176.691	5.1656	1	1080	10	30	60	150	480	562	640	690
Employment	Part Time	285	134.123	147.732	8.7509	2	540	6	30	65	186	400	480	520	540
Employment	Not Employed	854	91.198	87.218	2.9846	1	585	10	30	60	120	195	255	360	420
Employment	Refused	16	98.938	110.033	27.5083	10	357	10	31.5	52.5	115	290	357	357	357
Education	*	420	88.262	91.922	4.4853	1	660	5	29	60	120	210	262.5	384	420
Education	< High School	206	128.937	155.722	10.8497	2	1080	10	30	75	150	330	500	570	605
Education	High School Graduate	792	126.295	158.884	5.6457	1	960	5	30	60	150	365	524	600	660
Education	< College	583	129.849	149.53	6.1929	1	800	10	30	70	165	345	510	563	651
Education	College Graduate	411	117.876	144.142	7.11	1	720	10	30	60	135	290	515	600	640
Education	Post Graduate	285	78.182	95.665	5.6667	1	630	10	25	50	90	160	250	450	555
Census Region	Northeast	622	110.201	134.942	5.4107	1	755	5	30	60	130	280	465	563	600
Census Region	Midwest	601	108.243	133.098	5.4292	2	840	10	30	60	130	250	440	560	645
Census Region	South	871	127.922	155.825	5.2799	1	1080	10	30	60	155	320	520	600	660
Census Region	West	603	107.909	130.742	5.3242	1	840	10	30	60	120	255	430	550	600
Day Of Week	Weekday	1721	117.451	148.879	3.5887	1	1080	10	30	60	135	320	510	586	650
Day Of Week	Weekend	976	110.61	125.747	4.0251	1	840	5	30	65	135	255	380	560	608
Season	Winter	683	111.71	134	5.1274	2	840	10	30	60	135	255	420	568	660
Season	Spring	679	115.844	142.21	5.4575	1	720	10	30	60	130	300	500	588	645
Season	Summer	759	113.138	147.47	5.3528	1	1080	5	30	60	125	300	510	570	610
Season	Fall	576	120.243	138.948	5.7895	1	840	10	30	60	160	295	480	550	640
Asthma	No	2480	116.246	142.351	2.8585	1	1080	10	30	60	135	287.5	495	575	640
Asthma	Yes	208	101.111	124.977	8.6656	1	600	5	30	60	120	245	420	545	550
Asthma	DK	9	85.111	79.634	26.5447	33	290	33	55	58	60	290	290	290	290
Angina	No	2607	115.981	142.101	2.7831	1	1080	10	30	60	135	290	495	570	640
Angina	Yes	74	90.838	103.912	12.0795	2	630	15	37	64	105	150	190	510	630
Angina	DK	16	62.688	68.084	17.021	2	290	2	30	55	60	110	290	290	290
Bronchitis/Emphysema	No	2553	115.736	141.704	2.8045	1	1080	10	30	60	135	285	481	570	640
Bronchitis/Emphysema	Yes	130	104.754	131.336	11.5189	5	613	10	25	60	135	192.5	505	575	609
Bronchitis/Emphysema	DK	14	71.143	66.864	17.8701	20	290	20	35	56.5	70	110	290	290	290

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-138. Statistics for 24-Hour Cumulative Number of Minutes Spent in Schools, Churches, Hospitals, and Public Buildings

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentile 5	25	50	75	90	95	98	99
All		2932	274.332	205.942	3.8033	1	1440	20	95	221	430	540	615	725	805
Gender	Male	1234	285.147	206.713	5.8845	1	1440	30	110	255	425	540	620	745	840
Gender	Female	1698	266.472	205.082	4.9769	1	1440	20	90	200	430	540	610	713	800
Age (years)	*	50	268.96	221.042	31.2601	5	1030	30	100	192.5	400	590	625	871.5	1030
Age (years)	1-4	98	233	235.787	23.8181	1	1440	5	60	150	390	545	595	900	1440
Age (years)	5-11	391	351.202	149.578	7.5645	5	665	70	245	389	440	535	562	625	645
Age (years)	12-17	355	366.338	161.247	8.5581	1	935	60	260	415	446	502	605	710	805
Age (years)	18-64	1653	267.707	221.203	5.4407	1	1440	15	87	190	450	570	655	760	855
Age (years)	> 64	385	151.091	128.639	6.556	5	710	21	60	115	195	340	435	525	615
Race	White	2310	268.239	204.323	4.2512	1	1440	20	90	210	429	540	612	705	765
Race	Black	332	303.473	207.071	11.3645	1	1440	35	135	285	440	540	630	775	1000
Race	Asian	61	295	199.398	25.5302	5	900	30	135	240	425	535	565	840	900
Race	Some Others	57	314.684	203.549	26.9607	10	967	30	135	360	455	525	598	820	967
Race	Hispanic	141	283.936	229.828	19.355	2	1440	11	100	237	430	525	630	840	940
Race	Refused	31	257.774	192.517	34.5771	5	681	5	120	240	430	495	625	681	681
Hispanic	No	2654	271.293	203.551	3.9511	1	1440	20	94	215	425	540	612	712	800
Hispanic	Yes	240	306.388	230.835	14.9003	1	1440	20	110	287.5	444.5	567.5	695	840	940
Hispanic	DK	13	279.385	230.736	63.9946	35	760	35	65	235	420	562	760	760	760
Hispanic	Refused	25	286.6	175.367	35.0734	5	625	55	145	255	440	495	565	625	625
Employment	*	821	343.484	171.113	5.9719	1	1440	55	190	393	441	520	570	645	713
Employment	Full Time	1029	300.3	239.785	7.4751	1	1440	15	90	215	510	610	685	775	900
Employment	Part Time	293	251.324	199.326	11.6447	1	1030	20	85	200	387	525	610	800	880
Employment	Not Employed	775	176.406	148.414	5.3312	1	855	15	60	121	250	400	475	570	641
Employment	Refused	14	212.857	147.736	39.484	5	440	5	120	190	305	430	440	440	440
Education	*	917	340.328	172.613	5.7002	1	1440	45	190	390	440	525	580	645	713
Education	< High School	166	172.602	138.026	10.7129	1	735	27	70	123.5	235	375	465	525	640
Education	High School Graduate	617	207.29	199.027	8.0125	1	1440	15	60	135	295	510	585	690	785
Education	< College	520	247.492	213.609	9.3674	1	1000	15	85	165	420	552.5	640	760	855
Education	College Graduate	351	261.581	214.287	11.4378	1	1005	15	85	180	450	560	625	750	800
Education	Post Graduate	361	319.114	236.166	12.4298	1	1440	30	110	290	510	615	683	765	900
Census Region	Northeast	645	272.747	211.594	8.3315	1	1440	25	90	215	420	545	630	735	855
Census Region	Midwest	686	275.394	207.157	7.9093	1	1440	30	88	239	425	540	615	745	850
Census Region	South	1036	278.387	201.004	6.2449	1	1440	20	110	230	440	535	600	690	778
Census Region	West	565	267.418	207.214	8.7176	1	1440	15	100	200	420	555	620	712	820
Day Of Week	Weekday	2091	309.844	212.577	4.6488	1	1440	15	115	340	460	565	632	750	855
Day Of Week	Weekend	841	186.039	156.873	5.4094	1	1440	40	85	140	230	385	525	640	735
Season	Winter	847	296.587	201.244	6.9148	1	1440	30	120	285	444	545	615	710	770
Season	Spring	805	276.761	204.618	7.2118	1	1440	30	110	220	420	535	600	725	840
Season	Summer	667	254.115	209.724	8.1205	1	1015	20	80	180	420	550	630	738	890
Season	Fall	613	262.39	207.33	8.374	1	1005	14	75	210	425	540	615	712	778
Asthma	No	2689	273.193	207.301	3.9977	1	1440	20	94	217	430	540	615	725	820
Asthma	Yes	229	287.974	191.578	12.6598	1	855	25	120	275	435	533	605	645	800
Asthma	DK	14	270	171.24	45.7658	5	565	5	145	280	430	445	565	565	565
Angina	No	2836	277.127	206.396	3.8757	1	1440	20	100	230	430	540	615	725	805
Angina	Yes	78	176.423	172.803	19.5661	5	890	28	60	120	195	480	575	625	890
Angina	DK	18	258.278	165.599	39.0321	3	565	3	145	270	378	480	565	565	565
Bronchitis/Emphysema	No	2794	276.999	207.348	3.9227	1	1440	20	95	228	430	540	615	726	840
Bronchitis/Emphysema	Yes	121	212.562	166.349	15.1226	10	662	30	90	145	375	445	490	605	630
Bronchitis/Emphysema	DK	17	275.765	163.401	39.6306	5	565	5	145	305	415	440	565	565	565

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-139. Statistics for 24-Hour Cumulative Number of Minutes Spent in Bars/Nightclubs, Bowling Alleys, and Restaurants

								Percentiles							
Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		2296	111.735	131.368	2.7416	1	925	10	40	60	120	255	405	568	660
Gender	Male	1127	109.497	129.654	3.8621	1	900	10	35	60	120	240	377	560	660
Gender	Female	1169	113.892	133.019	3.8905	2	925	10	45	60	120	270	424	570	645
Age (years)	*	32	138.094	151.816	26.8376	15	610	30	47.5	65	150	315	495	610	610
Age (years)	1-4	61	62.705	47.701	6.1075	4	330	10	35	55	85	115	120	130	330
Age (years)	5-11	88	58.602	39.746	4.2369	5	180	10	30	45	85	120	137	170	180
Age (years)	12-17	127	76.614	82.038	7.2797	2	455	10	30	50	90	220	270	325	360
Age (years)	18-64	1718	121.371	142.223	3.4313	1	925	10	40	65	135	285	462	600	680
Age (years)	> 64	270	92.207	90.483	5.5066	3	750	20	45	62.5	100	177.5	255	358	520
Race	White	1945	108.84	127.174	2.8836	1	925	10	40	60	120	240	388	560	645
Race	Black	167	121.88	147.847	11.4408	5	805	10	30	60	153	300	490	555	735
Race	Asian	42	103.976	104.151	16.0709	5	497	30	40	62.5	120	200	240	497	497
Race	Some Others	36	159.333	196.721	32.7868	5	765	10	52.5	90	137.5	495	750	765	765
Race	Hispanic	83	130.205	161.594	17.7373	5	813	15	40	65	143	360	485	700	813
Race	Refused	23	155.913	135.696	28.2945	20	480	30	60	88	270	330	410	480	480
Hispanic	No	2131	110.53	129.679	2.8092	1	925	10	40	60	120	245	395	560	650
Hispanic	Yes	141	127.319	153.659	12.9404	1	813	15	40	70	120	360	440	700	765
Hispanic	DK	7	95	115.109	43.507	5	315	5	10	40	165	315	315	315	315
Hispanic	Refused	17	140.353	147.503	35.7748	30	480	30	40	70	210	410	480	480	480
Employment	*	273	65.85	61.078	3.6966	2	455	10	30	50	85	120	182	273	330
Employment	Full Time	1215	125.765	151.364	4.3424	1	925	10	40	63	135	300	500	640	735
Employment	Part Time	236	144.729	157.886	10.2775	1	813	10	47.5	80	180	385	520	615	745
Employment	Not Employed	559	88.642	77.231	3.2665	3	610	15	45	60	115	180	240	315	388
Employment	Refused	13	158.077	127.157	35.267	30	425	30	70		105	240	330	425	425	425
Education	*	309	76.006	81.68	4.6466	1	548	10	30	55	90	165	255	330	455
Education	< High School	155	154.155	175.537	14.0995	5	925	15	40	90	209	388	545	700	870
Education	High School Graduate	665	119.502	145.414	5.6389	3	910	10	45	60	120	290	485	630	680
Education	< College	498	121.321	137.839	6.1767	2	775	10	40	75	135	270	440	610	675
Education	College Graduate	395	101.096	109.709	5.5201	1	765	15	40	60	120	225	330	507	570
Education	Post Graduate	274	107.091	117.52	7.0997	3	765	15	40	65	120	220	330	560	675
Census Region	Northeast	462	115.771	127.168	5.9164	2	765	15	45	70	120	270	380	560	650
Census Region	Midwest	561	113.688	132.476	5.5932	1	813	10	40	65	120	250	410	570	675
Census Region	South	748	105.619	133.036	4.8643	2	910	13	35	60	110	240	390	555	650
Census Region	West	525	114.81	131.486	5.7385	1	925	10	37	70	130	245	417	590	640
Day Of Week	Weekday	1407	112.164	138.508	3.6926	1	925	10	35	60	120	270	430	595	675
Day Of Week	Weekend	889	111.055	119.269	4.0001	2	870	10	45	70	120	235	351	535	630
Season	Winter	584	116.783	135.982	5.627	3	875	15	40	68.5	120	265	440	595	735
Season	Spring	615	108.416	124.727	5.0295	2	925	15	41	65	120	240	395	542	585
Season	Summer	622	110.543	132.965	5.3314	1	910	10	35	60	120	260	390	605	660
Season	Fall	475	111.385	132.104	6.0614	1	900	10	35	60	125	265	355	550	770
Asthma	No	2124	111.768	129.918	2.819	1	910	10	40	60	120	255	390	568	660
Asthma	Yes	163	107.301	145.813	11.4209	4	925	10	30	57	118	265	485	560	670
Asthma	DK	9	184.222	186.348	62.1159	30	480	30	60	88	300	480	480	480	480
Angina	No	2229	112.481	132.361	2.8035	1	925	10	40	60	120	260	410	570	660
Angina	Yes	54	71.463	52.513	7.1461	3	340	15	45	60	90	120	120	232	340
Angina	DK	13	151	162.726	45.132	30	480	30	35	88	120	480	480	480	480
Bronchitis/Emphysema	No	2171	111.178	129.886	2.7876	1	910	10	40	60	120	255	400	560	660
Bronchitis/Emphysema	Yes	114	109.807	134.998	12.6437	5	925	15	43	65	120	235	375	530	620
Bronchitis/Emphysema	DK	11	241.636	274.085	82.6397	10	875	10	30	88	480	480	875	875	875

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-140. Statistics for 24-Hour Cumulative Number of Minutes Spent in Other Outdoors Such as Auto Repair Shops, Laundromats, Gyms, and at Work (non-specific)

								Percentiles							
Group Name	Group Code	N	Mean	Stdev	Stderr	Min	Max	5	25	50	75	90	95	98	99
All		1214	225.747	231.111	6.633	1	1440	10	56	120	370	568	670	800	910
Gender	Male	612	260.322	239.586	9.685	1	1040	10	60	160	460	605	695	815	930
Gender	Female	602	190.598	216.774	8.835	1	1440	10	45	105	260	535	600	720	855
Age (years)	*	21	264.524	273.733	59.733	15	940	30	75	100	420	560	840	940	940
Age (years)	1-4	27	92.296	74.852	14.405	10	270	15	25	65	160	180	250	270	270
Age (years)	5-11	59	134.678	186.691	24.305	5	910	5	30	80	145	325	720	855	910
Age (years)	12-17	76	164.368	159.542	18.301	1	660	5	45	130	208	450	550	600	660
Age (years)	18-64	903	250.29	243.45	8.101	1	1440	10	60	135	450	600	690	815	945
Age (years)	> 64	128	152.813	159.777	14.122	2	770	12	45	95	202.5	420	510	600	610
Race	White	996	226.348	228.881	7.252	1	1440	10	58.5	120	370	580	665	780	910
Race	Black	118	228.102	256.391	23.603	2	1430	5	45	120	358	525	720	990	1150
Race	Asian	25	194.68	196.484	39.297	5	600	25	58	90	300	525	530	600	600
Race	Some Others	23	211.217	236.332	49.279	5	800	10	25	115	405	515	680	800	800
Race	Hispanic	42	250.19	229.16	35.36	5	793	15	60	165	420	600	675	793	793
Race	Refused	10	146.5	246.555	77.967	15	840	15	55	67.5	105	495	840	840	840
Hispanic	No	1133	224.325	231.063	6.865	1	1440	10	55	120	360	565	670	810	930
Hispanic	Yes	68	230.088	215.421	26.124	5	793	15	61.5	127.5	398	545	660	790	793
Hispanic	DK	5	483.2	240.867	107.719	55	623	55	560	568	610	623	623	623	623
Hispanic	Refused	8	229.375	310.592	109.811	30	840	30	42.5	67.5	372.5	840	840	840	840
Employment	*	162	140.031	158.915	12.486	1	910	10	30	103.5	170	325	505	660	855
Employment	Full Time	652	276.345	250.945	9.828	2	1430	10	60	162.5	508	619	700	815	945
Employment	Part Time	132	240.909	227.902	19.836	5	1440	15	67.5	170	360	510	620	815	1005
Employment	Not Employed	259	145.347	173.086	10.755	1	1150	5	40	90	160	432	540	704	770
Employment	Refused	9	194.444	278.752	92.917	15	840	15	40	75	150	840	840	840	840
Education	*	186	148.097	168.067	12.323	1	910	5	30	109.5	177	330	520	720	855
Education	< High School	88	301.966	251.244	26.783	5	930	15	60	265	487.5	670	780	815	930
Education	High School Graduate	324	249.086	243.136	13.508	2	1150	10	53.5	126	435	595	690	815	979
Education	< College	251	266.996	256.435	16.186	2	1440	10	60	155	480	600	710	800	990
Education	College Graduate	217	202.014	217.284	14.75	1	1005	5	55	110	295	570	645	760	855
Education	Post Graduate	148	191.764	198.819	16.343	2	870	10	60	105	262.5	535	590	700	793
Census Region	Northeast	275	218.171	216.166	13.035	2	990	10	60	120	360	544	660	765	855
Census Region	Midwest	254	250.689	241.492	15.153	1	1005	10	55	150	460	600	695	815	940
Census Region	South	401	223.691	239.929	11.981	1	1440	10	47	120	360	560	635	815	979
Census Region	West	284	213.68	222.324	13.193	2	960	10	60	120	305	585	675	793	850
Day Of Week	Weekday	900	224.954	232.145	7.738	1	1430	10	58.5	120	367.5	565	672.5	815	942.5
Day Of Week	Weekend	314	228.019	228.476	12.894	2	1440	8	52	120	376	580	665	720	815
Season	Winter	347	241.715	239.749	12.87	2	1440	10	60	155	390	585	660	897	960
Season	Spring	321	220.343	220.658	12.316	1	1005	10	54	115	390	550	630	730	815
Season	Summer	294	224.418	244.957	14.286	1	1040	5	45	115	360	595	760	855	979
Season	Fall	252	212.194	214.928	13.539	1	990	15	55.5	120	327.5	540	660	710	793
Asthma	No	1123	225.742	229.228	6.84	1	1440	10	55	125	370	565	660	780	897
Asthma	Yes	84	228.5	259.329	28.295	1	979	10	59.5	100	351	660	793	910	979
Asthma	DK	7	193.571	201.406	76.124	15	510	15	60	80	450	510	510	510	510
Angina	No	1178	225.259	231.28	6.739	1	1440	10	55	120	360	570	670	810	930
Angina	Yes	28	227.75	218.573	41.306	5	770	12	62.5	135	425	560	600	770	770
Angina	DK	8	290.625	269.171	95.166	15	780	15	67.5	217.5	480	780	780	780	780
Bronchitis/Emphysema	No	1166	226.724	232.003	6.794	1	1440	10	58	120	370	570	670	810	930
Bronchitis/Emphysema	Yes	41	198.829	213.198	33.296	5	780	10	45	95	330	550	565	780	780
Bronchitis/Emphysema	DK	7	220.714	197.261	74.558	15	510	15	60	155	450	510	510	510	510

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-141. Statistics for 24-Hour Cumulative Number of Minutes Spent with Smokers Present

Category	Population Group	N	Mean	Stdev	Stderr	Min	Max	Percentiles							
								5	25	50	75	90	95	98	99
All		4005	381.494	300.479	4.748	1	1440	30	120	319	595	815	925	1060	1170
Gender	Male	1967	411.359	313	7.057	1	1440	30	135	355	638	855	965	1105	1217
Gender	Female	2035	352.771	285.139	6.321	1	1440	29	105	285	545	780	870	995	1110
Gender	Refused	3	283.333	188.171	108.641	105	480	105	105	265	480	480	480	480	480
Age (years)	*	54	386.259	305.371	41.556	5	1440	25	105	370	555	780	995	995	1440
Age (years)	1-4	155	366.561	324.464	26.062	5	1440	30	90	273	570	825	1010	1140	1305
Age (years)	5-11	224	318.071	314.016	20.981	1	1440	25	105	190	475	775	1050	1210	1250
Age (years)	12-17	256	245.77	243.61	15.226	1	1260	10	60	165	360	595	774	864	1020
Age (years)	18-64	2976	403.067	299.434	5.489	2	1440	30	134.5	355	625	830	930	1047	1150
Age (years)	> 64	340	342.694	292.209	15.847	5	1440	30	100	240	540	797.5	880	1015	1205
Race	White	3279	389.219	303.032	5.292	1	1440	30	120	330	610	825	930	1060	1190
Race	Black	395	359.977	287.96	14.489	2	1440	22	118	300	538	775	905	1080	1160
Race	Asian	48	262.063	209.928	30.3	5	800	10	64	212.5	412.5	560	630	800	800
Race	Some Others	79	420.671	339.247	38.168	10	1328	30	135	310	655	885	1140	1305	1328
Race	Hispanic	165	292.624	250.208	19.479	5	1095	15	75	220	475	660	800	845	945
Race	Refused	39	393.538	325.254	52.082	25	1110	30	115	290	655	865	1040	1110	1110
Hispanic	No	3666	384.913	301.22	4.975	1	1440	30	120	324	600	822	930	1060	1170
Hispanic	Yes	288	336.191	280.874	16.551	1	1440	20	115	252	512	760	850	1010	1260
Hispanic	DK	18	369.833	371.484	87.56	15	1440	15	90	220	600	760	1440	1440	1440
Hispanic	Refused	33	403.364	322.819	56.195	25	1110	30	120	325	655	840	1040	1110	1110
Employment	*	624	301.723	295.529	11.831	1	1440	15	75	190	450	735	900	1140	1230
Employment	Full Time	2042	405.894	296.349	6.558	2	1440	30	135	364.5	625	835	925	1005	1110
Employment	Part Time	381	378.013	291.098	14.913	5	1440	30	135	325	585	805	915	1080	1245
Employment	Not Employed	935	383.833	308.691	10.095	3	1440	30	120	310	600	825	930	1110	1290
Employment	Refused	23	341.957	254.245	53.014	25	925	30	120	325	450	715	885	925	925
Education	*	704	308.635	292.801	11.035	1	1440	15	87.5	205	465	741	900	1095	1217
Education	< High School	377	497.719	317.756	16.365	2	1440	40	225	465	775	905	990	1120	1369
Education	High School Graduate	1315	425.682	301.711	8.32	3	1440	30	155	390	650	840	928	1060	1202
Education	< College	829	388.807	295.753	10.272	5	1435	30	135	330	600	810	930	1050	1155
Education	College Graduate	473	325.871	272.694	12.538	2	1140	30	90	240	499	735	860	990	1035
Education	Post Graduate	307	282.518	257.117	14.674	3	1205	20	60	200	430	665	810	900	983
Census Region	Northeast	932	369.46	287.677	9.423	2	1440	30	120	314	565	800	892	990	1095
Census Region	Midwest	938	384.067	304.829	9.953	2	1440	29	120	319.5	600	825	930	1080	1140
Census Region	South	1409	404.028	308.501	8.219	1	1440	30	130	345	630	840	943	1090	1205
Census Region	West	726	349.883	291.992	10.837	1	1440	30	110	274	541	800	900	1045	1180
Day Of Week	Weekday	2661	374.746	296.185	5.742	1	1440	30	120	315	578	810	915	1045	1150
Day Of Week	Weekend	1344	394.854	308.482	8.415	1	1440	30	120	321.5	625	833	940	1110	1260
Season	Winter	1046	374.159	304.183	9.405	1	1440	25	115	295	590	815	925	1080	1170
Season	Spring	1034	384.762	301.561	9.378	2	1440	30	120	320	610	810	900	1105	1215
Season	Summer	1059	385.134	300.394	9.231	2	1440	30	120	330	591	840	940	1040	1130
Season	Fall	866	381.999	295.104	10.028	2	1440	30	120	324	590	810	915	1030	1150
Asthma	No	3687	378.806	298.378	4.914	1	1440	30	120	315	591	810	915	1050	1170
Asthma	Yes	298	416.862	323.967	18.767	5	1440	20	135	342.5	652	870	1015	1202	1335
Asthma	DK	20	350	304.324	68.049	25	995	27.5	60	290	540	795	902.5	995	995
Angina	No	3892	380.923	299.475	4.8	1	1440	30	120	320	595	815	920	1060	1170
Angina	Yes	87	404.31	345.105	36.999	2	1380	30	120	270	703	910	1015	1320	1380
Angina	DK	26	390.577	300.394	58.912	25	995	30	115	342.5	670	780	790	995	995
Bronchitis/Emphysema	No	3749	378.662	298.576	4.876	1	1440	30	120	315	590	810	915	1060	1170
Bronchitis/Emphysema	Yes	236	431.157	326.848	21.276	5	1380	30	150	362.5	680	892	980	1205	1260
Bronchitis/Emphysema	DK	20	326.25	291.068	65.085	10	995	17.5	85	222.5	540	755	887.5	995	995

Note: A "*" Signifies missing data. "DK" = The respondent replied "don't know". Refused = Refused data. N = doer sample size. Mean = Mean 24-hour cumulative number of minutes for doers. Stdev = standard deviation. Stderr = standard error. Min = minimum number of minutes. Max = maximum number of minutes. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 15-142 Range of Time (minutes) Spent Smoking Based on the Number of Respondents

	Total N	Number of Minutes											
		-	0-60	60-120	120-180	180-240	240-300	300-360	360-420	420-480	480-540	540-600	600-660
Overall	9386	5381	628	444	338	285	258	242	236	192	228	186	185
Gender													
Male	4294	2327	280	184	167	141	119	114	128	92	101	92	89
Female	5088	3053	348	259	171	144	138	128	108	99	127	94	96
Refused	4	1	*	1	*	*	1	*	*	1	*	*	*
Age (years)													
*	187	133	10	6	2	3	2	4	3	6	4	3	3
1-4	499	344	29	23	14	8	10	7	8	7	8	7	5
5-11	703	479	40	38	32	23	10	9	6	12	6	11	6
12-17	589	333	75	31	30	20	22	15	13	7	13	5	3
18-64	6059	3083	412	305	225	196	195	187	192	143	184	148	154
> 64	1349	1009	62	41	35	35	19	20	14	17	13	12	14
Race													
White	7591	4312	496	368	261	233	208	208	186	154	173	160	149
Black	945	550	66	41	37	26	29	18	31	23	33	15	22
Asian	157	109	12	3	7	5	3	2	5	3	3	2	1
Some Others	182	103	10	8	9	5	7	3	2	3	5	4	4
Hispanic	385	220	39	17	21	13	9	9	10	8	12	5	6
Refused	126	87	5	7	3	3	2	2	2	1	2	*	3
Hispanic													
No	8534	4868	573	396	295	267	238	226	213	181	202	173	168
Yes	702	414	48	38	38	16	18	14	21	10	23	11	13
DK	47	29	3	4	2	*	1	*	1	*	1	2	1
Refused	103	70	4	6	3	2	1	2	1	1	2	*	3
Employment													
*	1773	1149	143	91	74	50	39	29	26	28	27	22	14
Full Time	4096	2054	286	203	140	141	124	126	134	96	134	109	110
Part Time	802	421	51	42	36	25	32	27	17	23	28	12	16
Not Employed	2644	1709	145	105	87	67	61	56	58	43	38	43	44
Refused	71	48	3	3	1	2	2	4	1	2	1	*	1
Education													
*	1968	1264	153	98	81	56	49	38	30	31	30	27	18
< High School	834	457	34	28	23	16	15	23	38	15	20	26	12
High School Graduate	2612	1297	160	115	94	86	92	84	69	71	93	64	76
< College	1801	972	114	87	76	62	50	56	49	44	52	35	44
College Graduate	1247	774	88	70	42	38	32	24	32	23	20	22	21
Post Graduate	924	617	79	46	22	27	20	17	18	8	13	12	14
Census Region													
Northeast	2075	1143	150	108	66	73	61	63	54	52	56	40	38
Midwest	2102	1164	145	110	75	65	69	37	63	42	55	51	41
South	3243	1834	206	137	116	106	76	92	85	58	87	60	76
West	1966	1240	127	89	81	41	52	50	34	40	30	35	30
Day of Week													
Weekday	6316	3655	430	301	227	188	164	146	171	127	169	128	116
Weekend	3070	1726	198	143	111	97	94	96	65	65	59	58	69
Season													
Winter	2524	1478	180	113	91	81	65	68	53	39	60	48	41
Spring	2438	1404	154	120	82	73	73	61	61	50	58	40	61
Summer	2536	1477	165	116	88	71	64	64	68	61	52	57	45
Fall	1888	1022	129	95	77	60	56	49	54	42	58	41	38
Asthma													
No	8629	4942	580	419	308	264	237	223	216	175	213	172	173
Yes	694	396	42	24	29	20	20	17	20	16	13	13	12
DK	63	43	6	1	1	1	1	2	*	1	2	1	*
Angina													
No	9061	5169	610	430	331	273	252	235	233	187	223	184	181
Yes	250	63	13	11	5	11	5	5	2	5	4	*	4
DK	75	49	5	3	2	1	1	2	1	*	1	2	*
Bronchitis/emphysema													
No	8882	5133	593	423	311	267	246	224	219	182	215	177	174
Yes	433	197	30	20	24	17	11	16	17	10	11	7	11
DK	71	51	5	1	3	1	1	2	*	*	2	2	*

Table 15-142 Range of Time (minutes) Spent Smoking Based on the Number of Respondents (continued)

	Number of Minutes												
	660-720	720-780	780-840	840-900	900-960	960-1020	1020-1080	1080-1140	1140-1200	1200-1260	1260-1320	1320-1380	1380-1440
Overall	149	135	162	105	83	53	27	21	12	12	3	6	15
Gender													
Male	84	76	87	66	48	37	18	14	9	6	3	3	10
Female	65	59	75	39	35	17	9	7	3	6	*	3	5
Refused	*	*	*	*	*	*	*	*	*	*	*	*	*
Age (years)													
*	2	1	1	1	*	2	*	*	*	*	*	*	1
1-4	3	5	6	3	2	3	2	2	1	*	1	*	1
5-11	7	2	5	2	*	1	5	2	2	3	*	*	2
12-17	7	3	5	3	1	1	*	*	*	2	*	*	*
18-64	119	114	129	91	72	44	18	17	9	5	2	5	10
> 64	11	10	16	5	8	2	2	*	*	2	*	1	1
Race													
White	135	118	139	90	74	49	21	16	11	11	2	3	14
Black	7	10	8	9	6	3	5	2	1	*	*	2	1
Asian	*	*	2	*	*	*	*	*	*	*	*	*	*
Some Others	3	2	6	2	2	*	*	1	*	1	1	1	*
Hispanic	3	3	6	2	1	*	*	1	*	*	*	*	*
Refused	1	2	1	2	*	1	1	1	*	*	*	*	*
Hispanic													
No	141	127	149	96	81	52	25	19	12	11	2	6	13
Yes	5	6	11	8	2	1	1	1	*	1	1	*	1
DK	1	1	*	*	*	*	*	*	*	*	*	*	1
Refused	2	1	2	1	*	*	1	1	*	*	*	*	*
Employment													
*	16	10	16	8	3	5	7	4	3	5	1	*	3
Full Time	83	82	82	72	50	34	10	11	5	2	*	2	6
Part Time	18	11	16	6	10	2	2	3	*	2	*	1	1
Not Employed	31	32	48	18	19	12	8	3	4	3	2	3	5
Refused	1	*	*	1	1	*	*	*	*	*	*	*	*
Education													
*	19	12	18	10	3	7	8	4	3	5	1	*	3
< High School	15	24	34	16	16	7	6	2	1	1	*	2	3
High School Graduate	60	64	62	45	33	17	6	5	5	3	1	2	8
< College	36	22	29	18	23	12	5	6	3	2	1	2	1
College Graduate	11	9	12	10	6	8	1	4	*	*	*	*	*
Post Graduate	8	4	7	6	2	2	1	*	*	1	*	*	*
Census Region													
Northeast	37	34	34	23	20	10	2	4	2	2	*	1	2
Midwest	36	28	36	29	15	13	11	8	1	2	1	1	4
South	52	63	60	37	37	21	11	6	7	5	*	4	7
West	24	10	32	16	11	9	3	3	2	3	2	*	2
Day of Week													
Weekday	95	84	103	63	55	38	17	12	8	8	2	1	8
Weekend	54	51	59	42	28	15	10	9	4	4	1	5	7
Season													
Winter	30	47	46	26	21	11	7	6	4	1	2	1	5
Spring	41	36	44	29	10	14	5	5	4	5	1	2	5
Summer	38	23	45	31	33	13	11	5	2	3	*	2	2
Fall	40	29	27	19	19	15	4	5	2	3	*	1	3
Asthma													
No	134	124	150	92	77	47	24	20	9	9	3	5	13
Yes	15	9	11	13	6	5	3	1	3	3	*	1	2
DK	*	2	1	*	*	1	*	*	*	*	*	*	*
Angina													
No	141	130	157	103	82	48	26	20	12	12	2	5	15
Yes	4	3	4	2	1	4	1	1	*	*	1	1	*
DK	4	2	1	*	*	1	*	*	*	*	*	*	*
Bronchitis/emphysema													
No	139	128	150	91	75	48	25	20	11	9	3	4	15
Yes	10	5	12	14	8	4	2	1	1	3	*	2	*
DK	*	2	*	*	*	1	*	*	*	*	*	*	*

Note: * = Missing Data; DK =Don't know; N = Number of Respondents; Refused = Respondent Refused to Answer.
Source: Tsang And Klepeis, 1996.

Table 15-143 Number of Minutes Spent Smoking (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		9386	0	0	0	0	0	0	240	615	795	930	1035	1440
Gender	Male	4294	0	0	0	0	0	0	310	685	840	983	1095	1440
Gender	Female	5088	0	0	0	0	0	0	180	545	725	870	960	1440
Age (years)	1-4	499	0	0	0	0	0	0	75	455	735	975	1095	1440
Age (years)	5-11	703	0	0	0	0	0	0	82	370	625	975	1140	1440
Age (years)	12-17	589	0	0	0	0	0	0	130	377	542	810	864	1260
Age (years)	18-64	6059	0	0	0	0	0	0	345	675	830	950	1045	1440
Age (years)	> 64	1349	0	0	0	0	0	0	10	340	622	825	910	1440
Race	White	7591	0	0	0	0	0	0	250	630	805	940	1035	1440
Race	Black	945	0	0	0	0	0	0	225	540	715	910	1071	1440
Race	Asian	157	0	0	0	0	0	0	60	375	494	565	790	800
Race	Some Others	182	0	0	0	0	0	0	255	680	815	1140	1305	1328
Race	Hispanic	385	0	0	0	0	0	0	175	481	652	813	845	1095
Hispanic	No	8534	0	0	0	0	0	0	243	625	800	940	1035	1440
Hispanic	Yes	702	0	0	0	0	0	0	175	518	680	850	920	1440
Employment	Full Time	4096	0	0	0	0	0	0	360	687	835	945	1005	1440
Employment	Part Time	802	0	0	0	0	0	0	295	630	793	930	1054	1440
Employment	Not Employed	2644	0	0	0	0	0	0	144.5	555	768	915	1045	1440
Education	< High School	834	0	0	0	0	0	0	420	790	880	1004	1105	1440
Education	High School Graduate	2612	0	0	0	0	0	5	390	710	840	956	1060	1440
Education	< College	1801	0	0	0	0	0	0	288	630	805	945	1045	1435
Education	College Graduate	1247	0	0	0	0	0	0	135	480	660	860	970	1140
Education	Post Graduate	924	0	0	0	0	0	0	60	380	595	795	860	1205
Census Region	Northeast	2075	0	0	0	0	0	0	259	610	775	915	990	1440
Census Region	Midwest	2102	0	0	0	0	0	0	255	630	810	945	1054	1440
Census Region	South	3243	0	0	0	0	0	0	275	655	810	950	1060	1440
Census Region	West	1966	0	0	0	0	0	0	140	510	710	885	990	1440
Day of Week	Weekday	6316	0	0	0	0	0	0	225	595	780	925	1015	1440
Day of Week	Weekend	3070	0	0	0	0	0	0	260	651	810	950	1080	1440
Season	Winter	2524	0	0	0	0	0	0	210	600	790	930	1034	1440
Season	Spring	2438	0	0	0	0	0	0	240	626	785	920	1060	1440
Season	Summer	2536	0	0	0	0	0	0	235	600	810	940	1020	1440
Season	Fall	1888	0	0	0	0	0	0	285	630	791	945	1020	1440
Asthma	No	8629	0	0	0	0	0	0	240	610	790	928	1020	1440
Asthma	Yes	694	0	0	0	0	0	0	270	668	855	1020	1170	1440
Angina	No	9061	0	0	0	0	0	0	240	615	795	930	1034	1440
Angina	Yes	250	0	0	0	0	0	0	125	615	835	1007.5	1125	1380
Bronchitis/emphysema	No	8882	0	0	0	0	0	0	235	605	785	928	1020	1440
Bronchitis/emphysema	Yes	433	0	0	0	0	0	50	405	810	900	1040	1205	1380

Note: N = Doer Sample Size; Percentiles are the Percentage of Doers below or Equal to a Given Number of Minutes.
Source: Tsang and Klepeis, 1996.

Table 15-144 Range of Time Spent Smoking Cigars or Pipe Tobacco by the Number of Respondents

	Total N	Number of Minutes per Day							
		-	0-3	3-6	6-9	9-12	12-15	15-18	18-61
Overall	62	5	10	8	6	1	2	9	21
Gender									
Male	58	5	8	7	6	1	2	9	20
Female	4	*	2	1	*	*	*	*	1
Age (years)									
5-11	1	*	*	1	*	*	*	*	*
12-17	1	1	*	*	*	*	*	*	*
18-64	46	3	10	4	6	1	1	5	16
> 64	14	1	*	3	*	*	1	4	5
Race									
White	53	3	8	7	4	1	1	9	20
Black	5	1	2	1	1	*	*	*	*
Some Others	1	1	*	*	*	*	*	*	*
Hispanic	3	*	*	*	1	*	1	*	1
Hispanic									
No	57	5	9	8	5	*	1	9	20
Yes	5	*	1	*	1	1	1	*	1
Employment									
*	2	1	*	1	*	*	*	*	*
Full Time	39	2	7	4	5	1	1	4	15
Part Time	3	*	3	*	*	*	*	*	*
Not Employed	17	1	*	3	1	*	1	5	6
Refused	1	1	*	*	*	*	*	*	*
Education									
*	2	1	*	1	*	*	*	*	*
< High School	2	*	*	*	*	*	1	*	1
High School Graduate	24	2	4	4	3	*	*	3	8
< College	18	2	4	*	*	1	*	4	7
College Graduate	10	*	2	2	2	*	*	1	3
Post Graduate	6	*	*	1	1	*	1	1	2
Census Region									
Northeast	20	3	1	4	*	1	*	1	10
Midwest	19	*	4	4	2	*	1	4	4
South	12	1	3	*	2	*	1	1	4
West	11	1	2	*	2	*	*	3	3
Day of Week									
Weekday	40	3	7	5	2	1	*	7	15
Weekend	22	2	3	3	4	*	2	2	6
Season									
Winter	16	*	3	5	1	*	1	3	3
Spring	19	3	4	1	1	*	*	2	8
Summer	19	1	1	1	4	1	1	2	8
Fall	8	1	2	1	*	*	*	2	2
Asthma									
No	59	5	8	8	6	1	2	8	21
Yes	3	*	2	*	*	*	*	1	*
Angina									
No	60	5	10	8	6	1	2	8	20
Yes	2	*	*	*	*	*	*	1	1
Bronchitis/emphysema									
No	60	4	10	8	6	1	2	8	21
Yes	2	1	*	*	*	*	*	1	*

Note: * Signifies missing data; Refused = respondents refused to answer; N = doer sample size in specified range of number of minutes spent.
A value of "61" for number of minutes signifies that more than 60 minutes were spent.
Source: Tsang and Klepeis, 1996.

Table 15-145 Number of Minutes Spent Smoking Cigars or Pipe Tobacco (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		57	2	3	3	10	20	60	61	61	61	61	61	61
Gender	Male	53	3	5	10	10	20	60	61	61	61	61	61	61
Gender	Female	4	2	2	2	2	2.5	9	38	61	61	61	61	61
Age (years)	5-11	1	15	15	15	15	15	15	15	15	15	15	15	15
Age (years)	12-17	0	0	0	0	0	0	0	0	0	0	0	0	0
Age (years)	18-64	43	2	2	3	10	15	45	61	61	61	61	61	61
Age (years)	> 64	13	15	15	15	20	45	60	61	61	61	61	61	61
Race	White	50	2	2.5	3	10	20	60	61	61	61	61	61	61
Race	Black	4	10	10	10	10	10	15	25	30	30	30	30	30
Race	Some Others	0	0	0	0	0	0	0	0	0	0	0	0	0
Race	Hispanic	3	30	30	30	30	30	45	61	61	61	61	61	61
Hispanic	No	52	2	3	3	10	20	60	61	61	61	61	61	61
Hispanic	Yes	5	10	10	10	10	30	40	45	61	61	61	61	61
Employment	Full Time	37	2	2	3	10	20	60	61	61	61	61	61	61
Employment	Part Time	3	3	3	3	3	3	10	10	10	10	10	10	10
Employment	Not Employed	16	15	15	15	20	37.5	60	61	61	61	61	61	61
Education	< High School	2	45	45	45	45	45	53	61	61	61	61	61	61
Education	High School Graduate	22	2	2	10	10	15	45	61	61	61	61	61	61
Education	< College	16	3	3	3	3	25	60	61	61	61	61	61	61
Education	College Graduate	10	5	5	5	7.5	20	30	61	61	61	61	61	61
Education	Post Graduate	6	20	20	20	20	30	52.5	61	61	61	61	61	61
Census Region	Northeast	17	10	10	10	20	20	61	61	61	61	61	61	61
Census Region	Midwest	19	2	2	2	3	15	30	60	61	61	61	61	61
Census Region	South	11	10	10	10	10	10	45	61	61	61	61	61	61
Census Region	West	10	10	10	10	10	30	60	61	61	61	61	61	61
Day of Week	Weekday	37	2	2	3	10	20	60	61	61	61	61	61	61
Day of Week	Weekend	20	3	3	6.5	10	20	37.5	61	61	61	61	61	61
Season	Winter	16	3	3	3	10	15	25	60	61	61	61	61	61
Season	Spring	16	2	2	2	5	15	60.5	61	61	61	61	61	61
Season	Summer	18	10	10	10	20	30	60	61	61	61	61	61	61
Season	Fall	7	3	3	3	3	10	60	61	61	61	61	61	61
Asthma	No	54	2	3	10	10	20	60	61	61	61	61	61	61
Asthma	Yes	3	3	3	3	3	3	5	60	60	60	60	60	60
Angina	No	55	2	3	3	10	20	60	61	61	61	61	61	61
Angina	Yes	2	60	60	60	60	60	60.5	61	61	61	61	61	61
Bronchitis/emphysema	No	56	2	3	3	10	20	60	61	61	61	61	61	61
Bronchitis/emphysema	Yes	1	60	60	60	60	60	60	60	60	60	60	60	60

Note: A value of "61" for number of minutes signifies that more than 60 minutes were spent; N = doer sample size. Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis. 1996.

Table 15-146 Range of Numbers of Cigarettes Smoked Based on the Number of Respondents

	Total N	Number of Cigarettes Smoked by Respondent on the Day Before the Survey									
		*	None	1-2	3-5	6-9	10-14	15-24	25-35	36+	DK
Overall	4663	530	3288	45	92	88	182	315	56	57	10
Gender											
Male	2163	278	1467	24	38	32	81	167	30	43	3
Female	2498	251	1820	21	54	56	101	148	26	14	7
Refused	2	1	1	*	*	*	*	*	*	*	*
Age (years)											
*	84	2	72	1	1	*	2	3	1	1	1
1-4	263	263	*	*	*	*	*	*	*	*	*
5-11	348	258	88	*	1	*	*	1	*	*	*
12-17	326	1	315	*	1	3	2	3	*	*	1
18-64	2972	5	2232	42	76	75	156	276	54	51	5
> 64	670	1	581	2	13	10	22	32	1	5	3
Race											
White	3774	413	2664	30	63	63	156	272	54	52	7
Black	463	53	319	7	18	22	17	22	1	1	3
Aian	77	5	71	*	*	*	*	1	*	*	*
Some Others	96	22	55	1	4	1	5	6	1	1	*
Hispanic	193	37	133	7	5	2	2	7	*	*	*
Refused	60	*	46	*	2	*	2	7	*	3	*
Hispanic											
No	4244	452	3010	33	79	79	173	297	56	55	10
Yes	347	75	225	11	10	7	7	12	*	*	*
DK	26	2	18	*	2	2	1	1	*	*	*
Refused	46	1	35	1	1	*	1	5	*	2	*
Employment											
*	926	526	388	*	2	3	2	3	*	*	2
Full Time	2017	1	1510	34	55	51	100	193	37	34	2
Part Time	379	*	307	5	7	6	23	22	4	3	2
Not Employed	1309	3	1058	6	28	28	57	92	14	20	3
Refused	32	*	25	*	*	*	*	5	1	*	1
Education											
*	1021	526	473	*	4	3	4	8	*	1	2
< High School	399	3	279	1	9	12	27	42	8	16	2
High School Graduate	1253	1	899	16	44	35	73	138	23	23	1
< College	895	*	696	11	19	20	44	75	18	9	3
College Graduate	650	*	547	11	10	13	26	32	5	5	1
Post Graduate	445	*	394	6	6	5	8	20	2	3	1
Census Region											
Northeast	1048	112	747	4	12	19	49	78	10	16	1
Midwest	1036	110	746	11	25	19	29	73	13	8	2
South	1601	193	1079	17	37	34	76	108	29	24	4
West	978	115	716	13	18	16	28	56	4	9	3
Day of Week											
Weekday	3156	341	2239	28	66	61	116	217	38	43	7
Weekend	1507	189	1049	17	26	27	66	98	18	14	3
Season											
Winter	1264	163	883	16	23	21	50	71	18	14	5
Spring	1181	148	819	13	22	14	45	94	14	10	2
Summer	1275	142	906	7	20	32	47	89	12	17	3
Fall	943	77	680	9	27	21	40	61	12	16	*
Asthma											
No	4287	480	3023	40	85	80	171	292	51	56	9
Yes	341	48	239	5	6	8	10	18	5	1	1
DK	35	2	26	*	1	*	1	5	*	*	*
Angina											
No	4500	526	3161	45	88	85	175	304	52	54	10
Yes	125	2	99	*	3	3	5	8	3	2	*
DK	38	2	28	*	1	*	2	3	1	1	*
Bronchitis/emphysema											
No	4424	519	3138	43	80	81	170	284	48	52	9
Yes	203	11	120	2	11	6	11	28	8	5	1
DK	36	*	30	*	1	1	1	3	*	*	*

Note: * = Missing Data; DK = Don't Know; N= Number of Respndents; Refused = Respondent Refused to Answer
Source: Tsang and Klepeis, 1996.

Table 15-147 Range of Number of Cigarettes Smoked by Other People Based on Number of Respondents

	Total N	Number of Cigarettes Smoked By Others									
		*	None	1-2	3-5	6-9	10-14	15-24	25-35	36+	DK
Overall	4723	898	3209	55	108	78	122	121	19	28	85
Gender											
Male	2131	468	1403	21	35	39	61	46	11	12	35
Female	2590	428	1806	34	73	39	61	75	8	16	50
Refused	2	2	*	*	*	*	*	*	*	*	*
Age (years)											
*	103	11	82	*	2	*	*	3	*	1	4
1-4	236	236	*	*	*	*	*	*	*	*	*
5-11	355	355	*	*	*	*	*	*	*	*	*
12-17	263	263	*	*	*	*	*	*	*	*	*
18-64	3087	32	2506	46	97	74	116	109	16	24	67
> 64	679	1	621	9	9	4	6	9	3	3	14
Race											
White	3817	675	2616	42	89	70	106	107	18	24	70
Black	482	119	309	7	8	6	9	9	1	2	12
Asian	80	21	57	1	*	*	1	*	*	*	*
Some Others	86	29	51	*	*	1	3	1	*	1	*
Hispanic	192	50	120	5	9	1	3	1	*	1	2
Refused	66	4	56	*	2	*	*	3	*	*	1
Hispanic											
No	4290	796	2928	49	91	73	114	118	19	25	77
Yes	355	95	223	5	15	3	7	1	*	1	5
DK	21	4	11	1	*	1	1	*	*	2	1
Refused	57	3	47	*	2	1	*	2	*	*	2
Employment											
*	847	845	2	*	*	*	*	*	*	*	*
Full Time	2079	*	1740	28	64	50	73	59	9	10	46
Part Time	423	21	336	6	15	4	14	11	1	3	12
Not Employed	1335	30	1098	21	28	24	35	48	9	15	27
Refused	39	2	33	*	1	*	*	3	*	*	*
Education											
*	947	897	44	*	1	*	*	4	*	*	1
< High School	435	*	336	6	18	9	17	16	4	10	19
High School Graduate	1359	*	1097	25	38	40	47	62	9	9	32
< College	906	1	748	10	29	22	36	22	5	9	24
College Graduate	597	*	536	9	15	5	17	11	*	*	4
Post Graduate	479	*	448	5	7	2	5	6	1	*	5
Census Region											
Northeast	1027	201	690	14	29	18	14	32	3	4	22
Midwest	1066	196	726	15	28	13	27	25	4	7	25
South	1642	320	1090	17	36	33	58	44	7	15	22
West	988	181	703	9	15	14	23	20	5	2	16
Day of Week											
Weekday	3160	596	2178	33	76	54	77	69	12	14	51
Weekend	1563	302	1031	22	32	24	45	52	7	14	34
Season											
Winter	1260	266	841	17	23	19	29	34	7	6	18
Spring	1257	270	821	14	35	22	27	32	4	10	22
Summer	1261	240	863	13	25	18	35	30	3	6	28
Fall	945	122	684	11	25	19	31	25	5	6	17
Asthma											
No	4342	802	2989	52	97	69	117	104	15	22	75
Yes	353	95	196	3	10	9	5	16	4	6	9
DK	28	1	24	*	1	*	*	1	*	*	1
Angina											
No	4561	894	3068	53	104	78	121	116	19	26	82
Yes	125	1	110	2	3	*	1	4	*	2	2
DK	37	3	31	*	1	*	*	1	*	*	1
Bronchitis/emphysema											
No	4458	875	3016	53	99	75	115	108	17	23	77
Yes	230	21	163	2	8	3	7	12	2	5	7
DK	35	2	30	*	1	*	*	1	*	*	1

Note: * = Missing Data; DK =Don't know; N = Number of Respondents; Refused = Respondent Refused to Answer.
Source: Tsang And Klepeis, 1996.

Table 15-148 Range of the Number of Cigarettes Smoked While at Home Based on the Number of Respondents

	Total N	Number of Cigarettes Smoked by Respondent at Home									
		*	None	1-2	3-5	6-9	10-14	15-24	25-35	36+	DK
Overall	4723	516	3358	51	193	126	224	180	23	29	23
Gender											
Male	2131	277	1463	24	86	53	91	98	11	17	11
Female	2590	237	1895	27	107	73	133	82	12	12	12
Refused	2	2	*	*	*	*	*	*	*	*	*
Age (years)											
*	103	8	83	*	2	4	1	2	1	*	2
1-4	236	236	*	*	*	*	*	*	*	*	*
5-11	355	268	86	*	*	*	1	*	*	*	*
12-17	263	2	248	*	6	2	3	1	1	*	*
18-64	3087	1	2352	47	170	110	193	150	21	26	17
> 64	679	1	589	4	15	10	26	27	0	3	4
Race											
White	3817	391	2700	30	152	103	208	164	22	28	19
Black	482	61	345	10	27	20	9	6	1	*	3
Asian	80	13	65	*	2	*	*	*	*	*	*
Some Others	86	17	58	1	3	1	2	3	*	1	*
Hispanic	192	32	140	8	3	2	3	4	*	*	*
Refused	66	2	50	2	6	*	2	3	*	*	1
Hispanic											
No	4290	451	3045	41	182	121	210	167	23	29	21
Yes	355	64	252	8	4	5	10	11	*	*	1
DK	21	*	18	*	1	*	2	*	*	*	*
Refused	57	1	43	2	6	*	2	2	*	*	1
Employment											
*	847	514	322	*	5	1	3	1	1	*	*
Full Time	2079	1	1598	33	122	88	117	87	11	10	12
Part Time	423	*	346	4	17	10	27	12	3	3	1
Not Employed	1335	1	1060	14	47	27	76	78	7	16	9
Refused	39	*	32	*	2	*	1	2	1	*	1
Education											
*	947	514	406	1	9	3	6	4	2	*	2
< High School	435	*	309	5	20	17	32	26	7	12	7
High School Graduate	1359	*	989	21	78	64	98	84	7	11	7
< College	906	2	701	17	51	25	56	39	4	5	6
College Graduate	597	*	524	6	20	11	19	13	2	1	1
Post Graduate	479	*	429	1	15	6	13	14	1	*	*
Census Region											
Northeast	1027	121	721	11	39	22	50	46	8	5	4
Midwest	1066	102	764	12	52	32	53	33	5	7	6
South	1642	177	1159	16	62	51	81	63	8	14	11
West	988	116	714	12	40	21	40	38	2	3	2
Day of Week											
Weekday	3160	336	2277	32	129	87	134	118	14	18	15
Weekend	1563	180	1081	19	64	39	90	62	9	11	8
Season											
Winter	1260	153	873	18	53	39	59	42	10	6	7
Spring	1257	152	901	7	51	22	55	54	1	6	8
Summer	1261	139	896	10	44	33	64	53	7	10	5
Fall	945	72	688	16	45	32	46	31	5	7	3
Asthma											
No	4342	470	3100	45	176	112	208	165	20	25	21
Yes	353	46	234	5	15	14	16	15	3	4	1
DK	28	*	24	1	2	*	*	*	*	*	1
Angina											
No	4561	515	3225	49	188	123	217	173	23	26	22
Yes	125	*	104	1	2	3	5	7	*	3	*
DK	37	1	29	1	3	*	2	*	*	*	1
Bronchitis/emphysema											
No	4458	501	3179	46	179	121	210	159	21	20	22
Yes	230	15	149	4	12	5	14	20	2	9	*
DK	35	*	30	1	2	*	*	1	*	*	1

Note: * = Missing Data; DK =Don't Know; N= Number of Respondents; Refused = Respondent Refused to Answer
Source: Tsang and Klepeis, 1996.

Table 15-149. Differences in Time Use (hours/week)[a] Grouped by Sex, Employment Status, and Marital Status for the Surveys Conducted in 1965 and 1975

	Employed Men		Employed Women		Housewives		Total
Urban Data	Married	Single	Married	Single	Married	Single	
1965	(N=448)	(N=73)	(N=190)	(N=152)	(N=341)	(N=14)	(N=1218)
Sleep	53.1	50.6	53.8	52.6	53.9	58.8	53.3
Work for Pay	51.3	51.4	38.4	39.8	0.5	1.6	33.0
Family Care	9.0	7.7	28.8	20.6	50.0	45.7	25.4
Personal Care	20.9	22.2	20.3	21.7	22.6	23.0	21.5
Free Time	33.7	36.1	26.7	33.3	41.0	38.9	34.8
Organizations	2.6	3.6	1.4	3.7	3.4	3.4	2.8
Media	17.1	13.9	10.7	11.1	15.3	19.1	14.7
Social Life	7.2	10.4	7.9	9.6	12.6	10.2	9.4
Recreation	1.4	1.3	0.6	0.5	0.6	1.1	0.9
Other Leisure	5.4	6.9	6.1	8.4	9.1	5.1	7.0
Total Time	168.0	168.0	168.0	168.0	168.0	168.0	168.0
(Free)	(33.7)	(36.1)	(26.7)	(33.3)	(41.0)	(38.9)	(34.8)
1975	(N=245)	(N=87)	(N=117)	(N=108)	(N=141)	(N=28)	(N=726)
Sleep	53.4	54.1	55.1	54.3	56.8	58.6	54.7
Work for Pay	47.4	40.0	30.1	38.8	1.1	0.0	32.5
Family Care	9.7	9.0	24.9	16.6	44.3	42.8	20.5
Personal Care	21.4	20.0	26.2	21.9	21.4	19.2	21.8
Free Time	36.1	44.9	31.7	36.4	44.4	47.4	38.5
Organizations	3.7	4.8	1.1	4.4	4.8	3.0	3.8
Media	18.9	18.5	15.6	14.5	20.4	27.2	18.2
Social Life	6.4	8.9	6.6	8.9	10.1	9.1	7.8
Recreation	1.3	4.1	0.8	0.5	0.7	0.4	1.3
Other Leisure	5.8	8.6	6.5	8.1	8.4	7.7	7.4
Total Time	168.0	168.0	168.0	168.0	168.0	168.0	168.0
(Free)	(36.1)	(44.9)	(31.7)	(36.4)	(44.4)	(47.4)	(38.5)

[a] Data weighted to ensure equal days of the week.
Source: Robinson, 1977.

Table 15-150. Time Use (hours/week)[a] Differences by Age for the Surveys Conducted in 1965 and 1975

	Mean Duration (hrs/wk)									
	Age Group (years)									
	18-25		25-35		36-45		46-55		56-65	
Activity	1965 (N=200)	1975 (N=149)	1965 (N=321)	1975 (N=234)	1965 (N=306)	1975 (N=150)	1965 (N=252)	1975 (N=141)	1965 (N=156)	1975 (N=111)
Sleep	54.2	55.4	52.5	53.9	53.1	54.7	53.9	55.4	53.6	56.0
Work for Pay	32.6	27.0	29.2	33.4	33.1	34.4	33.4	31.0	35.9	20.4
Family Care	21.2	15.3	30.4	21.6	25.4	20.4	24.9	23.2	20.4	23.2
Personal Care	20.9	20.3	20.3	20.8	22.5	21.1	22.4	23.1	20.9	26.6
Free Time	39.1	50.0	35.6	38.4	33.8	37.3	33.4	35.2	37.1	41.8
Organizations	4.8	8.4	3.0	4.2	3.0	3.3	2.0	3.1	2.9	3.2
Media	13.8	18.5	14.6	17.2	14.5	18.3	15.3	18.8	17.4	22.6
Social Life	11.3	10.7	10.3	8.7	8.4	7.8	8.6	5.4	8.1	6.2
Recreation	0.9	2.6	1.2	1.3	0.8	1.0	0.6	1.3	1.1	1.3
Other Leisure	8.3	9.8	6.5	7.0	7.1	6.9	6.9	6.6	7.6	8.5
Total Time	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0
Free Time	(39.1)	(50.0)	(35.6)	(38.4)	(33.8)	(37.3)	(33.4)	(35.2)	(37.1)	(41.8)

[a] Data weighted to ensure equal days of the week.
Source: Robinson, 1977.

Table 15-151. Time Use (hours/week)[a] Differences by Education for the Surveys Conducted in 1965 and 1975

Activity	Mean duration (hours/week)									
	Age Group (in years)									
	0-8		9-11		12		13-15		16+	
	1965 (N=171)	1975 (N=75)	1965 (N=220)	1975 (N=114)	1965 (N=452)	1975 (N=319)	1965 (N=195)	1975 (N=137)	1965 (N=191)	1975 (N=144)
Sleep	54.9	57.0	52.3	53.7	53.0	55.5	53.6	53.6	53.6	54.8
Work for Pay	31.6	30.0	33.1	32.0	30.9	26.9	34.4	27.5	34.5	38.0
Family Care	24.7	18.7	25.4	21.7	28.9	23.5	21.7	18.9	21.2	16.8
Personal Care	20.8	22.9	20.9	22.0	21.1	22.1	21.7	10.5	22.7	22.3
Free Time	35.9	39.4	36.1	38.6	34.1	40.0	36.5	47.5	35.9	36.1
Organizations	1.8	3.0	1.5	2.2	2.5	3.7	5.8	9.1	4.7	4.1
Media	19.3	18.0	16.5	20.7	14.2	19.0	13.3	19.7	12.5	16.2
Social Life	7.7	8.4	9.8	7.9	9.5	8.5	9.0	7.7	10.2	8.1
Recreation	0.9	1.3	1.4	0.7	0.7	1.3	1.1	2.0	0.9	1.3
Other Leisure	6.3	8.7	7.0	7.1	7.2	7.5	7.4	9.0	7.7	6.4
Total Time	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0
Free Time	(36.0)	(39.4)	(36.2)	(38.6)	(34.1)	(40.0)	(36.6)	(47.5)	(36.0)	(36.1)

a Data weighted to ensure equal days of the week.
Source: Robinson, 1977.

Table 15-152. Time Use (hours/week)[a] Differences by Race for the Surveys Conducted in 1965 and 1975

	Mean duration (hours/week)			
	White		Black	
	1965 (N = 1030)	1975 (N = 680)	1965 (N = 103)	1975 (N = 77)
Activity Category				
Sleep	53.4	54.5	50.9	54.8
Work for Pay	31.9	30.0	36.6	30.0
Family Care	26.0	21.1	23.6	17.6
Personal Care	21.8	22.1	20.0	21.0
Free Time	34.9	40.3	36.9	44.6
Organizations	2.8	4.4	3.0	4.9
Media	14.8	18.7	15.7	19.6
Social Life	9.3	8.2	9.1	9.8
Recreation	1.1	1.5	0.6	0.4
Other Leisure	6.9	7.5	8.4	9.9
Total Time	168.0	168.0	168.0	168.0
Free Time	(34.9)	(40.3)	(36.8)	(44.6)

[a] Data weighted to ensure equal days of the week.

Source: Robinson, 1977.

Table 15-153. Mean Time Spent (hours/week)[a] in Ten Major Activity Categories Grouped by Regions

Activity	West N=200	North Central N=304	Northeast N=185	South N=286	Total[b] N=975 Mean	Total[b] N=975 S.D.[c]
Activity Actegtory						
Market Work	23.44	29.02	27.34	24.21	26.15	23.83
House/yard work	14.64	14.17	14.29	15.44	14.66	12.09
Child care	2.50	2.82	2.32	2.66	2.62	5.14
Services/shop	5.22	5.64	4.92	4.72	5.15	5.40
Personal care	79.23	76.62	78.11	79.38	78.24	12.70
Education	2.94	1.43	0.95	1.45	1.65	6.34
Organizations	3.42	2.97	2.45	2.68	2.88	5.40
Social entertainment	8.26	8.42	8.98	8.22	8.43	8.17
Active leisure	5.94	5.28	4.77	5.86	5.49	7.81
Passive leisure	22.47	21.71	23.94	23.47	22.80	13.35
Total Time	168.00	168.00	168.00	168.00	168.00	0.09

[a] Weighted for day of week, panel loss (not defined in report), and correspondence to Census. Data may not add to totals shown due to rounding.
[b] N = surveyed population.
[c] S.D. = standard deviation.
Source: Hill, 1985.

Table 15-154. Total Mean Time Spent (minutes/day) in Ten Major Activity Categories Grouped by Type of Day

	Time Duration (mins/day)		
	Weekday [N[a] = 831]	Saturday [N = 831]	Sunday [N = 831]
Activity Category			
Market Work	288.0 (257.7)[b]	97.9 (211.9)	58.0 (164.8)
House/Yardwork	126.3 (119.3)	160.5 (157.2)	124.5 (133.3)
Child Care	26.6 (50.9)	19.4 (51.5)	24.8 (61.9)
Services/Shopping	48.7 (58.7)	64.4 (92.5)	21.6 (49.9)
Personal Care	639.2 (114.8)	706.8 (169.8)	734.3 (156.5)
Education	16.4 (64.4)	5.4 (38.1)	7.3 (48.0)
Organizations	21.1 (49.7)	18.4 (75.2)	58.5 (104.5)
Social Entertainment	54.9 (69.2)	1,114.1 (156.0)	110.0 (151.2)
Active Leisure	37.9 (71.11)	61.4 (126.5)	64.5 (120.6)
Passive Leisure	181.1 (121.9)	191.8 (161.6)	236.5 (167.1)
Total Time	1,440	1,440	1,440

a N = Number of respondents.
b ( ) = Numbers in parentheses are standard deviations.
Source: Hill, 1985.

Table 15-155. Mean Time Spent (minutes/day) in Ten Major Activity Categories During Four Waves of Interviews[a]

	Fall (Nov. 1, 1975)[b] N=861	Winter (Feb. 28, 1976)[b]	Spring (June 1, 1976)[b] N=861	Summer (Sept. 21, 1976)[b] N=861	Range of Standard Deviations
Activity Category	Wave 1	Wave 2	Wave 3	Wave 4	
Market work	222.94	226.53	210.44	230.92	272-287
House/yard work	133.16	135.58	143.10	119.95	129-156
Child care	25.50	22.44	25.51	21.07	49-58
Services/shop	48.98	44.09	44.61	47.75	76-79
Personal care	652.95	678.14	688.27	674.85	143-181
Education	22.79	12.57	2.87	10.76	32-93
Organizations	25.30	22.55	23.21	29.91	68-87
Social entertainment	63.87	67.11	83.90	72.24	102-127
Active leisure	42.71	47.46	46.19	42.30	96-105
Passive leisure	210.75	183.48	171.85	190.19	144-162
Total Time	1440.00	1440.00	1440.00	1440.00	--

a Weighted for day of week, panel loss (not defined in report), and correspondence to Census.
b Dates by which 50% of the interviews for each wave were taken.
Source: Hill, 1985.

Table 15-156. Mean Time Spent (hours/week) in Ten Major Activity Categories Grouped by Gender[a]

	Time duration (hours/week)					
	Men n = 140		Women n = 561		Men and Women n = 971	
Activity Category						
Market work	35.8	(23.6)[b]	17.9	(20.7)	26.2	(23.8)
House/yard	8.5	(9.0)	20.0	(11.9)	14.7	(12.1)
Child care	1.2	(2.5)	3.9	(6.4)	2.6	(5.2)
Services/shop	3.9	(4.5)	6.3	(5.9)	5.2	(5.4)
Personal care	77.3	(13.0)	79.0	(12.4)	78.2	(12.7)
Education	2.3	(7.7)	1.1	(4.8)	1.7	(6.4)
Organizations	2.5	(5.5)	3.2	(5.3)	2.9	(5.4)
Social entertainment	7.9	(8.3)	8.9	(8.0)	8.4	(8.2)
Active leisure	5.9	(8.2)	5.2	(7.4)	5.5	(7.8)
Passive leisure	22.8	(14.1)	22.7	(12.7)	22.8	(13.3)
Total time	168.1		168.1		168.1	

[a] Detailed components of activities (87) are presented in Table 1A-4.
[b] ( ) = Numbers in parentheses are standard deviations.
Source: Hill, 1985.

Table 15-157. Percent Responses of Children's "Play" (activities) Locations in Maryvale, Arizona[a]

Location	Percent Responses			Ranking of Children's "Play" Locations[c]
	Preschool n = 211	Primary Grades (K-3) n = 45	Intermediate Grades (4-6) n = 66	
Residential Yards	143[b]	124[b]	132[b]	Residential (Own and Others)
School Playgrounds	0	53	52	Parks and Recreation Areas
Parks and Recreation Areas	42	53	33	Street/Path/Alley
Commercial	2	24	27	Natural/Vacant Areas
Industrial	0	0	2	School
Institutional	1	2	0	Institutional
Streets	3	24	41	Commercial
Alleys	1	2	9	Parking Lots
Parking Lots	0	9	9	Child Built Places
Vacant Lots/Canals/Fields	1	7	8	Water
				Industrial

[a] Survey was conducted in Maryvale (West Central Phoenix), Arizona.
[b] Percentages greater than 100, because many children played in more than one location.
[c] Ranking of children's activity locations were obtained from other literature sources.

Source: Sell, 1989.

Table 15-158. Occupational Tenure of Employed Individuals[a] by Age and Sex

	Median Tenure (years)		
Age Group (years)	All Workers	Men	Women
16-24	1.9	2.0	1.9
25-29	4.4	4.6	4.1
30-34	6.9	7.6	6.0
35-39	9.0	10.4	7.0
40-44	10.7	13.8	8.0
45-49	13.3	17.5	10.0
50-54	15.2	20.0	10.8
55-59	17.7	21.9	12.4
60-64	19.4	23.9	14.5
65-69	20.1	26.9	15.6
70 and older	21.9	30.5	18.8
Total	6.6	7.9	5.4

a Working population = 109.1 million persons
Source: Carey, 1988.

Table 15-159. Occupational Tenure for Employed Individuals[a] Grouped by Sex and Race

	Median Tenure (Years)		
Race	All Individuals	Men	Women
White	6.7	8.3	5.4
Black	5.8	5.8	5.8
Hispanic	4.5	5.1	3.7

[a] Working population = 109.1 million persons.
Source: Carey, 1988.

Table 15-160. Occupational Tenure for Employed Individuals[a] Grouped by Sex and Employment Status

	Median Tenure (Years)		
Employment Status	All Individuals	Men	Women
Full-Time	7.2	8.4	5.9
Part-Time	3.1	2.4	3.6

a Working population = 109.9 million persons.
Source: Carey, 1988.

Table 15-161. Occupational Tenure of Employed Individuals[a] Grouped by Major Occupational Groups and Age

Occupational Group	Median Tenure (years)						
	Age Group						
	Total[b]	16-24	25-34	35-44	45-54	55-64	65+
Executive, Administrative, and Managerial	8.4	2.4	5.6	10.1	15.1	17.9	26.3
Professional Specialty	9.6	2.0	5.7	12.0	18.2	25.6	36.2
Technicians and Related Support	6.9	2.2	5.7	10.9	17.7	20.8	22.2
Sales Occupations	5.1	1.7	4.7	7.7	10.5	15.5	21.6
Administrative Support, including Clerical	5.4	2.1	5.0	7.6	10.9	14.6	15.4
Service Occupations	4.1	1.7	4.4	6.9	9.0	10.6	10.4
Precision Production, Craft, and Repair	9.3	2.6	7.1	13.5	19.9	25.7	30.1
Operators, Fabricators, and Laborers	5.5	1.7	4.6	9.1	13.7	18.1	14.7
Farming, Forestry, and Fishing	10.4	2.9	7.9	13.5	20.7	30.5	39.8

a Working population = 109.1 million persons.
b Includes all workers 16 years and older
Source: Carey, 1988.

Table 15-162. Voluntary Occupational Mobility Rates for Workers[a] Age 16 Years and Older

Age Group (years)	Occupational Mobility Rate[b] (Percent)
16-24	12.7
25-34	6.6
35-44	4.0
45-54	1.9
55-64	1.0
64 and older	0.3
Total, age 16 and older	5.3

a Working population = 109.1 million persons.
b Occupational mobility rate = percentage of persons employed in an occupation who had voluntarily entered it from another occupation.
Source: Carey, 1990.

Table 15-163. Values and Their Standard Errors for Average Total Residence Time, T, for Each Group in Survey[a]

Households	Average total residence time T (years)	S.D. S_T	Average current residence T_{CR} (years)	Households (percent) 1985	1987
All households	4.55 ± 0.60	8.68	10.56±0.10	100.0	100.0
Renters	2.35±0.14	4.02	4.62±0.08	36.5	36.0
Owners	.11.36±3.87	13.72	13.96±0.12	63.5	64.0
Farms	17.31±13.81	18.69	18.75±0.38	2.1	1.9
Urban	4.19±0.53	8.17	10.07±0.10	74.9	74.5
Rural	7.80±1.17	11.28	12.06±0.23	25.1	25.5
Northeast region	7.37±0.88	11.48	12.64±0.12	21.2	20.9
Midwest region	5.11±0.68	9.37	11.15±0.10	25.0	24.5
South region	3.96±0.47	8.03	10.12±0.08	34.0	34.4
West region	3.49±0.57	6.84	8.44±0.11	19.8	20.2

[a]Values of the average current residence time, T_{CR}, are given for comparison.
Source: Israeli and Nelson, 1992.

Table 15-164. Total Residence Time, t (years), Corresponding to Selected Values of R(t)[a] by Housing Category

R(t) =	0.05	0.1	0.25	0.5	0.75
All households	23.1	12.9	3.7	1.4	0.5
Renters	8.0	5.2	2.6	1.2	0.5
Owners	41.4	32.0	17.1	5.2	1.4
Farms	58.4	48.3	26.7	10.0	2.4
Urban	21.7	10.9	3.4	1.4	0.5
Rural	32.3	21.7	9.1	3.3	1.2
Northeast region	34.4	22.3	7.5	2.8	1.0
Midwest region	25.7	15.0	4.3	1.6	0.6
South region	20.7	10.8	3.0	1.2	0.4
West region	17.1	8.9	2.9	1.2	0.4

[a] R(t) = fraction of households living in the same residence for t years or more.
Source: Israeli and Nelson, 1992.

Table 15-165. Residence Time of Owner/Renter Occupied Units	
Year household moved into unit	Total occupied units (numbers in thousands)
1990-1994	24,534
1985-1989	27,054
1980-1984	10,613
1975-1979	9,369
1970-1974	6,233
1960-1969	7,933
1950-1959	4,754
1940-1949	1,772
1939 or earlier	885
Total	93,147

Source: U.S. Bureau of the Census, 1993.

Table 15-166. Percent of Householders Living in Houses for Specified Ranges of Time	
Years lived in current home	Percent of total households
0-4	26.34
5-9	29.04
10-14	11.39
15-19	10.06
20-24	6.69
25-34	8.52
35-44	5.1
45-54	1.9
> 55	0.95
Total[a]	99.99

a Total does not equal 100 due to rounding errors.
Source: Adapted from U.S. Bureau of the Census, 1993.

Table 15-167. Descriptive Statistics for Residential Occupancy Period

	Residential occupancy period (years)		
	Both genders	Males only	Females only
	N[a] = 500,000	N = 244,274	N = 255,726
Statistic			
Mean	11.7	11.1	12.3
5th percentile	2	2	2
10th percentile	2	2	2
25th percentile	3	4	5
50th percentile	9	8	9
75th percentile	16	15	17
90th percentile	26	24	28
95th percentile	33	31	35
98th percentile	41	39	43
99th percentile	47	44	49
99.5th percentile	51	48	53
99.8th percentile	55	53	58
99.9th percentile	59	56	61
Second largest value	75	73	75
Largest value	87	73	87

a = Number of simulated persons
Source: Johnson and Capel, 1992.

Table 15-168. Descriptive Statistics for Both Genders by Current Age

	Residential occupancy period (years)							
		Percentile						
Current age, years	Mean	25	50	75	90	95	99
3	6.5	3	5	8	13	17	22
6	8.0	4	7	10	15	18	22
9	8.9	5	8	12	16	18	22
12	9.3	5	9	13	16	18	23
15	9.1	5	8	12	16	18	23
18	8.2	4	7	11	16	19	23
21	6.0	2	4	8	13	17	23
24	5.2	2	4	6	11	15	25
27	6.0	3	5	8	12	16	27
30	7.3	3	6	9	14	19	32
33	8.7	4	7	11	17	23	39
36	10.4	5	8	13	21	28	47
39	12.0	5	9	15	24	31	48
42	13.5	6	11	18	27	35	49
45	15.3	7	13	20	31	38	52
48	16.6	8	14	22	32	39	52
51	17.4	9	15	24	33	39	50
54	18.3	9	16	25	34	40	50
57	19.1	10	17	26	35	41	51
60	19.7	11	18	27	35	40	51
63	20.2	11	19	27	36	41	51
66	20.7	12	20	28	36	41	50
69	21.2	12	20	29	37	42	50
72	21.6	13	20	29	37	43	53
75	21.5	13	20	29	38	43	53
78	21.4	12	19	29	38	44	53
81	21.2	11	20	29	39	45	55
84	20.3	11	19	28	37	44	56
87	20.6	10	18	29	39	46	57
90	18.9	8	15	27	40	47	56
All ages	11.7	4	9	16	26	33	47

Source: Johnson and Capel, 1992.

Table 15-169. Summary of Residence Time of Recent Home Buyers (1993)

Number of years lived in previous house	Percent of Respondents
1 year or less	2
2-3	16
4-7	40
8-9	10
10 years or more	32

Source: NAR, 1993

Table 15-170. Tenure in Previous Home (Percentage Distribution)

	Percent			
	1987	1989	1991	1993
One year or less	5	8	4	2
2-3 Years	25	15	21	16
4-7 Years	36	22	37	40
8-9 Years	10	11	9	10
10 or More Years	24	34	29	32
Total	100	100	100	100
Median	6	6	6	6

Source: NAR, 1993

Table 15-171. Number of Miles Moved (Percentage Distribution)

	All Buyers	First-Time Buyer	Repeat Buyer	New Home Buyer	Existing Home Buyer
Miles	Percent				
Less than 5 miles	29	33	27	23	31
5 to 9 miles	20	25	16	18	20
10 to 19 miles	18	20	17	20	17
20 to 34 miles	9	11	8	12	9
35 to 50 miles	2	2	2	2	3
51 to 100 miles	5	2	6	6	4
Over 100 miles	17	6	24	19	16
Total	100	100	100	100	100
Median	9	8	11	11	8
Mean	200	110	270	230	190

Source: NAR, 1993

Table 15-172. Confidence in Activity Patterns Recommendations

Considerations	Rationale	Rating
TIME SPENT INDOORS VS. OUTDOORS		
Study Elements		
• Level of peer review	The studies received high level of peer review.	High
• Accessibility	The studies are widely available to the public.	High
• Reproducibility	The reproducibility of these studies is left to question. Evidence has shown that activities have tended to shift over the past decade since the studies were published, due to economic conditions and technological developments, etc. Thus, it is assumed there would be differences in reproducing these results. However, if data were reanalyzed in the same manner the results are expected to be the same.	Medium
• Focus on factor of interest	The study focused on general activity patterns. One study delineated between indoor and outdoor use of time but in many cases the locations were specified. Thus, any assumptions were made about the indoor or outdoor location where event took place.	High
• Data pertinent to US	The studies focused on the U.S. population and California.	High
• Primary data	One study analyzed data from a two primary studies. Data from the remaining study was collected to via questionnaires and interviews.	High
• Currency	The studies were published in 1985 (data was collected 1981-1982), 1987, 1991 (data was collected 1987-1990) and 1992.	Medium
• Adequacy of data collection period	In one study, households were sampled 4 times during 3 month intervals from February to December, 1981. Robinson's data was based on 1) the CARB Study where data was collected October 1987 to August 1988; and 2) the National Study where data was collected January through December 1985.	High
• Validity of approach	The approach used to collect data was direct and included questionnaires or interviews. Responses where based on diaries and 'mailback' surveys based on what the person planned to do the following day (the "tomorrow approach"). A 24 hour diary was used in another study.	High
• Study size	The study sizes ranged from 922 to 5,000 depending on the sub-group considered.	High
• Representativeness of the population	Timmer focused on activities of children. Robinson studies activities of both children and adults. The studies are representative of the US population and California State.	High
• Characterization of variability	Variability was characterized by age, gender, and day of the week; location of activities and various age categories for children. There was no mention of race and no socio-economic characterizations made.	Medium
• Lack of bias in study design (high rating is desirable)	Biases noted were sampled during time when children were in school (activities during vacation time are not represented); activities in the 1980's may different than they are now;	Medium
• Measurement error	Measurement or recording error may occur since the diaries were based on recall (in most cases a 24 hour recall).	Medium
Other Elements		
• Number of studies	Two	High
• Agreement between researchers	Difficult to compare due to varying categories of activities and the unique age distributions found within each study.	Not Ranked
Overall Rating		**Medium**

Table 15-172. Confidence in Activity Patterns Recommendations (continued)

Considerations	Rationale	Rating
TIME SPENT IN A VEHICLE		
Study Elements		
• Level of peer review	The study received high level of peer review.	High
• Accessibility	The study is widely available to the public.	High
• Reproducibility	The reproducibility of these studies is left to question. Evidence has shown that activities have tended to shift over the past decade since the studies were published, due to economic conditions, technological developments, etc. Thus, it is assumed there would be differences in reproducing these results.	Medium
• Focus on factor of interest	The study focused specifically focused on time spent in vehicle.	High
• Data pertinent to US	The studies focused on the U.S. population and California.	High
• Primary data	Robinson's study analyzed data from two primary studies, thus it secondary data.	High
• Currency	The studies were published in 1985 (data was collected 1981-1982), 1987, 1991 (data was collected 1987-1990) and 1992.	Medium
• Adequacy of data collection period	In one study, households were sampled 4 times during 3 month intervals from February to December, 1981. Robinson's data was based on 1) the Wiley et al. (1991) Study where data was collected October 1987 to August 1988; and 2) the National Study where data was collected January through December 1985.	High
• Validity of approach	The approach used to collect primary data was based on diary entries recorded the previous day with follow-up telephone interviews. Another study collected time diary data via mailback of questionnaires, telephone interviews. 'Mailback' surveys were based on the "tomorrow approach" where person knew they were to record in diaries in advance.	High
• Study size	The study sizes ranged from 922 to 5,000 depending on the sub-group considered.	High
• Representativeness of the population	The studies are representative of the US population and California State.	High
• Characterization of variability	Variability was characterized by age, gender, and day of the week. There was no mention of race and no socio-economic characterizations made.	Medium
• Lack of bias in study design (high rating is desirable)	Both studies lacked time distributions and were based on short-term data. Wiley et al. (1991) data was based recall, is limited to California's population, and only considered English speaking households.	Medium
• Measurement error	Measurement or recording error may occur when diaries were based on 24 hr recall.	Medium
Other Elements		
• Number of studies	One secondary study analyzing two primary studies	Medium
• Agreement between researchers	Similar activity patterns were found in both studies.	High
Overall Rating		**Medium**

Table 15-172. Confidence in Activity Patterns Recommendations (continued)

Considerations	Rationale	Rating
TIME SPENT SHOWERING		
Study Elements		
• Level of peer review	The study received high level of peer review.	High
• Accessibility	Currently, raw data are available to only EPA. It is not known when data will be publicly available.	Low
• Reproducibility	Results are reproducible.	High
• Focus on factor of interest	The study focused specifically focused on time spent showering.	High
• Data pertinent to US	The study focused on the U.S. general population.	High
• Primary data	The study was based on primary data.	High
• Currency	The study was published in 1996.	High
• Adequacy of data collection period	The data were collected between October 1992 and September 1994.	High
• Validity of approach	The study used a valid methodology and approach which, in addition to 24-hour diaries, collected information on temporal conditions and demographic data such as geographic location and socioeconomic status for various U.S. subgroups.	High
• Study size	Study consisted of 9,386 total participants..	High
• Representativeness of the population	The data were representative of the U.S. population.	High
• Characterization of variability	The study provides a distribution on showering duration.	High
• Lack of bias in study design (high rating is desirable)	The study includes distributions for showering duration. Study is based on short-term data.	High
• Measurement error	Measurement or recording error may occur because diaries are based on 24-hour recall.	Medium
Other Elements		
• Number of studies	One; the study was a national study.	Low
• Agreement between researchers	Recommendation is based on only one study but it is a widely accepted study and average value is comparable to a second key study.	High
Overall Rating		**High**

Table 15-172. Confidence in Activity Patterns Recommendations (continued)

Considerations	Rationale	Rating
TIME SPENT BATHING		
Study Elements		
• Level of peer review	The study received high level of peer review.	High
• Accessibility	Currently, raw data are available to only EPA. It is not known when data will be publicly available.	Low
• Reproducibility	Results can be reproduced or methodology can be followed and evaluated provided comparable economic and social conditions exists.	High
• Focus on factor of interest	The survey collected information on duration and frequency of selected activities and time spent in selected micro-environments.	High
• Data pertinent to US	The data represents the U.S. population.	High
• Primary data	The study was based on primary data.	High
• Currency	The study was published in 1996.	High
• Adequacy of data collection period	The data were collected between October 1992 and September 1994.	High
• Validity of approach	The study used a valid methodology and approach which, in addition to 24-hour diaries, collected information on temporal conditions and demographic data such as geographic location and socioeconomic status for various U.S. subgroups. Responses were weighted according to this demographic data.	High
• Study size	The study consisted of 9,386 total participants.	High
• Representativeness of the population	The studies were based on the U.S. population.	High
• Characterization of variability	The study provided data that varied across geographic region, race, gender, employment status, educational level, day of the week, seasonal conditions, and medical conditions of respondent..	High
• Lack of bias in study design (high rating is desirable)	The study includes distributions for bathing duration. Study is based on short-term data.	Medium
• Measurement error	Measurement or recording error may occur because diaries were based on 24-hour recall.	Medium
Other Elements		
• Number of studies	One; the study was based on one, primary, national study.	Low
• Agreement between researchers	Recommendation was based on only one study.	Not Ranked
Overall Rating		**High**

Table 15-172. Confidence in Activity Patterns Recommendations (continued)

Considerations	Rationale	Rating
SHOWER AND BATHING FREQUENCY		
Study Elements		
• Level of peer review	The study received high level of peer review.	High
• Accessibility	Currently, raw data is available to only EPA. It is not known when data will be publicly available.	Low
• Reproducibility	Results can be reproduced or methodology can be followed and evaluated provided comparable economic and social conditions exists.	High
• Focus on factor of interest	The survey collected information on duration and frequency of selected activities and time spent in selected micro-environments.	High
• Data pertinent to US	The data represents the U.S. population	High
• Primary data	The study was based on primary data.	High
• Currency	The study was published in 1996.	High
• Adequacy of data collection period	The data were collected between October 1992 and September 1994.	High
• Validity of approach	The study used a valid methodology and approach which, in addition to 24-hour diaries, collected information on temporal conditions and demographic data such as geographic location and socioeconomic status for various U.S. subgroups. Responses were weighted according to this demographic data.	High
• Study size	The study consisted of 9,386 total participants	High
• Representativeness of the population	Studies were based on the U.S. population.	High
• Characterization of variability	The study provided data that varied across geographic region, race, gender, employment status, educational level, day of the week, seasonal conditions, and medical conditions of respondent..	High
• Lack of bias in study design (high rating is desirable)	Study is based on short term data..	Medium
• Measurement error	Measurement or recording error may occur because diaries were based on 24-hour recall.	Medium
Other Elements		
• Number of studies	One; the study was based on one, primary, national study.	Low
• Agreement between researchers	Recommendation was based on only one study.	Not Ranked
Overall Rating		**High**

Table 15-172. Confidence in Activity Patterns Recommendations (continued)

Considerations	Rationale	Rating
TIME SPENT SWIMMING		
Study Elements		
• Level of peer review	Study received high level of peer review.	High
• Accessibility	Currently, raw data is available to only EPA. It is not known when data will be publicly available.	Low
• Reproducibility	Results can be reproduced or methodology can be followed and evaluated provided comparable economic and social conditions exists.	High
• Focus on factor of interest	The survey collected information on duration and frequency of selected activities and time spent in selected micro-environments.	High
• Data pertinent to US	The data represents the U.S. population	Iligh
• Primary data	The study was based on primary data.	High
• Currency	The study was published in 1996.	High
• Adequacy of data collection period	The data were collected between October 1992 and September 1994.	High
• Validity of approach	The study used a valid methodology and approach which, in addition to 24-hour diaries, collected information on temporal conditions and demographic data such as geographic location and socioeconomic status for various U.S. subgroups. Responses were weighted according to this demographic data.	High
• Study size	The study consisted of 9,386 total participants	High
• Representativeness of the population	Studies were based on the U.S. population.	High
• Characterization of variability	The study provided data that varied across geographic region, race, gender, employment status, educational level, day of the week, seasonal conditions, and medical conditions of respondent..	High
• Lack of bias in study design (high rating is desirable)	The study includes distributions for swimming duration. Study is based on short term data.	Medium
• Measurement error	Measurement or recording error may occur because diaries were based on 24-hour recall.	Medium
Other Elements		
• Number of studies	One; the study was based on one, primary, national study.	Low
• Agreement between researchers	Recommendation was based on only one study.	Not Ranked
Overall Rating		**High**

Table 15-172. Confidence in Activity Patterns Recommendations (continued)

Considerations	Rationale	Rating
RESIDENTIAL TIME SPENT INDOORS AND OUTDOORS		
Study Elements		
• Level of peer review	The study received high level of peer review.	High
• Accessibility	Currently, raw data is available to only EPA. It is not known when data will be publicly available.	Low
• Reproducibility	Results can be reproduced or methodology can be followed and evaluated provided comparable economic and social conditions exists.	High
• Focus on factor of interest	The survey collected information on duration and frequency of selected activities and time spent in selected micro-environments.	High
• Data pertinent to US	The data represents the U.S. population	High
• Primary data	The study was based on primary data.	High
• Currency	The study was published in 1996.	High
• Adequacy of data collection period	Data were collected between October 1992 and September 1994.	High
• Validity of approach	The study used a valid methodology and approach which, in addition to 24-hour diaries, collected information on temporal conditions and demographic data such as geographic location and socioeconomic status for various U.S. subgroups. Responses were weighted according to this demographic data.	High
• Study size	The study consisted of 9,386 total participants	High
• Representativeness of the population	The studies were based on the U.S. population.	High
• Characterization of variability	The study provided data that varied across geographic region, race, gender, employment status, educational level, day of the week, seasonal conditions, and medical conditions of respondent..	High
• Lack of bias in study design (high rating is desirable)	The study includes distribitions for time spent indoors and outdoors at ones residence. Study is based on short term data.	Medium
• Measurement error	Measurement or recording error may occur because diaries were based on 24-hour recall.	Medium
Other Elements		
• Number of studies	One; the study was based on one, primary, national study.	Low
• Agreement between researchers	Recommendation was based on only one study.	Not Ranked
Overall Rating		**High**

Table 15-173. Confidence in Occupational Mobility Recommendations

Considerations	Rationale	Rating
Study Elements		
• Level of peer review	The studies received high level of peer review	High
• Accessibility	The studies are widely available to the public.	High
• Reproducibility	If the data were re-collected in the same fashion, it is questionable whether the results would be the same based on changes in the economy that have occurred since study was conducted (more than 10 years ago). If the same data were analyzed according to the design of the study then it is expected the results would be the same.	Medium
• Focus on factor of interest	Occupational tenure was the focus of both key studies.	High
• Data pertinent to US	The data represents the U.S. population.	High
• Primary data	The two studies are secondary data sources since they are based on supplemental data to the January 1987 Current Population Study (a U.S. Census publication).	Medium
• Currency	The studies were published in 1988 (data was collection in 1987) and 1990 (data collected from 1986-1987).	Medium
• Adequacy of data collection period	The studies are based on census data, which is collected over a period of years. One study analyzed data for January 1987. The remaining study based data between a January 1986 and January 1987 time frame.	High
• Validity of approach	The studies used a valid methodologies and approaches.	High
• Study size	The study size for one is 109 Million; the remaining study's sample size was 100.1 Million.	High
• Representativeness of the population	The data are representative of the U.S. population.	High
• Characterization of variability	The studies provided averaged data according to gender, race, and education; age averages and percentiles were provided.	High
• Lack of bias in study design (high rating is desirable)	Much of the original study data is not available. Only median values are reported.	Medium
• Measurement error	There is no apparent error in measurement	High
Other Elements		
• Number of studies	Two	Medium
• Agreement between researchers	Difficult to compare between the number of years worked on a job and entry verses exit rate of various occupations. One set of data was recorded in number of years. The other set of data was recorded as a percent motility rate and grouped by age.	Not Ranked
Overall Rating		**High**

Table 15-174. Recommendations for Population Mobility

Study	Value	Method
Israeli and Nelson, 1992	4.6 yr (averge) 1/6 a person's lifetime (70 yr) = 11.7 (modeled)	Average of current and total residence times.
US Bureau of the Census, 1993	9 yr (50th percentile) 33 yr (90th percentile)	Current residence time
Johnson and Capel, 1992	26 yr (90th percentile) 33 yr (95th percentile) 47 yr (99th percentile) 12 yr (mean)	Residential occupancy period

Table 15-175. Confidence in Population Mobility Recommendations

Considerations	Rationale	Rating
Study Elements		
• Level of peer review	The studies received high levels of peer review and appear in publications.	High
• Accessibility	The studies are widely available to the public.	High
• Reproducibility	Results can be reproduced or methodology can be followed and evaluated.	High
• Focus on factor of interest	The Census data provided length of time at current. Two of the studies used modeling to estimate total time.	Medium
• Data pertinent to US	The data is based on the U.S. population	High
• Primary data	Two studies based results on modeled data and one based results on interviews.	Medium
• Currency	The reports were published in 1992 (based on data collected in 1985-1987) and 1993 (based on data collected from 1939 and 1994 (projected) .	Medium
• Adequacy of data collection period	The collection period was based on data collected over several years.	High
• Validity of approach	There are some concerns regarding the validity of approach. Data does not account for each member of the household, values are more realistic estimates for the individual's total residence time, than the average time a household has been living at its current residence. The moving process was modeled. In another study data was assumed to have an even distribution within the different ranges which may bias the 50th and 90th percentiles.	Medium
• Study size	The study size ranged from 15,000 to 500, 000.	High
• Representativeness of the population	Studies were based on the U.S. population.	High
• Characterization of variability	Variability across several geographic regions was noted. Type of ownership was also addressed. One study provided data grouped by race.	Medium
• Lack of bias in study design (high rating is desirable)	Mentioned above in validity of approach section.	Not Ranked
• Measurement error	There is no apparent error in measurement.	High
Other Elements		
• Number of studies	Three	High
• Agreement between researchers	The studies produced very similar results.	High
Overall Rating		**Medium**

Table 15-176. Summary of Recommended Values for Activity Factors

Type	Value	Study
Indoor Activities	Children (ages 3-11):	
	19 hr/day (weekdays)	Timmer et al., 1985 -Key study
	17 hr/day (weekends)	Timmer et al., 1985 -Key study
	Adults (ages 12 and older)	
	21 hr/day	Robinson and Thomas, 1991 - Key study
Outdoor Activities	Children	
	5 hr/day (weekdays)	Timmer et al., 1985 -Key study
	7 hr/day (weekends)	Timmer et al., 1985 -Key study
	Adults	
	1.5 hr/day	Robinson and Thomas, 1991 - Key study
Time Spent Inside Vehicle	Adults	Robinson and Thomas, 1991 - Key study
	1.3 hr/day	Tsang and Klepeis, 1996 - Key study
Taking Baths	20 minutes/event	Tsang and Klepeis, 1996 - Key study
Taking Showers	10 min/day shower duration	Tsang and Klepeis, 1996 - Key study
	1 shower event/day	Tsang and Klepeis, 1996 - Key study
Occupational Tenure	6.6 yrs (16 years and older)	Carey, 1988 - Relevant study
Population Mobility	Average: 9 yr	US Bureau of the Census, 1993 - Key study
	95th percentile: 30 yr	
Swimming	1 event/month	Tsang and Klepeis, 1996 - Key study
	60 minutes/event	
Residential		Tsang and Klepeis, 1996 - Key study
Indoors	16.4 hr/day	
Outdoors	2 hr/day	

APPENDIX 15A

ACTIVITY PATTERNS CODES AND OCCUPATIONAL TENURE DATA

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries

WORK AND OTHER INCOME-PRODUCING ACTIVITIES

Paid Work

01 - Normal work: activities at the main job including work brought home, travel that is part of the job, and overtime; "working," "at work"
- Work at home; work activities for pay done in the home when home is the main workplace (include travel as above)

02 - Job search; looking for work, including visits to employment agencies, phone calls to prospective employers, answering want ads
- Unemployment benefits; applying for or collecting unemployment compensation
- Welfare, food stamps; applying for or collecting welfare, food stamps

05 - Second job; paid work activities that are not part of the main job (use this code only when R* clearly indicates a second job or "other" job); paid work for those not having main job; garage sales, rental property

06 - Lunch at the workplace; lunch eaten at work, cafeteria, lunchroom when "where" = work (lunch at a restaurant, code 44; lunch at home, code 43)
- Eating, smoking, drinking coffee as a secondary activity while working (at workplace)

07 - Before and/or after work at the workplace; activities at the workplace before starting or after stopping work; include "conversations," other work. Do not code secondary activities with this primary activity
- Other work-related

08 - Coffee breaks and other breaks at the workplace; unscheduled breaks and other nonwork during work hours at the workplace; "took a break"; "had coffee" (as a primary activity). Do not code secondary activities with this primary activity

09 - Travel; to and from the workplace when R's travel to and from work were both interrupted by stops; waiting for related travel
- Travel to and from the workplace, including time spent awaiting transportation

HOUSEHOLD ACTIVITIES

Indoor

10 - Meal preparation: cooking, fixing lunches
- Serving food, setting table, putting groceries away. unloading car after grocery shopping

11 - Doing dishes, rinsing dishes, loading dishwasher
- Meal cleanup, clearing table, unloading dishwasher

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

HOUSEHOLD ACTIVITIES (continued)

Indoor (continued)

12 - Miscellaneous, "worked around house." NA if indoor or outdoor - Routine indoor cleaning and chores, picking up, dusting, making beds, washing windows, vacuuming, "cleaning," "fall/spring cleaning," "housework"

14 - Laundry and clothes care - wash
- Laundry and clothes care - iron, fold, mending, putting away clothes ("Sewing" code 84)

16 - Repairs indoors; fixing, repairing appliances
- Repairs indoors; fixing, repairing furniture
- Repairs indoors; fixing, repairing furnace, plumbing, painting a room

17 - Care of houseplants

19 - Other indoor, NA whether cleaning or repair; "did things in house"

Outdoor

13 - Routine outdoor cleaning and chores; yard work, raking leaves, mowing grass, garbage removal, snow shoveling, putting on storm windows, cleaning garage, cutting wood

16 - Repair, maintenance, exterior; fixing repairs outdoors, painting the house, fixing the roof, repairing the driveway (patching)
- Home improvements: additions to and remodeling done to the house, garage; new roof
- Improvement to grounds around house; repaved driveway

17 - Gardening; flower or vegetable gardening; spading, weeding, composting, picking, worked in garden"

19 - Other outdoor; "worked outside," "puttering in garage

MISCELLANEOUS HOUSEHOLD CHORES

16 - Car care; necessary repairs and routine care to cars; tune up
- Car maintenance; changed oil, changed tires, washed cars; "worked on car" except when clearly as a hobby - (code 83)

17 - Pet care; care of household pets including activities with pets; playing with the dog; walking the dog; (caring for pets of relatives, friends, code 42)

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

MISCELLANEOUS HOUSEHOLD CHORES (continued)

19 - Household paperwork; paying bills, balancing the checkbook, making lists, getting the mail, working on the budget
- Other household chores; (no travel), picking up things at home, e.g., "picked up deposit slips" (relate travel to purpose)

CHILD CARE

Child Care for Children of Household

20 - Baby care; care to children aged 4 and under

21 - Child care; care to children aged 5*-17
- Child care; mixed ages or NA ages of children

22 - Helping/teaching children learn, fix, make things; helping son bake cookies; helping daughter fix bike
- Help with homework or supervising homework

23 - Giving children orders or instructions; asking them to help; telling the*i*n to behave

- Disciplining child; yelling at kids, spanking children; correcting children's behavior
- Reading to child
- Conversations with household children only; listening to children

24 - Indoor playing; other indoor activities with children (including games ("playing") unless obviously outdoor games)

25 - Outdoor playing; outdoor activities with children including sports, walks, biking with, other outdoor games
- Coaching/leading outdoor, nonorganizational activities

26 - Medical care at home or outside home; activities associated with children's health; "took son to doctor," "gave daughter medicine"

Other Child Care

27 - Babysitting (unpaid) or child care outside R's home or for children not residing in HH
- Coordinating or facilitating child's social or instructional nonschool activities; (travel related, code 29)
- Other child care, including phone conversations relating to child care other than medical

29 - Travel related to child's social and instructional nonschool activities
- Other travel related to child care activities; waiting for related travel

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

OBTAINING GOODS AND SERVICES

Goods (include phone calls to obtain goods)

30 - Groceries; supermarket, shopping for food
- All other shopping for goods; including for clothing, small appliances; at drugstores, hardware stores, department stores, "downtown" or "uptown," "shopping," "shopping center," buying gas, "window shopping"

31 - Durable household goods; shopping for large appliances, cars, furniture
- House, apartment: activities connected to buying, selling, renting, looking for house, apartment, including phone calls; showing house, including traveling around looking at real estate property (for own use)

Services (include phone conversations to obtain services)

32 - Personal care; beauty, barber shop; hairdressers

33 - Medical care for self; visits to doctor, dentist, optometrist, including making appointments

34 - Financial services; activities related to taking care of financial business; going to the bank, paying utility bills (not by mail), going to accountant, tax office, loan agency, insurance office
- Other government services: post office, driver's license, sporting licenses, marriage licenses, police station

35 - Auto services; repair and other auto services including waiting for such services
- Clothes repair and cleaning; cleaners, laundromat, tailor
- Appliance repair: including furnace, water heater, electric or battery operated appliances; including watching repair person
- Household repair services: including furniture; other repair services NA type; including watching repair person

37 - Other professional services; lawyer, counseling (therapy)
- Picking up food at a takeout place - no travel
- Other services, "going to the dump"

38 - Errands; "running errands," NA whether for goods or services; borrowing goods

39 - Related travel; travel related to obtaining goods and services and/or household activities except 31; waiting for related travel

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

PERSONAL NEEDS AND CARE

Care to Self

40 - Washing, showering, bathing
- Dressing; getting ready, packing and unpacking clothes, personal hygiene, going to the bathroom

41 - Medical care at home to self

43 - Meals at home; including coffee, drinking, smoking, food from a restaurant eaten at home, "breakfast," "lunch"

44 - Meals away from home; eaten at a friend's home (including coffee, drinking, smoking)
- Meals away from home, except at workplace (06) or at friend's home (44); eating at restaurants, out for coffee

45 - Night sleep; longest sleep for day; (may occur during day for night shift workers) including "in bed," but not asleep

46 - Naps and resting; rest periods, "dozing," "laying down" (relaxing code 98)

48 - Sex, making out
- Personal, private; "none of your business"
- Affection between household members; giving and getting hugs, kisses, sitting on laps

Help and Care to Others

41 - Medical care to adults in household (HH)

42 - Nonmedical care to adults in HH; routine nonmedical care to adults in household; "got my wife up," "ran a bath for my husband"
- Help and care to relatives not living in HH; helping care for, providing for needs of relatives; (except travel) helping move, bringing food, assisting in emergencies, doing housework for relatives; visiting when sick
- Help and care to neighbors, friends
- Help and care to others, NA relationship to respondent

Other Personal and Helping

48 - Other personal; watching personal care activities

49 - Travel (helping); travel related to code 42, including travel that is the helping activity; waiting for related travel
- Other personal travel; travel related to other personal care activities; waiting for related travel; travel, NA purpose of trip - e.g., "went to Memphis" (no further explanation given)

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

EDUCATION AND PROFESSIONAL TRAINING

50 - Student (full-time); attending classes, school if full-time student; includes daycare, nursery school for children not in school

51 - Other classes, courses, lectures, academic or professional; R not a full-time student or NA whether a student; being tutored

54 - Homework, studying, research, reading, related to classes or profession, except for current job (code 07); "went to the library"

56 - Other education

59 - Other school-related travel; travel related to education coded above; waiting for related travel; travel to school not originating from home

ORGANIZATIONAL ACTIVITIES

Volunteer, Helping Organizations: hospital volunteer group, United Fund, Red Cross, Big Brother/Sister

63 - Attending meetings of volunteer, helping organizations
- Officer work; work as an officer of volunteer, helping organizations; R must indicate he/she is an officer to be coded here
- Fund raising activities as a member of volunteer helping organization, collecting money, planning a collection drive
- Direct help to individuals or groups as a member of volunteer helping organizations; visiting, bringing food, driving
- Other activities as a member of volunteer helping organizations, including social events and meals

Religious Practice

65 - Attending services of a church or synagogue, including participating in the service; ushering, singing in choir, leading youth group, going to church, funerals
- Individual practice; religious practice carried out as an individual or in a small group; praying, meditating, Bible study group (not a church), visiting graves

Religious Groups

64 - Meetings: religious helping groups; attending meetings of helping - oriented church groups -ladies aid circle, missionary society, Knights of Columbus
- Other activities; religious helping groups; other activities as a member of groups listed above, including social activities and meals

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

ORGANIZATIONAL ACTIVITIES (continued)

Religious Groups (continued)

- Meetings: other church groups; attending meetings of church group, not primarily helping-oriented, or NA if helping-oriented
- Other activities, other church groups; other activities as a member of church groups that are not helping-oriented or NA if helping, including social activities and meals; choir practice; Bible class

Professional/Union Organizations: State Education Association; AFL-CIO; Teamsters

60
- Meetings; professional/union; attending meetings of professional or union groups
- Other activities, professional/union; other activities as a member of professional or union group including social activities and meals

Child/Youth/Family Organizations: PTA, PTO; Boy/Girl Scouts; Little Leagues; YMCA/YWCA; school volunteer

67
- Meetings, family organizations; attending meetings of child/youth/family*-oriented organizations
- Other activities, family organizations; other activities as a member of child/youth/family-oriented organizations including social activities and meals

Fraternal Organizations: Moose, VFW, Kiwanis, Lions, Civitan, Chamber of Commerce, Shriners, American Legion

66
- Meetings, fraternal organizations; attending meetings of fraternal organizations
- Other activities, fraternal organizations; other activities as a member of fraternal organizations including social activities and helping activities and meals

Political Party and Civic Participation: Citizens' groups, Young Democrats, Young Republicans, radical political groups, civic duties

62
- Meetings, political/citizen organizations; attending meetings of a political party or citizen group, including city council
- Other activities, political/citizen organizations; other participation in political party and citizens' groups, including social activities, voting, jury duty, helping with elections, and meals

Special Interest/Identity Organizations (including groups based on sex, race, national origin); NOW; NAACP; Polish-American Society; neighborhood, block organizations; CR groups; senior citizens; Weight Watchers

61
- Meetings: identify organizations; attending meetings of special interest, identity organizations
- Other activities, identity organizations; other activities as a member of a special interest, identity organization, including social activities and meals

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

ORGANIZATIONAL ACTIVITIES (continued)

Other Miscellaneous Organizations, do not fit above

68 - Other organizations; any activities as a member of an organization not fitting into above categories; (meetings and other activities included here)

Travel Related to Organizational Activities

69 - Travel related to organizational activities as a member of a volunteer (helping) organization (code 63); including travel that is the helping activity, waiting for related travel
- Travel (other organization-related); travel related to all other organization activities; waiting for related travel

ENTERTAINMENT/SOCIAL ACTIVITIES

Attending Spectacles, Events

70 - Sports; attending sports events - football, basketball, hockey, etc.

71 - Miscellaneous spectacles, events: circus, fairs, rock concerts, accidents

72 - Movies; "went to the show"

73 - Theater, opera, concert, ballet

74 - Museums, art galleries, exhibitions, zoos

Socializing

75 - Visiting with others; socializing with people other than R's own HH members either at R's home or another home (visiting on the phone, code 96); talking/chatting in the context of receiving a visit or paying a visit

76 - Party; reception, weddings

77 - At bar; cocktail lounge, nightclub; socializing or hoping to socialize at bar, lounge
- Dancing

78 - Other events; other events or socializing, do not fit above

79 - Related travel; waiting for related travel

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

SPORTS AND ACTIVE LEISURE

Active Sports

80
- Football, basketball, baseball, volleyball, hockey. soccer, field hockey
- Tennis, squash, racquetball, paddleball
- Golf, miniature golf
- Swimming, waterskiing
- Skiing, ice skating, sledding, roller skating
- Bowling; pool, ping-pong, pinball
- Frisbee, catch
- Exercises, yoga (gymnastics - code 86)
- Judo, boxing, wrestling

Out of Doors

81
- Hunting
- Fishing
- Boating, sailing, canoeing
- Camping, at the beach
- Snowmobiling, dune-buggies
- Gliding, ballooning, flying
- Excursions, pleasure drives (no destination), rides with the family
- Picnicking

Walking, Biking

82
- Walking for pleasure
- Hiking
- Jogging, running
- Bicycling
- Motorcycling
- Horseback riding

Hobbies

83
- Photography
- Working on cars - not necessarily related to their running; customizing, painting
- Working on or repairing leisure time equipment (repairing the boat, "sorting out fishing tackle")
- Collections, scrapbooks
- Carpentry and woodworking (as a hobby)

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

SPORTS AND ACTIVE LEISURE (continued)

Domestic Crafts

84
- Preserving foodstuffs (canning, pickling)
- Knitting, needlework, weaving, crocheting (including classes), crewel, embroidery, quilting, quilling, macrame
- Sewing
- Care of animals/livestock when R is not a farmer (pets, code 17; "farmer", code 01, work)

Art and Literature

85
- Sculpture, painting, potting, drawing
- Literature, poetry, writing (not letters), writing a diary

Music/Theater/Dance

86
- Playing a musical instrument (include practicing), whistling
- Singing
- Acting (rehearsal for play)
- Nonsocial dancing (ballet, modern dance, body movement)
- Gymnastics (lessons - code 88)

Games

87
- Playing card games (bridge, poker)
- Playing board games (Monopoly, Yahtzee, etc.), bingo, dominoes
- Playing social games (scavenger hunts), "played games" - NA kind
- Puzzles

Classes/Lessons for Active Leisure Activity

88
- Lessons in sports activities: swimming, golf, tennis. skating, roller skating
- Lessons in gymnastics, dance, judo, body movement
- Lessons in music, singing, instruments
- Other lessons, not listed above

Travel

89
- Related travel; travel related to sports and active leisure; waiting for related travel: vacation travel

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

PASSIVE LEISURE

90 - Radio

91 - TV

92 - Records, tapes, "listening to music," listening to others playing a musical instrument

93 - Reading books (current job related, code 07; professionally or class related, code 54)

94 - Reading magazines, reviews, pamphlets
- Reading NA what; or other

95 - Reading newspapers

96 - Phone conversations - not coded elsewhere, including all visiting by phone
- Other talking/conversations; face-to-face conversations, not coded elsewhere (if children in HH only, code 23); visiting other than 75
- Conversations with HH members only - adults only or children and adults
- Arguing or fighting with people other than HH members only, household and nonhousehold members, or NA
- Arguing or fighting with HH members only

97 - Letters (reading or writing); reading mail

98 - Relaxing
- Thinking, planning; reflecting
- "doing nothing," "sat"; just sat;
- Other passive leisure, smoking dope, pestering, teasing, joking around, messing around; laughing

99 - Related travel: waiting for related travel

MISSING DATA CODES

- Activities of others reported - R's activity not specified
- NA activities; a time gap of greater than 10 minutes.

EXAMPLES OF ACTIVITIES IN "OTHER" CATEGORIES

Other Work Related

07 - Foster parent activities

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

EXAMPLES OF ACTIVITIES IN "OTHER" CATEGORIES (continued)

Other Household

19
- Typing
- Wrapping presents
- Checked refrigerator for shopping list
- Unpacked gifts from shower
- Packing/unpacking car
- "Settled in" after trip
- Hooked up boat to car
- Showed wife car (R was fixing)
- Packing to move
- Moved boxes
- Looking/searching for things at home (inside or out)

Other Child Care

27
- Waited for son to get hair cut
- Picked up nephew at sister's house
- "Played with kids" (R's children from previous marriage not living with R)
- Called babysitter

Other Services

37
- Left clothing at Goodwill
- Unloaded furniture (just purchased)
- Returned books (at library)
- Brought clothes in from car (after laundromat)
- Delivered some stuff to a friend
- Waited for father to pick up meat
- Waited for stores to open
- Put away things from swap meet
- Sat in car waiting for rain to stop before shopping
- Waiting for others while they are shopping
- Showing mom what I bought

Other Personal

48
- Waiting to hear from daughter
- Stopped at home, NA what for
- Getting hysterical
- Breaking up a fight (not child care related)
- Waited for wife to get up

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

EXAMPLES OF ACTIVITIES IN "OTHER" CATEGORIES (continued)

Other Personal (continued)

- Waiting for dinner at brother's house
- Waiting for plane (meeting someone at airport)
- Laughing
- Crying
- Moaning - head hurt
- Watching personal care activities ("watched dad shave")

Other Education

56
- Watched a film
- In discussion group

Other Organization

68
- Attending "Club House coffee klatch"
- Waited for church activities to begin
- "Meeting" NA kind
- Cleanup after banquet
- Checked into swap meet - selling and looking

Other Social, Entertainment

78
- Waiting for movies, other events
- Opening presents (at a party)
- Looking at gifts
- Decorating for party
- Tour of a home (friends or otherwise)
- Waiting for date
- Preparing for a shower (baby shower)
- Unloaded uniforms (for parade)

Other Active Leisure

88
- Fed birds, bird watching
- Astrology
- Swinging
- At park
- Showing slides
- Showing sketches

(continued on the following page)

Table 15A-1. Activity Codes and Descriptors Used for Adult Time Diaries (continued)

EXAMPLES OF ACTIVITIES IN "OTHER" CATEGORIES (continued)

Other Active Leisure (continued)

- Recording music
- Hung around airport (NA reason)
- Picked up fishing gear
- Inspecting motorcycle
- Arranging flowers
- Work on model airplane
- Picked asparagus
- Picked up softball equipment
- Registered to play golf
- Toured a village or lodge (coded 81)

Other Passive Leisure

98
- Lying in sun
- Listening to birds
- Looking at slides
- Stopped at excavating place
- Looking at pictures
- Walked around outside
- Waiting for a call
- Watched plane leave
- Girl watching/boy watching
- Watching boats
- Wasted time
- In and out of house
- Home movies

* R = Respondent
HH = Household.

Source: Juster et al., 1983.

Table 15A-2. Differences in Average Time Spent in Different Activities Between California and National Studies (minutes per day for age 18-64 years)

00-49	NON-FREE TIME	California 1987-88 (1359)	National 1985 (1980)	50-59	Free Time	California 1987-88 (1359)	National 1985 (1980)
00-09	PAID WORK			50-99	EDUCATION AND TRAINING		
00	(not used)			50	Students' Classes	9	5
01	Main Job	224	211	51	Other Classes	1	3
02	Unemployment	1	1	52	(not used)	-	-
03	Travel during work	8	NR	53	(not used)	-	-
04	(not used)	-	-	54	Homework	8	7
05	Second job	3	3	55	Library	*	1
06	Eating	6	8	56	Other Education	1	1
07	Before/after work	1	2	57	(not used)	-	-
08	Breaks	2	2	58	(not used)	-	-
09	Travel to/from work	28	25	59	Travel, Education	3	2
10-19	HOUSEHOLD WORK			60-69	ORGANIZATIONAL ACTIVITIES		
10	Food Preparation	29	36	60	Professional/Union	0	1
11	Meal Cleanup	10	11	61	Special Interest	*	1
12	Cleaning House	21	24	62	Political/Civic	0	*
13	Outdoor Cleaning	9	7	63	Volunteer/Helping	1	1
14	Clothes Care	7	11	64	Religious Groups	1	2
15	Car Repair/Maintenance (by R)	5	5	65	Religious Practice	5	7
16	Other Repairs (by R)	8	6	66	Fraternal	0	*
17	Plant Care	3	5	67	Child/Youth/Family	1	*
18	Animal Care	3	5	68	Other Organizations	2	1
19	Other Household	7	8	69	Travel Organizations	2	4
20-29	CHILD CARE			70-79	ENTERTAINMENT/ SOCIAL ACTIVITIES		
20	Baby Care	3	8	70	Sports Events	2	2
21	Child Care	7	5	71	Entertainment Events	5	1
22	Helping/Teaching	2	1	72	Movies	2	3
23	Talking/Reading	1	1	73	Theatre	1	1
24	Indoor Playing	2	3	74	Museums	1	*
25	Outdoor Playing	2	1	75	Visiting	26	25
26	Medical care - Care	*	1	76	Parties	6	7
27	Other Child Care	2	1	77	Bars/Lounges	4	6
28	(At Dry Cleaners)	*	NR	78	Other Social	*	1
29	Travel, Child care	4	4	79	Travel, Events/Social	13	16

Table 15A-2. Differences in Average Time Spent in Different Activities Between California and National Studies (minutes per day for age 18-64 years) (continued)

00-49	NON-FREE TIME	California 1987-88 (1359)	National 1985 (1980)	50-59	Free Time	California 1987-88 (1359)	National 1985 (1980)
30-39	OBTAINING GOODS AND SERVICES			80-89	RECREATION		
30	Everyday Shopping	8	5	80	Active Sports	15	13
31	Durable/House Shop	19	20	81	Outdoor	3	7
32	Personal Services	1	1	82	Walking/Hiking	5	4
33	Medical Appointments	2	2	83	Hobbies	1	1
34	Gov't/Financial Service	3	2	84	Domestic Crafts	3	6
35	Car Repair services	2	1	85	Art	*	1
36	Other Repair services	*	1	86	Music/Drama/Dance	3	2
37	Other Services	2	2	87	Games	5	7
38	Errands	*	1	88	Computer Use/Other	3	3
39	Travel, Goods and Services	24	20	89	Travel, Recreation	5	6
40-49	PERSONAL NEEDS AND CARE			90-99	COMMUNICATION		
40	Washing, Etc.	21	25	90	Radio	1	3
41	Medical Care	3	1	91	TV	130	126
42	Help and Care	3	4	92	Records/Tapes	3	1
43	Meals At Home	44	50	93	Read Books	4	7
44	Meals Out	27	20	94	Reading Magazines/Other	16	10
45	Night Sleep	480	469	95	Reading Newspaper	11	9
46	Naps/Day Sleep	16	16	96	Conversations	15	25
47	Dressing, Etc.	24	32	97	Writing	8	9
48	NA Activity	2	12	98	Think, Relax	9	6
49	Travel, Personal Care/NA	22	13	99	Travel, Communication	5	*
NR =	Not Recorded in National Survey				Total Travel	108	90
* =	Less than 0.5 Min. per day				(Codes 09, 29, 39, 49, 59, 69, 79, 89, 99)		

Source: Robinson and Thomas, 1991.

Table 15A-3. Time Spent in Various Microenvironments

	Mean duration					
	Men		Women		Total[a]	
Code Description	N = 639 California	N = 914 National	N = 720 California	N = 1059 National	N = 1980 California	N = 1359 National
AT HOME						
Kitchen	46	56	98	135	72	104
Living Room	181	136	98	180	189	158
Dining Room	18	10	22	18	19	15
Bathroom	27	27	38	43	33	38
Bedroom	481	478	534	531	508	521
Study	8	10	6	7	7	8
Garage	14	5	6	1	19	2
Basement	<0.5	4	<0.5	6	<0.5	5
Utility Room	1	0	3	5	2	4
Pool, Spa	1	NR	1	NR[b]	1	NR[b]
Yard	33		21		27	37
Room to Room	9	160[c]	34	116	21	40
Other NR Room	3		4		3	22
Total at home	822	888	963	1022	892	954
AWAY FROM HOME						
Office	78	261	94	155	86	193
Plant	73	--	12	--	42	--
Grocery Store	12	18	14	33	13	30
Shopping Mall	30	--	40	--	35	--
School	25	13	29	11	27	15
Other Public Places	18	--	10	--	14	12
Hospital	9	NR	24	NR	17	3
Restaurant	35	22	25	18	30	23
Bar-Night Club	15	--	5	--	10	--
Church	7	8	5	11	6	10
Indoor Gym	4	NR	4	NR	4	NR
Other's Home	60	42	61	45	61	43
Auto Repair	18	NR	4	NR	11	NR
Playground	16	27	8	16	12	NR
Hotel-Motel	7	NR	8	NR	8	NR
Dry Cleaners	<0.5	NR	1	NR	1	NR
Beauty Parlor	<0.5	NR	4	NR	2	NR
Other Locations	3	NR	1	NR	2	NR
Other Indoor	17	41	7	24	12	24
Other Outdoor	60	NR	13	NR	37	6
Total away from home	487	445	371	324	430	383

Table 15A-3. Time Spent in Various Microenvironments (continued)

	Mean duration					
	Men		Women		Total[a]	
Code Description	N = 639 California	N = 914 National	N = 720 California	N = 1059 National	N = 1980 California	N = 1359 National
TRAVEL						
Car	76	--	77	--	76	--
Van/Truck	30	86	11	77	20	88
Walking	10	--	8	--	9	2
Bus Stop	<0.5	--	1	--	1	--
Bus	6	--	2	--	4	3
Rapid Train	1	--	--	--	1	1
Other Travel	2	--	1	--	1	<0.5
Airplane	1	15	<0.5	10	1	1
Bicycle	1	--	<0.5	--	1	NR
Motorcycle	2	--	<0.5	--	1	NR
Other or Missing	1	--	<0.5	--	1	NR
Total travel	130	101	102	87	116	94
Not ascertained	1	8	4	7	2	9
Total Time Outdoors	--	--	--	--	88	70

[a] Totals do not necessarily reflect exact averages presented for each gender. Totals were revised, but revisions for each gender were not provided.
[b] NR = Not Reported
[c] Is total mean duration for those categories; breakdowns per category were not reported.

Source: Robinson and Thomas, 1991.

		National			California		
Note:	Percent at home	men	=	62	men	=	57
		women	=	71	women	=	67
		total	=	67	total	=	62
	Percent away from home	men	=	31	men	=	34
		women	=	23	women	=	26
		total	=	27	total	=	30
	Percent in travel	men	=	7	men	=	9
		women	=	6	women	=	7
		total	=	7	total	=	8

Table 15A-4. Major Time Use Activity Categories[a]

Activity code	Activity
01-09	Market work
10-19	House/yard work
20-29	Child care
30-39	Services/shopping
40-49	Personal care
50-59	Education
60-69	Organizations
70-79	Social entertainment
80-89	Active leisure
90-99	Passive leisure

[a] Appendix Table 14A-3 presents a detailed explanation of the coding and activities.
Source: Hill, 1985.

Table 15A-5. Mean Time Spent (minutes/day) for 87 Activities Grouped by Day of the Week

	Weekday N=831		Saturday N=831		Sunday N=831	
Activity	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
01-Normal Work	240.54	219.10	82.43	184.41	46.74	139.71
02-Unemployment Acts	0.98	9.43	0.00	0.00	0.00	0.00
05-Second Job	3.76	25.04	2.84	32.64	2.65	27.30
06-Lunch At Work	10.00	15.81	1.82	7.88	1.43	8.29
07-Before/After Work	3.51	10.05	1.45	9.79	1.66	13.76
08-Coffee Breaks	5.05	11.53	1.59	7.32	0.93	8.52
09-Travel: To/From Work	24.03	30.37	7.74	22.00	4.60	17.55
10-Meal Preparation	42.18	46.59	40.37	59.82	42.38	57.42
11-Meal Cleanup	12.48	19.25	12.07	22.96	13.97	25.85
12-Indoor Cleaning	26.37	43.84	38.88	80.39	21.73	48.70
13-Outdoor Cleaning	7.48	25.45	15.71	58.00	9.01	39.39
14-Laundry	13.35	30.39	11.48	31.04	7.79	25.43
16-Repairs/Maintenance	9.61	35.43	17.36	72.50	13.56	62.12
17-Garden/Pet Care	8.52	25.15	14.75	49.17	8.47	37.54
19-Other Household	6.26	20.62	9.82	37.58	7.60	32.17
20-Baby Care	6.29	22.91	5.89	30.72	6.26	33.78
21-Child Care	6.26	16.34	5.38	21.58	7.09	23.15
22-Helping/Teaching	1.36	8.28	0.23	3.64	0.76	6.52
23-Reading/Talking	2.47	8.65	1.71	10.84	1.53	9.97
24-Indoor Playing	1.75	8.72	0.90	7.82	2.45	15.11
25-Outdoor Playing	0.73	6.33	1.23	13.03	0.91	10.30
26-Medical Care-Child	0.64	7.42	0.16	2.79	0.44	7.20
27-Babysitting/Other	2.93	14.56	2.16	19.11	3.28	24.89
29-Travel: Child Care	4.18	10.97	1.71	8.72	2.08	10.56
30-Everyday Shopping	19.73	30.28	33.52	61.38	10.13	30.18
31-Durable/House Shop	0.58	4.83	1.46	14.04	1.65	17.92
32-Personal Care Services	1.93	10.04	3.42	18.94	0.02	0.69
33-Medical Appointments	3.43	14.49	0.60	6.63	0.00	0.00
34-Gov't/Financial Services	1.90	6.07	0.66	4.34	0.03	0.43
35-Repair Services	1.33	7.14	1.25	10.24	0.52	5.61
37-Other Services	1.13	7.17	1.55	9.57	0.72	4.34
38-Errands	0.74	8.03	0.35	5.27	0.04	1.04
39-Travel: Goods/Services	17.93	23.58	21.61	36.35	8.45	21.64
40-Washing/Dressing	44.03	29.82	44.25	41.20	47.54	40.15
41-Medical Care R/HH Adults	0.77	6.19	1.29	15.90	1.45	29.18
42-Help & Care	8.43	28.17	12.19	52.58	14.32	55.13
43-Meals At Home	53.45	35.57	57.86	49.25	61.84	49.27
44-Meals Out	19.55	31.20	31.13	56.03	25.95	47.60
45-Night Sleep	468.49	79.42	498.40	115.55	528.86	115.84
46-Naps/Resting	22.07	43.92	30.67	74.98	27.56	66.01
48-N.A. Activities	7.52	22.32	11.72	41.61	8.18	35.79
49-Travel: Personal	14.87	27.76	19.33	50.42	18.58	46.36
50-Students' Classes	6.33	33.79	0.96	18.17	0.96	20.07
51-Other Classes	2.65	17.92	0.40	11.52	0.27	5.63

Table 15A-5. Mean Time Spent (minutes/day) for 87 Activities Grouped by Day of the Week (continued)

Activity	Weekday N=831		Saturday N=831		Sunday N=831	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
54-Homework	4.56	24.35	3.48	27.98	5.40	38.68
56-Other Education	0.53	5.91	0.15	2.75	0.45	9.85
59-Travel: Education	2.29	10.36	0.35	4.26	0.21	3.14
60-Professional/Union Orgs.	0.51	7.27	0.13	3.64	0.44	8.34
61-Identity Organizations	1.53	11.19	1.24	35.63	0.48	7.58
62-Political/Citizen Orgs	0.14	1.25	0.07	1.91	0.19	5.55
63-Volunteer/Helping Orgs	1.08	10.08	0.02	0.45	0.41	7.09
64-Religious Groups	2.96	17.33	3.05	27.73	8.59	33.31
65-Religious Practice	4.98	19.92	7.13	30.12	34.05	62.06
66-Fraternal Organizations	0.85	9.28	1.73	27.71	0.31	6.67
67-Child/Family Organizations	1.70	11.69	1.04	17.83	0.26	7.63
68-Other Organizations	3.91	22.85	1.31	20.28	1.71	17.52
69-Traves: Organizations	3.41	9.83	2.66	12.22	12.07	37.64
70-Sport Events	2.22	13.45	6.29	42.05	3.44	27.78
71-Miscellaneous Events	0.32	4.89	1.94	19.90	1.96	19.75
72-Movies	1.65	11.03	4.74	27.04	3.35	22.65
73-Theater	0.69	7.13	2.66	27.79	0.77	10.37
74-Museums	0.19	3.32	0.90	13.62	0.72	11.17
75-Visiting w/Others	33.14	51.69	56.78	95.61	69.65	114.58
76-Parties	2.81	16.49	12.63	56.11	7.16	39.02
77-Bars/Lounges	3.62	18.07	7.23	35.09	3.91	26.95
78-Other Events	1.39	11.55	1.33	15.52	1.00	10.80
79-Travel: Events/Social	8.90	16.19	19.55	43.38	18.02	34.45
80-Active Sports	5.30	19.60	9.23	43.69	11.39	48.66
81-Outdoors	5.11	33.00	11.58	55.07	15.52	62.68
82-Walking/Biking	2.08	9.70	5.87	36.38	5.92	32.28
83-Hobbies	1.78	11.73	3.20	32.43	4.10	31.55
84-Domestic Crafts	11.18	37.03	8.67	40.49	6.41	34.82
85-Art/Literature	0.99	10.84	0.86	13.59	1.13	15.07
86-Music/Drama/Dance	0.45	4.91	0.83	8.83	0.63	8.32
87-Games	5.06	22.91	10.14	45.11	7.89	40.45
88-Classes/Other	2.65	15.83	2.56	29.92	3.37	23.60
89-Travel: Active Leisure	3.31	14.77	8.50	48.72	8.19	38.11
90-Radio	2.89	12.19	3.53	23.42	2.88	18.50
91-TV	113.01	103.89	118.99	131.24	149.67	141.43
92-Records/Tapes	2.58	20.26	2.40	16.09	2.03	16.08
93-Reading Books	4.41	18.09	2.76	17.85	5.23	30.13
94-Reading Magazines/N.A.	13.72	31.73	16.33	46.24	17.18	51.01
95-Reading Newspapers	12.03	22.65	12.19	34.96	26.01	44.47
96-Conversations	18.68	28.59	15.45	35.27	14.57	34.60
97-Letters	2.83	12.23	1.61	10.80	1.96	12.59
98-Other Passive Leisure	9.72	25.02	17.24	57.21	15.28	47.86
99-Travel: Passive Leisure	1.26	5.44	1.32	6.80	1.72	9.87

Source: Hill, 1985.

Table 15A-6. Weighted Mean Hours Per Week by Gender: 87 Activities and 10 Subtotals

	Men N=410		Women N=561		Men and women N=971	
Activity	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
01 - Normal work	29.78	20.41	14.99	17.62	21.82	20.33
02 - Unemployment acts	0.14	1.06	0.08	0.75	0.11	0.90
05 - Second job	0.73	3.20	0.17	1.62	0.43	2.49
06 - Lunch at work 1.08	1.43	0.65	1.21	0.85	1.33	
07 - Before/after work	0.51	1.27	0.23	0.69	0.36	1.01
08 - Coffee breaks 0.57	1.05	0.36	1.03	0.46	1.04	
09 - Travel: to/from work	2.98	2.87	1.45	2.17	2.16	2.63
10 - Meal preparation	1.57	2.61	7.25	5.04	4.63	4.98
11 - Meal cleanup	0.33	0.83	2.30	2.19	1.39	1.97
12 - Indoor cleaning	0.85	2.01	5.03	5.05	3.10	4.46
13 - Outdoor cleaning	1.59	3.59	0.56	1.59	1.03	2.75
14 - Laundry	0.13	0.72	2.44	3.34	1.38	2.75
16 - Repairs/maintenance	2.14	4.29	0.68	3.43	1.35	3.92
17 - Gardening/pet care	0.94	2.78	1.00	2.19	0.97	2.48
19 - Other household	0.92	2.42	0.72	1.84	0.81	2.13
20 - Baby care	0.24	1.20	0.90	3.04	0.60	2.40
21 - Child care	0.24	0.78	0.99	2.11	0.64	1.68
22 - Helping/teaching	0.07	0.61	0.15	0.76	0.11	0.70
23 - Reading/talking	0.07	0.35	0.30	0.86	0.19	0.68
24 - Indoor playing	0.13	0.69	0.18	0.82	0.16	0.76
25 - Outdoor playing	0.06	0.37	0.12	0.72	0.09	0.58
26 - Medical care - child	0.01	0.09	0.09	0.67	0.05	0.50
27 - Babysitting/other	0.14	0.78	0.64	2.58	0.41	1.98
29 - Travel: child care	0.23	0.67	0.50	1.21	0.38	1.00
30 - Everyday shopping	1.45	2.18	2.78	3.25	2.17	2.89
31 - Durables/house shopping	0.19	1.39	0.08	0.51	0.13	1.01
32 - Personal care services	0.06	0.42	0.35	1.14	0.22	0.90
33 - Medical appointments	0.15	0.75	0.37	1.63	0.27	1.31
34 - Govt/financial services	0.15	0.44	0.19	0.61	0.17	0.54
35 - Repair services	0.11	0.45	0.17	0.78	0.14	0.65
37 - Other services 0.11	0.61	0.13	0.61	0.12	0.61	
38 - Errands	0.04	0.41	0.06	0.68	0.05	0.57
39 - Travel: goods/services	1.60	2.02	2.14	2.17	1.89	2.12

(Continued on the following page)

Table 15A-6. Weighted Mean Hours Per Week by Gender: 87 Activities and 10 Subtotals (continued)

	Men N=410		Women N=561		Men and women N=971	
Activity	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
40 - Washing/dressing	4.33	2.39	5.43	3.24	4.92	2.93
41 - Medical care - adults	0.09	0.67	0.18	1.00	0.14	0.86
42 - Help and care	1.02	2.84	1.30	3.04	1.17	2.95
43 - Meals at home	6.59	3.87	6.32	3.53	6.44	3.69
44 - Meals out	2.72	3.48	2.24	2.73	2.46	3.10
45 - Night sleep	55.76	8.43	56.74	8.49	56.29	8.47
46 - Naps/resting 2.94	5.18	3.19	4.70	3.08	4.93	
48 - N.A. activities	1.77	6.12	1.99	5.70	1.89	5.89
49 - Travel: personal	2.06	2.59	1.61	2.51	1.82	2.56
50 - Students' classes	0.92	4.00	0.38	2.51	0.63	3.29
51 - Other classes	0.23	1.68	0.15	1.05	0.18	1.38
54 - Homework	0.76	3.48	0.38	1.87	0.56	2.74
56 - Other education	0.11	0.86	0.02	0.22	0.06	0.61
59 - Travel: education	0.29	1.07	0.16	1.06	0.22	1.07
60 - Professional/union organizations	0.04	0.46	0.04	0.62	0.04	0.55
61 - Identity organizations	0.14	0.97	0.18	1.55	0.16	1.31
62 - Political/citizen organizations	0.01	0.08	0.02	0.15	0.01	0.12
63 - Volunteer/helping organizations	0.02	0.32	0.14	1.05	0.09	0.80
64 - Religious groups	0.38	1.82	0.41	1.61	0.40	1.71
65 - Religious practice	0.89	2.05	1.31	2.97	1.12	1.60
66 - Fraternal organizations	0.16	1.17	0.05	0.66	0.10	0.93
67 - Child/family organizations	0.10	0.88	0.21	1.33	0.16	1.15
68 - Other organizations	0.34	2.40	0.32	1.53	0.32	1.98
69 - Travel: organizations	0.43	1.04	0.52	1.02	0.48	1.03
70 - Sports events	0.30	1.31	0.26	1.28	0.28	1.29
71 - Miscellaneous events	0.07	0.52	0.08	0.59	0.07	0.56
72 - Movies	0.31	1.25	0.26	1.13	0.28	1.19
73 - Theatre	0.13	0.93	0.06	0.48	0.09	0.72
74 - Museums	0.04	0.37	0.03	0.35	0.03	0.36
75 - Visiting with others	4.24	5.72	5.84	6.42	5.10	6.16
76 - Parties	0.64	2.05	0.44	1.65	0.53	1.84
77 - Bars/lounges	0.71	2.21	0.46	2.09	0.57	2.15
78 - Other events 0.12	0.72	0.18	1.18	0.15	0.99	
79 - Travel: events/social	1.40	1.82	1.26	1.67	1.32	1.74

(Continued on the following page)

Table 15A-6. Weighted Mean Hours Per Week by Gender: 87 Activities and 10 Subtotals (continued)

	Men N=410		Women N=561		Men and women N=971	
Activity	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
80 - Active sports	1.05	2.62	0.50	1.68	0.76	2.18
81 - Outdoors	1.49	4.59	0.48	1.67	0.94	3.39
82 - Walking/biking	0.52	1.31	0.23	0.98	0.36	1.16
83 - Hobbies	0.69	3.88	0.06	0.43	0.35	2.67
84 - Domestic crafts	0.30	1.59	2.00	4.72	1.21	3.93
85 - Art/literature	0.05	0.45	0.13	1.03	0.09	0.81
86 - Music/drama/dance	0.06	0.49	0.07	0.47	0.07	0.48
87 - Games	0.60	2.00	0.99	3.16	0.81	2.69
88 - Classes/other	0.41	1.75	0.28	1.50	0.34	1.62
89 - Travel: active leisure	0.76	1.91	0.43	1.43	0.58	1.68
90 - Radio	0.39	1.40	0.39	1.55	0.39	1.49
91 - TV	14.75	12.14	13.95	10.67	14.32	11.38
92 - Records/tapes	0.46	2.35	0.33	2.13	0.39	2.23
93 - Reading books	0.37	1.52	0.56	1.83	0.47	1.70
94 - Reading magazines/N.A.	1.32	2.81	1.97	3.67	1.67	3.32
95 - Reading newspapers	1.86	2.72	1.47	2.27	1.65	2.49
96 - Conversations	1.61	2.19	2.18	2.74	1.91	2.52
97 - Letters	0.20	1.06	0.31	1.12	0.26	1.10
98 - Other passive leisure	1.68	3.53	1.41	3.32	1.53	3.42
99 - Travel: passive leisure	0.18	0.49	0.13	0.49	0.15	0.49

Source: Hill, 1985.

Table 15A-7. Ranking of Occupations by Median Years of Occupational Tenure

Occupation	Median years of occupational tenure
Barbers	24.8
Farmers, except horticultural	21.1
Railroad conductors and yardmasters	18.4
Clergy	15.8
Dentists	15.7
Telephone line installers and repairers	15.0
Millwrights	14.8
Locomotive operating occupations	14.8
Managers; farmers, except horticultural	14.4
Telephone installers and repairers	14.3
Airplane pilots and navigators	14.0
Supervisors: police and detectives	13.8
Grader, dozer, and scraper operators	13.3
Tailors	13.3
Civil engineers	13.0
Crane and tower operators	12.9
Supervisors, n.e.c.	12.9
Teachers, secondary school	12.5
Teachers, elementary school	12.4
Dental laboratory and medical applicance technicians	12.3
Separating, filtering, and clarifying machine oeprators	12.1
Tool and die makers	12.0
Lathe and turning machine operators	11.9
Machinists	11.9
Pharmacists	11.8
Stationary engineers	11.7
Mechanical engineers	11.4
Chemists, except biochemists	11.1
Inspectors, testers, and graders	11.0
Electricians	11.0
Operating engineers	11.0
Radiologic technicians	10.9
Electrical power installers and repairers	10.8
Supervisors; mechanics and repairers	10.7
Heavy equipment mechanics	10.7
Bus, truck, and stationary engine mechanics	10.7
Physicians	10.7
Construction inspectors	10.7
Cabinet makers and bench carpenters	10.6
Industrial machinery repairers	10.6
Automobile body and related repairers	10.4

(Continued on the following page)

Table 15A-7. Ranking of Occupations by Median Years of Occupational Tenure (continued)

Occupation	Median years of occupational tenure
Electrical and electronic engineers	10.4
Plumbers, pipefitters, and steamfitters	10.4
Licensed practical nurses	10.3
Brickmasons and stonemasons	10.2
Truck drivers, heavy	10.1
Tile setters, hard and soft	10.1
Lawyers	10.1
Supervisors: production occupations	10.1
Administrators, education and related fields	10.1
Engineers, n.e.c.	10.0
Excavating and loading machine operators	10.0
Firefighting occupations	10.0
Aircraft engine mechanics	10.0
Police and detectives, public service	9.7
Counselors, educational and vocational	9.7
Architects	9.6
Stuctural metal workers	9.6
Aerospace engineers	9.6
Miscellaneous aterial moving equipment operators	9.4
Dental hygienists	9.4
Automobile mechanics	9.3
Registered nurses	9.3
Speech therapists	9.3
Binding and twisting machine operators	9.3
Managers and administrators, n.e.c.	9.1
Personnel and labor relations managers	9.0
Office machine repairer	9.0
Electronic repairers, commercial and industrial equipment	9.0
Welders and cutters	9.0
Punching and stamping press machine operators	9.0
Sheet metal workers	8.9
Administrators and officials, public administraion	8.9
Hairdressers and cosmetologists	8.9
Industrial engineers	8.9
Librarians	8.8
Inspectors and compliance officers, except construction	8.8
Upholsterers	8.6
Payroll and timekeeping clerks	8.6
Furnace, kiln, and oven operators, except food	8.6
Surveying and mapping technicians	8.6
Chemical engineers	8.6

(continued on the following page)

Table 15A-7. Ranking of Occupations by Median Years of Occupational Tenure (continued)

Occupation	Median years of occupational tenure
Sheriffs, bailiffs, and other law enforcement officers	8.6
Concrete and terrazzo finishers	8.6
Sales representatives, mining, manufacturing, and wholesale	8.6
Supervisors: general office	8.6
Specified mechanics and repairers, n.e.c.	8.5
Stenographers	8.5
Typesetters and compositors	8.5
Financial managers	8.4
Psychologists	8.4
Teachers: special education	8.4
Statistical clerks	8.3
Designers	8.3
Water and Sewage Treatment plant operators	8.3
Printing machine operators	8.2
Heating, air conditioning, and refrigeration mechanics	8.1
Supervisors; distribution, scheduling, and adjusting clerks	8.1
Insurance sales occupations	8.1
Carpenters	8.0
Public transportation attendants	8.0
Drafting occupations	8.0
Butchers and meatcutters	8.0
Miscellaneous electrical and electronic equipment repairers	7.9
Dressmakers	7.9
Musicians and composers	7.9
Supervisors and proprietors; sales occupations	7.9
Painters, Sculptors, craft-artists, and artist printmakers	7.9
Mechanics and repairers, not specified	7.7
Engineering technicians, n.e.c.	7.7
Clinical laboratory technologists and technicians	7.7
Purchasing managers	7.7
Purchasing agents and buyers, n.e.c.	7.7
Photographers	7.6
Chemical technicians	7.6
Managers; properties and real estate	7.6
Accountants and auditors	7.6
Religious workers, n.e.c.	7.6
Secretaries	7.5
Social workers	7.5
Operations and systems researchers and analysts	7.4
Postal clerks, except mail carriers	7.4
Managers; marketing, advertising, and public relations	7.3

(continued on the following page)

Table 15A-7. Ranking of Occupations by Median Years of Occupational Tenure (continued)

Occupation	Median years of occupational tenure
Farm workers	7.3
Managers; medicine and health	7.2
Data processing equipment repairers	7.2
Bookkeepers, accounting and auditing clerks	7.1
Grinding, abrading, buffing, and polishing machine operators	7.0
Management related occupations, n.e.c.	7.0
Supervisiors; cleaning and building service workers	7.0
Management analysts	7.0
Science technicians, n.e.c.	7.0
Mail carriers, postal service	7.0
Knitting, looping, taping, and weaving machine operators	6.9
Electrical and electronic technicians	6.9
Painting and paint spraying machine operators	6.9
Postsecondary teachers, subject not specified	6.8
Crossing guards	6.8
Inhalation therapists	6.7
Carpet installers	6.7
Computer systems analysts and scientists	6.6
Other financial officers	6.6
Industrial truck and tractor equipment operators	6.6
Textile sewing machine operators	6.6
Correctional institution officers	6.5
Teachers, prekindergarten and kindergarten	6.4
Supervisors; financial records processing	6.4
Miscellaneous Textile machine operators	6.4
Production inspectors, checkers, and examiners	6.3
Actors and directors	6.3
Health technologists and technicians, n.e.c.	6.3
Miscellaneous machine operators, n.e.c.	6.2
Private household cleaners, and servants	6.2
Buyers, wholesale and retail trade, excluding farm products	6.0
Real estate sales occupations	6.0
Electrical and electronic equipment assemblers	6.0
Bus drivers	6.0
Editors and reporters	6.0
Laundering and dry cleaning machine operators	6.0
Meter readers	5.9
Painters, construction and maintenance	5.9
Driver-sales workers	5.9
Teachers, n.e.c.	5.9
Order clerks	5.8
Physicians' assistants	5.8

(continued on the following page)

Table 15A-7. Ranking of Occupations by Median Years of Occupational Tenure (continued)

Occupation	Median years of occupational tenure
Billing clerks	5.8
Drywall installers	5.7
Construction trades, n.e.c.	5.7
Telephone operators	5.7
Authors	5.6
Nursing aides, orderlies, and attendants	5.6
Dental assistants	5.6
Timber cutting and logging occupations	5.5
Molding and casting machine operators	5.5
Miscellaneous hand-working occupations	5.5
Production coordinators	5.5
Public relations specialists	5.5
Personnel clerks, except payroll and bookkeeping	5.4
Assemblers	5.4
Securities and financial services sales occupations	5.4
Salesworkers, furniture and home furnishings	5.4
Insurance adjusters, examiners, and investigators	5.3
Pressing machine operators	5.3
Roofers	5.3
Graders and sorters, except agricultural	5.3
Supervisors; related agricultural occupations	5.2
Typists	5.2
Supervisors; motor vehicle operators	5.2
Personnel, training, and labor relations specialists	5.2
Legal assistants	5.2
Physical therapists	5.2
Advertising and related sales occupations	5.1
Records clerks	5.1
Economists	5.1
Technicians, n.e.c.	5.0
Expediters	5.0
Sales occupations, other business services	4.9
Computer operators	4.8
Computer programmers	4.8
Investigators and adjusters, except insurance	4.8
Underwriters	4.8
Salesworkers, parts	4.8
Artists, performers, and related workers, n.e.c.	4.8
Teachers' aides	4.6
Maids and housemen	4.6
Sawing machine operators	4.6
Machine operators, not specified	4.5
Weighers, measurers, and checkers	4.5

(continued on the following page)

Table 15A-7. Ranking of Occupations by Median Years of Occupational Tenure (continued)

Occupation	Median years of occupational tenure
Traffic, shipping, and receiving clerks	4.5
Salesworkers, hardware and building supplies	4.5
Biological technicians	4.4
Athletes	4.4
Bill and account collectors	4.4
Taxicab drivers and chauffeurs	4.4
Slicing and cutting machine operators	4.3
Administrative support occupations, n.e.c.	4.3
Mixing and blending machine operators	4.3
Waiters and waitresses	4.2
Janitors and cleaners	4.2
Production helpers	4.1
General office clerks	4.0
Machine feeders and offbearers	3.9
Interviewers	3.9
Bartenders	3.9
Eligibility clerks, social welfare	3.9
Bank tellers	3.8
Cooks, except short-order	3.8
Health aides, except nursing	3.7
Laborers, except construction	3.7
Welfare service aides	3.7
Salesworkers, motor vehicles and boats	3.7
Cost and rate clerks	3.6
Construction laborers	3.6
Hand packers and packagers	3.5
Transportation ticket and reservation agents	3.5
Animal caretakers, except farm	3.5
Photographic process machine operators	3.5
Freight, stock, and material movers, hand, n.e.c.	3.4
Data-entry keyers	3.4
Bakers	3.4
Dispatchers	3.3
Guards and police, except public service	3.3
Packaging and filling machine operators	3.3
Receptionists	3.3
Library clerks	3.3
Truckdrivers, light	3.2
Salesworkers, radio, television, hi-fi, and appliances	3.2
Salesworkers, apparel	3.1
Sales counter clerks	3.1
Salesworkers, other commodities	3.1

(continued on the following page)

Table 15A-7. Ranking of Occupations by Median Years of Occupational Tenure (continued)

Occupation	Median years of occupational tenure
Small engine repairers	3.1
Supervisors, food preparation and service occupations	3.0
Health record technologists and technicians	2.9
Helpers, construction trades	2.9
Attendants, amusement and recreation facilities	2.8
Street and door-to-door salesworkers	2.7
Child-care workers, private household	2.7
Child-care workers, except private household	2.7
Information clerks, n.e.c.	2.7
Hotel clerks	2.7
Personal service occupations, n.e.c.	2.7
Salesworkers, shoes	2.6
Garage and service station related occupations	2.6
Short-order cooks	2.5
File clerks	2.5
Cashiers	2.4
Mail clerks, except postal service	2.3
Miscellaneous food preparation occupations	2.3
News vendors	2.3
Vehicle washers and equipment cleaners	2.3
Messengers	2.3
Kitchen workers, food preparation	2.1
Stock handlers and baggers	1.9
Waiters and waitresses assistants	1.7
Food counter, fountain, and related occupations	1.5

[a] n.e.c. - not elsewhere classified

Source: Carey, 1988.

APPENDIX 15B

ACTIVITY PATTERNS CODES AND OCCUPATIONAL TENURE DATA

Table 15B-1. Annual Geographical Mobility Rates, by Type of Movement for Selected 1-Year Periods: 1960-1992 (numbers in thousands)

Mobility period	Total movers	Residing in the United States at beginning of period						Residing outside the United States at the beginning of period
		Total	Different house, same county	Different County				
				Total	Same State	Different State	Different Region	
NUMBER								
1991-92	42,800	41,545	26,587	14,957	7,853	7,105	3,285	1,255
1990-91	41,539	40,154	25,151	15,003	7,881	7,122	3,384	1,385
1989-90	43,381	41,821	25,726	16,094	8,061	8,033	3,761	1,560
1988-89	42,620	41,153	26,123	15,030	7,949	7,081	3,258	1,467
1987-88	42,174	40,974	26,201	14,772	7,727	7,046	3,098	1,200
1986-87	43,693	42,551	27,196	15,355	8,762	6,593	3,546	1,142
1985-86	43,237	42,037	26,401	15,636	8,665	6,791	3,778	1,200
1984-85	46,470	45,043	30,126	14,917	7,995	6,921	3,647	1,427
1983-84	39,379	38,300	23,659	14,641	8,198	6,444	3,540	1,079
1982-83	37,408	36,430	22,858	13,572	7,403	6,169	3,192	978
1981-82	38,127	37,039	23,081	13,959	7,330	6,628	3,679	1,088
1980-81	38,200	36,887	23,097	13,789	7,614	6,175	3,363	1,313
1970-71	37,705	36,161	23,018	13,143	6,197	6,946	3,936	1,544
1960-61	36,533	35,535	24,289	11,246	5,493	5,753	3,097	988
PERCENT								
1991-92	17.3	16.8	10.7	6.0	3.2	2.9	1.3	0.5
1990-91	17.0	16.4	10.3	6.1	3.2	2.9	1.4	0.6
1989-90	17.9	17.3	10.6	6.6	3.3	3.3	1.6	0.6
1988-89	17.8	17.2	10.9	6.3	3.3	3.0	1.4	0.6
1987-88	17.8	17.3	11.0	6.2	3.3	3.0	1.3	0.5
1986-87	18.6	18.1	11.6	6.5	3.7	2.8	1.5	0.5
1985-86	18.6	18.0	11.3	6.7	3.7	3.0	1.6	0.5
1984-85	20.2	19.6	13.1	6.5	3.5	3.0	1.6	0.6
1983-84	17.3	16.8	10.4	6.4	3.6	2.8	1.6	0.5
1982-83	16.6	16.1	10.1	6.0	3.3	2.7	1.4	0.4
1981-82	17.0	16.6	10.3	6.2	3.3	3.0	1.6	0.5
1980-81	17.2	16.6	10.4	6.2	3.4	2.8	1.5	0.6
1970-71	18.7	17.9	11.4	6.5	3.1	3.4	2.0	0.8
1960-61	20.6	20.0	13.7	6.3	3.1	3.2	1.7	0.6

Source: U.S. Bureau of Census, 1993.

Table 15B-2. Mobility of the Resident Population by State: 1980

Region, division, and state	Persons 5 years old, and over[b] 1980 (1,000)	Percent distribution - residence in 1975[a]			
		Same house in 1980 as 1975	Different house, same county	Different county, same state	Different county, different state
United States	210,323	53.6	25.1	9.8	9.7
Northeast	46,052	61.7	22.3	8.0	6.1
New England	11,594	59.1	23.4	6.7	9.2
Maine	1,047	56.9	24.0	7.5	10.8
New Hampshire	857	51.6	22.8	6.2	18.5
Vermont	476	54.4	23.9	6.5	14.3
Massachusetts	5,398	61.0	22.7	7.6	7.0
Rhode Island	891	60.5	23.9	5.0	8.7
Connecticut	2,925	59.0	24.4	5.5	9.3
Middle Atlantic	34,458	62.6	21.9	8.4	5.0
New York	16,432	61.5	22.6	9.3	3.8
New Jersey	6,904	61.5	20.0	8.6	7.8
Pennsylvania	11,122	65.0	22.0	7.1	5.2
Midwest	54,513	55.4	26.4	10.2	7.0
East North Central	38,623	56.0	27.4	9.6	6.0
Ohio	10,015	56.7	27.9	9.0	5.7
Indiana	5,074	54.8	27.5	9.6	7.6
Illinois	10,593	55.5	28.5	8.1	6.1
Michigan	8,582	56.4	26.2	11.3	5.1
Wisconsin	4,360	56.2	25.5	11.0	6.7
West North Central	15,890	53.9	24.0	11.8	9.4
Minnesota	3,770	55.6	22.8	13.3	7.3
Iowa	2,693	55.6	25.0	10.9	7.9
Missouri	4,564	54.0	24.1	11.8	9.4
North Dakota	598	51.7	23.1	11.4	12.7
South Dakota	633	52.9	23.2	12.1	11.1
Nebraska	1,448	53.1	24.4	11.0	10.5
Kansas	2,184	50.2	25.1	10.7	12.6

(Continued on the following page)

Table 15B-2. Mobility of the Resident Population by State: 1980 (continued)

Region, division, and state	Persons 5 years old, and over[b] 1980 (1,000)	Percent distribution - residence in 1975[a]			
		Same house in 1980 as 1975	Different house, same county	Different county, same state	Different county, different state
South	69,880	52.4	24.1	10.0	12.0
South Atlantic	34,498	52.7	22.4	9.7	13.6
Delaware	555	57.0	26.3	2.0	13.3
Maryland	3,947	55.5	21.9	10.3	10.4
District of Columbia	603	58.2	22.7	NA	16.3
Virginia	4,99i	51.0	17.9	15.0	13.9
West Virginia	1,806	60.9	23.4	6.6	8.6
North Carolina	5,476	56.9	23.5	8.9	9.8
South Carolina	2,884	57.5	22.3	7.7	11.5
Georgia	5,052	52.5	22.8	12.2	11.5
Florida	9,183	46.2	23.7	7.8	19.6
East South Central	13,556	56.0	25.9	7.9	9.5
Kentucky	3,379	54.4	27.2	8.6	9.0
Tennessee	4,269	54.2	27.2	7.4	10.6
Alabama	3,601	57.6	25.3	7.4	8.9
Mississippi	2,307	59.0	22.5	8.6	9.2
West South Central	21,826	49.6	25.6	11.8	11.0
Arkansas	2,113	53.1	24.8	9.1	12.4
Louisiana	3,847	57.0	24.3	9.2	8.4
Oklahoma	2,793	47.6	24.9	12.3	13.7
Texas	13,074	47.3	26.2	12.9	11.0
West	39,879	43.8	28.3	11.0	13.4
Mountain	10,386	42.7	25.1	9.1	21.1
Montana	722	47.3	24.5	12.3	15.0
Idaho	852	44.4	24.7	9.5	20.0
Wyoming	425	38.4	23.6	8.6	28.3
Colorado	2,676	39.8	22.7	14.8	20.6
New Mexico	1,188	50.3	23.2	7.2	17.4
Arizona	2,506	41.9	27.1	5.0	23.9
Utah	1,272	45.8	27.8	8.4	16.0
Nevada	745	34.8	27.4	3.6	31.5

(continued on the following page)

Table 15B-2. Mobility of the Resident Population by State: 1980 (continued)

Region, division, and state	Persons 5 years old, and over[b] 1980 (1,000)	Percent distribution - residence in 1975[a]: Same house in 1980 as 1975	Different house, same county	Different county, same state	Different county, different state
Pacific	29,493	44.2	29.4	11.6	10.7
Washington	3,825	43.7	27.7	10.1	16.2
Oregon	2,437	41.4	26.6	13.4	16.9
California	21,980	44.6	30.2	12.1	8.5
Alaska	363	32.2	27.6	8.7	29.1
Hawaii	888	49.3	25.2	2.8	16.9

[a] Survey assessed changes in residence between 1975 and 1980.
[b] Includes persons residing abroad in 1975.
NA = not applicable.

Source: U.S. Bureau of the Census, Statistical Abstract, 1984.

16. CONSUMER PRODUCTS

16.1. BACKGROUND

Consumer products may contain toxic or potentially toxic chemical constituents to which humans may be exposed as a result of their use. For example, methylene chloride and other solvents and carriers are common in consumer products and may have human health concerns. Potential pathways of exposure to consumer products or chemicals released from consumer products during use occur via ingestion, inhalation, and dermal contact. Exposure assessments that address consumer products involve characterization of these potential exposure pathways and calculating exposure or dose (based on exposure pathway) of chemical substances released during use of consumer products. In order to estimate specific-pathway exposure for consumer products or their components, the following information is needed: amount of product used; concentration of product in each type of activity; percent weight of chemical present in product; duration and frequency of use or activity; and for dermal exposure, the amount of solution on skin after exposure (Hakkinen et al., 1991; U.S. EPA, 1987).

This chapter presents information on the amount of product used, frequency of use, and duration of use for various consumer products typically found in consumer households. All tables that present information for these consumer products are located at the end of this chapter. U.S. EPA (1987) has complied a comprehensive list of consumer products found in typical American households. This list of consumer products is presented in Table 16-1. It should be noted that this chapter does not provide an exhaustive treatment of all consumer products, but rather provides some background and data that can be utilized in an exposure assessment. Also, the data presented may not capture information needed to assess the highly exposed population (e.g., consumers who use commercial/ industrial strength products at home). The studies presented in the following sections represent readily available surveys for which data were collected on the frequency and duration of use and amount of use of cleaning products, painting products, household solvent products, cosmetic and other personal care products, household equipment, pesticides, and tobacco. The studies have been classified as either key or relevant based on their applicability to exposure assessment needs.

The reader is also referred to a document developed by the U.S. EPA, Office of Toxic Substances: *Standard Scenarios for Estimating Exposure to Chemical Substances During Use of Consumer Products - Volumes I and II* (U.S. EPA, 1986). This document presents data and supporting information required to assess consumer exposure to constituents in household cleaners and components of adhesives. Information presented includes a description of standard scenarios selected to represent upper bound exposures for each product. Values are also presented for parameters that are needed to estimate exposure for defined exposure routes and pathways assumed for each scenario.

An additional reference is the Simmons Market Research Bureau (SMRB), "Simmons Study of Media and Markets." This document provides an example of marketing data that are available that may be useful in assessing exposure to selected products. The reports are published annually. Data are collected on the buying habits of the U.S. populations over the past 12 months. This information is collected for over 1,000 consumer products. Data are presented on frequency of use, total number of buyers in each use category, and selected demographics. The consumer product data are presented according to the "buyer" and not necessarily according to the "user" (actively exposed person). It may be necessary to adjust the data to reflect potential uses in a household. The reports are available for purchase from the Simmons Market Research Bureau, (212) 916-8970. Appendix Table 16A-1 presents a list of product categories in SMRB for which information is available.

16.2. KEY CONSUMER PRODUCTS USE STUDIES

Westat (1987a) - Household Solvent Products: A National Usage Survey - Westat (1987a) conducted a nationwide survey to determine consumer exposure to common household products believed to contain methylene chloride or its substitutes (trichloroethane, trichloroethylene, carbon tetrachloride, perchloroethylene, and 1,1,1,2,2,2- trichlorotrifluoroethane). The survey methodology was comprised of three phases. In the first phase, the sample population was generated by using a random digit dialing (RDD) procedure. Using this procedure, telephone numbers of households were randomly selected by utilizing an unbiased, equal probability of selection method, known as the "Waksberg Method" (Westat, 1987a). After the respondents in the selected households (18 years and older) agreed to participate in the survey, the second phase was initiated. It involved a mailout of questionnaires and product pictures to each respondent. In the third phase, a telephone follow-up call was made to those respondents who did not respond to the mailed questionnaire within a

4-week period. The same questionnaire was administered over the telephone to participants who did not respond to the mailed questionnaire. Of the 6,700 individuals contacted for the survey, 4,920 individuals either responded to the mailed questionnaire or to a telephone interview (a response rate of 73 percent). Survey questions included how often the products were used in the last 12 months; when they were last used; how much time was spent using a product (per occasion or year), and the time the respondent remained in the room after use; how much of a product was used per occasion or year; and what protective measures were used (Westat, 1987a).

Thirty-two categories of common household products were included in the survey and are presented in Table 16-2. Tables 16-2, 16-3, 16-4, and 16-5 provide means, medians, and percentile rankings for the following variables: frequency of use, exposure time, amount of use, and time exposed after use.

An advantage of this study is that the random digit dialing procedure (Waksberg Method) used in identifying participants for this survey enabled a diverse selection of a representative, unbiased, sample of the U.S. population (Westat 1987a). Also, empirical data generated from this study will provide more accurate calculations of human exposure to consumer household products than estimates previously used. However, a limitation associated with this study is that the data generated were based on recall behavior. Another limitation is that extrapolation of these data to long-term use patterns may be difficult.

Abt (1992) - Methylene Chloride Consumer Use Study Survey Findings - As part of a plan to assess the effectiveness of labeling of consumer products containing methylene chloride, Abt conducted a telephone survey of nearly five thousand households (Abt, 1992). The survey was conducted in April and May of 1991. Three classes of products were of concern: paint strippers, non-automotive spray paint, and adhesive removers. The survey paralleled a 1986 consumer use survey sponsored jointly by Abt and the U.S. EPA. Results of the survey were the following (Abt, 1992):

- Compared to the 1986 findings, a significantly smaller proportion of current survey respondents used a paint stripper, spray paint, or adhesive remover.
- The proportion of the population who used the three products recently (within the past year) decreased substantially.
- Those who used the products reported a significantly longer time since their last use.
- For all three products, the reported amount used per year was significantly higher in the current survey.

The survey was conducted to estimate the percent of the U.S. adult population using paint remover, adhesive remover, and non-automotive spray paint. In addition, an estimate of the population using these products containing methylene chloride was determined. A survey questionnaire was developed to collect product usage data and demographic data. The survey sample was generated using a RDD technique.

A total of 4,997 product screener interviews were conducted for the product interview sections; the number of respondents were: 381 for paint strippers, 58 for adhesive removers, and 791 for non-automotive spray paint. Survey responses were weighted to allow estimation at the level of the total U.S. population (Abt, 1992). A follow-up mail survey was also conducted using a short questionnaire. Respondents who had used the product in the past year or had purchased the product in the past 2 years and still had the container were asked to respond to the questionnaire (Abt, 1992). Of the mail questionnaires (527) sent out, 259 were returned. The questionnaire responses included 67 on paint strippers, 6 on adhesive removers, and 186 on non-automotive spray paint. Results of the survey are presented in Tables 16-6 through 16-11 (N's are unweighted). Data are presented for recent users. Recent users were defined as persons who have used the product within the last year of the survey or who have purchased the product in the past 2 years.

An advantage of this survey is that the survey population was large and the survey responses were weighted to represent the U.S. population. In addition, the survey was designed to collect data for frequency of product use and amount of product used by gender. A limitation of the survey is that the data were generated based on recall behavior. Extrapolation of these data to accurately reflect long-term use patterns may be difficult.

Westat (1987b) - National Usage Survey of Household Cleaning Products - Westat (1987b) collected usage data from a nationwide survey to assess the magnitude of exposure of consumers to various products used when performing certain household cleaning tasks. The survey was conducted between the middle of

November, 1985 to the middle of January, 1986. Telephone interviews were conducted with 193 households. According to Westat (1987b), the resulting response rate for this survey was 78 percent. The Waksberg method discussed previously in the Westat (1987a) study was also used in randomly selecting telephone numbers employed in the Westat (1987b) survey. The survey was designed to obtain information on cleaning activities performed in the interior of the home during the previous year. The person who did the majority of the cleaning in the kitchen and bathroom areas of each household was interviewed. Of those respondents, the primary cleaner was female in 160 households (83 percent) and male in 30 households (16 percent); the sex of the respondents in three remaining households was not ascertained (Westat, 1987b). Data obtained from the survey included the frequency of performing 14 different cleaning tasks; the amount of time (duration) spent at each task; the cleaning product most frequently used; the type of product (liquid, powder, aerosol or spray pump) used; and the protective measures taken during cleaning such as wearing rubber gloves or having a window open or an exhaust fan on (Westat, 1987b).

The survey data are presented in Tables 16-12 through 16-16. Table 16-12 presents the mean and median total exposure time of use for each cleaning task and the product type preferred for each task. The percentile rankings for the total time exposed to the products used for 14 cleaning tasks are presented in Table 16-13. The mean and percentile rankings of the frequency in performing each task are presented in Table 16-14. Table 16-15 shows the mean and percentile rankings for exposure time per event of performing household tasks. The mean and percentile rankings for total number of hours spent per year using the top 10 product groups are presented in Table 16-16.

Westat (1987b) randomly selected a subset of 30 respondents from the original survey and reinterviewed them during the first two weeks of March, 1986 as a reliability check on the recall data obtained from the original phone survey. Frequency and duration data for 3 of the original 14 cleaning tasks were obtained from the reinterviews. In a second effort to validate the phone survey, 50 respondents of the original phone survey participated in a four-week diary study (between February and March, 1986) of 8 of the 14 cleaning tasks originally studied. The diary approach assessed the validity of using a one-time telephone survey to determine usual cleaning behavior (Westat, 1987b). The data (i.e., frequency and duration) obtained from the reinterviews and the diary approach were lower than the data from the original telephone survey. The data from the reinterviews and the diary approach were more consistent with each other. Westat (1987b) attributed the significant differences in the data obtained from these surveys to seasonal changes rather than methodological problems.

A limitation of this survey is evident from the reliability and validity check of the data conducted by Westat (1987b). The data obtained from the telephone survey may reflect heavier seasonal cleaning because the survey was conducted during the holidays (November through January). Therefore, usage data obtained in this study may be biased and may represent upper bound estimates. Another limitation of this study is the small size of the sample population. An advantage of this survey is that the RDD procedure (Waksberg Method) used provides unbiased results of sample selection and reduces the number of unproductive calls. Another advantage of this study is that it provides empirical data on frequency and duration of consumer use, thereby eliminating best judgment or guesswork.

Westat (1987c) - National Household Survey of Interior Painters - Westat (1987c) conducted a study between November, 1985 and January, 1986 to obtain usage information to estimate the magnitude of exposure of consumers to different types of painting and painting related products used while painting the interior of the home. Seven-hundred and seventy-seven households were sampled to determine whether any household member had painted the interior of the home during the last 12 months prior to the survey date. Of the sampled households, 208 households (27 percent) had a household member who had painted during the last 12 months. Based on the households with primary painters, the response rate was 90 percent (Westat, 1987c). The person in each household who did most of the interior painting during the last 12 months was interviewed over the telephone. The RDD procedure (Waksberg Method) previously described in Westat (1987a) was used to generate sample blocks of telephone numbers in this survey. Questions were asked on frequency and time spent for interior painting activities; the amount of paint used; and protective measures used (i.e., wearing gloves, hats, and masks or keeping a window open) (Westat, 1987c). Fifty-three percent of the primary painters in the households interviewed were male, 46 percent were female, and the sex of the remaining 1 percent was not ascertained. Three types of painting products were used

in this study; latex paint, oil-based paint, and wood stains and varnishes. Of the respondents, 94.7 percent used latex paint, 16.8 percent used oil-based paint, and 20.2 percent used wood stains and varnishes.

Data generated from this survey are summarized in Tables 16-17, 16-18, and 16-19. Table 16-17 presents the mean, standard duration, and percentile rankings for the total exposure time for painting activity by paint type. Table 16-18 presents the mean and standard exposure time for the painting activity per occasion for each paint type. A "painting occasion" is defined as a time period from start to cleanup (Westat 1987c). Table 16-18 also presents the frequency and percentile rankings of painting occasions per year. Table 16-19 presents the total amount of paint used by interior painters.

In addition, 30 respondents from the original survey were reinterviewed in April 1986, as a reliability check on the recall data obtained from the original painting survey. There were no significant differences between the data obtained from the reinterviews and the original painting survey (Westat, 1987c).

An advantage of this survey, based on the reliability check conducted by Westat (1987c), is the stability in the painting data obtained. Another advantage of this survey is that the response rate was high (90 percent), therefore, minimizing non-response bias. Also, the Waksberg Method employed provides an unbiased equal probability method of RDD. A limitation of the survey is the data are based on 12-month recall and may not accurately reflect long-term use patterns.

Tsang and Klepeis (1996) - National Human Activity Pattern Survey (NHAPS) - The U.S. EPA collected information for the general population on the duration and frequency of selected activities and the time spent in selected microenvironments via 24-hour diaries. Over 9000 individuals from 48 contiguous states participated in NHAPS. The survey was conducted between October 1992 and September 1994. Individuals were interviewed to categorize their 24-hour routines (diaries) and/or answer follow-up exposure questions that were related to exposure events. Data were collected based on selected socioeconomic (gender, age, race, education, etc.) and geographic (census region, state, etc.) factors and time/season (day of week, month) (Tsang and Klepeis, 1996).

Data were collected for a maximum of 82 possible microenvironments and 91 different activities (Tsang and Klepeis, 1996). Respondents were also asked exposure-related follow up questions, mostly on air and water exposure pathways, on specific pollutant sources (paint, glue, etc.), or prolonged background activities (tobacco smoke, gas heaters, etc.) (Tsang and Klepeis, 1996).

As part of the survey, data were also collected on duration and frequency of use of selected consumer products. These data are presented in Tables 16-20 through 16-34. Distribution data are presented for selected percentiles (where possible). Other data are presented in ranges of time spent in an activity (e.g., working with or near a product being used) or ranges for the number of times an activity involving a consumer product was performed. Tables 16-20 through 16-34 provide duration and/or frequency data for the following categories: selected cosmetics and personal care items; household cleaners and other household products; household equipment; pesticides; and tobacco products.

The advantages of NHAPS is that the data were collected for a large number of individuals and are representative of the U.S. general population. In addition, frequency distributions of time spent and frequency of occurrence data for activities and locations are provided, when possible. Also, data on 9,386 different respondents are grouped by various socioeconomic, geographic, time/seasonal factors. A disadvantage of NHAPS is that means cannot be calculated for consumers who spent more than 60 or 120 minutes (depending on the activity) in an activity using a consumer product. Therefore, a good estimate of the high consumer activities cannot be captured.

16.3. RELEVANT CONSUMER PRODUCTS USE STUDY

CTFA (1983) - Cosmetic, Toiletry, and Fragrance Association, Inc. - Summary of Results of Surveys of the Amount and Frequency of Use of Cosmetic Products by Women - The Cosmetic, Toiletry, and Fragrance Association Inc. (CTFA, 1983), a major manufacturer and a market research bureau, conducted surveys to obtain information on frequency of use of various cosmetic products. Three surveys were conducted to collect data on the frequency of use of various cosmetic products and selected baby products. In the first of these three surveys CTFA (1983) conducted a one-week prospective survey of 47 female employees and relatives of employees between the ages of 13 and 61 years. In the second survey, a cosmetic manufacturer conducted a retrospective survey of 1,129 of its customers. The third survey was conducted by a market research bureau which sampled 19,035 female consumers nationwide over a 9-1/2 month

period. Of the 19,035 females interviewed, responses from only 9,684 females were tabulated (CTFA, 1983). The third survey was designed to reflect the sociodemographic (i.e., age, income, etc) characteristics of the entire U.S. population. The respondents in all three surveys were asked to record the number of times they used the various products in a given time period, i.e., a week, a day, a month, or a year (CTFA, 1983).

To obtain the average frequency of use for each cosmetic product, responses were averaged for each product in each survey. Thus, the averages were calculated by adding the reported number of uses per given time period for each product, dividing by the total number of respondents in the survey, and then dividing again by the number of days in the given time period (CTFA, 1983). The average frequency of use of cosmetic products was determined for both "users" and "non-users." The frequency of use of baby products was determined among "users" only. The upper 90th percentile frequency of use values were determined by eliminating the top ten percent most extreme frequencies of use. Therefore, the highest remaining frequency of use was recorded as the upper 90th percentile value (CTFA, 1983). Table 16-34 presents the amount of product used per application (grams) and the average and 90th percentile frequency of use per day for baby products and various cosmetic products for all the surveys.

An advantage of the frequency data obtained from the third survey (market research bureau) is that the sample population was more likely to be representative of the U.S. population. Another advantage of the third dataset is that the survey was conducted over a longer period of time when compared with the other two frequency datasets. Also, the study provided empirical data which will be useful in generating more accurate estimates of consumer exposure to cosmetic products. In contrast to the large market research bureau survey, the CTFA employee survey is very small and both that survey and the cosmetic company survey are likely to be biased toward high end users. Therefore, data from these two surveys should be used with caution.

16.4. RECOMMENDATIONS

Due to the large range and variation among consumer products and their exposure pathways, it is not feasible to specify recommended exposure values as has been done in other chapters of this handbook. The user is referred to the contents and references in the chapter to derive appropriate exposure factors. Table 16-35 summarizes the key and relevant studies in this chapter. In order to estimate consumer exposure to household products, several types of information are needed for the exposure equation. The information needed includes frequency and duration of use, amount of product used, percent weight of the chemical of concern found in the product, and for dermal exposure, the amount of the solution on the skin after exposure. The studies of Westat (1987a, b, and c), (Abt, 1992), and Tsang and Klepeis (1996) provide information on amount, duration, and frequency of use of household products. The frequency and duration of use and amount of product used for some household and other consumer products can be obtained from Tables 16-2 through 16-34. Exposure to chemicals present in common household products can be estimated by utilizing data presented in these tables and the appropriate exposure equation. It should be noted that if these data are used to model indoor air concentrations, the values for time of use, time exposed after use, and frequency in the indoor air, should be the same values used in the dose equation for frequency and contact time for a given individual.

16.5. REFERENCES FOR CHAPTER 16

Abt. (1992) Methylene chloride consumer products use survey findings. Prepared by Abt Associates, Inc. for the U.S. Consumer Product Safety Commission, Bethesda, MD.

Cosmetic, Toiletry and Fragrance Association (CTFA). (1983). Summary of the results of surveys of the amount and frequency of use of cosmetic products by women. Prepared by Environ Corporation, Washington, DC for CFFA Inc., Washington, DC.

Hakkinen, P.J.; Kelling, C.K.; Callender, J.C. (1991) Exposure assessment of consumer products: Human body weights and total body surface areas to use; and sources of data for specific products. Veterinary and Human Toxicology 1(33):61-65.

Tsang, A.M.; Klepeis, N.E. (1996) Results tables from a detailed analysis of the National Human Activity Pattern Survey (NHAPS) response. Draft Report prepared for the U.S. Environmental Protection Agency by Lockheed Martin, Contract No. 68-W6-001, Delivery Order No. 13.

U.S. EPA. (1986) Standard scenarios for estimating exposure to chemical substances during use of consumer products. Prepared by Versar, Inc. For

the Office of Toxic Substances, Contract No. 68-02-3968.

U.S. EPA. (1987) Methods for assessing exposure to chemical substances - Volume 7 - Methods for assessing consumer exposure to chemical substances. Washington, DC: Office of Toxic Substances. EPA Report No. 560/5-85-007.

Westat. (1987a) Household solvent products - a national usage survey. Under Subcontract to Battelle Columbus Div., Washington DC. Prepared for U.S. Environmental Protection Agency, Washington, DC. Available from NTIS, Springfield, VA. PB88-132881.

Westat. (1987b) National usage survey of household cleaning products. Prepared for U.S. Environmental Protection Agency, Office of Toxic Substances and Office of Pesticides and Toxic Substances, Washington, DC.

Westat. (1987c) National household survey of interior painters. Prepared for U.S. Environmental Protection Agency, Office of Toxic Substances and Office of Pesticides and Toxic Substances, Washington DC.

Table 16-1. Consumer Products Found in the Typical U.S. Household[a]

Consumer Product Category	Consumer Product
Cosmetics Hygiene Products	Adhesive bandages
	Bath additives (liquid)
	Bath additives (powder)
	Cologne/perfume/aftershave
	Contact lens solutions
	Deodorant/antiperspirant (aerosol)
	Deodorant/antiperspirant (wax and liquid)
	Depilatories
	Facial makeup
	Fingernail cosmetics
	Hair coloring/tinting products
	Hair conditioning products
	Hairsprays (aerosol)
	Lip products
	Mouthwash/breath freshener
	Sanitary napkins and pads
	Shampoo
	Shaving creams (aerosols)
	Skin creams (non-drug)
	Skin oils (non-drug)
	Soap (toilet bar)
	Sunscreen/suntan products
	Talc/body powder (non-drug)
	Toothpaste
	Waterless skin cleaners
Household Furnishings	Carpeting
	Draperies/curtains
	Rugs (area)
	Shower curtains
	Vinyl upholstery, furniture
Garment Conditioning Products	Anti-static spray (aerosol)
	Leather treatment (liquid and wax)
	Shoe polish
	Spray starch (aerosol)
	Suede cleaner/polish (liquid and aerosol)
	Textile water-proofing (aerosol)
Household Maintenance Products	Adhesive (general) (liquid)
	Bleach (household) (liquid)
	Bleach (see laundry)
	Candles
	Cat box litter
	Charcoal briquets
	Charcoal lighter fluid
	Drain cleaner (liquid and powder)
	Dishwasher detergent (powder)
	Dishwashing liquid
	Fabric dye (DIY)[b]
	Fabric rinse/softener (liquid)

Table 16-1. Consumer Products Found in the Typical U.S. Household[a] (continued)

Consumer Product Category	Consumer Product
Household Maintenance Products (continued)	Fabric rinse/softener (powder)
	Fertilizer (garden) (liquid)
	Fertilizer (garden) (powder)
	Fire extinguishers (aerosol)
	Floor polish/wax (liquid)
	Food packaging and packaged food
	Furniture polish (liquid)
	Furniture polish (aerosol)
	General cleaner/disinfectant (liquid)
	General cleaner (powder)
	General cleaner/disinfectant (aerosol and pump)
	General spot/stain remover (liquid)
	General spot/stain remover (aerosol and pump)
	Herbicide (garden-patio) (Liquid and aerosol)
	Insecticide (home and garden) (powder)
	Insecticide (home and garden) (aerosol and pump)
	Insect repellent (liquid and aerosol)
	Laundry detergent/bleach (liquid)
	Laundry detergent (powder)
	Laundry pre-wash/soak (powder)
	Laundry pre-wash/soak (liquid)
	Laundry pre-wash/soak (aerosol and pump)
	Lubricant oil (liquid)
	Lubricant (aerosol)
	Matches
	Metal polish
	Oven cleaner (aerosol)
	Pesticide (home) (solid)
	Pesticide (pet dip) (liquid)
	Pesticide (pet) (powder)
	Pesticide (pet) (aerosol)
	Pesticide (pet) (collar)
	Petroleum fuels (home((liquid and aerosol)
	Rug cleaner/shampoo (liquid and aerosol)
	Rug deodorizer/freshener (powder)
	Room deodorizer (solid)
	Room deodorizer (aerosol)
	Scouring pad
	Toilet bowl cleaner
	Toiler bowl deodorant (solid)
	Water-treating chemicals (swimming pools)
Home Building/Improvement Products (DIY)[b]	Adhesives, specialty (liquid)
	Ceiling tile
	Caulks/sealers/fillers
	Dry wall/wall board
	Flooring (vinyl)
	House Paint (interior) (liquid)
	House Paint and Stain (exterior) (liquid)
	Insulation (solid)
	Insulation (foam)

Table 16-1. Consumer Products Found in the Typical U.S. Household[a] (continued)

Consumer Product Category	Consumer Product
Home Building/Improvement Products (DIY)[b] (Continued)	Paint/varnish removers
	Paint thinner/brush cleaners
	Patching/ceiling plaster
	Roofing
	Refinishing products (polyurethane, varnishes, etc.)
	Spray paints (home) (aerosol)
	Wall paneling
	Wall paper
	Wall paper glue
Automobile-related Products	Antifreeze
	Car polish/wax
	Fuel/lubricant additives
	Gasoline/diesel fuel
	Interior upholstery/components, synthetic
	Motor oil
	Radiator flush/cleaner
	Automotive touch-up paint (aerosol)
	Windshield washer solvents
Personal Materials	Clothes/shoes
	Diapers/vinyl pants
	Jewelry
	Printed material (colorprint, newsprint, photographs)
	Sheets/towels
	Toys (intended to be placed in mouths)

[a] A subjective listing based on consumer use profiles.
[b] DIY = Do It Yourself.
Source: U.S. EPA, 1987.

Table 16-2. Frequency of Use for Household Solvent Products (users-only)

Products	Mean	Std. dev.	Min.	Percentile Rankings for Frequency of Use/Year 1	5	10	25	50	75	90	95	99	Max.
Spray Shoe Polish	10.28	20.10	1.00	1.00	1.00	1.00	2.00	4.00	8.00	24.30	52.00	111.26	156.00
Water Repellents/Protectors	3.50	11.70	1.00	1.00	1.00	1.00	1.00	2.00	3.00	6.00	10.00	35.70	300.00
Spot Removers	15.59	43.34	1.00	1.00	1.00	1.00	2.00	3.00	10.00	40.00	52.00	300.00	365.00
Solvent-Type Cleaning Fluids or Degreasers	16.46	44.12	1.00	1.00	1.00	1.00	2.00	4.00	12.00	46.00	52.00	300.00	365.00
Wood Floor and Paneling Cleaners	8.48	20.89	1.00	1.00	1.00	1.00	NA	2.00	6.00	24.00	50.00	56.00	350.00
TypeWriter Correction Fluid	40.00	74.78	1.00	1.00	1.00	2.00	4.00	12.00	40.00	100.00	200.00	365.00	520.00
Adhesives	8.89	26.20	1.00	1.00	1.00	1.00	2.00	3.00	6.00	15.00	28.00	100.00	500.00
Adhesive Removers	4.22	12.30	1.00	1.00	1.00	1.00	1.00	1.00	3.00	6.00	16.80	100.00	100.00
Silicone Lubricants	10.32	25.44	1.00	1.00	1.00	1.00	2.00	3.00	10.00	20.00	46.35	150.00	300.00
Other Lubricants (excluding Automotive)	10.66	25.46	1.00	1.00	1.00	1.00	2.00	4.00	10.00	20.00	50.00	100.00	420.00
Specialized Electronic Cleaners (for TVs, Etc.)	13.41	38.16	1.00	1.00	1.00	1.00	2.00	3.00	10.00	24.00	52.00	224.50	400.00
Latex Paint	3.93	20.81	1.00	1.00	1.00	1.00	1.00	2.00	4.00	6.00	10.00	30.00	800.00
Oil Paint	5.66	23.10	1.00	1.00	1.00	1.00	1.00	1.00	3.00	6.00	12.00	139.20	300.00
Wood Stains, Varnishes, and Finishes	4.21	12.19	1.00	1.00	1.00	1.00	1.00	2.00	4.00	7.00	12.00	50.80	250.00
Paint Removers/Strippers	3.68	9.10	1.00	1.00	1.00	1.00	4.00	2.00	3.00	6.00	11.80	44.56	100.00
Paint Thinners	6.78	22.10	0.03	0.03	0.10	0.23	1.00	2.00	4.00	12.00	23.00	100.00	352.00
Aerosol Spray Paint	4.22	15.59	1.00	1.00	1.00	1.00	1.00	2.00	4.00	6.10	12.00	31.05	365.00
Primers and Special Primers	3.43	8.76	1.00	1.00	1.00	1.00	1.00	1.00	3.00	6.00	10.00	50.06	104.00
Aerosol Rust Removers	6.17	9.82	1.00	1.00	1.00	1.00	1.00	2.00	6.00	15.00	24.45	50.90	80.00
Outdoor Water Repellents (for Wood or Cement)	2.07	3.71	1.00	1.00	1.00	1.00	1.00	2.00	2.00	3.00	5.90	12.00	52.00
Glass Frostings, Window Tints, and Artificial Snow	2.78	21.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	27.20	365.00
Engine Degreasers	4.18	13.72	1.00	1.00	1.00	1.00	1.00	2.00	3.25	6.70	12.00	41.70	300.00
Carburetor Cleaners	3.77	7.10	1.00	1.00	1.00	1.00	1.00	2.00	3.00	6.00	12.00	47.28	100.00
Aerosol Spray Paints for Cars	4.50	9.71	1.00	1.00	1.00	1.00	1.00	2.00	4.00	10.00	15.00	60.00	100.00
Auto Spray Primers	6.42	33.89	1.00	1.00	1.00	1.00	1.00	2.00	3.75	10.00	15.00	139.00	500.00
Spray Lubricant for Cars	10.31	30.71	1.00	1.00	1.00	1.00	2.00	3.00	6.00	20.00	40.00	105.60	365.00
Transmission Cleaners	2.28	3.55	1.00	NA	1.00	1.00	1.00	1.00	2.00	3.00	9.00	NA	26.00
Battery Terminal Protectors	3.95	24.33	1.00	1.00	1.00	1.00	1.00	2.00	2.00	4.00	6.55	41.30	365.00
Brake Quieters Cleaners	3.00	6.06	1.00	NA	1.00	1.00	1.00	2.00	2.00	6.00	10.40	NA	52.00
Gasket Remover	2.50	4.39	1.00	NA	1.00	1.00	1.00	1.00	2.00	5.00	6.50	NA	30.00
Tire/Hubcap Cleaners	11.18	18.67	1.00	1.00	1.00	1.00	2.00	4.00	12.00	30.00	50.00	77.00	200.00
Ignition and Wire Dryers	3.01	5.71	1.00	1.00	1.00	1.00	1.00	2.00	3.00	5.00	9.70	44.52	60.00

NA = Not Available
Source: Westat, 1987a

Table 16-3. Exposure Time of Use for Household Solvent Products (users-only)

Products	Mean (mins)	Std. dev.	Min.	Percentile Rankings for Duration of Use (minutes) 1	5	10	25	50	75	90	95	99	Max.
Spray Shoe Polish	7.49	9.60	0.02	0.03	0.25	0.50	2.00	5.00	10.00	18.00	30.00	60.00	60.00
Water Repellents/Protectors	14.46	24.10	0.02	0.08	0.50	1.40	3.00	10.00	15.00	30.00	60.00	120.00	480.00
Spot Removers	10.68	22.36	0.02	0.03	0.08	0.25	2.00	5.00	10.00	30.00	30.00	120.00	360.00
Solvent-Type Cleaning Fluids or Degreasers	29.48	97.49	0.02	0.03	1.00	2.00	5.00	15.00	30.00	60.00	120.00	300.00	1800.00
Wood Floor and Paneling Cleaners	74.04	128.43	0.02	1.00	5.00	10.00	20.00	30.00	90.00	147.00	240.00	480.00	2700.00
TypeWriter Correction Fluid	7.62	29.66	0.02	0.02	0.03	0.03	0.17	1.00	2.00	10.00	32.00	120.00	480.00
Adhesives	15.58	81.80	0.02	0.03	0.08	0.33	1.00	4.25	10.00	30.00	60.00	180.00	2880.00
Adhesive Removers	121.20	171.63	0.03	0.03	1.45	3.00	15.00	60.00	120.00	246.00	480.00	960.00	960.00
Silicone Lubricants	10.42	29.47	0.02	0.03	0.08	0.17	0.50	2.00	10.00	20.00	45.00	180.00	360.00
Other Lubricants (excluding Automotive)	8.12	32.20	0.02	0.03	0.05	0.08	0.50	2.00	5.00	15.00	30.00	90.00	900.00
Specialized Electronic Cleaners (for TVs, Etc.)	9.47	45.35	0.02	0.03	0.08	0.17	0.50	2.00	5.00	20.00	30.00	93.60	900.00
Latex Paint	295.08	476.11	0.02	1.00	22.50	30.00	90.00	180.00	360.00	480.00	810.00	2880.00	5760.00
Oil Paint	194.12	345.68	0.02	0.51	15.00	30.00	60.00	12.00	240.00	480.00	579.00	1702.80	5760.00
Wood Stains, Varnishes, and Finishes	117.17	193.05	0.02	0.74	5.00	10.00	30.00	60.00	120.00	140.00	360.00	720.00	280.00
Paint Removers/Strippers	125.27	286.59	0.02	0.38	5.00	5.00	20.00	60.00	120.00	240.00	420.00	1200.00	4320.00
Paint Thinners	39.43	114.85	0.02	0.08	1.00	2.00	5.00	10.00	30.00	60.00	180.00	480.00	2400.00
Aerosol Spray Paint	39.54	87.79	0.02	0.17	2.00	5.00	10.00	20.00	45.00	60.00	120.00	300.00	1800.00
Primers and Special Primers	91.29	175.05	0.05	0.24	3.00	5.00	15.00	30.00	120.00	240.00	360.00	981.60	1920.00
Aerosol Rust Removers	18.57	48.54	0.02	0.05	0.17	0.25	2.00	5.00	20.00	60.00	60.00	130.20	720.00
Outdoor Water Repellents	104.94	115.36	0.02	0.05	5.00	15.00	30.00	60.00	120.00	240.00	300.00	480.00	960.00
(for Wood or Cement)	29.45	48.16	0.03	0.14	2.00	3.00	5.00	15.00	30.00	60.00	96.00	268.80	360.00
Glass Frostings, Window Tints, and Artificial Snow	29.29	48.14	0.02	0.95	2.00	5.00	10.00	15.00	30.00	60.00	120.00	180.00	900.00
Engine Degreasers, Carburetor Cleaners	13.57	23.00	0.02	0.08	0.33	1.00	3.00	7.00	15.00	30.00	45.00	120.00	300.00
Aerosol Spray Paints for Cars	42.77	71.39	0.03	0.19	1.00	3.00	10.00	20.00	60.00	120.00	145.00	360.00	900.00
Auto Spray Primers	51.45	86.11	0.05	0.22	2.00	5.00	10.00	27.50	60.00	120.00	180.00	529.20	600.00
Spray Lubricant for Cars	9.90	35.62	0.02	0.03	0.08	0.17	1.00	5.00	10.00	15.00	30.00	120.00	720.00
Transmission Cleaners	27.90	61.44	0.17	NA	0.35	1.80	5.00	15.00	30.00	60.00	60.00	NA	450.00
Battery Terminal Protectors	9.61	18.15	0.03	0.04	0.08	0.23	1.00	5.00	10.00	20.00	30.00	120.00	180.00
Brake Quieters/Cleaners	23.38	36.32	0.07	NA	0.50	1.00	5.00	15.00	30.00	49.50	120.00	NA	240.00
Gasket Remover	23.57	27.18	0.33	NA	0.50	2.00	6.25	15.00	30.00	60.00	60.00	NA	180.00
Tire/Hubcap Cleaners	22.66	23.94	0.08	0.71	3.00	5.00	10.00	15.00	30.00	60.00	60.00	120.00	240.00
Ignition and Wire Dryers	7.24	8.48	0.02	0.02	0.08	0.47	1.50	5.00	10.00	15.00	25.50	48.60	60.00

NA = Not Available
Source: Westat, 1987a

Table 16-4. Amount of Products Used for Household Solvent Products (users-only)

Products	Mean (ounces/yr)	Std. dev	Percentile Rankings for Amount of Products Used (ounces/yr)										
			Min.	1	5	10	25	50	75	90	95	99	Max.
Spray Shoe Polish	9.90	17.90	0.04	0.20	0.63	1.00	2.00	4.50	10.00	24.00	36.00	99.36	180.00
Water Repellents/Protectors	11.38	22.00	0.04	0.47	0.98	1.43	2.75	6.00	12.00	24.00	33.00	121.84	450.00
Spot Removers	26.32	90.10	0.01	0.24	0.60	1.00	2.00	5.50	16.00	48.00	119.20	384.00	1600.00
Solvent-Type Cleaning Fluids or Degreasers	58.30	226.97	0.04	0.50	2.00	3.00	6.50	16.00	32.00	96.00	192.00	845.00	5120.00
Wood Floor and Paneling Cleaners	28.41	57.23	0.03	0.80	2.45	3.50	7.00	14.00	30.00	64.00	96.00	204.40	1144.00
TypeWriter Correction Fluid	4.14	13.72	0.01	0.02	0.06	0.12	0.30	0.94	2.40	8.00	18.00	67.44	181.80
Adhesives	7.49	55.90	0.01	0.02	0.05	0.12	0.35	1.00	3.00	8.00	20.00	128.00	1280.00
Adhesive Removers	34.46	96.60	0.25	0.29	1.22	2.80	6.00	10.88	32.00	64.00	138.70	665.60	1024.00
Silicone Lubricants	12.50	27.85	0.02	0.20	0.69	1.00	2.25	4.50	12.00	24.00	41.20	192.00	312.00
Other Lubricants (excluding Automotive)	9.93	44.18	0.01	0.18	0.30	0.52	1.00	2.25	8.00	18.00	32.00	128.00	1280.00
Specialized Electronic Cleaners (for TVs, Etc.)	9.48	55.26	0.01	0.05	0.13	0.25	0.52	2.00	6.00	12.65	24.00	109.84	1024.00
Latex Paint	371.27	543.86	0.03	4.00	12.92	32.00	64.00	256.00	384.00	857.60	1280.00	2560.00	6400.00
Oil Paint	168.92	367.82	0.02	0.33	4.00	8.00	25.20	64.00	148.48	384.00	640.00	1532.16	5120.00
Wood Stains, Varnishes, and Finishes	65.06	174.01	0.12	1.09	4.00	4.00	8.00	16.00	64.00	128.00	256.00	768.00	3840.00
Paint Removers/Strippers	63.73	144.33	0.64	1.50	4.00	8.00	16.00	32.00	64.00	128.00	256.00	512.00	2560.00
Paint Thinners	69.45	190.55	0.03	0.45	3.10	4.00	8.00	20.48	64.00	128.00	256.00	640.00	3200.00
Aerosol Spray Paint	30.75	52.84	0.02	0.75	2.01	3.25	7.00	13.00	32.00	65.00	104.00	240.00	1053.00
Primers and Special Primers	68.39	171.21	0.01	0.09	1.30	3.23	8.00	16.00	60.00	128.00	256.00	867.75	1920.00
Aerosol Rust Removers	18.21	81.37	0.09	0.25	1.00	1.43	2.75	8.00	13.00	32.00	42.60	199.80	1280.00
Outdoor Water Repellents (for Wood or Cement)	148.71	280.65	0.01	0.37	3.63	8.00	16.00	64.00	128.00	448.00	640.00	979.20	3200.00
Glass Frostings, Window Tints, and Artificial Snow	13.82	14.91	1.00	1.40	2.38	3.25	6.00	12.00	14.00	28.00	33.00	98.40	120.00
Engine Degreasers	46.95	135.17	0.04	1.56	4.00	6.00	12.00	16.00	36.00	80.00	160.00	480.00	2560.00
Carburetor Cleaners	22.00	50.60	0.10	0.50	1.50	3.00	5.22	12.00	16.00	39.00	75.00	212.00	672.00
Aerosol Spray Paints for Cars	44.95	89.78	0.04	0.14	1.50	3.00	6.12	16.00	48.00	100.80	156.00	557.76	900.00
Auto Spray Primers	70.37	274.56	0.12	0.77	3.00	4.00	9.00	16.00	48.00	128.00	222.00	1167.36	3840.00
Spray Lubricant for Cars	18.63	54.74	0.08	0.40	0.96	1.00	2.75	6.00	15.50	36.00	64.00	240.00	864.00
Transmission Cleaners	35.71	62.93	2.00	NA	3.75	4.00	8.00	15.00	32.00	77.00	140.00	NA	360.00
Battery Terminal Protectors	16.49	87.84	0.12	0.13	0.58	1.00	2.00	4.00	8.00	15.00	24.60	627.00	1050.00
Brake Quieters/Cleaners	11.72	13.25	0.50	NA	1.00	2.00	3.02	8.00	14.25	32.00	38.60	NA	78.00
Gasket Remover	13.25	22.35	0.50	NA	1.00	1.00	3.75	7.75	16.00	24.00	58.40	NA	160.00
Tire/Hubcap Cleaners	31.58	80.39	0.12	0.50	1.82	3.00	6.00	12.00	28.00	64.00	96.00	443.52	960.00
Ignition and Wire Dryers	9.02	14.59	0.13	0.32	1.09	1.50	3.00	6.00	10.75	16.00	20.55	113.04	120.00

NA = Not Available
Source: Westat, 1987a

Table 16-5. Time Exposed After Duration of Use for Household Solvent Products (users-only)

Products	Mean (mins)	Std. dev.	Percentile Rankings for Time Exposed After Duration of Use (minutes)										
			Min.	1	5	10	25	50	75	90	95	99	Max.
Spray Shoe Polish	31.40	80.50	0.00	0.00	0.00	0.00	0.00	5.00	20.00	120.00	120.00	480.00	720.00
Water Repellents/Protectors	37.95	111.40	0.00	0.00	0.00	0.00	0.00	3.00	20.00	120.00	240.00	480.00	1800.00
Spot Removers	43.65	106.97	0.00	0.00	0.00	0.00	1.00	5.00	30.00	120.00	240.00	480.00	1440.00
Solvent-Type Cleaning Fluids or Degreasers	33.29	90.39	0.00	0.00	0.00	0.00	0.00	3.00	28.75	60.00	180.00	480.00	1440.00
Wood Floor and Paneling Cleaners	96.75	192.88	0.00	0.00	0.00	0.00	5.00	30.00	120.00	240.00	480.00	1062.00	1440.00
TypeWriter Correction Fluid	124.70	153.46	0.00	0.00	1.00	5.00	30.00	60.00	180.00	360.00	480.00	600.00	1800.00
Adhesives	68.88	163.72	0.00	0.00	0.00	0.00	1.00	10.00	60.00	180.00	360.00	720.00	2100.00
Adhesive Removers	94.12	157.69	0.00	0.00	0.00	0.00	1.75	20.00	120.00	360.00	480.00	720.00	720.00
Silicone Lubricants	30.77	107.39	0.00	0.00	0.00	0.00	0.00	0.00	10.00	60.00	180.00	480.00	1440.00
Other Lubricants (excluding Automotive)	47.45	127.11	0.00	0.00	0.00	0.00	0.00	2.00	30.00	120.00	240.00	485.40	1440.00
Specialized Electronic Cleaners (for TVs, Etc.)	117.24	154.38	0.00	0.00	0.00	1.00	10.00	60.00	180.00	300.00	480.00	720.00	1440.00
Latex Paint	91.38	254.61	0.00	0.00	0.00	0.00	0.00	5.00	60.00	240.00	480.00	1440.00	2880.00
Oil Paint	44.56	155.19	0.00	0.00	0.00	0.00	0.00	0.00	30.00	120.00	240.00	480.00	2880.00
Wood Stains, Varnishes, and Finishes	48.33	156.44	0.00	0.00	0.00	0.00	0.00	1.00	30.00	120.00	240.00	694.00	2880.00
Paint Removers/Strippers	31.38	103.07	0.00	0.00	0.00	0.00	0.00	0.00	20.00	60.00	180.00	541.20	1440.00
Paint Thinners	32.86	105.62	0.00	0.00	0.00	0.00	0.00	0.00	15.00	60.00	180.00	480.00	1440.00
Aerosol Spray Paint	12.70	62.80	0.00	0.00	0.00	0.00	0.00	0.00	1.00	30.00	60.00	260.50	1440.00
Primers and Special Primers	22.28	65.57	0.00	0.00	0.00	0.00	0.00	0.00	10.00	60.00	120.00	319.20	720.00
Aerosol Rust Removers	15.06	47.58	0.00	0.00	0.00	0.00	0.00	0.00	5.00	60.00	60.00	190.20	600.00
Outdoor Water Repellents (for Wood or Cement)	8.33	43.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	58.50	309.60	420.00
Glass Frostings, Window Tints, and Artificial Snow	137.87	243.21	0.00	0.00	0.00	0.00	3.00	60.00	180.00	360.00	480.00	1440.00	1800.00
Engine Degreasers	4.52	24.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.50	120.00	360.00
Carburetor Cleaners	7.51	68.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	30.00	120.60	1800.00
Aerosol Spray Paints for Cars	10.71	45.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.50	60.00	282.00	480.00
Auto Spray Primers	11.37	45.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	77.25	360.00	360.00
Spray Lubricant for Cars	4.54	30.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	15.00	70.20	420.00
Transmission Cleaners	5.29	29.50	0.00	NA	0.00	0.00	0.00	0.00	0.00	5.00	22.50	NA	240.00
Battery Terminal Protectors	3.25	17.27	0.00	NA	0.00	0.00	0.00	0.00	0.00	2.90	15.00	120.00	180.00
Brake Quieters/Cleaners	10.27	30.02	0.00	NA	0.00	0.00	0.00	0.00	0.00	30.00	120.00	NA	120.00
Gasket Remover	27.56	58.54	0.00	NA	0.00	0.00	0.00	0.00	12.50	120.00	180.00	NA	240.00
Tire/Hubcap Cleaners	1.51	20.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	480.00
Ignition and Wire Dryers	6.39	31.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	30.00	216.60	240.00

NA = Not Available
Source: Westat, 1987a

Table 16-6. Frequency of Use and Amount of Product Used for Adhesive Removers

	No. of Times Used Within the Last 12 Months N=58	Minutes Using N=52	Minutes in Room After Using[a] N=51	Minutes in Room After Using[b] N=5	Amount Used in Past Year (Fluid oz.) N=51	Amount per Use (Fluid oz.) N=51
Mean	1.66	172.87	13.79	143.37	96.95	81.84
Standard deviation	1.67	304.50	67.40	169.31	213.20	210.44
Minimum Value	1.00	5.00	0.00	5.00	13.00	5.20
1st Percentile	1.00	5.00	0.00	5.00	13.00	5.20
5th Percentile	1.00	10.00	0.00	5.00	13.00	6.50
10th Percentile	1.00	15.00	0.00	5.00	16.00	10.67
25th Percentile	1.00	29.50	0.00	20.00	16.00	16.00
Median Value	1.00	120.00	0.00	120.00	32.00	26.00
75th Percentile	2.00	240.00	0.00	420.00	96.00	64.00
90th Percentile	3.00	480.00	0.00	420.00	128.00	128.00
95th Percentile	5.00	1440.00	120.00	420.00	384.00	192.00
99th Percentile	12.00	1440.00	420.00	420.00	1280.00	1280.00
Maximum Value	12.00	1440.00	420.00	1440.00	1280.00	1280.00

[a] Includes those who did not spend anytime in the room after use.
[b] Includes only those who spent time in the room.
Source: Abt, 1992.

Table 16-7. Adhesive Remover Usage by Gender

	Gender	
	Male N=25	Female N=33
Mean number of months since last time adhesive remover was used - includes all respondents. (Unweighted N=240)	35.33	43.89
Mean number of uses of product in the past year.	1.94	1.30
Mean number of minutes spent with the product during last use.	127.95	233.43
Mean number of minutes spent in the room after last use of product. (Includes all recent users)	19.76	0
Mean number of minutes spent in the room after last use of product. (Includes only those who did not leave immediately)	143.37	0
Mean ounces of product used in the past year.	70.48	139.71
Mean ounces of product used per use in the past year.	48.70	130.36

Source: Abt, 1992.

Table 16-8. Frequency of Use and Amount of Product Used for Spray Paint

	No. of Times Used Within the Last 12 Months N=775	Minutes Using N=786	Minutes in Room After Using[a] N=791	Minutes in Room After Using[b] N=35	Amount Used in Past Year (Fluid oz.) N=778	Amount per Use (Fluid oz.) N=778
Mean	8.23	40.87	3.55	65.06	83.92	19.04
Standard deviation	31.98	71.71	22.03	70.02	175.32	25.34
Minimum Value	1.00	1.00	0.00	1.00	13.00	0.36
1st Percentile	1.00	1.00	0.00	1.00	13.00	0.36
5th Percentile	1.00	3.00	0.00	1.00	13.00	3.47
10th Percentile	1.00	5.00	0.00	10.00	13.00	6.50
25th Percentile	1.00	10.00	0.00	15.00	13.00	9.75
Median Value	2.00	20.00	0.00	30.00	26.00	13.00
75th Percentile	4.00	45.00	0.00	60.00	65.00	21.67
90th Percentile	11.00	90.00	0.00	120.00	156.00	36.11
95th Percentile	20.00	120.00	0.00	120.00	260.00	52.00
99th Percentile	104.00	360.00	120.00	300.00	1170.00	104.00
Maximum Value	365.00	960.00	300.00	300.00	1664.00	312.00

[a] Includes those who did not spend anytime in the room after use.
[b] Includes only those who spent time in the room.
Source: Abt, 1992.

Table 16-9. Spray Paint Usage by Gender

	Gender	
	Male N=405	Female N=386
Mean number of months since last time spray paint was used - includes all respondents. (Unweighted N=1724)	17.39	26.46
Mean number of uses of product in the past year.	10.45	4.63
Mean number of minutes spent with the product during last use.	40.87	40.88
Mean number of minutes spent in the room after last use of product. (Includes all recent users)	5.49	0.40
Mean number of minutes spent in the room after last use of product. (Includes only those who did not leave immediately)	67.76	34.69
Mean ounces of product used in the past year.	103.07	59.99
Mean ounces of product used per use in the past year.	18.50	19.92

Source: Abt, 1992.

Table 16-10. Frequency of Use and Amount of Product Used for Paint Removers/Strippers

	No. of Times Used Within the Last 12 Months N=316	Minutes Using N=390	Minutes in Room After Using[a] N=390	Minutes in Room After Using[b] N=39	Amount Used in Past Year (Fluid oz.) N=307	Amount per Use (Fluid oz.) N=307
Mean	3.54	144.59	12.96	93.88	142.05	64.84
Standard deviation	7.32	175.54	85.07	211.71	321.73	157.50
Minimum Value	1.00	2.00	0.00	1.00	15.00	0.35
1st Percentile	1.00	5.00	0.00	1.00	15.00	2.67
5th Percentile	1.00	15.00	0.00	1.00	16.00	8.00
10th Percentile	1.00	20.00	0.00	3.00	16.00	10.67
25th Percentile	1.00	45.00	0.00	10.00	32.00	16.00
Median Value	2.00	120.00	0.00	60.00	64.00	32.00
75th Percentile	3.00	180.00	0.00	120.00	128.00	64.00
90th Percentile	6.00	360.00	10.00	180.00	256.00	128.00
95th Percentile	12.00	480.00	60.00	420.00	384.00	192.00
99th Percentile	50.00	720.00	180.00	1440.00	1920.00	320.00
Maximum Value	70.00	1440.00	1440.00	1440.00	3200.00	2560.00

[a] Includes those who did not spend anytime in the room after use.
[b] Includes only those who spent time in the room.
Source: Abt, 1992.

Table 16-11. Paint Stripper Usage by Gender

	Gender	
	Male N=156	Female N=162
Mean number of months since last time paint stripper was used - includes all respondents. (Unweighted N=1724)	32.07	47.63
Mean number of uses of product in the past year.	3.88	3.01
Mean number of minutes spent with the product during last use.	136.70	156.85
Mean number of minutes spent in the room after last use of product. (Includes all recent users)	15.07	9.80
Mean number of minutes spent in the room after last use of product. (Includes only those who did not leave immediately)	101.42	80.15
Mean ounces of product used in the past year.	160.27	114.05
Mean ounces of product used per use in the past year.	74.32	50.29

Source: Abt, 1992.

Table 16-12. Total Exposure Time of Performing Task and Product Type Used by Task for Household Cleaning Products

Tasks	Mean (hrs/year)	Median (hrs/year)	Product Type Used	Percent of Preference
Clean Bathroom Sinks and Tubs	44	26	Liquid	29%
			Powder	44%
			Aerosol	16%
			Spray pump	10%
			Other	1%
Clean Kitchen Sinks	41	18	Liquid	31%
			Powder	61%
			Aerosol	2%
			Spray pump	4%
			Other	2%
Clean Inside of Cabinets (such as kitchen)	12	5	Liquid	68%
			Powder	12%
			Aerosol	2%
			Spray pump	16%
			Other	2%
Clean Outside of Cabinets	21	6	Liquid	61%
			Powder	8%
			Aerosol	16%
			Spray pump	13%
			Other	2%
Wipe Off Kitchen Counters	92	55	Liquid	67%
			Powder	13%
			Aerosol	2%
			Spray pump	15%
			Other	3%
Thoroughly Clean Counters	24	13	Liquid	56%
			Powder	21%
			Aerosol	5%
			Spray pump	17%
			Other	1%
Clean Bathroom Floors	20	9	Liquid	70%
			Powder	21%
			Aerosol	2%
			Spray pump	4%
			Other	3%
Clean Kitchen Floors	31	14	Liquid	70%
			Powder	27%
			Aerosol	2%
			Spray pump	1%
			Other	--
Clean Bathroom or Other Tilted or Ceramic Walls	16	9	Liquid	37%
			Powder	18%
			Aerosol	17%
			Spray pump	25%
			Other	3%

Table 16-12. Total Exposure Time of Performing Task and Product Type Used by Task for Household Cleaning Products (continued)

Tasks	Mean (hrs/year)	Median (hrs/year)	Product Type Used	Percent of Preference
Clean Outside of Windows	13	6	Liquid	27%
			Powder	2%
			Aerosol	6%
			Spray pump	65%
			Other	--
Clean Inside of Windows	18	6	Liquid	24%
			Powder	1%
			Aerosol	8%
			Spray pump	66%
			Other	2%
Clean Glass Surfaces Such as Mirrors & Tables	34	13	Liquid	13%
			Powder	1%
			Aerosol	8%
			Spray pump	76%
			Other	2%
Clean Outside of Refrigerator and Other Appliances	27	13	Liquid	48%
			Powder	3%
			Aerosol	7%
			Spray pump	38%
			Other	4%
Clean Spots or Dirt on Walls or Doors Finishes	19	8	Liquid	46%
			Powder	15%
			Aerosol	4%
			Spray pump	30%
			Other	4%

Source: Westat, 1987b.

Table 16-13. Percentile Rankings for Total Exposure Time in Performing Household Tasks

Tasks	Percentile Rankings for Total Exposure Exposure Time Performing Task (hrs/yr)							
	100th	95th	90th	75th	50th	25th	10th	0th
Clean Bathroom Sinks and Tubs	365	121.67	91.25	52	26	13	5.2	0.4
Clean Kitchen Sinks	547.5	121.67	97.6	60.83	18.25	8.67	3.47	0.33
Clean Inside of Kitchen Cabinets	208	48	32.48	12	4.75	2	1	0.17
Clean Outside of Cabinets	780	78.66	36	17.33	6	2	0.967	0.07
Wipe Off Kitchen Counters	912.5	456.25	231.16	91.25	54.75	24.33	12.17	1.2
Thoroughly Clean Counters	547.5	94.43	52	26	13	6	1.75	0.17
Clean Bathroom Floors	365	71.49	36.83	26	8.67	4.33	2	0.1
Clean Kitchen Floors	730	96.98	52	26	14	8.67	4.33	0.5
Clean Bathroom or Other Tilted or Ceramic Walls	208	52	36	26	8.67	3	1	0.17
Clean Outside of Windows	468	32.6	24	11.5	6	2	1.5	0.07
Clean Inside of Windows	273	72	36	19.5	6	3	1.15	0.07
Clean Glass Surfaces Such as Mirrors & Tables	1460	104	60.83	26	13	6	1.73	0.17
Clean Outside Refrigerator and Other Appliances	365	95.29	91.25	30.42	13	4.33	1.81	0.1
Clean Spots or Dirt on Walls or Doors	312	78	52	24	8	2	0.568	0.07

Source: Westat, 1987b.

Table 16-14. Mean Percentile Rankings for Frequency of Performing Household Tasks

Tasks	Mean	Percentile Rankings							
		0th	10th	25th	50th	75th	90th	95th	100th
Clean bathroom sinks and tubs	3 x/week	0.2 x/week	1 x/week	1 x/week	2 x/week	3.5 x/week	7 x/week	7 x/week	42 x/week
Clean kitchen sinks	7 x/week	0 x/week	1 x/week	2 x/week	7 x/week	7 x/week	15 x/week	21 x/week	28 x/week
Clean inside of cabinets such as those in the kitchen	9 x/year	1 x/year	1 x/year	1 x/year	2 x/year	12 x/year	12 x/year	52 x/year	156 x/year
Clean outside of cabinets	3 x/month	0.1 x/month	0.1 x/month	0.3 x/month	1 x/month	4 x/month	4 x/month	22 x/month	30 x/month
Wipe off counters such as those in the kitchen	2 x/day	0 x/day	0.4 x/day	1 x/day	1 x/day	3 x/day	4 x/day	6 x/day	16 x/day
Thoroughly clean counters	8 x/month	0.1 x/month	0.8 x/month	1 x/month	4 x/month	4 x/month	30 x/month	30 x/month	183 x/month
Clean bathroom floors	6 x/month	0.2 x/month	1 x/month	2 x/month	4 x/month	4 x/month	13 x/month	30 x/month	30 x/month
Clean kitchen floors	6 x/month	0.1 x/month	1 x/month	2 x/month	4 x/month	4 x/month	13 x/month	30 x/month	30 x/month
Clean bathroom or other tiled or ceramic walls	4 x/month	0.1 x/month	0.2 x/month	1 x/month	2 x/month	4 x/month	9 x/month	13 x/month	30 x/month
Clean outside of windows	5 x/year	1 x/year	1 x/year	1 x/year	2 x/year	4 x/year	12 x/year	12 x/year	156 x/year
Clean inside of windows	10 x/year	1 x/year	1 x/year	2 x/year	4 x/year	12 x/year	24 x/year	52 x/year	156 x/year
Clean other glass surfaces such as mirrors and tables	7 x/month	0.1 x/month	1 x/month	2 x/month	4 x/month	4 x/month	17 x/month	30 x/month	61 x/month
Clean outside of refrigerator and other appliances	10 x/month	0.2 x/month	1 x/month	2 x/month	4 x/month	13 x/month	30 x/month	30 x/month	61 x/month
Clean spots or dirt on walls or doors	6 x/month	0.1 x/month	0.2 x/month	0.3 x/month	1 x/month	4 x/month	13 x/month	30 x/month	152 x/month

Source: Westat, 1987b.

16-15. Mean and Percentile Rankings for Exposure Time Per Event of Performing Household Tasks

Tasks	Mean (minutes/event)	Percentile Rankings (minutes/event)							
		0th	10th	25th	50th	75th	90th	95th	100th
Clean bathroom sinks and tubs	20	1	5	10	15	30	45	60	90
Clean kitchen sinks	10	1	2	3	5	10	15	20	480
Clean inside of cabinets such as those in the kitchen	137	5	24	44	120	180	240	360	2,880
Clean outside of cabinets	52	1	5	15	30	60	120	180	330
Wipe off counters such as those in the kitchen	9	1	2	3	5	10	15	30	120
Thoroughly clean counters	25	1	5	10	15	30	60	90	180
Clean bathroom floors	16	1	5	10	15	20	30	38	60
Clean kitchen floors	30	2	10	15	20	30	60	60	180
Clean bathroom or other tiled or ceramic walls	34	1	5	15	30	45	60	120	240
Clean outside of windows	180	4	30	60	120	240	420	480	1,200
Clean inside of windows	127	4	20	45	90	158	300	381	1,200
Clean other glass surfaces such as mirrors and tables	24	1	5	10	15	30	60	60	180
Clean outside of refrigerator and other appliances	19	1	4	5	10	20	30	45	240
Clean spots or dirt on walls or doors	50	1	5	10	20	60	120	216	960

Source: Westat, 1987b.

Table 16-16. Total Exposure Time for Ten Product Groups Most Frequently Used for Household Cleaning[a]

Products	Mean (hrs/yr)	Percentile Rankings of Total Exposure Time (hrs/yr)							
		0th	10th	25th	50th	75th	90th	95th	100th
Dish Detergents	107	0.2	6	24	56	134	274	486	941
Glass Cleaners	67	0.4	3	12	29	62	139	260	1,508
Floor Cleaners	52	0.7	4	7	22	52	102	414	449
Furniture Polish	32	0.1	0.3	1	12	36	101	215	243
Bathroom Tile Cleaners	47	0.5	2	8	17	48	115	287	369
Liquid Cleansers	68	0.2	2	9	22	52	122	215	2,381
Scouring Powders	78	0.3	9	17	35	92	165	281	747
Laundry Detergents	66	0.6	8	14	48	103	174	202	202
Rug Cleaners/Shampoos	12	0.3	0.3	0.3	9	26	26	26	26
All Purpose Cleaners	64	0.3	4	9	26	77	174	262	677

[a] The data in Table 16-15 above reflect for only the 14 tasks included in the survey. Therefore, many of the durations reported in the table underestimate the hours of the use of the product group. For example, use of dish detergents to wash dishes is not included.

Source: Westat, 1987b.

Table 16-17. Total Exposure Time of Painting Activity of Interior Painters (hours)

Types of Paint	Mean (hrs)	Std. dev.	Percentile Rankings for Duration of Painting Activity (hrs)							
			Min.	10	25	50	75	90	95	Max.
Latex	12.2	11.28	1	3	4	9	15	24	40	248
Oil-based	10.68	15.56	1	1.6	3	6	10	21.6	65.6	72
Wood Stains and Varnishes	8.57	10.85	1	1	2	4	9.3	24	40	42

Source: Westat, 1987c.

Table 16-18. Exposure Time of Interior Painting Activity/Occasion (hours) and Frequency of Occasions Spent Painting Per Year

Types of Paint	Duration of Painting/Occasion (hrs)		Frequency of Occasions Spent Painting/Year		Percentile Rankings for Frequency of Occasions Spent Painting							
	Mean	Median	Mean	Std. dev.	Min	10	25	50	75	90	95	Max.
Latex	2.97	3	4.16	5.54	1	1	2	3	4	9	10	62
Oil-based	2.14	3	5.06	11.98	1	1	1	2	4	8	26	72
Wood Stains and Varnishes	2.15	2	4.02	4.89	1	1	1	2	4	9	20	20

Source: Westat, 1987c.

Table 16-19. Amount of Paint Used by Interior Painters

Types of Paint	Median (gallons)	Mean (gallons)	Std. dev.	Percentile Rankings for Amount of Paint Used (gallons)							
				Min	10	25	50	75	90	95	Max.
Latex	3.0	3.89	4.56	0.13	1	2	3	5	8	10	50
Oil-based	2.0	2.55	3.03	0.13	0.25	0.5	2	3	7	12	12
Wood Stains and Varnishes	0.75	0.88	0.81	0.13	0.14	0.25	0.75	1	2	2	4.25

Source: Westat, 1987c.

Table 16-20. Number of Respondents Using Cologne, Perfume, Aftershave or Other Fragrances at Specified Daily Frequencies

Population Group	Total N	Number of Times Used in a Day				
		1-2	3-5	6-9	10+	DK
Overall	2223	2100	113	4	2	4
Gender						
Male	912	868	44	*	*	*
Female	1311	1232	69	4	2	4
Age (Years)						
*	33	31	1	1	*	*
5-11	26	24	2	*	*	*
12-17	144	133	9	*	1	1
18-64	1735	1635	93	3	1	3
> 64	285	277	8	*	*	*
Race						
White	1781	1684	91	4	*	2
Black	242	233	7	*	1	1
Asian	30	30	*	*	*	*
Some Others	38	35	3	*	*	*
Hispanic	111	98	11	*	1	1
Refused	21	20	1	*	*	*
Hispanic						
No	2012	1909	95	4	1	3
Yes	182	165	15	*	1	1
DK	11	9	2	*	*	*
Refused	18	17	1	*	*	*
Employment						
*	157	145	10	*	1	1
Full Time	1195	1125	67	2	*	1
Part Time	240	228	11	*	1	*
Not Employed	618	591	23	2	*	2
Refused	13	11	2	*	*	*
Education						
*	208	194	12	*	1	1
< High School	190	177	13	*	*	*
High School Graduate	739	704	32	2	*	1
< College	504	480	21	*	1	2
College Graduate	331	308	21	2	*	*
Post Graduate	251	237	14	*	*	*
Census Region						
Northeast	459	434	21	3	*	1
Midwest	530	502	25	1	*	2
South	813	766	46	*	1	*
West	421	398	21	*	1	1
Day of Week						
Weekday	1480	1402	71	3	*	4
Weekend	743	698	42	1	2	*
Season						
Winter	604	574	26	1	1	2
Spring	588	549	36	1	1	1
Summer	568	535	31	2	*	*
Fall	463	442	20	*	*	1
Asthma						
No	2075	1959	106	4	2	4
Yes	143	136	7	*	*	*
DK	5	5	*	*	*	*
Angina						
No	2161	2043	108	4	2	4
Yes	52	47	5	*	*	*
DK	10	10	*	*	*	*
Bronchitis/emphysema						
No	2112	1994	108	4	2	4
Yes	103	98	5	*	*	*
DK	8	8	*	*	*	*

Note: * = Missing Data; DK = Don't Know; Refused = Respondents Refused to Answer; N = Number of Respondents.
Source: Tsang and Klepeis, 1996.

Table 16-21. Number of Respondents Using Any Aerosol Spray Product for Personal Care Item Such as Deodorant or Hair Spray at Specified Daily Frequencies

Population Group	Total N	Number of Times Used in a Day									
		1	2	3	4	5	6	7	10	10+	DK
Overall	1491	1019	352	57	22	17	2	1	3	10	8
Gender											
Male	528	375	125	14	4	3	2	0	0	2	3
Female	962	644	226	43	18	14	0	1	3	8	5
Refused	1	0	1	0	0	0	0	0	0	0	0
Age (years)											
0	27	14	8	1	2	1	0	0	0	0	1
1-4	40	30	9	0	0	1	0	0	0	0	0
5-11	75	57	14	1	1	1	1	0	0	0	0
12-17	103	53	31	12	4	1	0	0	1	1	0
18-64	1071	724	263	39	15	13	1	1	2	8	5
> 64	175	141	27	4	0	0	0	0	0	1	2
Race											
White	1232	855	285	47	17	8	2	0	3	10	5
Black	131	84	32	5	3	5	0	0	0	0	2
Asian	24	18	5	0	0	0	0	0	0	0	1
Some Others	22	12	8	1	0	0	0	1	0	0	0
Hispanic	73	45	19	4	1	4	0	0	0	0	0
Refused	9	5	3	0	1	0	0	0	0	0	0
Hispanic											
No	1359	937	316	49	20	13	2	1	3	10	8
Yes	119	74	32	7	2	4	0	0	0	0	0
DK	6	3	2	1	0	0	0	0	0	0	0
Refused	7	5	2	0	0	0	0	0	0	0	0
Employment											
0	210	137	52	11	4	3	1	0	1	1	0
Full Time	714	492	171	24	11	5	1	1	1	4	4
Part Time	152	99	35	7	0	5	0	0	0	4	2
Not Employed	404	284	92	14	6	4	0	0	1	1	2
Refused	11	7	2	1	1	0	0	0	0	0	0
Education											
0	240	151	61	14	6	4	1	0	1	2	0
< High School	128	83	37	2	1	1	0	0	0	2	2
High School Graduate	528	365	121	23	7	5	1	0	2	1	3
< College	311	212	77	7	3	6	0	1	0	4	1
College Graduate	161	115	34	8	1	1	0	0	0	1	1
Post Graduate	123	93	22	3	4	0	0	0	0	0	1
Census Region											
Northeast	292	201	70	8	8	1	0	0	0	1	3
Midwest	340	227	85	14	4	3	1	0	1	3	2
South	585	388	148	23	8	8	0	1	2	4	3
West	274	203	49	12	2	5	1	0	0	2	0
Day of Week											
Weekday	994	695	220	35	17	12	1	0	1	7	6
Weekend	497	324	132	22	5	5	1	1	2	3	2
Season											
Winter	381	264	86	15	5	4	0	0	0	4	3
Spring	408	269	104	12	9	9	0	1	1	1	2
Summer	400	282	86	21	5	2	1	0	0	1	2
Fall	302	204	76	9	3	2	1	0	2	4	1
Asthma											
No	1387	950	327	53	20	15	2	1	1	10	8
Yes	100	66	24	4	2	2	0	0	2	0	0
DK	4	3	1	0	0	0	0	0	0	0	0
Anginа											
No	1451	990	344	55	22	17	2	1	3	9	8
Yes	35	26	7	1	0	0	0	0	0	1	0
DK	5	3	1	1	0	0	0	0	0	0	0
Bronchitis/emphysema											
No	1411	972	322	55	22	17	2	1	3	9	8
Yes	74	44	29	1	0	0	0	0	0	0	0
DK	6	3	1	1	0	0	0	0	0	1	0

Note: * = Missing Data; "DK" = Don't Know; Refused = Respondents Refused To Answer; N= Sample Size
Source: Tsang And Klepeis, 1996.

Table 16-22. Number of Minutes Spent in Activities Working with or Being Near Freshly Applied Paints (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		276	0	0	1	2	15	60	121	121	121	121	121	121
Gender	Male	145	0	0	1	2	10	48	121	121	121	121	121	121
Gender	Female	131	0	0	1	3	15	120	121	121	121	121	121	121
Age (years)	1-4	7	3	3	3	3	5	15	121	121	121	121	121	121
Age (years)	5-11	12	5	5	5	15	20	45	120	120	121	121	121	121
Age (years)	12-17	20	0	0	0.5	3	8	45	75	121	121	121	121	121
Age (years)	18-64	212	0	0	1	2	11	60	121	121	121	121	121	121
Age (years)	> 64	20	0	0	0	2.5	17.5	90	121	121	121	121	121	121
Race	White	241	0	0	2	4	15	60	121	121	121	121	121	121
Race	Black	16	0	0	0	1	2.5	10	90	121	121	121	121	121
Race	Asian	3	20	20	20	20	20	30	60	60	60	60	60	60
Race	Some Others	2	10	10	10	10	10	20	30	30	30	30	30	30
Race	Hispanic	12	0	0	0	1	3.5	27.5	120.5	121	121	121	121	121
Hispanic	No	257	0	0	1	3	15	60	121	121	121	121	121	121
Hispanic	Yes	17	0	0	0	1	6	45	121	121	121	121	121	121
Employment	Full Time	145	0	1	2	3	10	60	121	121	121	121	121	121
Employment	Part Time	31	0	0	0	1	30	60	121	121	121	121	121	121
Employment	Not Employed	61	0	0	0	2	30	120	121	121	121	121	121	121
Education	< High School	13	0	0	0	1	5	45	121	121	121	121	121	121
Education	High School Graduate	74	0	1	1	5	20	120	121	121	121	121	121	121
Education	< College	72	0	0	2	2	12.5	105	121	121	121	121	121	121
Education	College Graduate	42	0	0	0	1	6	60	121	121	121	121	121	121
Education	Post Graduate	30	2	2	3	4.5	15	30	121	121	121	121	121	121
Census Region	Northeast	60	0	0	2	5	25	120	121	121	121	121	121	121
Census Region	Midwest	70	0	0	0	2	10	55	121	121	121	121	121	121
Census Region	South	90	0	0	1	2	10	47.5	121	121	121	121	121	121
Census Region	West	56	1	1	1	3	12.5	75	121	121	121	121	121	121
Day of Week	Weekday	222	0	0	1	2	15	60	121	121	121	121	121	121
Day of Week	Weekend	54	0	0	0	5	15	45	121	121	121	121	121	121
Season	Winter	67	0	1	2	3	15	60	121	121	121	121	121	121
Season	Spring	74	0	0	1	2	10	30	121	121	121	121	121	121
Season	Summer	76	0	0	0	2	13.5	90	121	121	121	121	121	121
Season	Fall	59	0	1	2	5	20	120	121	121	121	121	121	121
Asthma	No	257	0	0	1	2	15	60	121	121	121	121	121	121
Asthma	Yes	19	1	1	1	2	10	45	121	121	121	121	121	121
Angina	No	270	0	0	1	2	12	60	121	121	121	121	121	121
Angina	Yes	6	45	45	45	45	60	121	121	121	121	121	121	121
Bronchitis/emphysema	No	265	0	0	1	3	15	60	121	121	121	121	121	121
Bronchitis/emphysema	Yes	11	0	0	0	2	5	45	121	121	121	121	121	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent; n = doer sample size; percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 16-23. Number of Minutes Spent in Activities Working with or Near Household Cleaning Agents Such as Scouring Powders or Ammonia (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		905	0	0	0	1	4	10	20	60	121	121	121	121
Gender	Male	278	0	0	1	2	3	10	20	60	121	121	121	121
Gender	Female	627	0	0	0	1	4	10	20	60	120	121	121	121
Age (years)	1-4	21	0	0	0	0	5	10	15	20	30	121	121	121
Age (years)	5-11	26	1	1	2	2	3	5	15	30	30	30	30	30
Age (years)	12-17	41	0	0	0	0	2	5	10	40	60	60	60	60
Age (years)	18-64	672	0	0	1	2	5	10	20	60	121	121	121	121
Age (years)	> 64	127	0	0	0	1	3	5	15	30	60	120	121	121
Race	White	721	0	0	1	1	4	10	20	60	121	121	121	121
Race	Black	112	0	0	0	1	2	5	12	30	90	121	121	121
Race	Asian	16	0	0	0	5	5	10	15	20	30	30	30	30
Race	Some Others	19	2	2	2	3	5	10	20	30	60	60	60	60
Race	Hispanic	30	0	0	1	2.5	10	15	30	60	90	121	121	121
Hispanic	No	838	0	0	0	1	3	10	20	60	121	121	121	121
Hispanic	Yes	58	0	0	1	2	5	12.5	30	60	120	121	121	121
Employment	Full Time	422	0	0	1	1	4	10	30	60	121	121	121	121
Employment	Part Time	98	0	0	1	2	5	10	20	60	121	121	121	121
Employment	Not Employed	296	0	0	0	2	3	10	15	60	120	121	121	121
Education	< High School	76	0	0	1	2	2	12.5	30	120	121	121	121	121
Education	High School Graduate	304	0	0	0	2	5	10	20	60	120	121	121	121
Education	< College	204	0	0	0	1	4.5	10	30	120	121	121	121	121
Education	College Graduate	114	0	1	1	2	5	10	20	60	90	121	121	121
Education	Post Graduate	109	0	0	1	1	3	5	15	30	60	121	121	121
Census Region	Northeast	207	0	0	0	1	3	5	15	45	120	121	121	121
Census Region	Midwest	180	0	0	0	1	5	10	30	75	121	121	121	121
Census Region	South	309	0	0	1	2	4	10	20	60	120	121	121	121
Census Region	West	209	0	0	1	1	4	10	20	60	121	121	121	121
Day of Week	Weekday	580	0	0	0	1	3	10	20	60	121	121	121	121
Day of Week	Weekend	325	0	0	1	2	5	10	20	60	90	121	121	121
Season	Winter	240	0	0	0	2	3	10	20	75	121	121	121	121
Season	Spring	220	0	0	0	1	3	10	17.5	52.5	104	121	121	121
Season	Summer	244	0	0	0	2	4	10	20	30	60	121	121	121
Season	Fall	201	0	0	1	2	5	10	30	90	121	121	121	121
Asthma	No	826	0	0	0	1	3	10	20	60	120	121	121	121
Asthma	Yes	79	0	0	1	2	5	10	30	120	121	121	121	121
Angina	No	868	0	0	0	1	4	10	20	60	121	121	121	121
Angina	Yes	33	0	0	2	2	5	5	30	120	121	121	121	121
Bronchitis/emphysema	No	843	0	0	0	1	4	10	20	60	120	121	121	121
Bronchitis/emphysema	Yes	60	0	0	1	2	3.5	10	32.5	120.5	121	121	121	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent; n = doer sample size; percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 16-24. Number of Minutes Spent in Activities (at home or elsewhere) Working with or Near Floorwax, Furniture Wax or Shoe Polish (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		325	0	0	2	2	5	10	30	60	121	121	121	121
Gender	Male	96	0	0	1	2	5	11	30	121	121	121	121	121
Gender	Female	229	0	0	2	3	5	10	30	60	121	121	121	121
Age (years)	1-4	13	0	0	0	5	10	15	20	60	121	121	121	121
Age (years)	5-11	21	0	0	2	2	3	5	10	35	60	120	120	120
Age (years)	12-17	15	0	0	0	1	2	10	25	45	121	121	121	121
Age (years)	18-64	238	0	0	2	3	5	15	30	120	121	121	121	121
Age (years)	> 64	34	0	0	0	2	5	10	20	35	121	121	121	121
Race	White	267	0	0	2	2	5	10	30	60	121	121	121	121
Race	Black	32	2	2	2	5	5	15	30	60	121	121	121	121
Race	Asian	1	4	4	4	4	4	4	4	4	4	4	4	4
Race	Some Others	6	0	0	0	0	2	22.5	60	121	121	121	121	121
Race	Hispanic	18	1	1	1	4	5	12.5	30	120	121	121	121	121
Hispanic	No	291	0	0	2	2	5	10	30	60	121	121	121	121
Hispanic	Yes	31	1	1	4	5	5	10	30	90	120	121	121	121
Employment	Full Time	150	0	0.5	2	3	5	15	30	121	121	121	121	121
Employment	Part Time	32	3	3	5	5	10	15	30	60	121	121	121	121
Employment	Not Employed	92	0	0	1	2	5	10	20	60	120	121	121	121
Education	< High School	26	2	2	3	5	5	10	15	60	60	60	60	60
Education	High School Graduate	115	0	0	2	3	5	12	30	120	121	121	121	121
Education	< College	70	0	1	2	3	10	15	30	75	121	121	121	121
Education	College Graduate	29	2	2	3	5	7	30	60	121	121	121	121	121
Education	Post Graduate	31	0	0	0	2	4	10	30	60	121	121	121	121
Census Region	Northeast	77	0	0	2	3	5	10	30	60	121	121	121	121
Census Region	Midwest	70	0	0	1	2	5	10	25	90	121	121	121	121
Census Region	South	125	0	0	2	2	5	10	30	120	121	121	121	121
Census Region	West	53	0	0	1	3	5	15	30	120	121	121	121	121
Day of Week	Weekday	210	0	0	2	2	5	10	30	120	121	121	121	121
Day of Week	Weekend	115	0	0	2	3	5	10	30	60	120	121	121	121
Season	Winter	92	0	1	2	4	7	13.5	30	121	121	121	121	121
Season	Spring	78	0	0	1	2	5	15	30	60	121	121	121	121
Season	Summer	81	0	0	2	2	5	15	30	120	121	121	121	121
Season	Fall	74	0	0	0	2	5	10	15	60	121	121	121	121
Asthma	No	296	0	0	2	2	5	10	30	60	121	121	121	121
Asthma	Yes	29	0	0	0	2	5	15	30	121	121	121	121	121
Angina	No	312	0	0	2	2	5	10	30	60	121	121	121	121
Angina	Yes	12	0	0	0	2	4	10	12.5	30	121	121	121	121
Bronchitis/emphysema	No	302	0	0	2	2	5	10	30	90	121	121	121	121
Bronchitis/emphysema	Yes	22	0	0	2	2	5	10	15	20	20	121	121	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent; n = doer sample size; percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 16-25. Number of Minutes Spent in Activities Working with or Being Near Glue (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		294	0	0	0	1	5	15	60	121	121	121	121	121
Gender	Male	151	0	0	0	2	5	15	70	121	121	121	121	121
Gender	Female	143	0	0	0	1	5	15	30	121	121	121	121	121
Age (years)	1-4	6	0	0	0	0	30	30	30	50	50	50	50	50
Age (years)	5-11	36	2	2	3	5	5	12.5	25	30	60	120	120	120
Age (years)	12-17	34	0	0	1	2	5	10	30	30	60	120	120	120
Age (years)	18-64	207	0	0	0	1	5	20	90	121	121	121	121	121
Age (years)	> 64	10	0	0	0	0	0	3.5	60	120.5	121	121	121	121
Race	White	241	0	0	0	1	5	15	60	121	121	121	121	121
Race	Black	28	0	0	0	2	5	12.5	45	121	121	121	121	121
Race	Asian	4	10	10	10	10	12.5	17.5	40	60	60	60	60	60
Race	Some Others	7	1	1	1	1	3	30	90	120	120	120	120	120
Race	Hispanic	12	5	5	5	5	5	27.5	90	121	121	121	121	121
Hispanic	No	260	0	0	0	1	5	15	60	121	121	121	121	121
Hispanic	Yes	27	3	3	5	5	5	30	120	121	121	121	121	121
Employment	Full Time	150	0	0	0	1	5	20	120	121	121	121	121	121
Employment	Part Time	24	1	1	2	3	10	27.5	90	121	121	121	121	121
Employment	Not Employed	46	0	0	0	0	2	10	30	121	121	121	121	121
Education	< High School	11	0	0	0	0	1	5	10	60	121	121	121	121
Education	High School Graduate	69	0	0	0	1	5	20	90	121	121	121	121	121
Education	< College	66	0	0	0	1	5	27.5	121	121	121	121	121	121
Education	College Graduate	37	0	0	0	1	5	15	30	121	121	121	121	121
Education	Post Graduate	32	0	0	0	1	5	15	60	121	121	121	121	121
Census Region	Northeast	55	0	0	0	1	5	20	60	121	121	121	121	121
Census Region	Midwest	71	0	0	1	2	5	15	60	121	121	121	121	121
Census Region	South	98	0	0	0	1	5	15	60	121	121	121	121	121
Census Region	West	70	0	0	0	1	5	15	60	121	121	121	121	121
Day of Week	Weekday	228	0	0	0	1	5	15	60	121	121	121	121	121
Day of Week	Weekend	66	0	0	0	1	5	15	60	121	121	121	121	121
Season	Winter	85	0	0	0	2	5	15	45	121	121	121	121	121
Season	Spring	74	0	0	0	2	5	10	30	121	121	121	121	121
Season	Summer	66	0	0	0	1	10	20	121	121	121	121	121	121
Season	Fall	69	0	0	0	1	5	15	60	121	121	121	121	121
Asthma	No	266	0	0	0	1	5	15	60	121	121	121	121	121
Asthma	Yes	28	0	0	0	1	5	17.5	40	121	121	121	121	121
Angina	No	290	0	0	0	1	5	15	60	121	121	121	121	121
Angina	Yes	3	1	1	1	1	1	121	121	121	121	121	121	121
Bronchitis/emphysema	No	283	0	0	0	1	5	15	60	121	121	121	121	121
Bronchitis/emphysema	Yes	11	1	1	1	1	2	30	121	121	121	121	121	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent; n = doer sample size; percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 16-26. Number of Minutes Spent in Activities Working with or Near Solvents, Fumes or Strong Smelling Chemicals (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		495	0	0	0	2	5	20	121	121	121	121	121	121
Gender	Male	258	0	0	1	2	5	30	121	121	121	121	121	121
Gender	Female	237	0	0	0	1	5	15	90	121	121	121	121	121
Age (years)	1-4	7	0	0	0	0	1	5	60	121	121	121	121	121
Age (years)	5-11	16	0	0	0	2	5	5	17.5	45	70	70	70	70
Age (years)	12-17	38	0	0	0	0	5	10	60	121	121	121	121	121
Age (years)	18-64	407	0	0	1	2	5	30	121	121	121	121	121	121
Age (years)	> 64	21	0	0	0	0	2	5	15	121	121	121	121	121
Race	White	413	0	0	0	2	5	20	121	121	121	121	121	121
Race	Black	40	0	0	1	3.5	9	60	121	121	121	121	121	121
Race	Asian	8	5	5	5	5	10	37.5	120.5	121	121	121	121	121
Race	Some Others	8	2	2	2	2	2.5	5	60	121	121	121	121	121
Race	Hispanic	23	0	0	0	0	5	30	121	121	121	121	121	121
Hispanic	No	449	0	0	0	2	5	20	121	121	121	121	121	121
Hispanic	Yes	41	0	0	0	0	5	20	121	121	121	121	121	121
Employment	Full Time	299	0	0	1	2	10	30	121	121	121	121	121	121
Employment	Part Time	44	0	0	2	2	5	22.5	121	121	121	121	121	121
Employment	Not Employed	91	0	0	0	0	2	10	60	121	121	121	121	121
Education	< High School	35	0	0	1	2	5	15	121	121	121	121	121	121
Education	High School Graduate	138	0	0	1	2	5	30	121	121	121	121	121	121
Education	< College	128	0	0	1	2	5	30	121	121	121	121	121	121
Education	College Graduate	69	0	0	0	1	5	30	121	121	121	121	121	121
Education	Post Graduate	60	0	0	0	1.5	5	27.5	121	121	121	121	121	121
Census Region	Northeast	101	0	0	2	2	5	20	121	121	121	121	121	121
Census Region	Midwest	122	0	0	0	2	5	30	121	121	121	121	121	121
Census Region	South	165	0	0	0	2	5	20	121	121	121	121	121	121
Census Region	West	107	0	0	0	2	5	20	121	121	121	121	121	121
Day of Week	Weekday	362	0	0	0	2	5	30	121	121	121	121	121	121
Day of Week	Weekend	133	0	0	0	2	5	15	90	121	121	121	121	121
Season	Winter	128	0	0	0	2	5	20	95	121	121	121	121	121
Season	Spring	127	0	0	0	1	5	20	121	121	121	121	121	121
Season	Summer	149	0	0	1	2	5	21	121	121	121	121	121	121
Season	Fall	91	0	0	1	2	5	30	121	121	121	121	121	121
Asthma	No	445	0	0	0	2	5	20	121	121	121	121	121	121
Asthma	Yes	50	0	0	1	1	5	15	121	121	121	121	121	121
Angina	No	489	0	0	0	2	5	20	121	121	121	121	121	121
Angina	Yes	6	0	0	0	0	2	15	121	121	121	121	121	121
Bronchitis/emphysema	No	469	0	0	0	2	5	20	121	121	121	121	121	121
Bronchitis/emphysema	Yes	26	2	2	2	2	5	17.5	60	121	121	121	121	121

Note: A Value of "121" for Number of Minutes Signifies That More than 120 Minutes Were Spent; N = Doer Sample Size; Percentiles Are the Percentage of Doers below or Equal to a Given Number of Minutes.
Source: Tsang and Klepeis, 1996.

Table 16-27. Number of Minutes Spent in Activities Working with or Near Stain or Spot Removers (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		109	0	0	0	0	2	5	15	60	121	121	121	121
Gender	Male	42	0	0	0	0	3	5	60	121	121	121	121	121
Gender	Female	67	0	0	0	0	2	5	10	20	30	60	120	120
Age (years)	1-4	3	0	0	0	0	0	0	3	3	3	3	3	3
Age (years)	5-11	3	3	3	3	3	3	5	5	5	5	5	5	5
Age (years)	12-17	7	0	0	0	0	5	15	35	60	60	60	60	60
Age (years)	18-64	87	0	0	0	0	2	5	15	60	121	121	121	121
Age (years)	> 64	9	0	0	0	0	2	3	15	121	121	121	121	121
Race	White	88	0	0	0	0	2	5	15	60	121	121	121	121
Race	Black	9	0	0	0	0	5	5	6	121	121	121	121	121
Race	Asian	2	5	5	5	5	5	7.5	10	10	10	10	10	10
Race	Some Others	3	0	0	0	0	0	2	3	3	3	3	3	3
Race	Hispanic	7	1	1	1	1	2	5	30	35	35	35	35	35
Hispanic	No	97	0	0	0	0	2	5	15	60	121	121	121	121
Hispanic	Yes	12	0	0	0	1	2	3	22.5	35	121	121	121	121
Employment	Full Time	62	0	0	0	0	2	5	15	120	121	121	121	121
Employment	Part Time	8	0	0	0	0	3	5	12.5	20	20	20	20	20
Employment	Not Employed	25	0	0	0	0	2	4	15	60	121	121	121	121
Education	< High School	6	3	3	3	3	3	20	30	60	60	60	60	60
Education	High School Graduate	34	0	0	0	0	1	4	10	120	121	121	121	121
Education	< College	22	0	0	0	1	3	5	15	20	121	121	121	121
Education	College Graduate	16	0	0	0	1	3	5	12.5	60	121	121	121	121
Education	Post Graduate	16	0	0	0	0	1	5	15	20	121	121	121	121
Census Region	Northeast	21	0	0	1	1	3	5	10	121	121	121	121	121
Census Region	Midwest	25	0	0	0	0	2	5	15	60	60	121	121	121
Census Region	South	38	0	0	0	0	2	5	15	60	120	121	121	121
Census Region	West	25	0	0	0	0	2	5	25	60	60	121	121	121
Day of Week	Weekday	75	0	0	0	0	2	5	15	120	121	121	121	121
Day of Week	Weekend	34	0	0	0	0	2	5	15	60	60	120	120	120
Season	Winter	26	0	0	0	0	2	5	15	60	120	120	120	120
Season	Spring	30	0	0	0	0.5	2	5	15	32.5	121	121	121	121
Season	Summer	37	0	0	0	0	2	5	20	121	121	121	121	121
Season	Fall	16	0	0	0	1	5	5	15	60	121	121	121	121
Asthma	No	100	0	0	0	0	2	5	15	60	120.5	121	121	121
Asthma	Yes	9	0	0	0	0	2	5	6	121	121	121	121	121
Angina	No	109	0	0	0	0	2	5	15	60	121	121	121	121
Bronchitis/emphysema	No	105	0	0	0	0	2	5	15	60	121	121	121	121
Bronchitis/emphysema	Yes	4	0	0	0	0	0.5	1.5	8.5	15	15	15	15	15

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent; n = doer sample size; percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 16-28. Number of Minutes Spent in Activities Working with or Near Gasoline or Diesel-powered Equipment, Besides Automobiles (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		390	0	0	1	3	10	60	121	121	121	121	121	121
Gender	Male	271	0	0	1	3	15	60	121	121	121	121	121	121
Gender	Female	119	1	1	1	2	8	30	120	121	121	121	121	121
Age (years)	1-4	14	0	0	0	1	5	22.5	120	121	121	121	121	121
Age (years)	5-11	12	1	1	1	3	7.5	25	50	60	60	60	60	60
Age (years)	12-17	25	2	2	5	5	13	35	120	121	121	121	121	121
Age (years)	18-64	312	0	0	1	3	15	60	121	121	121	121	121	121
Age (years)	> 64	26	2	2	2	3	10	25	90	121	121	121	121	121
Race	White	355	0	1	1	3	15	60	121	121	121	121	121	121
Race	Black	15	1	1	1	1	2	15	121	121	121	121	121	121
Race	Asian	8	0	0	0	0	5	11.5	17.5	90	90	90	90	90
Race	Some Others	2	1	1	1	1	1	23	45	45	45	45	45	45
Race	Hispanic	8	3	3	3	3	10	105.5	121	121	121	121	121	121
Hispanic	No	367	0	0	1	3	10	60	121	121	121	121	121	121
Hispanic	Yes	19	1	1	1	2	5	30	121	121	121	121	121	121
Employment	Full Time	237	0	0	1	2	20	90	121	121	121	121	121	121
Employment	Part Time	33	1	1	2	2	10	45	121	121	121	121	121	121
Employment	Not Employed	66	0	0	2	4	10	30	121	121	121	121	121	121
Education	< High School	33	0	0	1	2	6	60	121	121	121	121	121	121
Education	High School Graduate	135	1	1	2	5	20	90	121	121	121	121	121	121
Education	< College	89	0	1	2	3	15	60	121	121	121	121	121	121
Education	College Graduate	48	0	0	0	1	10	60	120	121	121	121	121	121
Education	Post Graduate	30	0	0	1	1.5	10	30	120	121	121	121	121	121
Census Region	Northeast	57	0	1	1	1	10	60	121	121	121	121	121	121
Census Region	Midwest	117	0	0	1	5	15	90	121	121	121	121	121	121
Census Region	South	151	0	1	2	3	10	60	121	121	121	121	121	121
Census Region	West	65	0	0	1	3	10	45	121	121	121	121	121	121
Day of Week	Weekday	278	0	0	1	2	10	60	121	121	121	121	121	121
Day of Week	Weekend	112	1	1	2	5	15	45	120	121	121	121	121	121
Season	Winter	97	0	0	1	2	10	60	121	121	121	121	121	121
Season	Spring	110	0	1	1	3	10	60	121	121	121	121	121	121
Season	Summer	119	0	1	2	5	15	60	121	121	121	121	121	121
Season	Fall	64	0	1	1	2	5	30	121	121	121	121	121	121
Asthma	No	361	0	0	1	3	10	60	121	121	121	121	121	121
Asthma	Yes	28	2	2	3	3	30	120.5	121	121	121	121	121	121
Angina	No	381	0	0	1	3	10	60	121	121	121	121	121	121
Angina	Yes	7	15	15	15	15	20	45	121	121	121	121	121	121
Bronchitis/emphysema	No	368	0	0	1	3	15	60	121	121	121	121	121	121
Bronchitis/emphysema	Yes	21	2	2	3	3	5	45	121	121	121	121	121	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent; n = doer sample size; percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 16-29. Number of Minutes Spent Using Any Microwave Oven (minutes/day)

			Percentiles											
Category	Population Group	N	1	2	5	10	25	50	75	90	95	98	99	100
Overall		2298	0	0	1	1	3	5	10	15	30	40	60	121
Gender	Male	948	0	0	1	1	2	5	10	15	30	40	67	121
Gender	Female	1350	0	0	1	1.5	3	5	10	20	30	42.5	60	121
Age (years)	5-11	62	0	0	0	1	1	2	5	10	15	20	30	30
Age (years)	12-17	141	0	0	0	1	2	3	5	10	15	30	30	60
Age (years)	18-64	1686	0	0	1	2	3	5	10	15	25	45	60	121
Age (years)	> 64	375	0	0	1	2	3	5	10	20	30	60	60	70
Race	White	1953	0	0	1	2	3	5	10	16	30	40	60	121
Race	Black	182	0	0	1	1	2	3	6	15	20	30	30	121
Race	Asian	38	0	0	1	1	3	5	10	20	30	60	60	60
Race	Some Others	29	0	0	2	2	3	5	10	30	30	50	50	50
Race	Hispanic	74	0	0	0	1	2	3	10	15	45	120	121	121
Hispanic	No	2128	0	0	1	1	3	5	10	15	30	35	60	121
Hispanic	Yes	139	0	0	0	1	2	5	10	20	30	120	120	121
Employment	Full Time	1114	0	0	1	1	3	5	10	15	30	34	60	121
Employment	Part Time	237	0	0	1	1	3	5	10	20	30	60	120	121
Employment	Not Employed	734	0	0	1	2	3	5	10	20	30	45	60	120
Education	< High School	190	0	0	0	1.5	3	5	10	20	33	60	121	121
Education	High School Graduate	717	0	0	1	2	3	5	10	20	30	45	60	121
Education	< College	518	0	0	1	2	3	5	10	18	30	60	120	121
Education	College Graduate	347	0	0	1	2	3	5	10	15	25	30	60	70
Education	Post Graduate	288	0	0	1	1	3	5	10	15	20	30	30	90
Census Region	Northeast	420	0	0	1	2	2	5	10	20	30	60	60	121
Census Region	Midwest	545	0	0	1	1	3	5	10	15	30	35	60	121
Census Region	South	831	0	0	1	2	3	5	10	16	30	45	60	121
Census Region	West	502	0	0	1	1	2	5	10	15	20	30	60	121
Day of Week	Weekday	1567	0	0	1	1	3	5	10	15	25	30	60	121
Day of Week	Weekend	731	0	0	1	1	2	5	10	20	30	50	120	121
Season	Winter	657	0	0	1	2	2	5	10	15	30	40	67	121
Season	Spring	577	0	0	1	2	3	5	10	20	30	45	60	120
Season	Summer	565	0	0	0	1	2	5	10	15	20	30	60	120
Season	Fall	499	0	0	1	1	2	5	10	20	30	45	120	121
Asthma	No	2109	0	0	1	1	2	5	10	15	30	40	60	121
Asthma	Yes	180	0	0	1	2	3	5	10	19	30	45	60	121
Angina	No	2212	0	0	1	1	2	5	10	15	30	40	60	121
Angina	Yes	72	0	0	1	2	3	6	10	15	30	45	60	60
Bronchitis/emphysema	No	2164	0	0	1	1	2	5	10	15	30	40	60	121
Bronchitis/emphysema	Yes	124	0	0	1	1	3	5	10	30	30	60	120	121

Note: A Value of "121" for number of minutes signifies that more than 120 minutes were spent; n = doer sample size; percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 16-30. Number of Respondents Using a Humidifier at Home

	Total N	Frequency				
		Almost Every Day	3-5 Times a Week	1-2 Times a Week	1-2 Times a Month	DK
Overall	1047	300	121	107	495	24
Gender						
Male	455	135	53	48	208	11
Female	591	165	68	59	286	13
Refused	1	*	*	*	1	*
Age (years)						
*	16	3	1	3	7	2
1-4	111	33	16	7	53	2
5-11	88	18	10	12	46	2
12-17	83	21	7	5	49	1
18-64	629	183	77	70	287	12
> 64	120	42	10	10	53	5
Race						
White	879	268	98	79	414	20
Black	93	24	10	15	42	2
Asian	18	3	2	1	11	1
Some Others	20	1	3	4	12	*
Hispanic	30	2	7	8	13	*
Refused	7	2	1	*	3	1
Hispanic						
No	978	286	109	95	466	22
Yes	60	11	11	12	25	1
DK	5	3	*	*	2	*
Refused	4	*	1	0	2	1
Employment						
*	279	70	32	25	147	5
Full Time	416	124	43	44	194	11
Part Time	88	22	14	9	43	*
Not Employed	256	82	29	29	109	7
Refused	8	2	3	*	2	1
Education						
*	303	74	36	27	160	6
< High School	86	27	15	14	29	1
High School Graduate	251	85	27	28	104	7
< College	188	53	16	17	97	5
College Graduate	119	32	17	13	56	1
Post Graduate	100	29	10	8	49	4
Census Region						
Northeast	273	84	26	28	132	3
Midwest	326	102	37	32	142	13
South	302	83	42	31	141	5
West	146	31	16	16	80	3
Day of Week						
Weekday	698	196	83	70	335	14
Weekend	349	104	38	37	160	10
Season						
Winter	320	135	46	34	98	7
Spring	257	58	23	29	144	3
Summer	269	56	27	20	155	11
Fall	201	51	25	24	98	3
Asthma						
No	948	272	110	95	448	23
Yes	92	27	9	10	45	1
DK	7	1	2	2	2	*
Angina						
No	1015	290	116	103	482	24
Yes	24	8	4	3	9	*
DK	8	2	1	1	4	*
Bronchitis/emphysema						
No	994	278	117	102	473	24
Yes	48	21	3	4	20	*
DK	5	1	1	1	2	*

Note: * = Missing Data; DK= Don't Know; Refused = Respondent Refused to Answer; N = Number of Respondents
Source: Tsang and Klepeis, 1996.

Table 16-31. Number of Respondents Indicating that Pesticides Were Applied by the Professional at Home to Eradicate Insects, Rodents, or Other Pests at Specified Frequencies

	Total N	Number of Times Over a 6-month Period Pesticides Were Applied by Professionals					
		None	1-2	3-5	6-9	10+	DK
Overall	1946	1057	562	134	150	20	23
Gender							
Male	897	498	248	64	64	11	12
Female	1048	558	314	70	86	9	11
Refused	1	1	*	*	*	*	*
Age (years							
*	33	17	8	4	4	*	*
1-4	113	60	35	11	6	1	*
5-11	150	84	37	10	18	1	*
12-17	143	90	40	5	6	*	2
18-64	1264	660	387	89	97	15	16
> 64	243	146	55	15	19	3	5
Race							
White	1532	856	429	98	117	14	18
Black	231	107	78	20	17	4	5
Aslan	24	13	10	1	*	*	*
Some Others	38	24	8	4	2	*	*
Hispanic	100	45	33	10	11	1	*
Refused	21	12	4	1	3	1	*
Hispanic							
No	1750	960	499	121	130	19	21
Yes	172	83	56	12	18	1	2
DK	8	5	3	*	*	*	*
Refused	16	9	4	1	2	*	*
Employment							
*	398	229	111	24	30	2	2
Full Time	855	463	252	59	60	11	10
Part Time	163	84	50	14	12	2	1
Not Employed	512	272	145	35	46	5	9
Refused	18	9	4	2	2	*	1
Education							
*	436	246	122	27	35	2	4
< High School	137	80	31	11	10	1	4
High School Graduate	483	265	140	26	38	9	5
< College	416	218	131	28	29	4	6
College Graduate	272	137	87	25	20	2	1
Post Graduate	202	111	51	17	18	2	3
Census Region							
Northeast	335	201	85	2	22	3	4
Midwest	318	202	84	17	13	*	2
South	875	404	298	63	86	11	13
West	418	250	95	34	29	6	4
Day of Week							
Weekday	1303	702	374	91	105	16	15
Weekend	643	355	188	43	45	4	8
Season							
Winter	466	247	129	29	46	9	6
Spring	449	240	128	30	43	3	5
Summer	584	324	172	40	34	6	8
Fall	447	246	133	35	27	2	4
Asthma							
No	1766	969	509	121	129	16	22
Yes	167	80	50	13	19	4	1
DK	13	8	3	*	2	*	*
Angina							
No	1880	1019	549	131	141	19	21
Yes	53	30	10	3	7	1	2
DK	13	8	3	*	2	*	*
Bronchitis/emphysema							
No	1833	1004	524	127	140	18	20
Yes	101	46	36	7	8	1	3
DK	12	7	2	*	2	1	*

Note: * = Missing Data; DK= Don't know; Refused = Respondent Refused to Answer; N = Number of Respondents
Source: Tsang and Klepeis, 1996.

Table 16-32. Number of Respondents Reporting Pesticides Applied by the Consumer at Home To Eradicate Insects, Rodents, or Other Pests at Specified Frequencies

	Total N	Number of Times Over a 6-month Period Pesticides Applied by Resident					
		None	1-2	3-5	6-9	10+	DK
Overall	1946	721	754	286	73	83	29
Gender							
Male	897	318	367	135	31	35	11
Female	1048	403	386	151	42	48	18
Refused	1	*	1	*	*	*	*
Age (years)							
*	33	13	12	3	1	4	*
1-4	113	46	46	15	3	3	*
5-11	150	50	70	24	1	4	1
12-17	143	45	64	21	5	8	*
18-64	1264	473	477	192	48	55	19
> 64	243	94	85	31	15	9	9
Race							
White	1532	574	600	227	55	50	26
Black	231	81	77	36	10	25	2
Asian	24	4	15	3	1	1	*
Some Others	38	11	12	11	1	2	1
Hispanic	100	41	42	9	5	3	*
Refused	21	10	8	*	1	2	*
Hispanic							
No	1750	647	677	258	63	76	29
Yes	172	66	67	26	10	3	*
DK	8	2	3	1	*	2	*
Refused	16	6	7	1	*	2	*
Employment							
*	398	139	176	59	9	14	1
Full Time	855	298	342	131	37	35	12
Part Time	163	67	66	20	4	5	1
Not Employed	512	209	163	76	23	27	14
Refused	18	8	7	*	*	2	1
Education							
*	436	157	189	62	10	17	1
< High School	137	44	50	19	4	14	6
High School Graduate	483	184	196	53	21	18	11
< College	416	157	158	63	18	16	4
College Graduate	272	97	97	53	9	12	4
Post Graduate	202	82	64	36	11	6	3
Census Region							
Northeast	335	112	131	56	12	19	5
Midwest	318	108	145	35	12	12	6
South	875	363	316	119	30	37	10
West	418	138	162	76	19	15	8
Day of Week							
Weekday	1303	485	503	186	44	66	19
Weekend	643	236	251	100	29	17	10
Season							
Winter	466	190	153	75	18	21	9
Spring	449	170	192	51	15	16	5
Summer	584	204	233	89	21	27	10
Fall	447	157	176	71	19	19	5
Asthma							
No	1766	643	695	261	70	70	27
Yes	167	73	54	25	3	11	1
DK	13	5	5	*	*	2	1
Angina							
No	1880	696	731	276	70	80	27
Yes	53	21	19	8	3	1	1
DK	13	4	4	2	0	2	1
Bronchitis/emphysema							
No	1833	675	715	272	72	71	28
Yes	101	41	35	14	1	10	*
DK	12	5	4	*	*	2	1

Note: * = Missing Data; DK= Don't know; Refused = Respondent Refused to Answer; N = Number of Respondents
Source: Tsang and Klepeis, 1996.

Table 16-33. Number of Minutes Spent in Activities Working with or Near Pesticides, Including Bug Sprays or Bug Strips (minutes/day)

Category	Population Group	N	Percentiles											
			1	2	5	10	25	50	75	90	95	98	99	100
Overall		257	0	0	0	0	2	10	60	121	121	121	121	121
Gender	Male	121	0	0	1	1	2	10	90	121	121	121	121	121
Gender	Female	136	0	0	0		2	0	35	121	121	121	121	121
Age (years)	1-4	6	1	1	1	1	3	10	15	20	20	20	20	20
Age (years)	5-11	16	0	0	0	0	1.5	7.5	30	121	121	121	121	121
Age (years)	12-17	10	0	0	0	0	2	2.5	40	121	121	121	121	121
Age (years)	18-64	190	0	0	0	1	2	10	88	121	121	121	121	121
Age (years)	> 64	31	0	0	0	0	2	5	15	60	121	121	121	121
Race	White	199	0	0	0	1	2	10	60	121	121	121	121	121
Race	Black	36	0	0	0	0	1	3	20	121	121	121	121	121
Race	Asian	2	5	5	5	5	5	7.5	10	10	10	10	10	10
Race	Some Others	4	0	0	0	0	1.5	6.5	10	10	10	10	10	10
Race	Hispanic	15	0	0	0	0	2	20	121	121	121	121	121	121
Hispanic	No	231	0	0	0	0	2	10	60	121	121	121	121	121
Hispanic	Yes	25	0	0	0	1	5	20	121	121	121	121	121	121
Employment	Full Time	124	0	0	0	1	2	10	120.5	121	121	121	121	121
Employment	Part Time	26	0	0	0	1	2	5	60	121	121	121	121	121
Employment	Not Employed	75	0	0	0	0	2	5	30	121	121	121	121	121
Education	< High School	20	1	1	1	1	2.5	22.5	105.5	121	121	121	121	121
Education	High School Graduate	87	0	0	0	0	2	10	45	121	121	121	121	121
Education	< College	56	0	0	0	1	2	10	89	121	121	121	121	121
Education	College Graduate	29	0	0	0	0	1	10	90	121	121	121	121	121
Education	Post Graduate	29	0	0	0	0	3	10	30	121	121	121	121	121
Census Region	Northeast	45	0	0	1	2	5	10	88	121	121	121	121	121
Census Region	Midwest	51	0	0	0	0	2	10	121	121	121	121	121	121
Census Region	South	106	0	0	0	0	2	5	30	121	121	121	121	121
Census Region	West	55	0	0	0	1	2	10	45	121	121	121	121	121
Day of Week	Weekday	183	0	0	0	0	2	10	60	121	121	121	121	121
Day of Week	Weekend	74	0	0	0	1	3	10	30	121	121	121	121	121
Season	Winter	39	0	0	0	0	2	5	90	121	121	121	121	121
Season	Spring	78	0	0	0	0	2	10	60	121	121	121	121	121
Season	Summer	105	0	0	0	1	2	10	60	121	121	121	121	121
Season	Fall	35	0	0	0	0	1	10	60	121	121	121	121	121
Asthma	No	231	0	0	0	1	2	10	60	121	121	121	121	121
Asthma	Yes	24	0	0	0	0	1	5	90.5	121	121	121	121	121
Angina	No	244	0	0	0	0	2	10	60	121	121	121	121	121
Angina	Yes	8	1	1	1	1	2	5	75.5	121	121	121	121	121
Bronchitis/emphysema	No	240	0	0	0	0	2	10	60	121	121	121	121	121
Bronchitis/emphysema	Yes	14	1	1	1	2	2	5	30	121	121	121	121	121

Note: A value of "121" for number of minutes signifies that more than 120 minutes were spent; n = doer sample size.
Percentiles are the percentage of doers below or equal to a given number of minutes.
Source: Tsang and Klepeis, 1996.

Table 16-34. Amount and Frequency of Use of Various Cosmetic and Baby Products

Product Type	Amount of Product Per Application[a] (grams)	Average Frequency of Use (per day)			Upper 90th Percentile Frequency of Use (per day)		
		Survey Type			Survey Type		
		CTFA	Cosmetic Co.	Market Research Bureau[b]	CTFA	Cosmetic Co.	Market Research Bureau
Baby Lotion - baby use[c]	1.4	0.38	1.0	--	0.57	2.0	--
Baby Lotion - adult use	1.0	0.22	0.19	0.24[d]	0.86	1.0	1.0[d]
Baby Oil - baby use[c]	1.3	0.14	1.2	--	0.14	3.0	--
Baby Oil - adult use	5.0	0.06	0.13	--	0.29	0.57	--
Baby Powder - baby use[c]	0.8	5.36	1.5	0.35[d]	8.43	3.0	1.0[d]
Baby Powder - adult use	0.8	0.13	0.22	--	0.57	1.0	--
Baby Cream - baby use[c]	--	0.43	1.3	--	0.43	3.0	--
Baby Cream - adult use	--	0.07	0.10	--	0.14	0.14[e]	--
Baby Shampoo - baby use[c]	0.5	0.14	--	0.11[f]	0.14	--	0.43[f]
Baby Shampoo - adult use	5.0	0.02	--	--	0.86[e]	--	--
Bath Oils	14.7	0.08	0.19	0.22[g]	0.29	0.86	1.0[g]
Bath Tablets	--	0.003	0.008	--	0.14[e]	0.14[e]	--
Bath Salts	18.9	0.006	0.013	--	0.14[e]	0.14[e]	--
Bubble Baths	11.8	0.088	0.13	--	0.43	0.57	--
Bath Capsules	--	0.018	0.019	--	0.29[e]	0.14[e]	--
Bath Crystals	--	0.006	--	--	0.29[e]	0.14[e]	--
Eyebrow Pencil	--	0.27	0.49	--	1.0	1.0	--
Eyeliner	--	0.42	0.68	0.27	1.43	1.0	1.0
Eye Shadow	--	0.69	0.78	0.40	1.43	1.0	1.0
Eye Lotion	--	0.094	0.34	--	0.43	1.0	--
Eye Makeup Remover	--	0.29	0.45	--	1.0	1.0	--
Mascara	--	0.79	0.87	0.46	1.29	1.0	1.5
Under Eye Cover	--	0.79	--	--	0.29	--	--
Blusher & Rouge	0.011	1.18	1.24	0.55	2.0	1.43	1.5
Face Powders	0.085	0.35	0.67	0.33	1.29	1.0	1.0
Foundations	0.265	0.46	0.78	0.47	1.0	1.0	1.5
Leg and Body Paints	--	0.003	0.011	--	0.14[e]	0.14[e]	--
Lipstick & Lip Gloss	--	1.73	1.23	2.62	4.0	2.86	6.0
Makeup Bases	0.13	0.24	0.64	--	0.86	1.0	--
Makeup Fixatives	--	0.052	0.12	--	0.14	1.0	--
Sunscreen	3.18	0.003	--	0.002	0.14[e]	--	0.005
Colognes & Toilet Water	0.65	0.68	0.85	0.56	1.71	1.43	1.5
Perfumes	0.23	0.29	0.26	0.38	0.86	1.0	1.5

Table 16-34. Amount and Frequency of Use of Various Cosmetic and Baby Products (continued)

Product Type	Amount of Product Per Application[a] (grams)	Average Frequency of Use (per day)			Upper 90th Percentile Frequency of Use (per day)		
		Survey Type			Survey Type		
		CTFA	Cosmetic Co.	Market Research Bureau[b]	CTFA	Cosmetic Co.	Market Research Bureau
Powders	2.01	0.18	0.39	--	1.0	1.0	--
Sachets	0.2	0.0061	0.034	--	0.14[e]	0.14[e]	--
Fragrance Lotion	--	0.0061	--	--	0.29[e]	--	--
Hair Conditioners	12.4	0.4	0.40	0.27	1.0	1.0	0.86
Hair Sprays	--	0.25	0.55	0.32	1.0	1.0	1.0
Hair Rinses	12.7	0.064	0.18	--	0.29	1.0	--
Shampoos	16.4	0.82	0.59	0.48	1.0	1.0	1.0
Tonics and Dressings	2.85	0.073	0.021	--	0.29	0.14[e]	--
Wave Sets	2.6	0.003[h]	0.040	--	--[h]	0.14	--
Dentifrices	--	1.62	0.67	2.12	2.6	2.0	4.0
Mouthwashes	--	0.42	0.62	0.58	1.86	1.14	1.5
Breath Fresheners	--	0.052	0.43	0.46	0.14	1.0	0.57
Nail Basecoats	0.23	0.052	0.13	--	0.29	0.29	--
Cuticle Softeners	0.66	0.040	0.10	--	0.14	0.29	--
Nail Creams & Lotions	0.56	0.070	0.14	--	0.29	0.43	--
Nail Extenders	--	0.003	0.013	--	0.14[e]	0.14[e]	--
Nail Polish & Enamel	0.28	0.16	0.20	0.07	0.71	0.43	1.0
Nail Polish & Enamel Remover	3.06	0.088	0.19	--	0.29	0.43	--
Nail Undercoats	--	0.049	0.12	--	0.14	0.29	--
Bath Soaps	2.6	1.53	0.95	--	3.0	1.43	--
Underarm Deodorants	0.52	1.01	0.80	1.10	1.29	1.29	2.0
Douches	--	0.013	0.089	0.085	0.14[e]	0.29	0.29
Feminine Hygiene Deodorants	--	0.021	0.084	0.05	1.0[c]	0.29	0.14
Cleansing Products (cold creams, cleansing lotions liquids & pads)	1.7	0.63	0.80	0.54	1.71	2.0	1.5
Depilatories	--	0.0061	0.051	0.009	0.016	0.14	0.033
Face, Body & Hand Preps (excluding shaving preps)	3.5	0.65	--	1.12	2.0	--	2.14
Foot Powder & Sprays	--	0.061	0.079	--	0.57[e]	0.29	--
Hormones	--	0.012	0.028	--	0.57[e]	0.14[e]	--
Moisturizers	0.53	0.98	0.88	0.63	2.0	1.71	1.5
Night Skin Care Products	1.33	0.18	0.50	--	1.0	1.0	--

Table 16-34. Amount and Frequency of Use of Various Cosmetic and Baby Products (continued)

Product Type	Amount of Product Per Application[a] (g)	Average Frequency of Use (per day)			Upper 90th Percentile Frequency of Use (per day)		
		Survey Type			Survey Type		
		CTFA	Cosmetic Co.	Market Research Bureau[b]	CTFA	Cosmetic Co.	Market Research Bureau
Paste Masks (mud packs)	3.7	0.027	0.20	--	0.14	0.43	--
Skin Lighteners	--	--	0.024	--	--[d]	0.14[d]	--
Skin Fresheners & Astringents	2.0	0.33	0.56	--	1.0	1.43	--
Wrinkle Smoothers (removers)	0.38	0.021	0.15	--	1.0[d]	1.0	--
Facial Cream	0.55	0.0061	--	--	0.0061	--	--
Permanent Wave	101	0.003	--	0.001	0.0082	--	0.005
Hair Straighteners	0.156	0.0007	--	--	0.005[d]	--	--
Hair Dye	--	0.001	--	0.005	0.004[d]	--	0.014
Hair Lighteners	--	0.0003	--	--	0.005[d]	--	--
Hair Bleaches	--	0.0005	--	--	0.02[d]	--	--
Hair Tints	--	0.0001	--	--	0.005[d]	--	--
Hair Rinse (coloring)	--	0.0004	--	--	0.02[d]	--	--
Shampoo (coloring)	--	0.0005	--	--	0.02[d]	--	--
Hair Color Spray	--	--	--	--	--[d]	--	--
Shave Cream	1.73	--	--	0.082	--	--	0.36

[a] Values reported are the averages of the responses reported by the twenty companies interviewed. (--'s) indicate no data available.

[b] The averages shown for the Market Research Bureau are not true averages - this is due to the fact that in many cases the class of most frequent users were indicated by "1 or more" also ranges were used in many cases, i.e., "10-12." The average, therefore, is underestimated slightly. The "1 or more" designation also skew the 90th percentile figures in many instances. The 90th percentile values may, in actuality, be somewhat higher for many products.

[c] Average usage among users only for baby products.

[d] Usage data reflected "entire household" use for both baby lotion and baby oil.

[e] Fewer than 10% of individuals surveyed used these products. Value listed is lowest frequency among individuals reporting usage. In the case of wave sets, skin lighteners, and hair color spray, none of the individuals surveyed by the CTFA used this product during the period of the study.

[f] Usage data reflected "entire household" use.

[g] Usage data reflected total bath product usage.

[h] None of the individuals surveyed reported using this product.

Source: CTFA, 1983.

Table 16-35. Summary of Consumer Products Use Studies

Study	Study Size	Approach	Relevant Population	Comments
KEY STUDIES				
Abt, 1992	4,997 product interviews; 527 mailed questionnaires	Direct - interviews and questionnaires	Adults	Random digit dialing method used to select sample. Information on use of 3 products containing methyl chloride was requested.
Westat, 1987a	4,920 individuals	Direct - questionnaire	18+ yrs selected to be representative of US population	Waksberg Method (random digit dialing) used to select sample. Respondents asked to recall use in past 2 months of 32 catagories of household products containing methyl chloride.
Westat, 1987b	193 households	Direct - telephone survey; 2 post-survey validation efforts: 30 reinterviewed, then another 50 reeinterviewed	Adult household members who do cleaning tasks in household	Waksberg Method (random digit dialing) used to select sample. Household use of cleaning products requested. Phone survey during end of year holidays may reflect biased usage data. Two validation resurveys conducted 3 months after survey.
Westat, 1987c	777 households	Direct - telephone survey; 1 post-survey validation effort conducted with 30 reinterviewed	Household members who do painting tasks in household	Waksberg Method (random digit dialing) used to select sample. Painting product use information in past 12 months was requested. One validation resurvey conducted 3 months after survey.
Tsang and Klepeis, 1996	9,386 individuals	Direct - interviews and questionnaires	Representative of U.S. general population	National Human Activity Patterns Survey (NHAPS). Participants selected using random Dial Digit (RDD) and Computer Assisted Telephone Interviewing (CATI). 24-hour diary data, and follow-up questions; nationally representative; represent all seasons, age groups, and genders.
RELEVANT STUDY				
CTFA, 1983	Survey 1: 47 women employees and relatives or employees Survey 2: 1,129 cosmetics purchasers Survey 3: 19,035 females	Survey 1: Direct - 1 wk prospective survey Survey 2: Direct - prospective survey Survey 3: Direct - 9.5 months. prospective survey	Survey 1: 16-61 yr old females Survey 2: Customers of cosmetic manufacturer Survey 3: Market research company sampled female consumers nationwide	Interviewees asked to recall their use of cosmetics and some baby products during a specific past time period. Surveys 1 and 2 had small populations, but Survey 3 had large population selected to be representative of U.S. population

APPENDIX 16A

SIMMONS MARKET RESEARCH DATA

Table 16A-1. Volumes Included in 1992 Simmons Study

The volumes included in the Media series are as follows:	
M1	Publications: Total Audiences
M2	Publications: Qualitative Measurements And In-Home Audiences
M3	Publications: Duplication Of Audiences
M4	Multi-Media Audiences: Adults
M5	Multi-Media Audiences: Males
M6	Multi-Media Audiences: Females and Mothers
M7	Business To Business
M8	Multi-Media Reach and Frequency and Television Attentiveness & Special Events
The following volumes are included in the Product series:	
P1	Automobiles, cycles, Trucks & Vans
P2	Automotive Products & Services
P3	Travel
P4	Banking, Investments, Insurance, Credit Cards & Contributions, Memberships & Public Activities
P5	Games & Toys, Children's & Babies' Apparel & Specialty Products
P6	Computers, Books, Discs, Records, Tapes, Stereo, Telephones, TV & Video
P7	Appliances, Garden Care, Sewing & Photography
P8	Home Furnishings & Home Improvements
P9	Sports & Leisure
P10	Restaurants, Stores & Grocery Shopping
P11	Direct Mail & Other In-Home Shopping, Yellow Pages, Florist, Telegrams, Faxes & Greeting Cards
P12	Jewelry, Watches, Luggage, Writing Tools & Men's Apparel
P13	Women's Apparel
P14	Distilled Spirits, Mixed Drinks, Malt Beverages, Wine & Tobacco Products
P15	Coffee, Tea, Cocoa, Milk, Soft Drinks, Juices & Bottled Water
P16	Dairy Products, Desserts, Baking & Bread Products
P17	Cereals & Spreads, Rice, Pasta, Pizza, Mexican Foods, Fruits & Vegetables
P18	Soup, Meat, Fish, Poultry, Condiments & Dressings
P19	Chewing Gum, Candy, Cookies & Snacks
P20	Soap, Laundry, Paper Products & Kitchen Wraps
P21	Household Cleaners, Room Deodorizers, Pest Controls & Pet Foods
P22	Health Care Products & Remedies
P23	Oral Hygiene Products, Skin Care, Deodorants & Drug Stores
P24	Hair Care, Shaving Products & Fragrances
P25	Women's Beauty Aids, Cosmetics & Personal Products
P26	Relative Volume of Consumption

17. RESIDENTIAL BUILDING CHARACTERISTICS

17.1. INTRODUCTION

Unlike previous chapters in this handbook which focus on human behavior or characteristics that affect exposure, this chapter focuses on residence characteristics. Assessment of exposure in residential settings requires information on the availability of the chemical(s) of concern at the point of exposure, characteristics of the structure and microenvironment that affect exposure, and human presence within the residence. The purpose of this chapter is to provide data that are available on residence characteristics that affect exposure in an indoor environment. Source-receptor relationships in residential exposure scenarios can be complex due to interactions among sources, and transport/transformation processes that result from chemical-specific and building-specific factors. Figure 17-1 illustrates the complex factors that must be considered when conducting exposure assessments in a residential setting. In addition to sources within the building, chemicals of concern may enter the indoor environment from outdoor air, soil, gas, water supply, tracked-in soil, and industrial work clothes worn by the residents. Indoor concentrations are affected by loss mechanisms, also illustrated in Figure 17-1, involving chemical reactions, deposition to and re-emission from surfaces, and transport out of the building. Particle-bound chemicals can enter indoor air through resuspension. Indoor air concentrations of gas-phase organic chemicals are affected by the presence of reversible sinks formed by a wide range of indoor materials. In addition, the activity of human receptors greatly affects their exposure as they move from room to room, entering and leaving the exposure scene.

Inhalation exposure assessments in residential and other indoor settings are modeled by considering the building as an assemblage of one or more well-mixed zones. A zone is defined as one room, a group of interconnected rooms, or an entire building. This macroscopic level, well-mixed perspective forms the basis for interpretation of measurement data as well as simulation of hypothetical scenarios. Exposure assessment models on a macroscopic level incorporate important physical factors and processes. These well-mixed, macroscopic models have been used to perform indoor air quality simulations (Axley, 1989), as well as indoor air exposure assessments (McKone, 1989; Ryan, 1991). Nazzaroff and Cass (1986) and Wilkes et al. (1992) have used code-intensive computer programs featuring finite difference or finite element numerical techniques to model mass balance. A simplified approach using desk top spreadsheet programs has been used by Jennings et al. (1985).

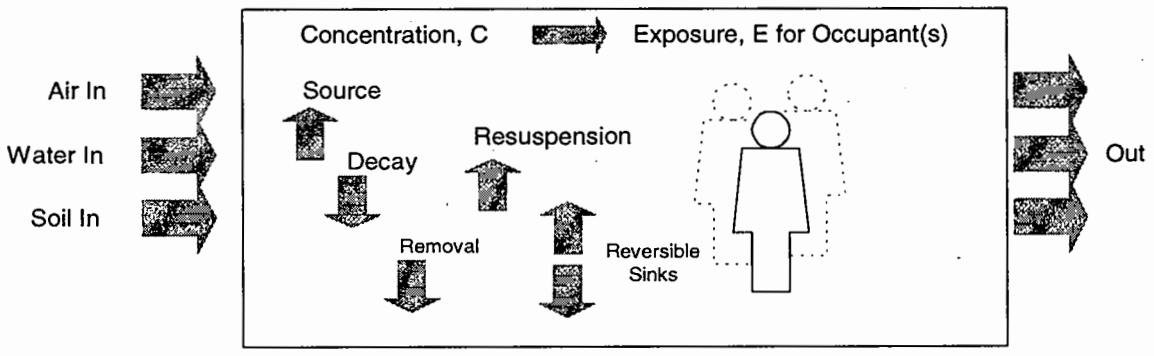

Figure 17-1. Elements of Residential Exposure

In order to model mass balance of indoor contaminants, the indoor air volume is represented as a network of interconnected zones. Because conditions in a given zone are determined by interactions with other connecting zones, the multizone model is stated as a system of simultaneous equations. The mathematical framework for modeling indoor air has been reviewed by Sinden (1978) and Sandberg (1984).

Indoor air quality models typically are not software products that can be purchased as "off-the-shelf" items. Most existing software models are research tools that have been developed for specific purposes and are being continuously refined by researchers. Leading examples of indoor air models implemented as software products are as follows:

- CONTAM -- developed at the National Institute of Standards and Technology (NIST) with support from U.S. EPA and the U.S. Department of Energy (DOE) (Axley, 1988; Grot, 1991; Walton, 1993);

- EXPOSURE -- developed at the Indoor Air Branch of U.S. EPA Air and Energy Engineering Research Laboratory (EPA/AEERL) (Sparks, 1988, 1991);

- MCCEM -- the Multi-Chamber Consumer Exposure Model developed for U.S EPA Office of Pollution Prevention and Toxics (EPA/OPPT) (GEOMET, 1989; Koontz and Nagda, 1991); and

- THERdbASE -- the Total Human Exposure Relational Data Base and Advanced Simulation Environment software developed by researchers at the Harry Reid Center for Environmental Studies at University Nevada, Las Vegas (UNLV) (Pandian et al., 1993).

Section 17.2 of this chapter summarizes existing data on building characteristics (volumes, surface areas, mechanical systems, and types of foundations). Section 17.3 summarizes transport phenomena that affect chemical transport (airflow, chemical-specific deposition and filtration, and effects of water supply and soil tracking). Section 17.4 provides information on various types of indoor sources associated with airborne exposure, waterborne sources, and soil/house dust sources. Section 17.5 summarizes advanced concepts.

17.2. BUILDING CHARACTERISTICS

17.2.1. Key Volumes of Residence Studies

Versar (1990) - Database on Perfluorocarbon Tracer (PFT) Ventilation Measurements - A database of time-averaged air exchange and interzonal airflow measurements in more than 4,000 residences has been compiled by Versar (1990) to allow researchers to access these data (see Section 17.3.2). These data were collected between 1982 and 1987. The residences that appear in this database are not a random sample of U.S. homes; however, they do represent a compilation of homes visited in about 100 different field studies, some of which involved random sampling. In each study, the house volumes were directly measured or estimated. The collective homes visited in these field projects are not geographically balanced; a large fraction of these homes are located in southern California. Statistical weighting techniques were applied in developing estimates of nationwide distributions (see Section 17.3.2) to compensate for the geographic imbalance.

U.S. DOE (1995) - Housing Characteristics 1993, Residential Energy Consumption Survey (RECS) - Measurement surveys have not been conducted to directly characterize the range and distribution of volumes for a random sample of U.S. residences. Related data, however, are regularly collected through the U.S. DOE's RECS (U.S. DOE, 1995). In addition to collecting information on energy use, this triennial survey collects data on housing characteristics including direct measurements of total and heated floor space for buildings visited by survey specialists. For the most recent survey (1993), a multistage probability sample of over 7,000 residences was surveyed, representing 96 million residences nationwide. The survey response rate was 81.2 percent. Volumes were estimated from the RECS measurements by multiplying the heated floor space area by an assumed ceiling height of 8 feet, recognizing that this assumed height may not apply universally to all homes.

Results for residential volume distributions from the RECS (Thompson, 1995) are presented in Table 17-1. Estimated parameters of residential volume distributions (in cubic meters) from the PFT database (Versar, 1990) are also summarized in Table 17-1, for comparison to the RECS data. The arithmetic means from the two sources

are identical (369 cubic meters). The medians (50th percentiles) are very similar: 310 cubic meters for the RECS data, and 321 cubic meters for the PFT database. Cumulative frequency distributions from the two sources (Figure 17-2) also are quite similar, especially between the 50th and 75th percentiles.

Table 17-1. Summary of Residential Volume Distributions in Cubic Meters[a]

Parameter	RECS Data (1)	PFT Database (2)
Arithmetic Mean	369	369
Standard Deviation	258	209
10th Percentile	147	167
25th Percentile	209	225
50th Percentile	310	321
75th Percentile	476	473
90th Percentile	672	575

[a] In cubic meters
Sources: (1) Thompson, 1995; (2) Versar, 1990

The RECS also provides relationships between average residential floor areas and factors such as housing type, ownership, household size and structure age. The predominant housing type--single-family detached homes--also has the largest average volume (Table 17-2). Multifamily units and mobile homes have volumes averaging about half that of single-family detached homes, with single-family attached homes about halfway between these extremes. Within each category of housing type, owner-occupied residences average about 50 percent greater volume than rental units. The relationship of residential volume to household size (Table 17-3) is of particular interest for purposes of exposure assessment. For example, one-person households would not include children, and the data in the table indicate that multi-person households occupy residences averaging about 50 percent greater volume than residences occupied by one-person households.

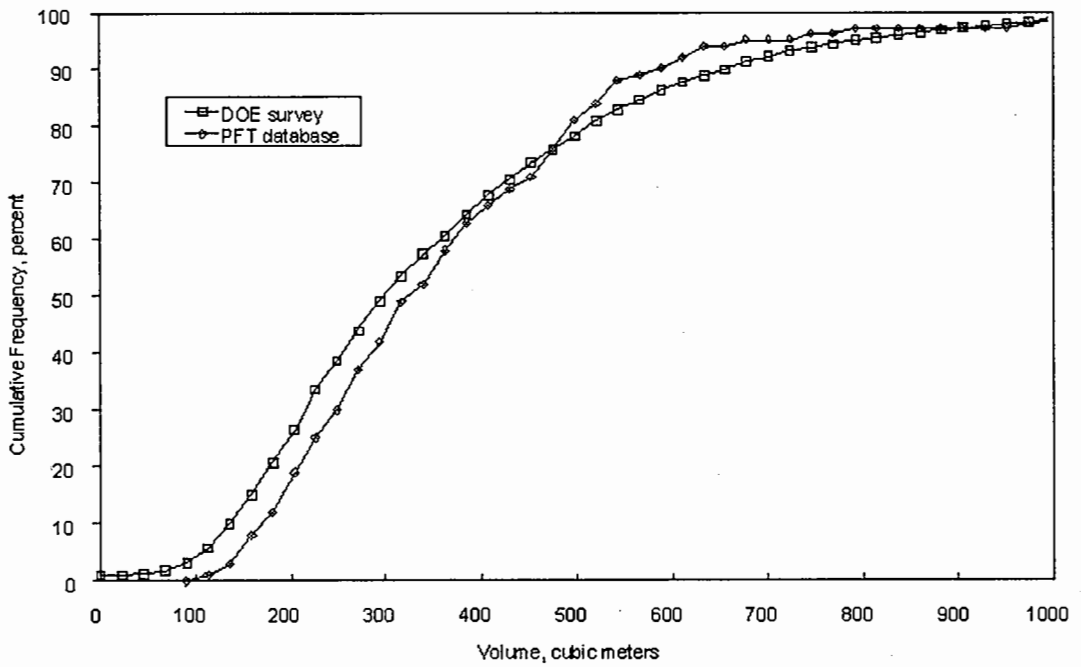

Figure 17-2. Cumulative Frequency Distributions for Residential Volumes from the PFT Data Base and the U.S. DOE's RECs.

Table 17-2. Average Estimated Volumes of U.S. Residences, by Housing Type and Ownership

	Ownership					
	Owner-Occupied		Rental		All Units	
Housing Type	Volume[a] (m^3)	Percent of Total	Volume[a] (m^3)	Percent of Total	Volume[a] (m^3)	Percent of Total
Single-Family (Detached)	471	53.1	323	8.5	451	61.7
Single-Family (Attached)	406	4.6	291	2.9	362	7.5
Multifamily (2-4 units)	362	1.6	216	6.7	243	8.3
Multifamily (5+ Units)	241	1.7	183	15.2	190	16.8
Mobile Home	221	4.6	170	1.2	210	5.8
All Types	441	65.4	233	34.6	369	100.0

[a] Volumes calculated from floor areas assuming a ceiling height of 8 feet.
Source: Adapted from U.S. DOE, 1995.

Table 17-3. Residential Volumes in Relation to Household Size and Year of Construction

	Volume[a] (m^3)	Percent of Total
Household Size		
1 Person	269	24.3
2 Persons	386	32.8
3 Persons	387	17.2
4 Persons	431	15.1
5 Persons	433	7.0
6 or More Persons	408	3.6
All Sizes	369	100.0
Year of Construction		
1939 or before	385	21.1
1940 to 1949	338	7.1
1950 to 1959	365	13.5
1960 to 1969	358	15.5
1970 to 1979	350	18.7
1980 to 1984	344	8.8
1985 to 1987	387	5.7
1988 to 1990	419	4.9
1991 to 1993	438	4.7
All Years	369	100.0

[a] Volumes calculated from floor areas assuming a ceiling height of 8 feet.
Source: U.S. DOE, 1995.

Data on year of construction indicate a slight decrease in residential volumes between 1950 and 1984, followed by an increasing trend over the next decade. A ceiling height of 8 feet was assumed in estimating the average volumes, whereas there may have been some time-related trends in ceiling height.

Murray (1996) - Analysis of RECS and PFT Databases. Using a database from the 1993 RECS and an assumed ceiling height of 8 feet, Murray (1996) estimated a mean residential volume of 382 m^3 using RECS estimates of heated floor space. This estimate is slightly different from the mean of 369 m^3 given in Table 17-1. Murray's (1996) sensitivity analysis indicated that when a fixed ceiling height of 8 feet was replaced with a randomly varying height with a mean of 8 feet, there was little effect on the standard deviation of the estimated distribution. From a separate analysis of the PFT database, based on 1,751 individual household measurements, Murray (1996) estimated an average volume of 369 m^3, the same as previously given in Table 17-1. In performing this analysis, the author carefully reviewed the PFT database in an effort to use each residence only once, for those residences thought to have multiple PFT measurements.

17.2.2. Volumes and Surface Areas of Rooms

Room Volumes - Volumes of individual rooms are dependent on the building size and configuration, but summary data are not readily available. The exposure assessor is advised to define specific rooms, or assemblies of rooms, that best fit the scenario of interest. Most

models for predicting indoor-air concentrations specify airflows in cubic meters per hour and, correspondingly, express volumes in cubic meters. A measurement in cubic feet can be converted to cubic meters by multiplying the value in cubic feet by 0.0283 m^3/ft^3. For example, a bedroom that is 9 feet wide by 12 feet long by 8 feet high has a volume of 864 cubic feet or 24.5 cubic meters. Similarly, a living room with dimensions of 12 feet wide by 20 feet long by 8 feet high has a volume of 1920 cubic feet or 54.3 cubic meters, and a bathroom with dimensions of 5 feet by 12 feet by 8 feet has a volume of 480 cubic feet or 13.6 cubic meters.

Murray (1996) analyzed the distribution of selected residential zones (i.e., a series of connected rooms) using the PFT database. The author analyzed the "kitchen zone" and the "bedroom zone" for houses in the Los Angeles area that were labeled in this manner by field researchers, and "basement," "first floor," and "second floor" zones for houses outside of Los Angeles for which the researchers labeled individual floors as zones. The kitchen zone contained the kitchen in addition to any of the following associated spaces: utility room, dining room, living room and family room. The bedroom zone contained all the bedrooms plus any bathrooms and hallways associated with the bedrooms. The following summary statistics (mean ± standard deviation) were reported by Murray (1996) for the volumes of the zones described above: 199 ± 115 m^3 for the kitchen zone, 128 ± 67 m^3 for the bedroom zone, 205 ± 64 m^3 for the basement, 233 ± 72 m^3 for the first floor, and 233 ± 111 m^3 for the second floor.

Surface Areas - The surface areas of floors are commonly considered in relation to the room or house volume, and their relative loadings are expressed as a surface area-to-volume, or loading ratio. Table 17-4 provides the basis for calculating loading ratios for typical-sized rooms. Constant features in the examples are: a room width of 12 feet and a ceiling height of 8 feet (typical for residential buildings), or a ceiling height 12 feet (typical for commercial buildings). The loading ratios for the 8-foot ceiling height range from 0.98 m^2m^{-3} to 2.18 m^2m^{-3} for wall area and from 0.36 m^2m^{-3} to 0.44 m^2m^{-3} for floor area. In comparison, ASTM Standard E 1333 (ASTM, 1990), for large-chamber testing of formaldehyde levels from wood products, specifies the following loading ratios: (1) 0.95 m^2m^{-3} for testing plywood (assumes plywood or paneling on all four walls of a typical size room); and (2) 0.43 m^2m^{-3} for testing particleboard (assumes that particleboard decking or underlayment would be used as a substrate for the entire floor of a structure).

Table 17-4. Dimensional Quantities for Residential Rooms

Nominal Dimensions	Length (m)	Width (m)	Height (m)	Volume (m^3)	Wall Area (m^2)	Floor Area (m^2)	Total Area (m^2)
Eight Foot Ceiling							
12'x15'	4.6	3.7	2.4	41	40	17	74
12'x12'	3.7	3.7	2.4	33	36	13	62
10'x12'	3.0	3.7	2.4	27	33	11	55
9'x12'	2.7	3.7	2.4	24	31	10	51
6'x12'	1.8	3.7	2.4	16	27	7	40
4'x12'	1.2	3.7	2.4	11	24	4	32
Twelve Foot Ceiling							
12'x15'	4.6	3.7	3.7	61	60	17	94
12'x12'	3.7	3.7	3.7	49	54	13	80
10'x12'	3.0	3.7	3.7	41	49	11	71
9'x12'	2.7	3.7	3.7	37	47	10	67
6'x12'	1.8	3.7	3.7	24	40	7	54
4'x12'	1.2	3.7	3.7	16	36	4	44

Products and Materials - Table 17-5 presents examples of assumed amounts of selected products and materials used in constructing or finishing residential surfaces (Tucker, 1991). Products used for floor surfaces include adhesive, varnish and wood stain; and materials used for walls include paneling, painted gypsum board, and wallpaper. Particleboard and chipboard are commonly used for interior furnishings such as shelves or cabinets, but could also be used for decking or underlayment. It should be noted that numbers presented in Table 17-5 for surface area are based on typical values for residences, and they are presented as examples. In

contrast to the concept of loading ratios presented above (as a surface area), the numbers in Table 17-5 also are not scaled to any particular residential volume. In some cases, it may be preferable for the exposure assessor to use professional judgment in combination with the loading ratios given above. For example, if the exposure scenario involves residential carpeting, either as an indoor source or as an indoor sink, then the ASTM loading ratio of 0.43 m^2m^{-3} for floor materials could be multiplied by an assumed residential volume and assumed fractional coverage of carpeting to derive an estimate of the surface area. More specifically, a residence with a volume of 300 m^3, a loading ratio of 0.43 m^2m^{-3} and coverage of 80% would have 103 m^2 of carpeting. The estimates discussed here relate to macroscopic surfaces; the true surface area for carpeting, for example, would be considerably larger because of the nature of its fibrous material.

Table 17-5. Examples of Products and Materials Associated with Floor and Wall Surfaces in Residences

Material Sources	Assumed Amount of Surface Covered[a]
Silicone caulk	0.2 m^2
Floor adhesive	10.0 m^2
Floor wax	50.0 m^2
Wood stain	10.0 m^2
Polyurethane wood finish	10.0 m^2
Floor varnish or lacquer	50.0 m^2
Plywood paneling	100.0 m^2
Chipboard	100.0 m^2
Gypsum board	100.0 m^2
Wallpaper	100.0 m^2

[a] Based on typical values for a residence.
Source: Adapted from Tucker, 1991.

Furnishings - Information on the relative abundance of specific types of indoor furnishings, such as draperies or upholstered furniture, was not readily available. The exposure assessor is advised to rely on common sense and professional judgment. For example, the number of beds in a residence is usually related to household size, and information has been provided (Table 17-3) on average house volume in relation to household size.

17.2.3. Mechanical System Configurations

Mechanical systems for air movement in residences can affect the migration and mixing of pollutants released indoors and the rate of pollutant removal. Three types of mechanical systems are: (1) systems associated with heating and air conditioning (HAC); (2) systems whose primary function is providing localized exhaust; and (3) systems intended to increase the overall air exchange rate of the residence.

Portable space heaters intended to serve a single room, or a series of adjacent rooms, may or may not be equipped with blowers that promote air movement and mixing. Without a blower, these heaters still have the ability to induce mixing through convective heat transfer. If the heater is a source of combustion pollutants, as with unvented gas or kerosene space heaters, then the combination of convective heat transfer and thermal buoyancy of combustion products will result in fairly rapid dispersal of such pollutants. The pollutants will disperse throughout the floor where the heater is located and to floors above the heater, but will not disperse to floors below.

Central forced-air HAC systems are common in many residences. Such systems, through a network of supply/return ducts and registers, can achieve fairly complete mixing within 20 to 30 minutes (Koontz et al., 1988). The air handler for such systems is commonly equipped with a filter (see Figure 17-3) that can remove particle-phase contaminants. Further removal of particles, via deposition on various room surfaces (see Section 17.3.2), is accomplished through increased air movement when the air handler is operating.

Figure 17-3 also distinguishes forced-air HAC systems by the return layout in relation to supply registers. The return layout shown in the upper portion of the figure is the type most commonly found in residential settings. On any floor of the residence, it is typical to find one or more supply registers to individual rooms, with one or two centralized return registers. With this layout, supply/return imbalances can often occur in individual rooms, particularly if the interior doors to rooms are closed. In comparison, the supply/return layout shown in the lower portion of the figure by design tends to achieve a balance in individual rooms or zones. Airflow imbalances can also be caused by inadvertent duct leakage to unconditioned spaces such as attics, basements, and crawl spaces. Such imbalances usually depressurize the house, thereby increasing the likelihood of contaminant entry via soil-gas transport or through spillage of combustion products from vented fossil-fuel appliances such as fireplaces and gas/oil furnaces.

Mechanical devices such as kitchen fans, bathroom fans, and clothes dryers are intended primarily to provide localized removal of unwanted heat, moisture, or odors. Operation of these devices tends to increase the air exchange rate between the indoors and outdoors. Because

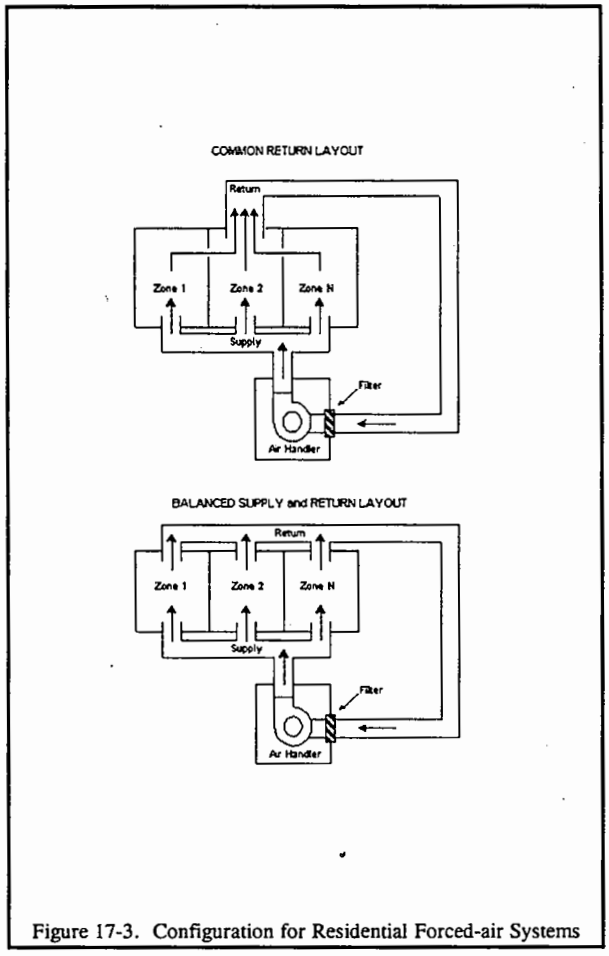

Figure 17-3. Configuration for Residential Forced-air Systems

local exhaust devices are designed to be near certain indoor sources, their effective removal rate for locally generated pollutants is greater than would be expected from the dilution effect of increased air exchange. Operation of these devices also tends to depressurize the house, because replacement air usually is not provided to balance the exhausted air.

An alternative approach to pollutant removal is one which relies on an increase in air exchange to dilute pollutants generated indoors. This approach can be accomplished using heat recovery ventilators (HRVs) or energy recovery ventilators (ERVs). Both types of ventilators are designed to provide balanced supply and exhaust airflows and are intended to recover most of the energy that normally is lost when additional outdoor air is introduced. Although ventilators can provide for more rapid dilution of internally generated pollutants, they also increase the rate at which outdoor pollutants are brought into the house. A distinguishing feature of the two types is that ERVs provide for recovery of latent heat (moisture) in addition to sensible heat. Moreover, ERVs typically recover latent heat using a moisture-transfer device such as a desiccant wheel. It has been observed in some studies that the transfer of moisture between outbound and inbound air streams can result in some re-entrainment of indoor pollutants that otherwise would have been exhausted from the house (Andersson et al., 1993). Inadvertent air communication between the supply and exhaust air streams can have a similar effect.

Studies quantifying the effect of mechanical devices on air exchange using tracer-gas measurements are uncommon and typically provide only anecdotal data. The common approach is for the expected increment in the air exchange rate to be estimated from the rated airflow capacity of the device(s). For example, if a device with a rated capacity of 100 cubic feet per minute (cfm), or 170 cubic meters per hour, is operated continuously in a house with a volume of 400 cubic meters, then the expected increment in the air exchange rate of the house would be 170 $m^3 h^{-1}$ / 400 m^3, or approximately 0.4 air changes per hour.

17.2.4. Type of Foundation

The type of foundation of a residence is of interest in residential exposure assessment. It provides some indication of the number of stories and house configuration, and provides an indication of the relative potential for soil-gas transport. For example, such transport can occur readily in homes with enclosed crawl spaces. Homes with basements provide some resistance, but still have numerous pathways for soil-gas entry. By comparison, homes with crawl spaces open to the outside have significant opportunities for dilution of soil gases prior to transport into the house.

Lucas et al. (1992) - National Residential Radon Survey - The National Resdental Radon Survey, sponsored by the U.S. EPA, was conducted by Lucas et al. (1992) in about 5,700 households nationwide. In addition to radon measurements, information on a number of housing characteristics was collected, including whether each house had a basement. The estimated percentage (45.2 percent) of homes in the U.S. having basements (Table 17-6) from this survey is the same as found by the RECS (Table 17-7).

Table 17-6. Percent of Residences with Basement, by Census Region and EPA Region

Census Region	EPA Region	Percent of Residences with Basements
Northeast	1	93.4
Northeast	2	55.9
Northeast	3	67.9
South	4	19.3
Midwest	5	73.5
South	6	4.1
Midwest	7	75.3
West	8	68.5
West	9	10.3
West	10	11.5
	All Regions	45.2

Source: Lucas et al., 1992.

The National Residential Radon Survey provides data for more refined geographical areas, with a breakdown by the 10 EPA Regions. The New England region (i.e., EPA Region 1), which includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, had the highest prevalence of basements (93 percent). The lowest prevalence (4 percent) was for the South Central region (i.e., EPA Region 6), which includes Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. Table 17-8 presents the States associated with each Census Region and EPA Region.

U.S. DOE (1995) - Housing Characteristics 1993 - Residential Energy Consumption Survey (RECS) - The most recent RECS (described in Section 17.2.1) was administered in 1993 to over 7,000 households (U.S. DOE, 1995). The type of information requested by the survey questionnaire included the type of foundation for the residence (i.e., basement, enclosed crawl space, crawl space open to outside or concrete slab). This information was not obtained for multifamily structures with five or more dwelling units or for mobile homes. Table 17-7 presents estimates from the survey of the percentage of residences with each foundation type, by census region, and for the entire U.S. The percentages can add to more than 100 percent because some residences have more than one type of foundation; for example, most split-level structures have a partial basement combined with some crawlspace that typically is enclosed.

The data in Table 17-7 indicate that close to half (45 percent) of residences nationwide have a basement, and that fewer than 10 percent have a crawl space that is open to outside. It also shows that a large fraction of homes have concrete slabs (31 percent). There are also variations by census region. For example, nearly 80 percent of the residences in the Northeast and Midwest regions have basements. In the South and West regions, the predominant foundation types are concrete slabs and enclosed crawl spaces. Table 17-8 illustrates the four Census Regions.

17.3. TRANSPORT RATES

17.3.1. Background

Major air transport pathways for airborne substances in residences include the following:

- Air exchange - Air leakage through windows, doorways, intakes and exhausts, and "adventitious openings" (i.e., cracks and seams) that combine to form the leakage configuration of the building envelope plus natural and mechanical ventilation;
- Interzonal airflows - Transport through doorways, ductwork, and service chaseways that interconnect rooms or zones within a building; and
- Local circulation - Convective and advective air circulation and mixing within a room or within a zone.

The distribution of airflows across the building envelope that contribute to air exchange and the interzonal airflows along interior flowpaths is determined by the interior pressure distribution. The forces causing the airflows are temperature differences, the actions of wind, and mechanical ventilation systems. Basic concepts have been reviewed by ASHRAE (1993). Indoor-outdoor and room-to-room temperature differences create density differences that help determine basic patterns of air motion. During the heating season, warmer indoor air tends to rise to exit the building at upper levels by stack action. Exiting air is replaced at lower levels by an influx of colder outdoor air. During the cooling season, this pattern is reversed: stack forces during the cooling season are generally not as strong as in the heating season because the indoor-outdoor temperature differences are not pronounced.

In examining a data base of air leakage measurements, Sherman and Dickerhoff (1996) observed that houses built prior to 1980 showed a clear increase in leakage with increasing age and were leakier, on average,

Table 17-7. Percent of Residences with Certain Foundation Types by Census Region

Census Region	Percent of Residences[a]			
	With Basement	With Enclosed Crawlspace	With Crawlspace Open to Outside	With Concrete Slab
Northeast	78.0	12.6	2.8	15.8
Midwest	78.1	19.5	5.6	14.7
South	18.6	31.8	11.0	44.6
West	19.4	36.7	8.1	43.5
All Regions	45.2	26.0	7.5	31.3

[a] Percentage may add to more than 100 percent because more than one foundation type may apply to a given residence.
Source: U.S. DOE, 1995.

Table 17-8. States Associated with EPA Regions and Census Regions

US EPA Regions

Region 1
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

Region 2
New Jersey
New York

Region 3
Delaware
District of Columbia
Maryland
Pennsylvania
Virginia
West Virginia

Region 4
Alabama
Florida
Georgia
Kentucky
Mississippi
North Carolina
South Carolina
Tennessee

Region 5
Illinois
Indiana
Michigan
Minnesota
Ohio
Wisconsin

Region 6
Arkansas
Louisiana
New Mexico
Oklahoma
Texas

Region 7
Iowa
Kansas
Missouri
Nebraska

Region 8
Colorado
Montana
North Dakota
South Dakota
Utah
Wyoming

Region 9
Arizona
California
Hawaii
Nevada

Region 10
Alaska
Idaho
Oregon
Washington

US Bureau of Census Regions

Northeast Region
Connecticut
Maine
Massachusetts
New Hampshire
New Jersey
New York
Pennsylvania
Rhode island
Vermont

Midwest Region
Illinois
Indiana
Iowa
Kansas
Michigan
Minnesota
Missouri
Nebraska
North Dakota
Ohio
South Dakota
Wisconsin

South Region
Alabama
Arkansas
Delaware
District of Columbia
Florida
Georgia
Kentucky
Louisiana
Maryland
Mississippi
North Carolina
Oklahoma
South Carolina
Tennessee
Texas
Virginia
West Virginia

West Region
Alaska
Arizona
California
Colorado
Hawaii
Idaho
Montana
Nevada
New Mexico
Oregon
Utah
Washington
Wyoming

than newer houses. They further observed that the post-1980 houses did not show any trend in leakiness with age.

The position of the neutral pressure level (i.e., the point where indoor-outdoor pressures are equal) depends on the leakage configuration of the building envelope. The stack effect arising from indoor-outdoor temperature differences is also influenced by the partitioning of the building interior. When there is free communication between floors or stories, the building behaves as a single volume affected by a generally rising current during the heating season and a generally falling current during the cooling season. When vertical communication is restricted, each level essentially becomes an independent zone. As the wind flows past a building, regions of positive and negative pressure (relative to indoors) are created within the building; positive pressures induce an influx of air, whereas negative pressures induce an outflow. Wind effects and stack effects combine to determine a net inflow or outflow.

The final element of indoor transport involves the actions of mechanical ventilation systems that circulate indoor air through the use of fans. Mechanical ventilation systems may be connected to heating/cooling systems that, depending on the type of building, recirculate thermally treated indoor air or a mixture of fresh air and recirculated air. Mechanical systems also may be solely dedicated to exhausting air from a designated area, as with some kitchen range hoods and bath exhausts, or to recirculating air in designated areas as with a room fan. Local air circulation also is influenced by the movement of people and the operation of local heat sources.

17.3.2. Air Exchange Rates

Air exchange is the balanced flow into and out of a building, and is composed of three processes: (1) infiltration - air leakage through random cracks, interstices, and other unintentional openings in the building envelope; (2) natural ventilation - airflows through open windows, doors, and other designed openings in the building envelope; and (3) forced or mechanical ventilation - controlled air movement driven by fans. For nearly all indoor exposure scenarios, air exchange is treated as the principal means of diluting indoor concentrations. The air exchange rate is generally expressed in terms of air changes per hour (ACH, with units of h^{-1}), the ratio of the airflow ($m^3 h^{-1}$) to the volume (m^3).

No measurement surveys have been conducted to directly evaluate the range and distribution of residential air exchange rates. Although a significant number of air exchange measurements have been carried out over the years, there has been a diversity of protocols and study objectives. Since the early 1980s, however, an inexpensive perfluorocarbon tracer (PFT) technique has been used to measure time-averaged air exchange and interzonal airflows in thousands of occupied residences using essentially similar protocols (Dietz et al., 1986). The PFT technique utilizes miniature permeation tubes as tracer emitters and passive samplers to collect the tracers. The passive samplers are returned to the laboratory for analysis by gas chromatography. These measurement results have been compiled to allow various researchers to access the data (Versar, 1990).

Nazaroff et al. (1988) - Prior to the Koontz and Rector (1995) study, Nazaroff et al. (1988) aggregated the data from two studies conducted earlier using tracer-gas decay. At the time these studies were conducted, they were the largest U.S. studies to include air exchange measurements. The first (Grot and Clark, 1981) was conducted in 255 dwellings occupied by low-income families in 14 different cities. The geometric mean ± standard deviation for the air exchange measurements in these homes, with a median house age of 45 years, was 0.90 ± 2.13 ACH. The second study (Grimsrud et al., 1983) involved 312 newer residences, with a median age of less than 10 years. Based on measurements taken during the heating season, the geometric mean ± standard deviation for these homes was 0.53 ± 1.71 ACH. Based on an aggregation of the two distributions with proportional weighting by the respective number of houses studied, Nazaroff et al. (1988) developed an overall distribution with a geometric mean of 0.68 ACH and a geometric standard deviation of 2.01.

Versar (1990) - Database of PFT Ventilation Measurements - The residences included in the PFT database do not constitute a random sample across the United States. They represent a compilation of homes visited in the course of about 100 separate field-research projects by various organizations, some of which involved random sampling and some of which involved judgmental or fortuitous sampling. The larger projects in the PFT database are summarized in Table 17-9, in terms of the number of measurements (samples), states where, and months when, samples were taken, and summary statistics for their respective distributions of measured air exchange rates. For selected projects (LBL, RTI, SOCAL), multiple measurements were taken for the same house, usually during different seasons. A large majority of the

Table 17-9. Summary of Major Projects Providing Air Exchange Measurements in the PFT Database

Project Code	State	Month(s)[a]	Number of Measurements	Mean Air Exchange Rate	SD[b]	Percentiles				
						10th	25th	50th	75th	90th
ADM	CA	5-7	29	0.70	0.52	0.29	0.36	0.48	0.81	1.75
BSG	CA	1,8-12	40	0.53	0.30	0.21	0.30	0.40	0.70	0.90
GSS	AZ	1-3,8-9	25	0.39	0.21	0.16	0.23	0.33	0.49	0.77
FLEMING	NY	1-6,8-12	56	0.24	0.28	0.05	0.12	0.22	0.29	0.37
GEOMET1	FL	1,6-8,10-12	18	0.31	0.16	0.15	0.18	0.25	0.48	0.60
GEOMET2	MD	1-6	23	0.59	0.34	0.12	0.29	0.65	0.83	0.92
GEOMET3	TX	1-3	42	0.87	0.59	0.33	0.51	0.71	1.09	1.58
LAMBERT1	ID	2-3,10-11	36	0.25	0.13	0.10	0.17	0.23	0.33	0.49
LAMBERT2	MT	1-3,11	51	0.23	0.15	0.10	0.14	0.19	0.26	0.38
LAMBERT3	OR	1-3,10-12	83	0.46	0.40	0.19	0.26	0.38	0.56	0.80
LAMBERT4	WA	1-3,10-12	114	0.30	0.15	0.14	0.20	0.30	0.39	0.50
LBL1	OR	1-4,10-12	126	0.56	0.37	0.28	0.35	0.45	0.60	1.02
LBL2	WA	1-4,10-12	71	0.36	0.19	0.18	0.25	0.32	0.42	0.52
LBL3	ID	1-5,11-12	23	1.03	0.47	0.37	0.73	0.99	1.34	1.76
LBL4	WA	1-4,11-12	29	0.39	0.27	0.14	0.18	0.36	0.47	0.63
LBL5	WA	2-4	21	0.36	0.21	0.13	0.19	0.30	0.47	0.62
LBL6	ID	3-4	19	0.28	0.14	0.11	0.17	0.26	0.38	0.55
NAHB	MN	1-5,9-12	28	0.22	0.11	0.11	0.16	0.20	0.24	0.38
NYSDH	NY	1-2,4,12	74	0.59	0.37	0.28	0.37	0.50	0.68	1.07
PEI	MD	3-4	140	0.59	0.45	0.15	0.26	0.49	0.83	1.20
PIERCE	CT	1-3	25	0.80	1.14	0.20	0.22	0.38	0.77	2.35
RTI1	CA	2	45	0.90	0.73	0.38	0.48	0.78	1.08	1.52
RTI2	CA	7	41	2.77	2.12	0.79	1.18	2.31	3.59	5.89
RTI3	NY	1-4	397	0.55	0.37	0.26	0.33	0.44	0.63	0.94
SOCAL1	CA	3	551	0.81	0.66	0.29	0.44	0.66	0.94	1.43
SOCAL2	CA	7	408	1.51	1.48	0.35	0.59	1.08	1.90	3.11
SOCAL3	CA	1	330	0.76	1.76	0.26	0.37	0.48	0.75	1.11
UMINN	MN	1-4	35	0.36	0.32	0.17	0.20	0.28	0.40	0.56
UWISC	WI	2-5	57	0.82	0.76	0.22	0.33	0.55	1.04	1.87

[a] 1 = January, 2 = February, etc.
[b] Standard deviation
Source: Adapted from Versar, 1990.

measurements are from the SOCAL project that was conducted in Southern California. The means of the respective studies generally range from 0.2 to 1.0 ACH, with the exception of two California projects--RTI2 and SOCAL2. Both projects involved measurements in Southern California during a time of year (July) when windows would likely be opened by many occupants.

Koontz and Rector (1995) - Estimation of Distributions for Residential Air Exchange Rates - In analyzing the composite data from various projects (2,971 measurements), Koontz and Rector (1995) assigned weights to the results from each state to compensate for the geographic imbalance in locations where PFT measurements were taken. The results were weighted in such a way that the resultant number of cases would represent each state in proportion to its share of occupied housing units, as determined from the 1990 U.S. Census of Population and Housing.

Summary statistics from the Koontz and Rector (1995) analysis are shown in Table 17-10, for the country as a whole and by census regions. Based on the statistics for all regions combined, the authors suggested that a 10th percentile value of 0.18 ACH would be appropriate as a conservative estimator for air exchange in residential settings, and that the 50th percentile value of 0.45 ACH would be appropriate as a typical air exchange rate. In

applying conservative or typical values of air exchange rates, it is important to realize the limitations of the underlying data base. Although the estimates are based on thousands of measurements, the residences represented in the database are not a random sample of the United States housing stock. The sample population is not balanced in terms of geography or time of year. Statistical techniques were applied to compensate for some of these imbalances. In addition, PFT measurements of air exchange rates assume uniform mixing of the tracer within the building. This is not always so easily achieved. Furthermore, the degree of mixing can vary from day to day and house to house because of the nature of the factors controlling mixing (e.g., convective air monitoring driven by weather, and type and operation of the heating system). The relative placement of the PFT source and the sampler can also cause variability and uncertainty. It should be noted that sampling is typically done in a single location in a house which may not represent the average from that house. In addition, very high and very low values of air exchange rates based on PFT measurements have greater uncertainties than those in the middle of the distribution. Despite such limitations, the estimates in Table 17-10 are believed to represent the best available information on the distribution of air exchange rates across United States residences throughout the year.

Table 17-10. Summary Statistics for Air Exchange Rates (air changes per hour-ACH), by Region

	West Region	North Central Region	Northeast Region	South Region	All Regions
Arithmetic Mean	0.66	0.57	0.71	0.61	0.63
Arithmetic Standard Deviation	0.87	0.63	0.60	0.51	0.65
Geometric Mean	0.47	0.39	0.54	0.46	0.46
Geometric Standard Deviation	2.11	2.36	2.14	2.28	2.25
10th Percentile	0.20	0.16	0.23	0.16	0.18
50th Percentile	0.43	0.35	0.49	0.49	0.45
90th Percentile	1.25	1.49	1.33	1.21	1.26
Maximum	23.32	4.52	5.49	3.44	23.32

Source: Koontz and Rector, 1995.

Murray and Burmaster (1995) - Residential Air Exchange Rates in the United States: Empirical and Estimated Parametric Distributions by Season and Climatic Region - Murray and Burmaster (1995) analyzed the PFT database using 2,844 measurements (essentially the same cases as analyzed by Koontz and Rector (1995), but without the compensating weights). These authors summarized distributions for subsets of the data defined by climate region and season. The coldest region was defined as having 7,000 or more heating degree days, the colder region as 5,500-6,999 degree days, the warmer region as 2,500-5,499 degree days, and the warmest region as fewer than 2,500 degree days. The months of December, January and February were defined as winter, March, April and May were defined as spring, and so on. The results of Murray and Burmaster (1995) are summarized in Table 17-11. Neglecting the summer results in the colder regions which have only a few observations, the results indicate that the highest air exchange rates occur in the warmest climate region during the summer. As noted earlier (Section 17.3.2), many of the measurements in the warmer climate region were from field studies conducted in Southern California during a time of year (July) when windows would tend to be open in that area. Data for this region in particular should be used with caution since other areas within this region tend to have very hot summers and residences use air conditioners, resulting in lower air exchange rates. The lowest rates generally occur in the colder regions during the fall (Table 17-11).

17.3.3. Infiltration Models

A variety of mathematical models exist for prediction of air infiltration rates in individual buildings. A number of these models have been reviewed, for example, by Liddament and Allen (1983), and by Persily and Linteris (1984). Basic principles are concisely summarized in the ASHRAE Handbook of Fundamentals (ASHRAE, 1993). These models have a similar theoretical basis; all address indoor-outdoor pressure differences that are maintained by the actions of wind and stack (temperature difference) effects. The models generally incorporate a network of airflows where nodes representing regions of different pressure are interconnected by leakage paths. Individual models differ in details such as the number of nodes they can treat or

Table 17-11. Distributions of Residential Air Exchange Rates[a] by Climate Region and Season

Climate Region	Season	Sample Size	Arithmetic Mean	Standard Deviation	Percentiles				
					10th	25th	50th	75th	90th
Coldest	Winter	161	0.36	0.28	0.11	0.18	0.27	0.48	0.71
	Spring	254	0.44	0.31	0.18	0.24	0.36	0.53	0.80
	Summer	5	0.82	0.69	0.27	0.41	0.57	1.08	2.01
	Fall	47	0.25	0.12	0.10	0.15	0.22	0.34	0.42
Colder	Winter	428	0.57	0.43	0.21	0.30	0.42	0.69	1.18
	Spring	43	0.52	0.91	0.13	0.21	0.24	0.39	0.83
	Summer	2	1.31	--	--	--	--	--	--
	Fall	23	0.35	0.18	0.15	0.22	0.33	0.41	0.59
Warmer	Winter	96	0.47	0.40	0.19	0.26	0.39	0.58	0.78
	Spring	165	0.59	0.43	0.18	0.28	0.48	0.82	1.11
	Summer	34	0.68	0.50	0.27	0.36	0.51	0.83	1.30
	Fall	37	0.51	0.25	0.30	0.30	0.44	0.60	0.82
Warmest	Winter	454	0.63	0.52	0.24	0.34	0.48	0.78	1.13
	Spring	589	0.77	0.62	0.28	0.42	0.63	0.92	1.42
	Summer	488	1.57	1.56	0.33	0.58	1.10	1.98	3.28
	Fall	18	0.72	1.43	0.22	0.25	0.42	0.46	0.74

[a] In air changes per hour
Source: Murray and Burmaster, 1995.

the specifics of leakage paths (e.g., individual components such as cracks around doors or windows versus a combination of components such as an entire section of a building). Such models are not easily applied by exposure assessors, however, because the required inputs (e.g., inferred leakage areas, crack lengths) for the model are not easy to gather.

Another approach for estimating air infiltration rates is developing empirical models. Such models generally rely on collection of infiltration measurements in a specific building under a variety of weather conditions. The relationship between the infiltration rate and weather conditions can then be estimated through regression analysis, and is usually stated in the following form:

$$A = a + b\,|T_i - T_o| + cU^n \qquad \text{(Eqn. 17-1)}$$

where:

A = air infiltration rate (h^{-1})
T_i = indoor temperature (°C)
T_o = outdoor temperature (°C)
U = windspeed (ms^{-1})
n is an exponent with a value typically between 1 and 2
a, b and c are parameters to be estimated

Relatively good predictive accuracy usually can be obtained for individual buildings through this approach. However, exposure assessors often do not have the information resources required to develop parameter estimates for making such predictions.

A reasonable compromise between the theoretical and empirical approaches has been developed in the model specified by Dietz et al. (1986). The model, drawn from correlation analysis of environmental measurements and air infiltration data, is formulated as follows:

$$A = L\left(0.006\Delta T + \frac{0.03}{C}U^{1.5}\right) \qquad \text{(Eqn. 17-2)}$$

where:

A = average air changes per hour or infiltration rate, h^{-1}
L = generalized house leakiness factor ($1 < L < 5$)
C = terrain sheltering factor ($1 < C < 10$)
ΔT = indoor-outdoor temperature difference (C°)
U = windspeed (ms^{-1})

The value of L is greater as house leakiness increases and the value of C is greater as terrain sheltering (reflects shielding of nearby wind barrier) increases. Although the above model has not been extensively validated, it has intuitive appeal and it is possible for the user to develop reasonable estimates for L and C with limited guidance. Historical data from various U.S. airports are available for estimation of the temperature and windspeed parameters. As an example application, consider a house that has central values of 3 and 5 for L and C, respectively. Under conditions where the indoor

temperature is 20 °C (68 °F), the outdoor temperature is 0 °C (32 ° F) and the windspeed is 5 ms^{-1}, the predicted infiltration rate for that house would be 3 (0.006 x 20 + 0.03/5 x 51.5), or 0.56 air changes per hour. This prediction applies under the condition that exterior doors and windows are closed, and does not include the contributions, if any, from mechanical systems (see Section 17.2.3). Occupant behavior, such as opening windows, can, of course, overwhelm the idealized effects of temperature and wind speed.

17.3.4. Deposition and Filtration

Deposition refers to the removal of airborne substances to available surfaces that occurs as a result of gravitational settling and diffusion, as well as electrophoresis and thermophoresis. Filtration is driven by similar processes, but is confined to material through which air passes. Filtration is usually a matter of design, whereas deposition is a matter of fact.

17.3.4.1. Deposition

The deposition of particulate matter and reactive gas-phase pollutants to indoor surfaces is often stated in terms of a characteristic deposition velocity (m h^{-1}) allied to the surface-to-volume ratio (m^2 m^{-3}) of the building or room interior, forming a first order loss rate (h^{-1}) similar to that of air exchange. Theoretical considerations specific to indoor environments have been summarized in comprehensive reviews by Nazaroff and Cass (1989) and Nazaroff et al. (1993).

For airborne particles, deposition rates depend on aerosol properties (size, shape, density) as well as room factors (thermal gradients, turbulence, surface geometry). The motions of larger particles are dominated by gravitational settling; the motions of smaller particles are subject to convection and diffusion. Consequently, larger particles tend to accumulate more rapidly on floors and up-facing surfaces while smaller particles may accumulate on surfaces facing in any direction. Figure 17-4 illustrates the general trend for particle deposition across the size range of general concern for inhalation exposure (<10 μm). The current thought is that theoretical calculations of deposition rates are likely to provide unsatisfactory results due to knowledge gaps relating to near-surface air motions and other sources of inhomogeneity (Nazaroff et al., 1993).

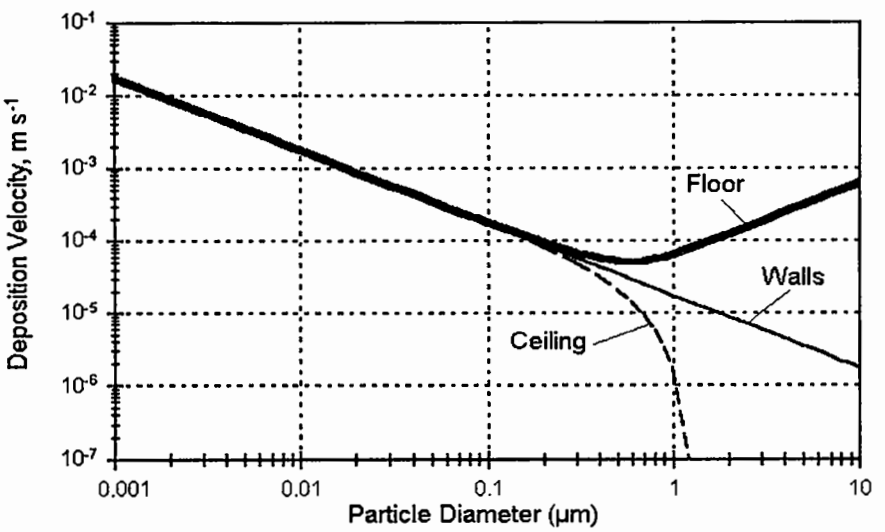

Figure 17-4. Idealized Patterns of Particle Deposition Indoors

Source: Adapted from Nazaroff and Cass, 1989.

Wallace (1996) - Indoor Particles: A Review - In a major review of indoor particles, Wallace (1996) cited overall particle deposition rates for respirable ($PM_{2.5}$), inhalable (PM_{10}), and coarse (difference between PM_{10} and $PM_{2.5}$) size fractions determined from EPA's PTEAM study. These values, listed in Table 17-12, were derived from measurements conducted in nearly 200 residences.

Table 17-12. Deposition Rates for Indoor Particles

Size Fraction	Deposition Rate
$PM_{2.5}$	0.39 h^{-1}
PM_{10}	0.65 h^{-1}
Coarse	1.0 h^{-1}

Source: Adapted from Wallace, 1996.

Thatcher and Layton (1995) - Deposition, Resuspension, and Penetration of Particles Within a Residence - Thatcher and Layton (1995) evaluated removal rates for indoor particles in four size ranges (1-5, 5-10, 10-25, and >25 μm) in a study of one house occupied by a family of four. These values are listed in Table 17-13. In a subsequent evaluation of data collected in 100 Dutch residences, Layton and Thatcher (1995) estimated settling velocities of 2.7 m h^{-1} for lead-bearing particles captured in total suspended particulate matter (TSP) samples.

Table 17-13. Particle Deposition During Normal Activities

Particle Size Range	Particle Removal Rate (h^{-1})
1-5	0.5
5-10	1.4
10-25	2.4
>25	4.1

Source: Adapted from Thatcher and Layton, 1995.

17.3.4.2. Filtration

A variety of air cleaning techniques have been applied to residential settings. Basic principles related to residential-scale air cleaning technologies have been summarized in conjunction with reporting early test results (Offerman et al., 1984). General engineering principles are summarized in ASHRAE (1988). In addition to fibrous filters integrated into central heating and air conditioning systems, extended surface filters and High Efficiency Particle Arrest (HEPA) filters as well as electrostatic systems are available to increase removal efficiency. Free-standing air cleaners (portable and/or console) are also being used. Product-by-product test results reported by Hanley et al. (1994); Shaughnessy et al. (1994); and Offerman et al. (1984) exhibit considerable variability across systems, ranging from ineffectual (< 1% efficiency) to nearly complete removal.

17.3.5. Interzonal Airflows

Residential structures consist of a number of rooms that may be connected horizontally, vertically, or both horizontally and vertically. Before considering residential structures as a detailed network of rooms, it is convenient to divide them into one or more zones. At a minimum, each floor is typically defined as a separate zone. For indoor air exposure assessments, further divisions are sometimes made within a floor, depending on (1) locations of specific contaminant sources and (2) the presumed degree of air communication among areas with and without sources.

Defining the airflow balance for a multiple-zone exposure scenario rapidly increases the information requirements as rooms or zones are added. As shown in Figure 17-5, a single-zone system (considering the entire building as a single well-mixed volume) requires only two airflows to define air exchange. Further, because air exchange is balanced flow (air does not "pile up" in the building, nor is a vacuum formed), only one number (the air exchange rate) is needed. With two zones, six airflows are needed to accommodate interzonal airflows plus air exchange; with three zones, twelve airflows are required. In some cases, the complexity can be reduced using judicious (if not convenient) assumptions. Interzonal airflows connecting nonadjacent rooms can be set to zero, for example, if flow pathways do not exist. Symmetry also can be applied to the system by assuming that each flow pair is balanced.

17.3.6. Water Uses

Among indoor water uses, showering, bathing and handwashing of dishes or clothes provide the primary opportunities for dermal exposure. Virtually all indoor water uses will result in some volatilization of chemicals, leading to inhalation exposure.

The exposure potential for a given situation will depend on the source of water, the types and extents of water uses, and the extent of volatilization of specific chemicals. According to the results of the 1987 Annual Housing Survey (U.S. Bureau of the Census, 1992), 84.7 percent of all U.S. housing units receive water from a public system or private company (as opposed to a well). Across the four major regions defined by the U.S. Census Bureau (Northeast, South, Midwest, and West), the

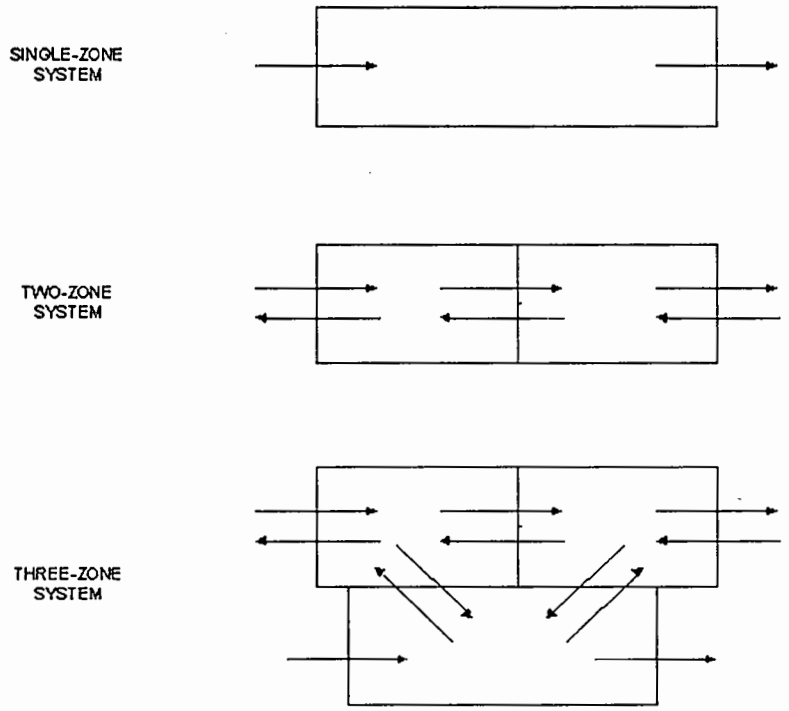

Figure 17-5. Air Flows for Multiple-zone Systems

percentage varies from 82.5 in the Midwest region to 93.2 in the West region (the Northeast and South regions both are very close to the national percentage).

The primary types of water use indoors can be classified as showering/bathing, toilet use, clothes washing, dishwashing, and faucet use (e.g., for drinking, cooking, general cleaning, or washing hands). Substantial information on water use has been collected in California households by the Metropolitan Water District of Southern California (MWD, 1991) and by the East Bay Municipal Utility District (EBMUD, 1992). An earlier study by the U.S. Department of Housing and Urban Development (U.S. DHUD, 1984) monitored water use in 200 households over a 20-month period. The household selection process for this study was not random; it involved volunteers from water companies and engineering organizations, most of which were located in large metropolitan areas. Nazaroff et al. (1988) also assembled the results of several smaller surveys, typically involving between 5 and 50 households each.

A common feature of the various studies cited above is that the results were all reported in gallons per capita per day (gcd), or in units that could be easily converted to gcd. Most studies also provided estimates by type of use--shower/bath, toilet, laundry, dishwashing, and other (e.g., faucets). A summary of the various study results is provided in Table 17-14. There is generally about a threefold variation across studies for total

Table 17-14. In-house Water Use Rates (gcd), by Study and Type of Use

Study	Total, All Uses	Shower or Bath	Toilet	Laundry	Dishwashing	Other
MWD[1]	93	26	30	20	5	12
EBMUD[2]	67	20	28	9	4	6
U.S. DHUD[3]	40	15	10	13	2	--
Nazaroff et al., 1988	52	6	17	11	18	--
Study 1						
Study 2						
- Rural	46	11	18	14	3	--
- Urban	43	10	18	11	4	--
Study 3	42	9	20	7	4	2
Study 4	45	9	15	11	4	6
Study 5	70	21	32	7	7	3
Study 6	59	20	24	8	4	3
Study 7	40	10	9	11	5	5
Study 8	52-86	20-40	4-6	20-30	8-10	--
Mean Across Studies[5]	59	17	18	13	6	5
Median Across Studies[5]	53	15	18	11	4	5

[1] Metropolitan Water District of Southern California, 1991.
[2] East Bay Municipal Utility District, 1992.
[3] U.S. Department of Housing and Urban Development, 1984.
[4] Results of eight separate studies.
[5] The average value from each range reported in Study No. 8 was used to calculate the median across studies. The mean and median for the "Total, all Uses" column were obtained by summing across the means and medians for individual types of water use.

in-house water use as well as each type of use. Central values for total use, were obtained by taking the mean and median across the studies for each type of water use and then summing these means/medians across uses. These central values are shown at the bottom of the table. The means and medians were summed across types of uses to obtain the mean for all uses combined because only a subset of the studies reported values for other uses.

The following sections provide a summary of the water use characteristics for the primary types of water uses indoors. To the extent found in the literature, each water use is described in terms of the frequency of use; flowrate during the use; quantity of water used during each occurrence of the water use; and quantity used by an average person. Table 17-15 summarizes the studies of U.S. DHUD and the Power Authorities by locations and number of households.

Table 17-15. Summary of Selected HUD and Power Authority Water Use Studies

	Number of Households	Location	Reference
U.S. DHUD Studies			
Study 1	37	Los Angeles, CA	a,b
Study 2	7	Sacramento, CA	a,c
Study 3	40	Walnut Creek, CA	a,c
Study 4	7	Washington, DC	a
Study 5	21	Sacramento, CA	a
Study 6	19	Los Angeles, CA	a
Power Authority Studies			
Study 1	32	Seattle, WA	a
Study 2	23	Denver, CO	a
Study 3	15	Aurora, CO	a
Study 4	10	Fairfax, VA	a
TOTAL	211		

Sources:
[a] U.S. Department of Housing and Urban Development, 1984.
[b] Metropolitan Water District of Southern California, 1991.
[c] East Bay Municipal Utility District, 1992.

Caution should be exercised when using the data collected in these studies and shown here. The participants in these studies are not a representative sample of the general population. The participants consisted of volunteers, mostly from large metropolitan areas.

Showering and Bathing Water Use Characteristics - The HUD study (U.S. DHUD, 1984) monitored 162 households for shower duration. The individuals were also subdivided by people who only shower or only bath. The results are given in Table 17-16. The flowrates of various types of shower heads were also evaluated in the study (Table 17-17).

Toilet Water Use Characteristics - The HUD study (U.S. DHUD, 1984) reported water volume per flush for various types of toilets and monitored 162 households for shower duration. The results of this study are shown in Table 17-18. Since the HUD study was conducted prior to 1984, the newer (post 1984) conserving toilets that are designed to use approximately 1.6 gallons per flush were not tested.

The frequency of use for toilets in households was examined in several studies (U.S. DHUD, 1984; Ligman, et al., 1974; Siegrist, 1976). The observed mean frequencies in these studies are given in Table 17-19. Tables 17-20 through 17-24 present indoor water use frequencies for dishwashers and clothes washers.

Table 17-16. Showering and Bathing Water Use Characteristics

Characteristic	Mean Duration	Mean Frequency
Individuals who Shower only	10.4 minutes/shower	0.74 showers/day/person
Individuals who Bath only	NA	0.41 baths/day/person
Individuals who Shower and Bath	NA	NA

Source: Adapted from U. S. DHUD, 1984.

Table 17-17. Showering Characteristics for Various Types of Shower Heads

Shower Head Type	Mean Flow Rate (gpm)
Non-Conserving (> 3 gpm)	3.4
Low Flow (≤ 3 gpm)	1.9
Restrictor (≤ 3 gpm)	2.1
Zinplas[a]	1.8
Turbojector[a]	1.3

[a] Types of low flow water fixtures.
Source: Adapted from U.S. DHUD, 1984.

Table 17-18. Toilet Water Use Characteristics

Toilet Type	Average Water Use (gallons/flush)
Non-Conserving	5.5
Bottles	5.0
Bags	4.8
Dams	4.5
Low-flush	3.5

Source: Adapted from U.S. DHUD, 1984.

Table 17-19. Toilet Frequency Use Characteristics

Study	Flush Frequency (flushes/person/day)
U.S. DHUD, 1984[a]	4.2 flushes/household/day
Ligman, et al., 1974 Rural, M-F	3.6 flushes/person/day
Ligman, et al., 1974 Rural, Sat-Sun	3.8 flushes/person/day
Ligman, et al., 1974 Urban, M-F	3.6 flushes/person/day
Ligman, et al., 1974 Urban, Sat-Sun	3.1 flushes/person/day
Siegrist, 1976	2.3 flushes/person/day
Unweighted Mean	3.43 flushes/person/day

[a] The HUD value may in fact be flushes/household/day

Table 17-20. Dishwasher Frequency Use Characteristics

Study	Use Frequency
U.S. DHUD, 1984	0.47 loads/person/day
Ligman, et al., 1974 Rural	1.3 loads/day
Siegrist, 1976	0.39 loads/person/day
Unweighted Mean	0.92 loads/day

Table 17-21. Dishwasher Water Use Characteristics

Brand	Average Water Use (gallons/regular cycle)	Cycle Duration (minutes)	
		140°F	120°F
Maytag	11.5	75	--
Frigidaire	12	75	75
General Electric	10.5	80	95
Sears	10	75	95
Whirlpool	9.5	60	110
White/Westinghouse	12	75	75
Waste King	11.5	65	85
Kitchen Aid	9.5	80	80
Magic Chef	11.5	70	--
Unweighted Mean	10.9	72.8	87.9

Source: Adapted from Consumer Reports, 1987.

Table 17-22. Clothes Washer Frequency Use Characteristics

Study	Use Frequency
U.S. DHUD, 1984	0.3 loads/person/day
Ligman, et al., 1974 Rural	0.34 loads/person/day
Ligman, et al., 1974 Urban	0.27 loads/person/day
Siegrist, 1976	0.31 loads/day

Table 17-23. Clothes Washer Water Use Characteristics

Brand	Average Water Use (gallons/regular cycle)	Cycle Duration (minutes)
Maytag	41	32
Frigidaire	48	40
General Electric	51	48
Hotpoint	51	48
Sears	49	40
Whirlpool	53	44
White/Westinghouse	54	47
Kelvinator	46	52
Norge	55	49

Source: Adapted from Consumer Reports, 1982.

Table 17-24. Range of Water Uses for Clothes Washers

Type of Clothes Washer	Range of Water Use
Conventional	27-59 gallons/load
Low Water	16-19 gallons/load
All Clothes Washers	16-59 gallons/load

Source: Adapted from Consumer Reports, 1982.

17.3.7. House Dust and Soil

House dust is a complex mixture of biologically-derived material (animal dander, fungal spores, etc.), particulate matter deposited from the indoor aerosol, and soil particles brought in by foot traffic. House dust may contain VOCs (see, for example, Wolkoff and Wilkins, 1994; Hirvonen et al., 1995), pesticides from imported soil particles as well as from direct applications indoors (see, for example, Roberts et al., 1991), and trace metals derived from outdoor sources (see, for example, Layton and Thatcher, 1995). The indoor abundance of house dust depends on the interplay of deposition from the airborne state, resuspension due to various activities, direct accumulation, and infiltration.

In the absence of indoor sources, indoor concentrations of particulate matter are significantly lower than outdoor levels. For some time, this observation supported the idea that a significant fraction of the outdoor aerosol is filtered out by the building envelope. More recent data, however, have shown that deposition (incompletely addressed in earlier studies) accounts for the indoor-outdoor contrast, and outdoor particles smaller than 10 μm aerodynamic diameter penetrate the building envelope as completely as nonreactive gases (Wallace, 1996).

Roberts et al. (1991) - Development and Field Testing of a High Volume Sampler for Pesticides and Toxics in Dust - Dust loadings, reported by Roberts et al. (1991) were also measured in conjunction with the Non-Occupational Pesticide Exposure Study (NOPES). In this study house dust was sampled from a representative grid using a specially constructed high-volume surface sampler (HVS2). The surface sampler collection efficiency was verified in conformance with ASTM F608 (ASTM, 1989). The data summarized in Table 17-25 were collected from carpeted areas in volunteer households in Florida encountered during the course of NOPES. Seven of the nine sites were single-family detached homes, and two were mobile homes. The authors noted that the two houses exhibiting the highest dust loadings were only those homes where a vacuum cleaner was not used for housekeeping.

Table 17-25. Total Dust Loading for Carpeted Areas

Household	Total Dust Load ($g\text{-}m^{-2}$)	Fine Dust (<150 μm) Load ($g\text{-}m^{-2}$)
1	10.8	6.6
2	4.2	3.0
3	0.3	0.1
4	2.2; 0.8	1.2; 0.3
5	1.4; 4.3	1.0; 1.1
6	0.8	0.3
7	6.6	4.7
8	33.7	23.3
9	812.7	168.9

Source: Adapted from Roberts et al., 1991.

Thatcher and Layton (1995) - Deposition, Resuspension and Penetration of Particles Within a Residence - Relatively few studies have been conducted at the level of detail needed to clarify the dynamics of indoor aerosols. One intensive study of a California residence (Thatcher and Layton, 1995), however, provides instructive results. Using a model-based analysis for data collected under controlled circumstances, the investigators verified penetration of the outdoor aerosol and estimated rates for particle deposition and resuspension (Table 17-26). The investigators stressed that normal household activities are a significant source of airborne particles larger than 5 μm. During the study, they observed that just walking into and out of a room could momentarily double the concentration. The airborne abundance of submicrometer particles, on the other hand, was unaffected by either cleaning or walking.

Table 17-26. Particle Deposition and Resuspension During Normal Activities

Particle Size Range (μm)	Particle Deposition Rate (h^{-1})	Particle Resuspension Rate (h^{-1})
0.3-0.5	(not measured)	9.9×10^{-7}
0.6-1	(not measured)	4.4×10^{-7}
1-5	0.5	1.8×10^{-5}
5-10	1.4	8.3×10^{-5}
10-25	2.4	3.8×10^{-4}
>25	4.1	3.4×10^{-5}

Source: Adapted from Thatcher and Layton, 1995.

Mass loading of floor surfaces (Table 17-27) was measured in the study of Thatcher and Layton (1995) by thoroughly cleaning the house and sampling accumulated dust, after one week of normal habitation. Methodology, validated under ASTM F608 (ASTM, 1989), showed fine dust recovery efficiencies of 50 percent with new carpet and 72 percent for linoleum. Tracked areas showed consistently higher accumulations than untracked areas, confirming the importance of tracked-in material. Differences between tracked areas upstairs and downstairs show that tracked-in material is not readily transported upstairs. The consistency of untracked carpeted areas throughout the house, suggests that, in the absence of tracking, particle transport processes are similar on both floors.

Table 17-27. Dust Mass Loading After One Week Without Vacuum Cleaning

Location in Test House	Dust Loading ($g\text{-}m^{-2}$)
Tracked area of downstairs carpet	2.20
Untracked area of downstairs carpet	0.58
Tracked area of linoleum	0.08
Untracked area of linoleum	0.06
Tracked area of upstairs carpet	1.08
Untracked area of upstairs carpet	0.60
Front doormat	43.34

Source: Adapted from Thatcher and Layton, 1995.

17.4. SOURCES

Product- and chemical-specific mechanisms for indoor sources can be described using simple emission factors to represent instantaneous releases, as well as constant releases over defined time periods; more complex formulations may be required for time-varying sources. Guidance documents for characterizing indoor sources within the context of the exposure assessment process are limited (see, for example, Jennings et al., 1987; Wolkoff, 1995). Fairly extensive guidance exists in the technical literature, however, provided that the exposure assessor has the means to define (or estimate) key mechanisms and chemical-specific parameters. Basic concepts are summarized below for the broad source categories that relate to airborne contaminants, waterborne contaminants, and for soil/house dust indoor sources.

17.4.1. Source Descriptions for Airborne Contaminants

Table 17-28 summarizes simplified indoor source descriptions for airborne chemicals for direct discharge sources (e.g., combustion, pressurized propellant products), as well as emanation sources (e.g., evaporation from "wet" films, diffusion from porous media), and transport-related sources (e.g., infiltration of outdoor air contaminants, soil gas entry).

Direct-discharge sources can be approximated using simple formulas that relate pollutant mass released to characteristic process rates. Combustion sources, for example, may be stated in terms of an emission factor, fuel content (or heating value), and fuel consumption (or carrier delivery) rate. Emission factors for combustion products of general concern (e.g., CO, NO_x) have been measured for a number of combustion appliances using room-sized chambers (see, for example, Relwani et al., 1986). Other direct-discharge sources would include

volatiles released from water use and from pressurized consumer products. Resuspension of house dust (see Section 17.3.7) would take on a similar form by combining an activity-specific rate constant with an applicable dust mass.

Table 17-28. Simplified Source Descriptions for Airborne Contaminants

Description	Components	Dimensions
Direct Discharge		
Combustion	$E_f H_f M_f$	g h^{-1}
	E_f = emission factor	g J^{-1}
	H_f = fuel content	J mol^{-1}
	M_f = fuel consumption rate	mol h^{-1}
Volume Discharge	$Q_p C_p \epsilon$	g h^{-1}
	Q_p = volume delivery rate	m^3 h^{-1}
	C_p = concentration in carrier	g m^{-3}
	ϵ = transfer efficiency	g g^{-1}
Mass Discharge	$M_p w_c \epsilon$	g h^{-1}
	M_p = mass delivery rate	g h^{-1}
	w_c = weight fraction	g g^{-1}
	ϵ = transfer efficiency	g g^{-1}
Diffusion Limited		
	$(D_f \delta^{-1})(C_s - C_i)A_i$	g h^{-1}
	D_f = diffusivity	m^2 h^{-1}
	δ^{-1} = boundary layer thickness	m
	C_s = vapor pressure of surface	g m^{-3}
	C_i = room concentration	g m^{-3}
	A_i = area	m^2
Exponential		
	$A_i E_o e^{-k t}$	g h^{-1}
	A_i = area	m^2
	E_o = initial unit emission rate	g h^{-1} m^{-2}
	k = emission decay factor	h^{-1}
	t = time	h
Transport		
Infiltration Interzonal Soil Gas	$Q_{ji} C_j$	g h^{-1}
	Q_{ji} = air flow from zone j	m^3 h^{-1}
	C_j = air concentration in zone j	g m^{-3}

Diffusion-limited sources (e.g., carpet backing, furniture, flooring, dried paint) represent probably the greatest challenge in source characterization for indoor air quality. Vapor-phase organics dominate this group, offering great complexity because (1) there is a fairly long list of chemicals that could be of concern, (2) ubiquitous consumer products, building materials, coatings, and furnishings contain varying amounts of different chemicals, (3) source dynamics may include nonlinear mechanisms, and (4) for many of the chemicals, emitting as well as non-emitting materials evident in realistic settings may promote reversible and irreversible sink effects. Very detailed descriptions for diffusion-limited sources can be constructed to link specific properties of the chemical, the source material, and the receiving environment to calculate expected behavior (see, for example, Schwope et al., 1992; Cussler, 1984). Validation to actual circumstances, however, suffers practical shortfalls because many parameters simply cannot be measured directly.

The exponential formulation listed in Table 17-28 was derived based on a series of papers generated during the development of chamber testing methodology by EPA (Dunn, 1987; Dunn and Tichenor, 1988; Dunn and Chen, 1993). This framework represents an empirical alternative that works best when the results of chamber tests are available. Estimates for the initial emission rate (E_o) and decay factor (k_s) can be developed for hypothetical sources from information on pollutant mass available for release (M) and supporting assumptions.

Assuming that a critical time period (t_c) coincides with reduction of the emission rate to a critical level (E_c) or with the release of a critical fraction of the total mass (M_c), the decay factor can be estimated by solving either of these relationships:

$$\frac{E_c}{E_o} = e^{-k_s t_c} \text{ or } \frac{M_c}{M} = 1 - e^{-k_s t_c} \qquad \text{(Eqn. 17-3)}$$

The critical time period can be derived from product-specific considerations (e.g., equating drying time for a paint to 90 percent emissions reduction). Given such an estimate for k_s, the initial emission rate can be estimated by integrating the emission formula to infinite time under the assumption that all chemical mass is released:

$$M = \int_0^\infty E_o e^{-k_s t} dt = \frac{E_o}{k_s} \qquad \text{(Eqn. 17-4)}$$

The basis for the exponential source algorithm has also been extended to the description of more complex diffusion-limited sources. With these sources, diffusive or evaporative transport at the interface may be much more rapid than diffusive transport from within the source material, so that the abundance at the source/air interface becomes depleted, limiting the transfer rate to the air. Such effects can prevail with skin formation in "wet" sources like stains and paints (see, for example, Chang and Guo, 1992). Similar emission profiles have been observed with the emanation of formaldehyde from

particleboard with "rapid" decline as formaldehyde evaporates from surface sites of the particleboard over the first few weeks. It is then followed by a much slower decline over ensuing years as formaldehyde diffuses from within the matrix to reach the surface (see, for example, Zinn et al., 1990).

Transport-based sources bring contaminated air from other areas into the airspace of concern. Examples include infiltration of outdoor contaminants, and soil gas entry. Soil gas entry is a particularly complex phenomenon, and is frequently treated as a separate modeling issue (Little et al., 1992; Sextro, 1994). Room-to-room migration of indoor contaminants would also fall under this category, but this concept is best considered using the multiple-zone model.

17.4.2. Source Descriptions for Waterborne Contaminants

Residential water supplies may convey chemicals to which occupants can be exposed through ingestion, dermal contact, or inhalation. These chemicals may appear in the form of contaminants (e.g., trichloroethylene) as well as naturally-occurring byproducts of water system history (e.g., chloroform, radon). Among indoor water uses, showering, bathing and handwashing of dishes or clothes provide the primary opportunities for dermal exposure. The escape of volatile chemicals to the gas phase associates water use with inhalation exposure. The exposure potential for a given situation will depend on the source of water, the types and extents of water uses, and the extent of volatilization of specific chemicals. Primary types of residential water use (summarized in Section 17.3) include showering/bathing, toilet use, clothes washing, dishwashing, and faucet use (e.g., for drinking, cooking, general cleaning, or washing hands).

Upper-bounding estimates of chemical release rates from water use can be formulated as simple emission factors by combining the concentration in the feed water (g m^{-3}) with the flow rate for the water use (m^3 h^{-1}), and assuming that the chemical escapes to the gas phase. For some chemicals, however, not all of the chemical escapes in realistic situations due to diffusion-limited transport and solubility factors. For inhalation exposure estimates, this may not pose a problem because the bounding estimate would overestimate emissions by no more than approximately a factor of two. For multiple exposure pathways, the chemical mass remaining in the water may be of importance. Refined estimates of volatile emissions are usually considered under two-resistance theory to accommodate mass transport aspects of the water-air system (see, for example, Little, 1992; Andelman, 1990; McKone, 1987). Release rates are formulated as:

$$S = K_m F_W \left[C_w - \frac{C_a}{H} \right] \qquad \text{(Eqn. 17-5)}$$

where:

S	=	chemical release rate (g h^{-1})
K_m	=	dimensionless mass-transfer coefficient
F_w	=	water flow rate (m^3 h^{-1})
C_w	=	concentration in feed water (g m^{-3})
C_a	=	concentration in air (g m^{-3})
H	=	dimensionless Henry's Law constant

Because the emission rate is dependent on the air concentration, recursive techniques are required. The mass transfer coefficient is a function of water use characteristics (e.g., water droplet size spectrum, fall distance, water film) and chemical properties (diffusion in gas and liquid phases). Estimates of practical value are based on empirical tests to incorporate system characteristics into a single parameter (see, for example, Giardino et al., 1990). Once characteristics of one chemical-water use system are known (reference chemical, subscript r), the mass transfer coefficient for another chemical (index chemical, subscript i) delivered by the same system can be estimated using formulations identified in the review by Little (1992):

$$\frac{1}{K}\left(\frac{D_{Li}}{D_{Lr}}\right)^{1/2} = \frac{1}{K_{Lr}} = \frac{1}{K_{Gr}} - \frac{1}{H}\left(\frac{D_{Gr}}{D_{Gi}}\right)^{2/3}\left(\frac{D_{Li}}{D_{Lr}}\right)^{1/2} \qquad \text{(Eqn. 17-6)}$$

where:

D_L	=	liquid diffusivity (m^2 s^{-1})
D_G	=	gas diffusivity (m^2 s^{-1})
K_L	=	liquid-phase mass transfer coefficient
K_G	=	gas-phase mass transfer coefficient
H	=	dimensionless Henry's Law constant

17.4.3. Soil and House Dust Sources

The rate process descriptions compiled for soil and house dust in Section 17.3 provide inputs for estimating indoor emission rates (S_d, g h^{-1}) in terms of dust mass loading (M_d, g m^{-2}) combined with resuspension rates (R_d, h^{-1}) and floor area (A_f, m^2):

$$S_d = M_d R_d A_f \quad \text{(Eqn. 17-7)}$$

Because house dust is a complex mixture, transfer of particle-bound constituents to the gas phase may be of concern for some exposure assessments. For emission estimates, one would then need to consider particle mass residing in each reservoir (dust deposit, airborne).

17.5. ADVANCED CONCEPTS

17.5.1. Uniform Mixing Assumption

Many exposure measurements are predicated on the assumption of uniform mixing within a room or zone of a house. Mage and Ott (1994) offers an extensive review of the history of use and misuse of the concept. Experimental work by Baughman et al. (1994) and Drescher et al. (1995) indicates that, for an instantaneous release from a point source in a room, fairly complete mixing is achieved within 10 minutes when convective flow is induced by solar radiation. However, up to 100 minutes may be required for complete mixing under quiescent (nearly isothermal) conditions. While these experiments were conducted at extremely low air exchange rates (< 0.1 ACH), based on the results, attention is focused on mixing within a room.

The situation changes if a human invokes a point source for a longer period and remains in the immediate vicinity of that source. Personal exposure in the near vicinity of a source can be much higher than the well-mixed assumption would suggest. A series of experiments conducted by GEOMET (1989) for the U.S. EPA involved controlled point-source releases of carbon monoxide tracer (CO), each for 30 minutes. "Breathing-zone" measurements located within 0.4 m of the release point were ten times higher than for other locations in the room during early stages of mixing and transport.

Similar investigations conducted by Furtaw et al. (1995) involved a series of experiments in a controlled-environment room-sized chamber. Furtaw et al. (1995) studied spatial concentration gradients around a continuous point source simulated by sulfur hexafluoride (SF_6) tracer with a human moving about the room. Average breathing-zone concentrations when the subject was near the source exceeded those several meters away by a factor that varied inversely with the ventilation intensity in the room. At typical room ventilation rates, the ratio of source-proximate to slightly-removed concentration was on the order of 2:1.

17.5.2. Reversible Sinks

For some chemicals, the actions of reversible sinks are of concern. For an initially "clean" condition in the sink material, sorption effects can greatly deplete indoor concentrations. However, once enough of the chemical has been adsorbed, the diffusion gradient will reverse, allowing the chemical to escape. For persistent indoor sources, such effects can serve to reduce indoor levels initially but once the system equilibrates, the net effect on the average concentration of the reversible sink is negligible. Over suitably short time frames, this can also affect integrated exposure. For indoor sources whose emission profile declines with time (or ends abruptly), reversible sinks can serve to extend the emissions period as the chemical desorbs long after direct emissions are finished. Reversible sink effects have been observed for a number of chemicals in the presence of carpeting, wall coverings, and other materials commonly found in residential environments.

Interactive sinks (and models of the processes) are of a special importance; while sink effects can greatly reduce indoor air concentrations, re-emission at lower rates over longer time periods could greatly extend the exposure period of concern. For completely reversible sinks, the extended time could bring the cumulative exposure to levels approaching the sink-free case. Recent publications (Axley et al., 1993; Tichenor et al., 1991) show that first principles provide useful guidance in postulating models and setting assumptions for reversible/irreversible sink models. Sorption/desorption can be described in terms of Langmuir (monolayer) as well as Brunauer-Emmet-Teller (BET, multilayer) adsorption.

17.6 RECOMMENDATIONS

Table 17-29 presents a summary of volume of residence surveys and Table 17-30 presents a summary of air exchange rates surveys. Table 17-31 presents the recommended values. Tables 17-32 and 17-33 provide the confidence in recommendations for house volume and air exchange rates, respectively. Key studies or analyses described in this chapter were used in selecting recommended values for residential volume. The air exchange rate data presented in the studies are extremely limited. Therefore, studies have not been classified as key or relevant studies. However, recommendations have been provided for air exchange rates and the confidence recommendation has been assigned a "low" overall rating. Therefore, these values should be used with caution. Both

central and conservative values are provided. These two parameters -- volume and air exchange rate -- can be used by exposure assessors in modeling indoor-air concentrations as one of the inputs to exposure estimation. Other inputs to the modeling effort include rates of indoor pollutant generation and losses to (and, in some cases, re-emissions from) indoor sinks. Other things being equal (i.e., holding constant the pollutant generation rate and effect of indoor sinks), lower values for either the indoor volume or the air exchange rate will result in higher indoor-air concentrations. Thus, values near the lower end of the distribution (e.g., 10th percentile) for either parameter are appropriate in developing conservative estimates of exposure.

For the volume of a residence, both key studies (U.S. DOE (1995) and Versar (1990) PFT database) have the same mean value -- 369 m^3 (see Table 17-1). This mean value is recommended as a central estimate residential volume. Intuitively, the 10th percentile of the distribution from either study -- 147 m^3 for RECS survey or 167 m^3 for the PFT database -- is too conservative a value, as both these values are lower than the mean volume for multifamily dwelling units (see Table 17-2). Instead, the 25th percentile -- 209 m^3 for RECS survey or 225 m^3 for PFT database, averaging 217 m^3 across the two key studies -- is recommended (Table 17-1).

For the residential air exchange rate, the median value of 0.45 air changes per hour (ACH) from the PFT database (see Table 17-9) is recommended as a typical value (Koontz and Rector, 1995). This median value is very close to the geometric mean of the measurements in the PFT database analyzed by Koontz and Rector (1995). The arithmetic mean is not preferred because it is influenced fairly heavily by extreme values at the upper tail of the distribution. For a conservative value, the 10th percentile for the PFT database -- 0.18 ACH -- is recommended (Table 17-10).

There are some uncertainties in, or limitations on, the distribution for volumes and air exchange rates that are presented in this chapter. For example, the RECS used to infer volume distributions used a nationwide probability sample, but measured floor area rather than total volume. By comparison, field studies contributing to the PFT data base measured house volumes directly, but the aggregate sampling frame for these studies is not statistically representative of the national housing stock.

Although the PFT methodology is relatively simple to implement, it is subject to errors and uncertainties. The general performance of the sampling and analytical aspects of the system are quite good. That is, laboratory analysis will measure the correct time-weighted-average tracer concentration to within a few percent (Dietz et al., 1986). Nonetheless, significant errors can arise when conditions in the measurement scene greatly deviate from idealizations calling for constant, well-mixed conditions. Principal concerns focus on the effects of naturally varying air exchange and the effects of temperature in the permeation source.

Sherman (1989) carried out an error analysis of the PFT methodology using mathematical models combined with typical weather data to calculate how an ideal sampling system would perform in a time-varying environment. He found that for simple single-story (ranch) and two-story plus basement (colonial) layouts, seasonal measurements would underpredict seasonal average air exchange by 20 to 30 percent. Underprediction can occur because the PFT methodology is measuring the effective ventilation (the product of ventilation efficiency and air exchange), and the temporal efficiency will generally be less than unity over averaging periods of this length. Sherman (1989) also noted, however, that while the bias could have an impact on determining air exchange (absent knowledge of ventilation efficiency) for calculating energy loads, the effective air exchange term is directly relevant to determining average indoor concentrations resulting from constant sources.

Leaderer et al. (1985) conducted a series of experiments in a room-sized-environmental chamber to evaluate the practical impacts of varying air exchange and the temperature response of the permeation sources. The negative bias anticipated in the measured (effective) versus actual air exchange as conditions varied diurnally between 0.4 and 1.5. ACH was evident but minor (3 to 6 percent), most likely due to the mechanical mixing in the chamber and the relatively short integration time (72 h). Similarly, cycling temperature diurnally over an 8°C range (holding air exchange steady at 0.6 ACH) would cause concentrations changes of about 20 percent as emissions fluctuated. The investigators found, however, that using a time-weighted average temperature to define the emission rate reduced the temperature bias to essentially zero.

17.7. REFERENCES FOR CHAPTER 17

Andelman, J.B. (1990) Total exposure to volatile organic compounds in potable water. In: Ram, N, et

al., eds. Significance and Treatment of Volatile Organic Compounds in Water Supplies. pp 485-504, Lewis Publishers, Chelsea, MI.

Andersson, B., K. Andersson, J. Sundell, and P.-A. Zingmark. (1993) Mass transfer of contaminants in rotary enthalpy heat exchangers. Indoor Air. 3:143-148.

ASHRAE. (1988) ASHRAE Handbook: Equipment. American Society of Heating, Refrigerating, and Air-Conditioning Engineers. Atlanta, GA.

ASHRAE. (1993) ASHRAE Handbook: Fundamentals. American Society of Heating, Refrigerating, and Air-Conditioning Engineers. Atlanta, GA.

ASTM. (1989) Standard laboratory test method for evaluation of carpet-embedded dirt removal effectiveness of household vacuum cleaners. Designation: F 608-89. American Society for Testing and Materials, Philadelphia, PA.

ASTM. (1990) Test method for determining formaldehyde levels from wood products under defined conditions using a large chamber. Standard E 1333 90. American Society for Testing and Materials: Philadelphia.

Axley, J.W. (1988) Progress toward a general analytical method for predicting indoor air pollution in buildings: indoor air quality modeling phase III report. NBSIR 88-3814. National Bureau of Standards, Gaithersberg, MD.

Axley, J.W. (1989) Multi-zone dispersal analysis by element assembly. Building and Environment. 24(2):113-130.

Axley, J.W.; Lorenzetti, D. (1993) Sorption transport models for indoor air quality analysis. In: Nagda, N.L. Ed., Modeling of Indoor Air Quality and Exposure. ASTM STP 1205. Philadelphia, PA: American Society for Testing and Materials, pp. 105-127.

Baughman, A.V.; Gadgil, A.J.; Nazaroff, W.W. (1994) Mixing of a point source pollutant by natural convection flow within a room. Indoor Air. 4:114-122.

Chang, J.C.S.; Guo, Z. (1992) Characterization of organic emissions from a wood finishing product -- wood stain. Indoor Air. 2(3):146-53.

Consumer Reports. (1982) Washing machines. Consumer Reports Magazine. 47(10).

Consumer Reports. (1987) Dishwashers. Consumer Reports Magazine. 52(6).

Cussler, E.L. (1984) Diffusion. Cambridge University Press, New York, NY.

Dietz, R.N.; Goodrich, R.W.; Cote, E.A.; Wieser, R.F. (1986) Detailed description and performance of a passive perfluorocarbon tracer system for building ventilation and air exchange measurements. H.R. Trechsel and P.L. Lagus, Eds. In: Measured Air Leakage of Buildings. ASTM STP 904. Philadelphia, PA: American Society for Testing and Materials, pp. 203-264.

Drescher, A.C.; Lobascio, C.; Gadgil, A.J.; Nazaroff, W.W. (1995) Mixing of a Point-Source Indoor Pollutant by Forced Convection. Indoor Air. 5:204-214.

Dunn, J.E. (1987) Models and statistical methods for gaseous emission testing of finite sources in well-mixed chambers. Atmospheric Environment. (21)2:425-430.

Dunn, J.E.; Chen, T. (1993) Critical evaluation of the diffusion hypothesis in the theory of porous media volatile organic compounds (VOC) sources and sinks. In: Nagda, N.L. Ed., Modeling of Indoor Air Quality and Exposure. ASTM STP 1205. Philadelphia, PA.: American Society for Testing and Materials, pp. 64-80.

Dunn, J.E.; Tichenor, B.A. (1988) Compensating for sink effects in emissions test chambers by mathematical modeling. Atmospheric Environ., 22(5)885-894.

EBMUD. (1992) Urban water management plan. East Bay Municipal Utility Water District, in written communication to J.B. Andelman, July 1992.

Furtaw, E.J.; Pandian, M.D.; Nelson, D.R; Behar, J.V. (1995) Modeling indoor air concentrations near emission sources in perfectly mixed rooms. Engineering Solutions to Indoor Air Quality Problems. Presented at Sixth Conference of the International Society for Environmental Epidemiology and Fourth Conference of the International Society for Exposure Analysis (Joint Conference), Research Triangle Park, NC, September 1994.

GEOMET. (1989) Assessment of indoor air pollutant exposure within building zones. Report Number IE-2149, prepared for USEPA Office of Health and Environmental Assessment under Contract No. 68-02-4254, Task No. 235. Germantown, MD.: GEOMET Technologies, Inc.

Giardino, N.J.; Gummerman, E.; Andelman, J.B.; Wilkes, C.R.; Small, M.J. (1990) Real-time measurements of trichloroethylene in domestic bathrooms using contaminated water. Proceedings of the 5th International Conference on Indoor Air Quality and Climate, Toronto, 2:707-712.

Grimsrud, D.T.; Sherman, M.H.; Sondereggen, R.C. (1983) Calculating infiltration: implications for a construction quality standard. In: Proceedings of the American Society of Heating, Refrigerating and Air-Conditioning Engineers Conference. Thermal Performance of Exterior Envelopes of Buildings II. ASHRAE SP38, Atlanta, GA, pp. 422-449.

Grot, R.A. (1991) User manual NBS/AVIS CONTAM88. NISTIR 4585, Gaithersberg, MD: National Institute of Standards and Technology.

Grot, R.A.; Clark, R.E. (1981) Air leakage characteristics and weatherization techniques for low-income housing. In: Proceedings of the American Society of Heating, Refrigerating and Air-Conditioning Engineers Conference. Thermal Performance of Exterior Envelopes of Buildings. ASHRAE SP28, Atlanta, GA, pp. 178-194.

Hanley, J.T.; Ensor, D.S.; Smith, D.D.; Sparks, L.E. (1994) Fractional aerosol filtration efficiency of in-duct ventilation air cleaners. Indoor Air. 4(3):179-188.

Hirvonen, A.; Pasanen, P.; Tarhanen, J.; Ruuskanen, J. (1995) Thermal desorption of organic compounds associated with settled household dust. Indoor Air. 5:255-264.

Jennings, P.D.; Carpenter, C.E.; Krishnan, M.S. (1985) Methods for assessing exposure to chemical substances volume 12: methods for estimating the concentration of chemical substances in indoor air. EPA 560/5-85-016, U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances, Washington, DC.

Jennings, P.D.; Hammerstrom, K.A.; Adkins, L.C.; Chambers, T.; Dixon, D.A. (1987) Methods for assessing exposure to chemical substances volume 7: methods for assessing consumer exposure to chemical substances. EPA 560/5-85-007, U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances, Washington, DC.

Koontz, M.D.; Nagda, N.L. (1991) A multichamber model for assessing consumer inhalation exposure. Indoor Air. 1(4):593-605.

Koontz, M.D.; Rector, H.E. (1995) Estimation of distributions for residential air Exchange rates, EPA Contract No. 68-D9-0166, Work Assignment No. 3-19, U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics, Washington, DC.

Koontz, M.D.; Rector, H.E.; Fortmann, R.C.; Nagda, N.L. (1988) Preliminary experiments in a research house to investigate contaminant migration in indoor air. EPA 560/5-88-004. U.S. Environmental Protection Agency, Office of Pesticides and Toxic Substances, Washington, DC.

Layton, D.W.; Thatcher, T.L. (1995) Movement of outdoor particles to the indoor environment: An analysis of the Arnhem Lead Study. Paper No. 95-MP4.02. Annual Meeting of the Air and Waste Management Association, San Antonio, TX.

Leaderer, B.P.; Schaap, L.; Dietz, R.N. (1985) Evaluation of perfluorocarbon tracer technique for determining infiltration rates in residences. Environ. Sci. and Technol. 19(12):1225-1232.

Liddament, M.; Allen, C. (1983) Validation and comparison of mathematical models of air infiltration. Technical Note AIC 11. Air Infiltration Centre, Great Britain.

Ligman, K.; Hutzler, N.; Boyle, W.C. (1974) Household wastewater characterization. J. Environ. Eng. 100:201-213.

Little, J.C. (1992) Applying the two-resistance theory to contaminant volatilization in showers. Environ. Sci. and Technol. 26(7):1341-1349.

Little, J.C.; Daisey, J.M.; Nazaroff, W.W. (1992) Transport of subsurface contaminants into buildings -- an exposure Pathway for Volatile Organics. Environ. Sci. and Technol. (26)11:2058-2066.

Lucas, R.M.; Grillo, R.B.; Perez-Michael, A.; Kemp, S. (1992) National residential radon survey statistical analysis -- volume 2: summary of the questionnaire data. RTI/5158/49-2F. Research Triangle Institute, Research Triangle Park, NC.

Mage, D.T.; Ott, W.R. (1994) The correction for nonuniform mixing in indoor environments. ASTM Symposium on Methods for Characterizing Indoor Sources and Sinks, Washington, DC.

McKone, T.E. (1987) Human exposure to volatile organic compounds in household tap water: The inhalation pathway. Environ. Sci. and Technol. 21(12):1194-1201.

McKone, T.E. (1989) Household exposure models. Toxicol. Letters. 49:321-339.

MWD. (1991) Urban water use characteristics in the metropolitan water district of southern california. Draft Report. Metropolitan Water District of Southern California, August 1991.

Murray, D.M. (1996) residential house and zone volumes in the United States: Empirical and Estimated Parametric Distributions. Submitted to Risk Analysis in 1996.

Murray, D.M.; Burmaster, D.E. (1995) Residential air exchange rates in the United States: Empirical and Estimated Parametric Distribution by Season and Climatic Region. Submitted to Risk Analysis in 1995.

Nazaroff, W.W.; Cass, G.R. (1986) Mathematical modeling of chemically reactive pollutants in indoor air. Environ. Sci. and Technol. 20:924-934.

Nazaroff, W.W.; Cass, G.R. (1989) Mass-transport aspects of pollutant removal at indoor surfaces. Environment International, 15:567-584.

Nazaroff, W.W.; Doyle, S.M.; Nero, A.V.; Sextro, R.G. (1988). Radon entry via potable water. In: Nazaroff, W.W. and Nero, A.V., Eds., Radon and Its Decay Products in Indoor Air. John Wiley and Sons, NY. pp. 131-157.

Nazaroff, W.W.; Gadgil, A.J.; Weschler, C.J. (1993) Critique of the use of deposition velocity in modeling indoor air quality. In: Nagda, N.L. Ed., Modeling of Indoor Air Quality and Exposure, ASTM STP 1205, American Society for Testing and Materials. Philadelphia, PA, pp. 148-165.

Offerman, F.J.; Sextro, R.G.; Fisk, W.; Nazaroff, W.W.; Nero, A.V.; Revzan, K.L.; Yater, J. (1984) Control of respirable particles and radon progeny with portable air cleaners. Report No. LBL-16659, Lawrence Berkley Laboratory, Berkley, CA.

Pandian, M.H.; Behar, J.V.; Thomas, J. (1993) Use of a relational database to predict human population exposures for different time periods. Proceedings of Indoor Air '93, Helsinki 3:283-288.

Persily, A.K.; Linteris, G.T. (1984) A comparison of measured and predicted infiltration rates. ASHRAE Transactions 89(2):183-199.

Relwani, S.M.; Moschandreas, D.J.; Billick, I.H. (1986) Effects of operational factors on pollutant emission rates from residential gas appliances. J. Air Poll. Control Assoc. 36:1233-1237.

Roberts, J.W.; Budd, W.T.; Ruby, M.G.; Bond, A.E.; Lewis, R.G.; Wiener, R.W.; Camann, D.E. (1991) Development and field testing of a high volume sampler for pesticides and toxics in dust. J. Exposure Anal. and Environ. Epidemiol. (1)2:143-155

Ryan, P.B. (1991) An overview of human exposure modeling. J. Exposure Anal. and Environ. Epidemiol. (1)4:453-474.

Sandberg, M. (1984) The Multi-chamber theory reconsidered from the viewpoint of air quality studies. Building and Environment (19)4:221-233.

Sextro, R.G. (1994) Radon and the natural environment. IN: Nagda, N.L. Ed., Radon -- Prevalence, Measurements, Health Risks and Control, ASTM MNL 15, American Society for Testing and Materials, Philadelphia, PA, pp. 9-32.

Shaughnessy, R.J.; Levetin, E.; Blocker, J.; Sublette, K.L. (1994) Effectiveness of portable air cleaners: sensory testing results. Indoor Air 4(3):179-188.

Sherman, M.H. (1989) Analysis of errors associated with passive ventilation measurement techniques. Building and Environment 24(2):131-139.

Sherman, M.; Dickerhoff, D. (1996) Air tightness of U.S. dwellings. In: The Role of Ventilation 15th AIVC Conference Proceedings. Buxton, Great Britain, September 27-30, 1994.

Siegrist, R. (1976) Characteristics of rural household wastewater. J. Environ. Eng. 1:533-548.

Sinden, F.W. (1978) Multi-chamber theory of infiltration. Building and Environment. 13:21-28.

Sparks, L.E. (1988) Indoor air quality model version 1.0. Report No. EPA-600/8-88-097a.. Research Triangle Park, NC. U.S. Environmental Protection Agency.

Sparks, L.E. (1991) Exposure - Version 2., U.S. Environmental Protection Agency, Office of Research and Development, Research Triangle Park, NC.

Swope, A.D.; Goydan, R.; Reid, R.C. (1992) Methods for assessing exposure to chemical substances Volume 11: Methodology for Estimating the Migration of Additives and Impurities from Polymeric Substances. EPA 560/5-85-015, U.S. Environmental Protection Agency, Office of Pollution Prevention, Pesticides, and Toxic Substances, Washington, DC.

Thatcher, T.L.; Layton, D.W. (1995) Deposition, resuspension, and penetration of particles within a residence. Atmos. Environ. 29(13):1487-1497.

Thompson, W. (1995) U.S. Department of Energy (U.S. DOE) and Energy Information Administration. Personal communication on distribution of heated floor space area from the 1993 RECS.

Tichenor, B.A.; Guo, Z.; Dunn, J.E.; Sparks, L.E.; Mason, M.A. (1991) The interaction of vapor phase organic compounds with indoor sinks. Indoor Air 1:23-35.

Tucker, W.G. (1991) Emission of organic substances from indoor surface materials. Environ. Internat. 17:357-363.

U.S. Bureau of the Census. (1992) Statistical abstract of the United States: 1992 (112th edition). Table No. 1230, p. 721. Washington, DC.: U.S. Department of Commerce.

U.S. DHUD. (1984) Residential water conservation projects: summary report. Report Number HUD-PDR-903. Washington, DC: U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

U.S. DOE. (1995) Housing characteristics 1993, Residential Energy Consumption Survey (RECS) Report No. DOE/EIA-0314 (93), Washington, DC: U.S. Department of Energy, Energy Information Administration.

Versar. (1990) Database of perfluorocarbon tracer (PFT) ventilation measurements: description and user's manual. USEPA Contract No. 68-02-4254, Task No. 39. Washington, D.C: U.S.Environmental Protection Agency, Office of Toxic Substances.

Wallace, L.A. (1996) Indoor particles: A review. J. Air and Waste Management Assoc. (46)2:98-126.

Walton, G.N. (1993) CONTAM 93 User Manual. NISTIR 5385. Gaithersburg, MD: National Institute of Standards and Technology.

Wilkes, C.R.; Small, M.J.; Andelman, J.B.; Giardino, N.J.; Marshall, J. (1992) Inhalation exposure model for volatile chemicals from indoor uses of water. Atmospheric Environment (26A)12:2227-2236.

Wolkoff, P. (1995) Volatile organic compounds: sources, measurements, emissions, and the impact on indoor air quality. Indoor Air Supplement No. 3/95, pp 1-73.

Wolkoff, P.; Wilkins, C.K. (1994) Indoor VOCs from household floor dust: comparison of headspace with desorbed VOCs; Method for VOC release determination. Indoor Air 4:248-254.

Zinn, T.W.; Cline, D.; Lehmann, W.F. (1990) Long-term study of formaldehyde emission decay from particleboard. Forest Products Journal (40)6:15-18.

Table 17-29. Volume of Residence Surveys

Study	Number of Residences	Survey Type	Areas Surveyed	Comments
Key Studies				
U.S. DOE, 1995 (RECS)	Over 7,000	Direct measurement of floor area; estimation of volume	Nationwide (random sample)	Volumes were estimated assuming 8 ft. ceiling height. Provides relationships between average residential volumes and facilities such as housing type, ownership, household size, and structure age.
Versar, 1990 (PFT database)	Over 2,000	Direct measurement and estimated	Nationwide (not random sample); a large fraction located in CA	Sample was not geographically balanced; statistical weighting was applied to develop nationwide distributions
Murray, 1996	7,041 (RECS) 1,751 (PFT)	Direct measurements and estimated	RECS-Nationwide (random sample); PFT - Nationwide (not random sample); a large fraction located in CA	Duplicate measurement were eliminated; tested the effects of using 8 ft. assumption on ceiling height to calculate volume; data from both databases were analyzed.

Table 17-30. Air Exchange Rates Surveys

Study	Number of Residences/Measurements	Survey Type	Areas Surveyed	Comments
Versar, 1990 (PFT database)	Over 2,000 residences	Measurements using PFT technique	Nationwide (not random sample); a large fraction located in CA	Multiple measurements on the same home were included.
Koontz & Rector, 1995 (PFT database)	2,971 measurements	Measurements using PFT technique	Nationwide (not random sample); a large fraction located in CA	Multiple measurements on the same home were included. Compensated for geographic imbalances. Data are presented by region of the country and season.
Murray and Burmaster, 1995 (PFT database)	2,844 measurements	Measurements using PFT technique	Nationwide (not random sample); a large fraction located in CA	Multiple measurements on the same home were included. Did not compensate for geographical imbalances. Data are presented by climate region and season.
Nazaroff et al., 1988	255 (Grot and Clark, 1981)	Direct measurement	255, low-income families in 14 cities	Sample size was small and not representative of the U.S.
	312 (Grimsrud, 1983)	Direct measurement	321, newer residences, median age < 10 years	Sample size was small and not representative of the U.S.

Table 17-31. Recommendations - Residential Parameters

Volume of Residence	369 m^3 (central estimate)[a]	217 m^3 (mean)[b]
Air Exchange Rate	0.45 ACH (median)[c]	0.18 ACH (10th percentile)[d]

a Same mean value presented in two studies (Table 17-1) - recommended to be used as the central estimate.
b Mean of two 25th percentile values (Table 17-1) - recommended to be used as the mean value.
c Recommended to be used as a typical value (Table 17-10).
d Recommended to be used as a conservative value (Table 17-10).

Table 17-32. Confidence in House Volume Recommendations

Considerations	Rationale	Rating
Study Elements		
• Level of peer review	All key studies are from peer reviewed literature.	High
• Accessibility	Papers are widely available from peer review journals.	High
• Reproducibility	Direct measurements were made.	High
• Focus on factor of interest	The focus of the studies was on estimating house volume as well as other factors.	High
• Data pertinent to U.S.	Residences in the U.S. was the focus of the key studies.	High
• Primary data	All the studies were based on primary data.	High
• Currency	Measurements in the PFT database were taken between 1982-1987. The RECS survey was conducted in 1993.	Medium
• Adequacy of data collection period	Not applicable	
• Validity of approach	For the RECS survey, volumes were estimated assuming an 8 ft. ceiling height. The effect of this assumption has been tested by Murray (1996) and found to be insignificant.	Medium
• Study size	The sample sizes used in the key studies were fairly large, although only 1 study (RECS) was representative of the whole U.S. Not all samples were selected at random; however, RECS samples were selected at random.	Medium
• Representativeness of the population	RECS sample is representative of the U.S.	Medium
• Characterization of variability	Distributions are presented by housing type and regions; although some of the sample sizes for the subcategories were small.	Medium
• Lack of bias in study design (high rating is desirable)	Selection of residences was random for RECS.	Medium
• Measurement error	Some measurement error may exist since surface areas were estimated using the assumption of 8 ft. ceiling height.	Medium
Other Elements		
• Number of studies	There are 3 key studies; however there are only 2 data sets.	Low
• Agreement between researchers	There is good agreement among researchers.	High
Overall Rating	Results were consistent; 1 study (RECS) was representative of residences in the whole U.S.; volumes were estimated rather than measured in some cases.	Medium

Table 17-33. Confidence in Air Exchange Rate Recommendations

Considerations	Rationale	Rating
Study Elements		
• Level of peer review	The studies appear in peer reviewed literature. Although there are 3 studies, they are all based on the same database (PFT database).	High
• Accessibility	Papers are widely available from government reports and peer review journals.	High
• Reproducibility	Precision across repeat analyses has been documented to be acceptable.	Medium
• Focus on factor of interest	The focus of the studies was on estimating air exchange rates as well as other factors.	High
• Data pertinent to U.S.	Residences in the U.S. was the focus of the PFT database.	High
• Primary data	All the studies were based on primary data.	High
• Currency	Measurements in the PFT database were taken between 1982-1987.	Medium
• Adequacy of data collection period	Only short term data were collected; some residences were measured during different seasons; however, long term air exchange rates are not well characterized.	Medium
• Validity of approach	Although the PFT technology is an EPA standard method (Method IP-4A), it has some major limitations (e.g., uniform mixing assumption).	Low
• Study size	The sample sizes used in the key studies were fairly large, although not representative of the whole U.S. Not all samples were selected at random.	Medium
• Representativeness of the population	Sample is not representative of the U.S..	Low
• Characterization of variability	Distributions are presented by U.S. regions, seasons, and climatic regions; although some of the sample sizes for the subcategories were small and not representative of U.S. The utility is limited..	Low
• Lack of bias in study design (high rating is desirable)	Bias may result since the selection of residences was not random.	Low
• Measurement error	Some measurement error may exist.	Medium
Other Elements		
• Number of studies	There are 3 key studies; however there are only 1 data set. However, the database contains results of 20 projects of varying scope.	Medium
• Agreement between researchers	Not applicable	
Overall Rating	Sample was not representative of residences in the whole U.S., but covered the range of occurrence. PFT methodology has limitations. Uniform mixing assumption may not be adequate. Results will vary depending on placement of samples and on whether windows and doors are closed or opened.	Low

GLOSSARY

Absorption fraction (percent absorbed) - The relative amount of a substance that penetrates through a barrier into the body, reported as a unitless fraction.

Accuracy - The measure of the correctness of data, as given by the difference between the measured value and the true or standard value.

Activity pattern (time use) data - Information on activities in which various individuals engage, length of time spent performing various activities, locations in which individuals spend time and length of time spent by individuals within those various environments.

Air exchange rate - Rate of air leakage through windows, doorways, intakes and exhausts, and "adventitious openings" (i.e., cracks and seams) that combine to form the leakage configuration of the building envelope plus natural and mechanical ventilation.

Ambient - The conditions surrounding a person, sampling location, etc.

Analytical uncertainty propagation - Examines how uncertainty in individual parameters affects the overall uncertainty of the exposure assessment. The uncertainties associated with various parameters may propagate through a model very differently, even if they have approximately the same uncertainty. Since uncertainty propagation is a function of both the data and the model structure, this procedure evaluates both input variances and model sensitivity.

As consumed intake rates - Intake rates that are based on the weight of the food in the form that it is consumed.

Average daily dose - Dose rate averaged over a pathway-specific period of exposure expressed as a daily dose on a per-unit-body-weight basis. The ADD is used for exposure to chemicals with non-carcinogenic non-chronic effects. The ADD is usually expressed in terms of mg/kg-day or other mass/mass-time units.

Best Tracer Method (BTM) - Method for estimating soil ingestion that allows for the selection of the most recoverable tracer for a particular subject or group of subjects. Selection of the best tracer is made on the basis of the food/soil (F/S) ratio.

Boneless equivalent - Weights of meat (pork, veal, beef) and poultry, excluding all bones, but including separable fat sold on retail cuts of red meat.

Carcass weight - Weight of the chilled hanging carcass, which includes the kidney and attached internal fat (kidney, pelvic, and heart fat), excludes the skin, head, feet, and unattached internal organs. The pork carcass weight includes the skin and feet but excludes the kidney and attached internal fat.

Chronic intake - The long term period over which a substance crosses the outer boundary of an organism without passing an absorption barrier.

Comparability - The ability to describe likenesses and differences in the quality and relevance of two or more data sets.

Consumer-only intake rate - The average quantity of food consumed per person in a population composed only of individuals who ate the food item of interest during a specified period.

Contaminant concentration - Contaminant concentration is the concentration of the contaminant in the medium (air, food, soil, etc.) contacting the body and has units of mass/volume or mass/mass.

Creel Census - Approach used by fishery managers to obtain harvest data collected onsite from single anglers or from larger-scale commercial type operations.

Deposition - The removal of airborne substances to available surfaces that occurs as a result of gravitational settling and diffusion, as well as electrophoresis and thermophoresis.

Diary study - Survey in which individuals are asked to record food intake, activities, or other factors in a diary which is later used to evaluate exposure factors associated with specific populations.

Distribution - A set of values derived from a specific population or set of measurements that represents the range and array of data for the factor being studied.

Dose - The amount of a substance available for interaction with metabolic processes or biologically significant receptors after crossing the outer boundary of an organism. The potential dose is the amount ingested, inhaled, or applied to the skin. The applied dose is the amount of a substance presented to an absorption barrier and available for absorption (although not necessarily having yet crossed the outer boundary of the organism). The absorbed dose is the amount crossing a specific absorption barrier (e.g., the exchange boundaries of skin, lung, and digestive tract) through uptake processes. Internal dose is a more general term denoting the amount absorbed without respect to specific absorption barriers or exchange boundaries. The amount of a chemical available for interaction by any particular organ or cell is termed the delivered dose for that organ or cell.

Dose-response relationship - The resulting biological responses in an organ or organism expressed as a function of a series of doses.

Dressed weight - The portion of the harvest brought into kitchens for use, including bones for particular species.

Dry weight intake rates - Intake rates that are based on the weight of the food consumed after the moisture content has been removed.

Employer tenure - The length of time a worker has been with the same employer.

Exposed foods - Those foods that are grown above ground and are likely to be contaminated by pollutants deposited on surfaces that are eaten.

Exposure duration - Total time an individual is exposed to the chemical being evaluated.

Exposure Assessment - The determination or estimation (qualitative or quantitative) of the magnitude, frequency, or duration, and route or exposure.

Exposure concentration - The concentration of a chemical in its transport or carrier medium at the point of contact.

Exposure pathway - The physical course a chemical takes from the source to the organism exposed.

Exposure route - The way a chemical pollutant enters an organism after contact, e.g., by ingestion, inhalation, or dermal absorption.

Exposure scenario - A set of facts, assumptions, and interferences about how exposure takes place that aids the exposure assessor in evaluating estimating, or quantifying exposures.

Exposure - Contact of a chemical, physical, or biological agent with the outer boundary of an organism. Exposure is quantified as the concentration of the agent in the medium in contact integrated over the time duration of the contact.

Exposure duration - Length of time over which contact with the contaminant lasts.

General population - The total of individuals inhabiting an area or making up a whole group.

Geometric mean - The nth root of the product of n values.

Homegrown/home produced foods - Fruits and vegetables produced by home gardeners, meat and dairy products derived form consumer-raised livestock, game meat, and home caught fish.

Inhaled dose - The amount of an inhaled substance that is available for interaction with metabolic processes or biologically significant receptors after crossing the outer boundary of an organism.

Insensible water loss - Evaporative water losses that occur during breastfeeding. Corrections are made to account for insensible water loss when estimating breast milk intake using the test weighing method.

Intake - The process by which a substance crosses the outer boundary of an organism without passing an absorption barrier (e.g., through ingestion or inhalation).

Intake rate - Rate of inhalation, ingestion, and dermal contact depending on the route of exposure. For ingestion, the intake rate is simply the amount of food

containing the contaminant of interest that an individual ingests during some specific time period (units of mass/time). For inhalation, the intake rate is the rate at which contaminated air is inhaled. Factors that affect dermal exposure are the amount of material that comes into contact with the skin, and the rate at which the contaminant is absorbed.

Internal dose - The amount of a substance penetrating across absorption barriers (the exchange boundaries) of an organism, via either physical or biological processes (synonymous with absorbed dose).

Interzonal airflows - Transport of air through doorways, ductwork, and service chaseways that interconnect rooms or zones within a building.

Lifetime average daily dose - Dose rate averaged over a lifetime. The LADD is used for compounds with carcinogenic or chronic effects. The LADD is usually expressed in terms of mg/kg-day or other mass/mass-time units.

Limiting Tracer Method (LTM) - Method for evaluating soil ingestion that
assumes that the maximum amount of soil ingested corresponds with the lowest estimate from various tracer elements.

Local circulation - Convective and adjective air circulation and mixing within a room or within a zone.

Mass-balance/tracer techniques - Method for evaluating soil intake that accounts for both inputs and outputs of tracer elements. Tracers in soil, food, medicine and other ingested items as well as in feces and urine are accounted for.

Median value - The value in a measurement data set such that half the measured values are greater and half are less.

Microenvironment - The combination of activities and locations that yield potential exposure.

Moisture content - The portion of foods made up by water. The percent water is needed for converting food intake rates and residue concentrations between whole weight and dry weight values.

Monte Carlo technique - A repeated random sampling from the distribution of values for each of the parameters in a generic (exposure or dose) equation to derive an estimate of the distribution of (exposures or doses in) the population.

Occupational mobility - An indicator of the frequency at which workers change from one occupation to another.

Occupational tenure - The cumulative number of years a person worked in his or her current occupation, regardless of number of employers, interruptions in employment, or time spent in other occupations.

Pathway - The physical course a chemical or pollutant takes from the source to the organism exposed.

Per capita intake rate - The average quantity of food consumed per person in a population composed of both individuals who ate the food during a specified time period and those that did not.

Pica - Deliberate ingestion of non-nutritive substances such as soil.

Population mobility - An indicator of the frequency at which individuals move from one residential location to another.

Potential dose - The amount of a chemical contained in material ingested, air breathed, or bulk material applied to the skin.

Precision - A measure of the reproducibility of a measured value under a given set of circumstances.

Preparation losses - Net cooking losses, which include dripping and volatile losses, post cooking losses, which involve losses from cutting, bones, excess fat, scraps and juices, and other preparation losses which include losses from paring or coring.

Probabilistic uncertainty analysis - Technique that assigns a probability density function to each input parameter, then randomly selects values from each of the distributions and inserts them into the exposure equation. Repeated calculations produce a distribution of predicted values, reflecting the combined impact of variability in

each input to the calculation. Monte Carlo is a common type of probabilistic Uncertainty analysis.

Protected foods - Those foods that have outer protective coatings that are typically removed before consumption.

Random samples - Samples selected from a statistical population such that each sample has an equal probability of being selected.

Range - The difference between the largest and smallest values in a measurement data set.

Recreational/sport fishermen - Individuals who catch fish as part of a sporting or recreational activity and not for the purpose of providing a primary source of food for themselves or for their families.

Representativeness - The degree to which a sample is, or samples are, characteristic of the whole medium, exposure, or dose for which the samples are being used to make inferences.

Residential volume - The volume (m^3) of the structure in which an individual resides and may be exposed to airborne contaminants.

Residential occupancy period - The time (years) between a person moving into a residence and the time the person moves out or dies.

Resource utilization - For any quantity Y that is consumed by individuals in a population, the percentiles of the "resource utilization distribution" of Y can be formally defined as follows: Y_p (R) is the pth percentile of the resource utilization distribution if p percent of the overall consumption of Y in the population is done by individuals with consumption below Y_p (R) and 100-p percent is done by individuals with consumption above Y_p(R).

Retail weight equivalent - Weight of food as sold through retail foodstores; therefore, conversion factors are used to correct carcass weight to retail weight to account for trimming, shrinkage, or loss of meat and chicken at retail outlets.

Route - The way a chemical or pollutant enters an organism after contact, e.g., by ingestion, inhalation, or dermal absorption.

Sample - A small part of something designed to show the nature or quality of the whole. Exposure-related measurements are usually samples of environmental or ambient media, exposures of a small subset of a population for a short time, or biological samples, all for the purpose of inferring the nature and quality of parameters important to evaluating exposure.

Screening-level assessments - Typically examine exposures that would fall on or beyond the high end of the expected exposure distribution.

Sensitivity analysis - Process of changing one variable while leaving the others constant to determine its effect on the output. This procedure fixes each uncertain quantity at its credible lower and upper bounds (holding all others at their nominal values, such as medians) and computes the results of each combination of values. The results help to identify the variables that have the greatest effect on exposure estimates and help focus further information-gathering efforts.

Serving sizes - The quantities of individual foods consumed per eating occasion. These estimates may be useful for assessing acute exposures.

Soil adherence - The quantity of soil that adheres to the skin and from which chemical contaminants are available for uptake at the skin surface.

Subsistence fishermen - Individuals who consume fresh caught fish as a major source of food.

Test weighing - A method for estimating breast milk intake over a 24-hour period in which the infant is weighed before and after each feeding without changing its clothing. The sum of the difference between the measured weights over the 24-hour period is assumed to be equivalent to the amount of breast milk consumed daily.

Total tapwater - Water consumed directly from the tap as a beverage or used in the preparation of foods and beverages (i.e., coffee, tea, frozen juices, soups, etc.).

Total fluid intake - Consumption of all types of fluids including tapwater, milk, soft drinks, alcoholic beverages, and water intrinsic to purchased foods.

Tracer-element studies - Soil ingestion studies that use trace elements found in soil and poorly metabolized in the human gut as indicators of soil intake.

Uncertainty - Uncertainty represents a lack of knowledge about factors affecting exposure or risk and can lead to inaccurate or biased estimates of exposure. The types of uncertainty include: scenario, parameter, and model.

Upper percentile - Values at the upper end of the distribution of values for a particular set of data.

Uptake - The process by which a substance crosses an absorption barrier and is absorbed into the body.

Variability - Variability arises from true heterogeneity across people, places or time and can affect the precision of exposure estimates and the degree to which they can be generalized. The types of variability include: spatial, temporal, and inter-individual.

Ventilation rate (VR) - Alternative term for inhalation rate or breathing rate. Usually measured as minute volume, i.e. volume (liters) of air exhaled per minute.

Volume of exhaled air (V_E) - Product of the number of respiratory cycles in a minute and the volume of air respired during each respiratory cycle (tidal volume, V_T).

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