Health Risk and Exposure Assessment for Ozone

Final Report

Chapter 6 Appendices

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Health Risk and Exposure Assessment for Ozone

Final Report

Chapter 6 Appendices

U.S. Environmental Protection Agency
Office of Air and Radiation
Office of Air Quality Planning and Standards
Health and Environmental Impacts Division
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DISCLAIMER

This final document has been prepared by staff from the Risk and Benefits Group, Health and Environmental Impacts Division, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency. Any findings and conclusions are those of the authors and do not necessarily reflect the views of the Agency.

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CHAPTER 6 APPENDICES

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APPENDIX 6A

Probabilistic Population Exposure-Response Relationships

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This Appendix shows the probabilistic exposure-response relationships for lung function decrements associated with 8-hour O_3 exposures occurring at moderate exertion. The 2.5th percentile, median (50th percentile), and 97.5th percentile exposure-response functions for changes in $FEV_1 \geq 10\%$, $\geq 15\%$ and $\geq 20\%$ are shown in Figures 6A-1 through 6A-3, along with the response data to which they were fit. The values of the function are provided in Table 6A-1.

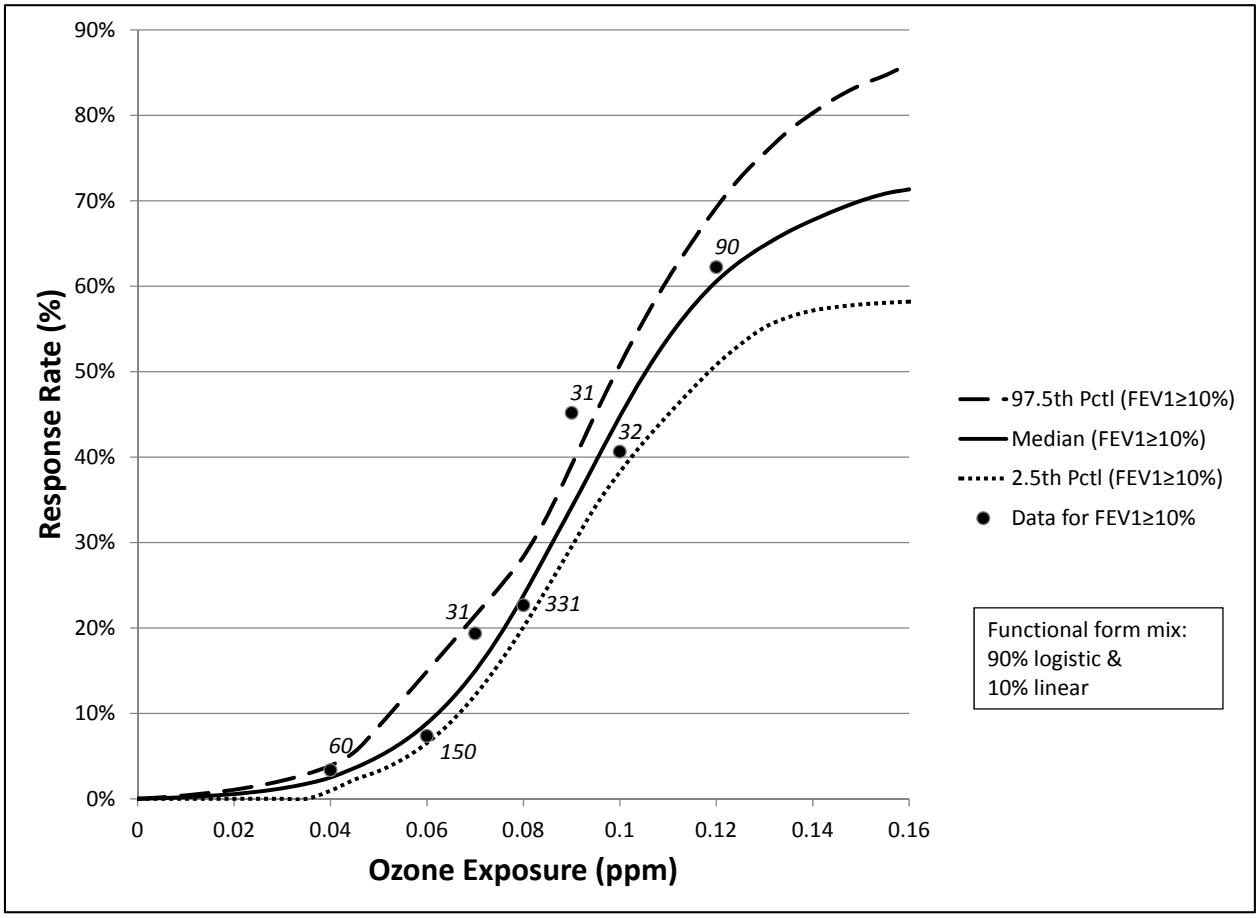

Figure 6A-1. Probabilistic Exposure-Response Relationships for FEV Decrement ≥ 10% for 8-Hour Exposures at Moderate Exertion, Ages 18-35. Values associated with data points are the number of subject-exposures at each exposure concentration.

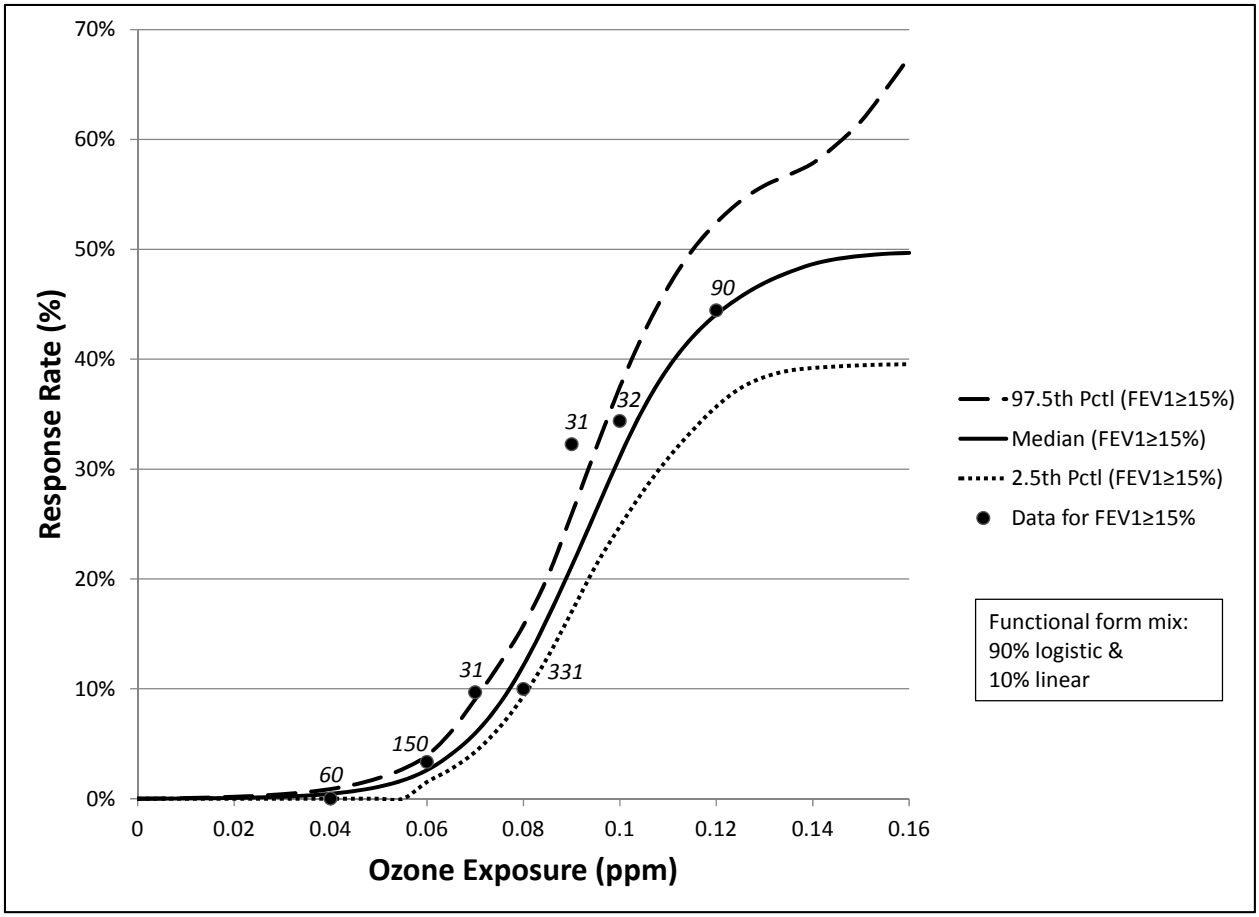

Figure 6A-2. Probabilistic Exposure-Response Relationships for FEV_1 Decrement ≥ 15% for 8-Hour Exposures At Moderate Exertion, Ages 18-35. Values associated with data points are the number of subject-exposures at each exposure concentration.

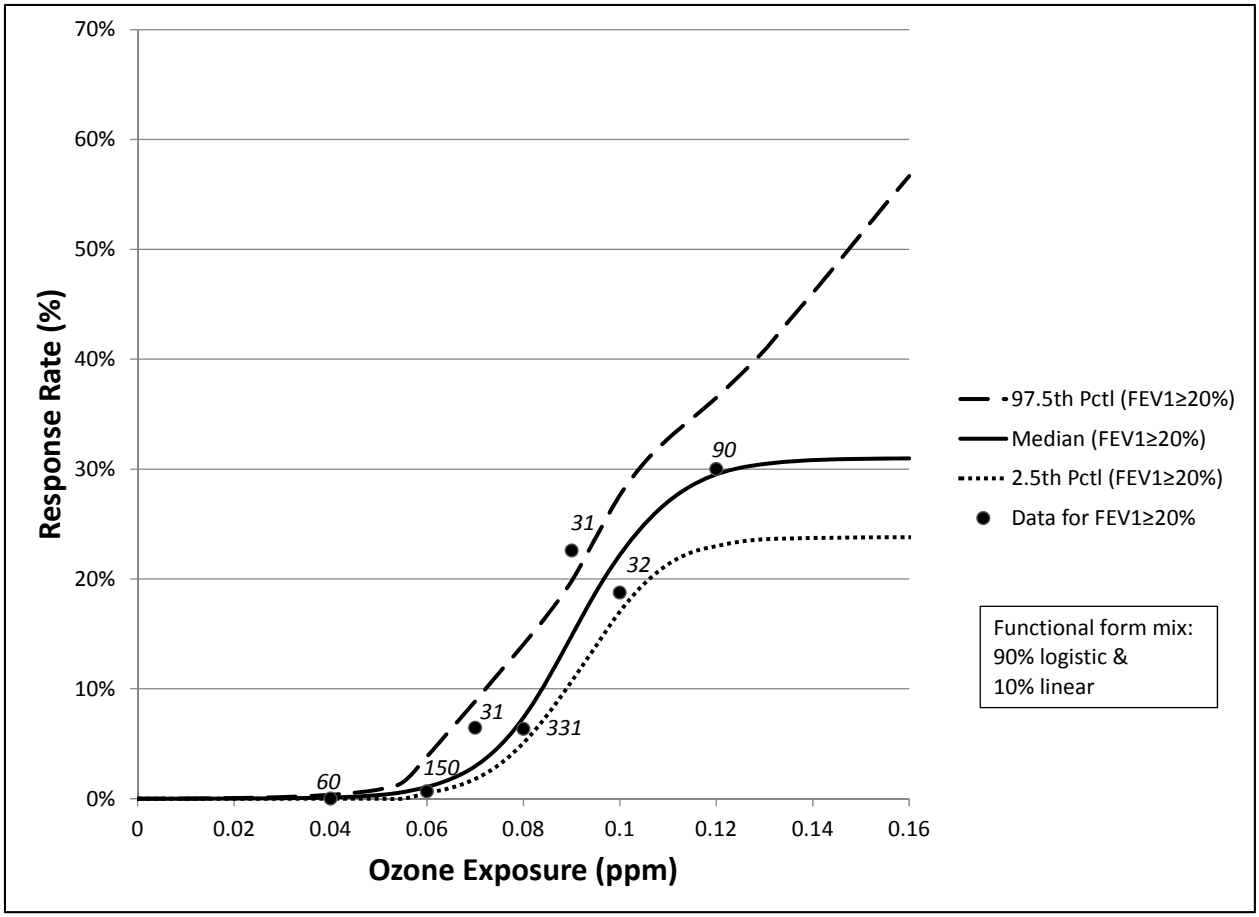

Figure 6A-3. Probabilistic Exposure-Response Relationships for FEV_1 Decrement ≥ 20% for 8-Hour Exposures At Moderate Exertion, Ages 18-35. Values associated with data points are the number of subject-exposures at each exposure concentration.

Table 6A-1. Probabilistic Exposure-Response Relationships for FEV_1 Decrement ≥ 10%, ≥ 15%, and ≥ 20% for 6.6-Hour Exposures at Moderate Exertion with Functional Mix of 90% Logistic and 10% Linear Form, Ages 18-35.

O_3 (ppm)	≥ 10%			≥ 15%			≥ 20%		
	2.5%	median	97.5%	2.5%	median	97.5%	2.5%	median	97.5%
0	0	0	0	0	0	0	0	0	0
0.005	0	0.0008	0.0018	0	0.0001	0.0002	0	0	0.0001
0.01	0	0.0019	0.0041	0	0.0002	0.0006	0	0	0.0002
0.015	0	0.0035	0.0070	0	0.0004	0.0010	0	0.0001	0.0003
0.02	0	0.0056	0.0106	0	0.0007	0.0017	0	0.0001	0.0006
0.025	0	0.0084	0.0153	0	0.0011	0.0027	0	0.0002	0.0009
0.03	0	0.0123	0.0213	0	0.0018	0.0041	0	0.0003	0.0015
0.035	0	0.0176	0.0289	0	0.0029	0.0060	0	0.0006	0.0023
0.04	0.0095	0.0249	0.0389	0	0.0045	0.0088	0	0.0011	0.0036
0.045	0.0225	0.0362	0.0550	0	0.0070	0.0129	0	0.0019	0.0055
0.05	0.0325	0.0495	0.0848	0	0.0109	0.0188	0	0.0033	0.0084
0.055	0.0464	0.0665	0.1168	0	0.0167	0.0270	0	0.0060	0.0150
0.06	0.0653	0.0883	0.1492	0.0152	0.0260	0.0393	0.0052	0.0108	0.0383
0.065	0.0901	0.1160	0.1818	0.0271	0.0404	0.0609	0.0099	0.0180	0.0635
0.07	0.1213	0.1497	0.2146	0.0427	0.0595	0.0906	0.0180	0.0296	0.0887
0.075	0.1586	0.1905	0.2475	0.0647	0.0860	0.1223	0.0312	0.0476	0.1147
0.08	0.2010	0.2378	0.2835	0.0934	0.1212	0.1577	0.0508	0.0738	0.1404
0.085	0.2473	0.2894	0.3319	0.1287	0.1642	0.2018	0.0765	0.1083	0.1675
0.09	0.2951	0.3415	0.3907	0.1700	0.2115	0.2590	0.1069	0.1482	0.1981
0.095	0.3428	0.3948	0.4511	0.2121	0.2614	0.3181	0.1388	0.1879	0.2376
0.1	0.3825	0.4474	0.5079	0.2479	0.3116	0.3747	0.1703	0.2219	0.2762
0.105	0.4178	0.4961	0.5604	0.2810	0.3560	0.4242	0.1954	0.2493	0.3055
0.11	0.4496	0.5393	0.6089	0.3099	0.3922	0.4656	0.2134	0.2704	0.3277
0.115	0.4796	0.5756	0.6520	0.3349	0.4199	0.4990	0.2245	0.2853	0.3462
0.12	0.5080	0.6055	0.6921	0.3569	0.4408	0.5242	0.2299	0.2952	0.3650
0.125	0.5319	0.6292	0.7273	0.3737	0.4567	0.5439	0.2340	0.3012	0.3859
0.13	0.5517	0.6477	0.7557	0.3838	0.4695	0.5581	0.2362	0.3047	0.4082
0.135	0.5637	0.6639	0.7819	0.3895	0.4789	0.5677	0.2368	0.3068	0.4346
0.14	0.5715	0.6774	0.8026	0.3920	0.4867	0.5784	0.2373	0.3082	0.4603
0.145	0.5757	0.6893	0.8209	0.3934	0.4912	0.5957	0.2375	0.3089	0.4868
0.15	0.5786	0.6999	0.8356	0.3945	0.4941	0.6166	0.2378	0.3093	0.5138
0.155	0.5805	0.7084	0.8467	0.3951	0.4959	0.6449	0.2379	0.3096	0.5406
0.16	0.5819	0.7133	0.8603	0.3955	0.4968	0.6749	0.2379	0.3097	0.5668

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APPENDIX 6B

Lung Function Risk Estimates Based on the MSS Model

List of Tables

Table 6B-1. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Atlanta.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	10.05%	1.66%	0.47%	2.66%	0.32%	0.07%	0.61%	0.03%	0.00%
2006	65 (06-08)	13.22%	2.75%	0.87%	3.62%	0.55%	0.13%	0.87%	0.06%	0.00%
2006	70 (06-08)	15.85%	3.80%	1.36%	4.52%	0.84%	0.19%	1.16%	0.08%	0.01%
2006	75 (06-08)	19.21%	5.29%	2.05%	5.77%	1.24%	0.34%	1.56%	0.15%	0.02%
2006	base	30.77%	11.72%	5.76%	10.76%	2.92%	1.22%	3.57%	0.50%	0.13%
2007	60 (06-08)	9.98%	1.77%	0.51%	2.59%	0.36%	0.07%	0.54%	0.01%	0.00%
2007	65 (06-08)	13.13%	2.72%	0.90%	3.60%	0.57%	0.14%	0.81%	0.05%	0.00%
2007	70 (06-08)	15.77%	3.80%	1.34%	4.47%	0.76%	0.22%	1.12%	0.08%	0.01%
2007	75 (06-08)	18.99%	5.18%	2.09%	5.73%	1.13%	0.34%	1.51%	0.12%	0.01%
2007	base	30.20%	11.32%	5.48%	10.65%	2.88%	1.13%	3.32%	0.47%	0.09%
2008	60 (06-08)	7.03%	0.90%	0.20%	1.85%	0.23%	0.05%	0.41%	0.02%	0.00%
2008	60 (08-10)	9.77%	1.70%	0.45%	2.59%	0.38%	0.09%	0.60%	0.04%	0.00%
2008	65 (06-08)	9.09%	1.51%	0.36%	2.44%	0.34%	0.08%	0.56%	0.04%	0.00%
2008	65 (08-10)	12.17%	2.48%	0.83%	3.40%	0.54%	0.14%	0.76%	0.07%	0.01%
2008	70 (06-08)	11.00%	2.09%	0.61%	3.01%	0.45%	0.12%	0.68%	0.06%	0.01%
2008	70 (08-10)	15.41%	3.76%	1.40%	4.56%	0.79%	0.24%	1.07%	0.10%	0.02%
2008	75 (06-08)	13.36%	2.97%	1.03%	3.81%	0.64%	0.19%	0.87%	0.08%	0.01%
2008	75 (08-10)	19.22%	5.55%	2.21%	5.75%	1.17%	0.36%	1.53%	0.17%	0.03%
2008	base	22.62%	7.22%	3.15%	7.00%	1.55%	0.52%	1.97%	0.24%	0.04%
2009	60 (08-10)	7.36%	1.10%	0.29%	1.92%	0.26%	0.06%	0.39%	0.02%	0.00%
2009	65 (08-10)	9.29%	1.66%	0.49%	2.50%	0.37%	0.09%	0.52%	0.04%	0.00%
2009	70 (08-10)	11.88%	2.48%	0.84%	3.24%	0.52%	0.14%	0.71%	0.05%	0.01%
2009	75 (08-10)	14.94%	3.69%	1.34%	4.12%	0.73%	0.23%	1.00%	0.09%	0.02%
2009	base	17.36%	4.89%	1.92%	4.82%	0.97%	0.30%	1.25%	0.13%	0.02%
2010	60 (08-10)	9.84%	1.56%	0.40%	2.47%	0.32%	0.06%	0.52%	0.03%	0.01%
2010	65 (08-10)	12.10%	2.23%	0.70%	3.11%	0.43%	0.10%	0.69%	0.04%	0.01%
2010	70 (08-10)	14.86%	3.25%	1.11%	3.98%	0.61%	0.18%	1.00%	0.07%	0.01%
2010	75 (08-10)	18.09%	4.55%	1.66%	4.98%	0.85%	0.26%	1.31%	0.11%	0.01%
2010	base	20.59%	5.73%	2.24%	5.84%	1.11%	0.36%	1.58%	0.14%	0.02%

Table 6B-2. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Baltimore.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	9.60%	1.64%	0.45%	2.41%	0.34%	0.09%	0.46%	0.03%	0.01%
2006	65 (06-08)	12.75%	2.82%	0.86%	3.29%	0.52%	0.15%	0.70%	0.07%	0.01%
2006	70 (06-08)	15.62%	3.93%	1.38%	4.23%	0.73%	0.23%	0.96%	0.10%	0.02%
2006	75 (06-08)	18.62%	5.16%	2.05%	5.27%	1.03%	0.34%	1.27%	0.13%	0.02%
2006	base	27.12%	9.74%	4.58%	8.72%	2.17%	0.77%	2.37%	0.32%	0.08%
2007	60 (06-08)	9.61%	1.64%	0.43%	2.18%	0.29%	0.08%	0.47%	0.03%	0.00%
2007	65 (06-08)	12.25%	2.53%	0.81%	3.01%	0.43%	0.13%	0.66%	0.04%	0.00%
2007	70 (06-08)	14.52%	3.42%	1.18%	3.77%	0.59%	0.18%	0.87%	0.06%	0.01%
2007	75 (06-08)	16.95%	4.45%	1.68%	4.54%	0.80%	0.23%	1.12%	0.08%	0.02%
2007	base	23.30%	7.76%	3.42%	6.74%	1.53%	0.51%	1.90%	0.23%	0.04%
2008	60 (06-08)	7.40%	1.09%	0.26%	1.77%	0.22%	0.05%	0.32%	0.02%	0.00%
2008	60 (08-10)	7.92%	1.24%	0.32%	1.93%	0.25%	0.06%	0.35%	0.02%	0.00%
2008	65 (06-08)	9.55%	1.76%	0.55%	2.33%	0.31%	0.08%	0.46%	0.03%	0.01%
2008	65 (08-10)	9.83%	1.87%	0.59%	2.43%	0.32%	0.09%	0.47%	0.03%	0.01%
2008	70 (06-08)	11.45%	2.44%	0.80%	2.90%	0.40%	0.13%	0.59%	0.05%	0.01%
2008	70 (08-10)	11.95%	2.62%	0.88%	3.05%	0.45%	0.14%	0.62%	0.06%	0.01%
2008	75 (06-08)	13.38%	3.29%	1.18%	3.50%	0.58%	0.17%	0.75%	0.07%	0.01%
2008	75 (08-10)	13.85%	3.50%	1.27%	3.65%	0.62%	0.19%	0.81%	0.07%	0.01%
2008	base	19.29%	6.03%	2.69%	5.38%	1.16%	0.37%	1.43%	0.14%	0.03%
2009	60 (08-10)	6.74%	0.84%	0.17%	1.63%	0.22%	0.06%	0.31%	0.01%	0.00%
2009	65 (08-10)	8.16%	1.24%	0.30%	1.97%	0.28%	0.07%	0.40%	0.02%	0.00%
2009	70 (08-10)	9.71%	1.78%	0.45%	2.37%	0.35%	0.10%	0.51%	0.03%	0.00%
2009	75 (08-10)	11.07%	2.23%	0.66%	2.79%	0.43%	0.12%	0.60%	0.05%	0.01%
2009	base	14.55%	3.81%	1.36%	3.75%	0.67%	0.21%	0.86%	0.07%	0.01%
2010	60 (08-10)	10.61%	1.95%	0.50%	2.66%	0.32%	0.10%	0.49%	0.04%	0.00%
2010	65 (08-10)	13.00%	2.78%	0.92%	3.40%	0.47%	0.15%	0.68%	0.06%	0.00%
2010	70 (08-10)	15.65%	3.88%	1.39%	4.25%	0.72%	0.21%	0.91%	0.09%	0.01%
2010	75 (08-10)	18.09%	4.99%	1.97%	5.17%	0.95%	0.31%	1.17%	0.11%	0.02%
2010	base	24.32%	8.27%	3.71%	7.50%	1.67%	0.62%	2.03%	0.25%	0.06%

Table 6B-3. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Boston.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	6.98%	1.06%	0.26%	1.73%	0.21%	0.05%	0.36%	0.02%	0.00%
2006	65 (06-08)	8.99%	1.75%	0.47%	2.33%	0.31%	0.09%	0.56%	0.03%	0.00%
2006	70 (06-08)	11.79%	2.83%	0.93%	3.06%	0.55%	0.15%	0.83%	0.06%	0.01%
2006	75 (06-08)	13.63%	3.71%	1.39%	3.59%	0.72%	0.21%	1.03%	0.09%	0.02%
2006	base	17.25%	5.51%	2.40%	4.76%	1.05%	0.35%	1.42%	0.17%	0.03%
2007	60 (06-08)	8.88%	1.70%	0.45%	2.02%	0.24%	0.05%	0.45%	0.04%	0.01%
2007	65 (06-08)	11.57%	2.77%	0.88%	2.78%	0.41%	0.09%	0.69%	0.06%	0.01%
2007	70 (06-08)	15.17%	4.42%	1.67%	3.87%	0.69%	0.20%	1.12%	0.10%	0.03%
2007	75 (06-08)	17.75%	5.69%	2.36%	4.65%	0.97%	0.28%	1.40%	0.15%	0.04%
2007	base	21.88%	7.82%	3.77%	5.94%	1.39%	0.46%	1.96%	0.24%	0.06%
2008	60 (06-08)	6.67%	0.95%	0.19%	1.73%	0.21%	0.04%	0.37%	0.02%	0.00%
2008	60 (08-10)	7.67%	1.29%	0.29%	1.94%	0.25%	0.06%	0.46%	0.03%	0.00%
2008	65 (06-08)	8.55%	1.59%	0.44%	2.20%	0.30%	0.07%	0.55%	0.03%	0.00%
2008	65 (08-10)	10.25%	2.20%	0.68%	2.64%	0.42%	0.10%	0.70%	0.04%	0.00%
2008	70 (06-08)	11.14%	2.53%	0.83%	2.84%	0.48%	0.12%	0.76%	0.05%	0.00%
2008	70 (08-10)	12.90%	3.20%	1.16%	3.35%	0.62%	0.17%	0.95%	0.07%	0.01%
2008	75 (06-08)	12.90%	3.20%	1.16%	3.35%	0.62%	0.17%	0.95%	0.07%	0.01%
2008	75 (08-10)	14.95%	4.26%	1.72%	3.95%	0.80%	0.25%	1.16%	0.10%	0.02%
2008	base	15.75%	4.74%	1.94%	4.13%	0.86%	0.28%	1.27%	0.12%	0.03%
2009	60 (08-10)	7.38%	1.36%	0.37%	1.80%	0.24%	0.06%	0.36%	0.02%	0.00%
2009	65 (08-10)	9.43%	2.06%	0.64%	2.28%	0.33%	0.10%	0.53%	0.03%	0.01%
2009	70 (08-10)	11.18%	2.83%	1.04%	2.71%	0.45%	0.15%	0.71%	0.05%	0.01%
2009	75 (08-10)	12.09%	3.26%	1.23%	2.87%	0.53%	0.17%	0.80%	0.05%	0.01%
2009	base	12.39%	3.41%	1.29%	2.89%	0.55%	0.16%	0.82%	0.06%	0.01%
2010	60 (08-10)	7.98%	1.24%	0.26%	1.94%	0.23%	0.05%	0.42%	0.03%	0.00%
2010	65 (08-10)	10.39%	2.05%	0.58%	2.52%	0.34%	0.07%	0.63%	0.04%	0.01%
2010	70 (08-10)	12.77%	3.04%	0.97%	3.18%	0.50%	0.12%	0.84%	0.06%	0.01%
2010	75 (08-10)	14.39%	3.68%	1.38%	3.54%	0.58%	0.14%	0.98%	0.07%	0.01%
2010	base	14.90%	3.97%	1.51%	3.66%	0.60%	0.15%	1.03%	0.08%	0.01%

Table 6B-4. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Chicago.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	8.23%	1.47%	0.42%	2.21%	0.31%	0.08%	0.45%	0.03%	0.00%
2006	65 (06-08)	10.45%	2.20%	0.72%	2.79%	0.47%	0.11%	0.62%	0.05%	0.01%
2006	70 (06-08)	12.54%	3.03%	1.13%	3.35%	0.59%	0.18%	0.79%	0.08%	0.02%
2006	75 (06-08)	14.39%	3.94%	1.57%	3.75%	0.75%	0.23%	0.96%	0.11%	0.03%
2006	base	14.55%	4.15%	1.65%	3.71%	0.75%	0.22%	0.96%	0.11%	0.03%
2007	60 (06-08)	10.75%	2.17%	0.64%	2.76%	0.40%	0.12%	0.61%	0.03%	0.00%
2007	65 (06-08)	13.86%	3.39%	1.19%	3.73%	0.65%	0.19%	0.94%	0.07%	0.01%
2007	70 (06-08)	16.95%	4.72%	1.81%	4.67%	0.90%	0.27%	1.24%	0.10%	0.02%
2007	75 (06-08)	19.68%	6.16%	2.61%	5.49%	1.14%	0.40%	1.59%	0.15%	0.03%
2007	base	20.14%	6.48%	2.81%	5.55%	1.18%	0.41%	1.64%	0.16%	0.03%
2008	60 (06-08)	7.07%	1.01%	0.24%	1.89%	0.22%	0.06%	0.35%	0.02%	0.00%
2008	60 (08-10)	8.25%	1.34%	0.33%	2.18%	0.25%	0.08%	0.42%	0.02%	0.00%
2008	65 (06-08)	8.69%	1.46%	0.36%	2.30%	0.28%	0.09%	0.47%	0.02%	0.00%
2008	65 (08-10)	9.85%	1.85%	0.51%	2.56%	0.33%	0.10%	0.56%	0.04%	0.00%
2008	70 (06-08)	10.14%	1.95%	0.54%	2.62%	0.35%	0.11%	0.58%	0.04%	0.00%
2008	70 (08-10)	11.14%	2.40%	0.78%	2.78%	0.39%	0.11%	0.66%	0.04%	0.01%
2008	75 (06-08)	11.17%	2.41%	0.80%	2.76%	0.38%	0.11%	0.65%	0.04%	0.01%
2008	75 (08-10)	11.05%	2.43%	0.81%	2.65%	0.37%	0.11%	0.65%	0.04%	0.00%
2008	base	11.05%	2.43%	0.81%	2.65%	0.37%	0.11%	0.65%	0.04%	0.00%
2009	60 (08-10)	8.16%	1.45%	0.42%	2.31%	0.34%	0.09%	0.46%	0.03%	0.00%
2009	65 (08-10)	9.86%	2.04%	0.63%	2.79%	0.42%	0.13%	0.59%	0.04%	0.01%
2009	70 (08-10)	11.31%	2.74%	0.89%	3.09%	0.52%	0.15%	0.70%	0.05%	0.01%
2009	75 (08-10)	11.30%	2.79%	0.92%	2.91%	0.51%	0.14%	0.67%	0.05%	0.01%
2009	base	11.30%	2.79%	0.92%	2.91%	0.51%	0.14%	0.67%	0.05%	0.01%
2010	60 (08-10)	10.83%	2.11%	0.60%	3.13%	0.51%	0.15%	0.66%	0.04%	0.01%
2010	65 (08-10)	13.19%	3.13%	1.02%	3.83%	0.71%	0.20%	0.88%	0.06%	0.01%
2010	70 (08-10)	15.34%	4.16%	1.46%	4.39%	0.88%	0.26%	1.09%	0.09%	0.02%
2010	75 (08-10)	15.60%	4.41%	1.64%	4.25%	0.88%	0.25%	1.07%	0.09%	0.02%
2010	base	15.60%	4.41%	1.64%	4.25%	0.88%	0.25%	1.07%	0.09%	0.02%

Table 6B-5. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Cleveland.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	4.40%	0.45%	0.06%	1.16%	0.10%	0.01%	0.25%	0.01%	0.00%
2006	65 (06-08)	7.68%	1.28%	0.30%	2.15%	0.29%	0.04%	0.50%	0.03%	0.01%
2006	70 (06-08)	10.55%	2.15%	0.66%	3.05%	0.49%	0.11%	0.73%	0.07%	0.01%
2006	75 (06-08)	13.45%	3.26%	1.17%	4.03%	0.78%	0.20%	0.99%	0.11%	0.02%
2006	base	17.33%	5.16%	2.12%	5.57%	1.23%	0.40%	1.47%	0.19%	0.05%
2007	60 (06-08)	5.42%	0.68%	0.17%	1.23%	0.12%	0.02%	0.27%	0.01%	0.00%
2007	65 (06-08)	9.95%	1.84%	0.58%	2.49%	0.31%	0.09%	0.55%	0.04%	0.01%
2007	70 (06-08)	13.59%	3.19%	1.10%	3.69%	0.53%	0.16%	0.92%	0.09%	0.01%
2007	75 (06-08)	17.02%	4.61%	1.84%	5.02%	0.91%	0.28%	1.32%	0.15%	0.02%
2007	base	21.65%	7.09%	3.19%	6.78%	1.50%	0.51%	2.07%	0.24%	0.05%
2008	60 (06-08)	4.79%	0.48%	0.07%	1.19%	0.12%	0.03%	0.24%	0.01%	0.00%
2008	60 (08-10)	4.79%	0.48%	0.07%	1.19%	0.12%	0.03%	0.24%	0.01%	0.00%
2008	65 (06-08)	8.54%	1.37%	0.38%	2.18%	0.28%	0.07%	0.52%	0.03%	0.00%
2008	65 (08-10)	7.50%	1.12%	0.25%	1.88%	0.22%	0.05%	0.42%	0.02%	0.00%
2008	70 (06-08)	11.58%	2.40%	0.79%	3.09%	0.50%	0.12%	0.77%	0.05%	0.01%
2008	70 (08-10)	10.88%	2.10%	0.69%	2.86%	0.44%	0.11%	0.70%	0.04%	0.01%
2008	75 (06-08)	14.50%	3.74%	1.34%	4.08%	0.74%	0.20%	1.08%	0.10%	0.01%
2008	75 (08-10)	14.10%	3.55%	1.27%	3.95%	0.69%	0.18%	1.03%	0.09%	0.01%
2008	base	18.32%	5.53%	2.25%	5.38%	1.13%	0.34%	1.54%	0.16%	0.03%
2009	60 (08-10)	4.31%	0.56%	0.09%	1.14%	0.10%	0.01%	0.20%	0.01%	0.00%
2009	65 (08-10)	6.15%	1.00%	0.24%	1.57%	0.20%	0.03%	0.31%	0.02%	0.00%
2009	70 (08-10)	8.45%	1.58%	0.49%	2.21%	0.33%	0.06%	0.50%	0.04%	0.00%
2009	75 (08-10)	10.58%	2.31%	0.78%	2.90%	0.49%	0.12%	0.69%	0.06%	0.00%
2009	base	12.83%	3.27%	1.21%	3.55%	0.66%	0.19%	0.88%	0.09%	0.02%
2010	60 (08-10)	5.11%	0.48%	0.09%	1.28%	0.11%	0.01%	0.24%	0.01%	0.00%
2010	65 (08-10)	7.79%	1.04%	0.23%	2.00%	0.23%	0.04%	0.44%	0.02%	0.00%
2010	70 (08-10)	11.10%	2.07%	0.57%	3.00%	0.43%	0.11%	0.69%	0.05%	0.01%
2010	75 (08-10)	14.31%	3.32%	1.07%	4.13%	0.68%	0.18%	1.01%	0.08%	0.01%
2010	base	18.49%	5.13%	2.08%	5.44%	1.15%	0.34%	1.47%	0.14%	0.03%

Table 6B-6. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Dallas.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	12.69%	2.60%	0.86%	3.43%	0.45%	0.10%	0.89%	0.06%	0.00%
2006	65 (06-08)	15.63%	3.76%	1.38%	4.44%	0.66%	0.18%	1.20%	0.10%	0.01%
2006	70 (06-08)	18.94%	5.11%	2.01%	5.73%	0.96%	0.29%	1.64%	0.15%	0.03%
2006	75 (06-08)	21.60%	6.39%	2.68%	6.93%	1.28%	0.41%	2.03%	0.22%	0.05%
2006	base	29.97%	10.90%	5.33%	10.54%	2.69%	0.92%	3.59%	0.48%	0.12%
2007	60 (06-08)	8.72%	1.51%	0.42%	2.16%	0.27%	0.06%	0.50%	0.03%	0.00%
2007	65 (06-08)	10.83%	2.20%	0.70%	2.79%	0.37%	0.09%	0.68%	0.05%	0.00%
2007	70 (06-08)	13.22%	3.10%	1.10%	3.53%	0.54%	0.14%	0.88%	0.08%	0.01%
2007	75 (06-08)	15.13%	3.91%	1.54%	4.17%	0.68%	0.19%	1.09%	0.11%	0.02%
2007	base	21.44%	7.21%	3.28%	6.43%	1.48%	0.50%	1.92%	0.25%	0.06%
2008	60 (06-08)	8.45%	1.31%	0.31%	2.16%	0.27%	0.04%	0.51%	0.02%	0.00%
2008	60 (08-10)	8.45%	1.31%	0.31%	2.16%	0.27%	0.04%	0.51%	0.02%	0.00%
2008	65 (06-08)	10.48%	1.92%	0.55%	2.69%	0.37%	0.08%	0.66%	0.03%	0.00%
2008	65 (08-10)	10.48%	1.92%	0.55%	2.69%	0.37%	0.08%	0.66%	0.03%	0.00%
2008	70 (06-08)	12.69%	2.69%	0.86%	3.37%	0.49%	0.13%	0.85%	0.06%	0.01%
2008	70 (08-10)	12.69%	2.69%	0.86%	3.37%	0.49%	0.13%	0.85%	0.06%	0.01%
2008	75 (06-08)	14.39%	3.46%	1.17%	3.97%	0.64%	0.19%	1.02%	0.07%	0.01%
2008	75 (08-10)	14.90%	3.64%	1.26%	4.14%	0.67%	0.20%	1.08%	0.08%	0.01%
2008	base	19.64%	6.01%	2.52%	5.85%	1.16%	0.39%	1.64%	0.17%	0.03%
2009	60 (08-10)	9.55%	1.77%	0.48%	2.40%	0.33%	0.08%	0.56%	0.03%	0.00%
2009	65 (08-10)	11.84%	2.53%	0.84%	3.13%	0.45%	0.13%	0.77%	0.05%	0.00%
2009	70 (08-10)	14.38%	3.48%	1.30%	3.98%	0.67%	0.19%	1.02%	0.09%	0.01%
2009	75 (08-10)	17.00%	4.64%	1.89%	5.01%	0.90%	0.28%	1.39%	0.12%	0.02%
2009	base	23.14%	7.85%	3.58%	7.32%	1.61%	0.60%	2.21%	0.27%	0.05%
2010	60 (08-10)	8.44%	1.31%	0.34%	2.13%	0.25%	0.05%	0.47%	0.02%	0.00%
2010	65 (08-10)	10.23%	1.88%	0.58%	2.71%	0.36%	0.07%	0.65%	0.05%	0.00%
2010	70 (08-10)	12.36%	2.61%	0.89%	3.39%	0.49%	0.11%	0.82%	0.07%	0.01%
2010	75 (08-10)	14.56%	3.52%	1.23%	4.10%	0.67%	0.17%	1.05%	0.11%	0.01%
2010	base	19.18%	5.82%	2.44%	5.50%	1.13%	0.38%	1.63%	0.18%	0.04%

Table 6B-7. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Denver.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	12.47%	2.31%	0.72%	3.77%	0.54%	0.12%	0.96%	0.07%	0.00%
2006	65 (06-08)	15.13%	3.32%	1.11%	4.80%	0.78%	0.17%	1.30%	0.10%	0.01%
2006	70 (06-08)	17.78%	4.49%	1.63%	5.74%	1.04%	0.29%	1.60%	0.16%	0.03%
2006	75 (06-08)	20.23%	5.64%	2.21%	6.68%	1.30%	0.40%	1.92%	0.22%	0.05%
2006	base	24.08%	7.75%	3.46%	8.12%	1.93%	0.66%	2.53%	0.38%	0.09%
2007	60 (06-08)	11.41%	1.96%	0.57%	3.40%	0.47%	0.10%	0.82%	0.05%	0.01%
2007	65 (06-08)	13.77%	2.83%	0.88%	4.22%	0.67%	0.14%	1.05%	0.09%	0.01%
2007	70 (06-08)	16.12%	3.68%	1.30%	4.95%	0.82%	0.21%	1.28%	0.12%	0.02%
2007	75 (06-08)	18.24%	4.57%	1.75%	5.67%	1.04%	0.30%	1.53%	0.16%	0.03%
2007	base	21.33%	6.31%	2.57%	6.68%	1.34%	0.42%	1.90%	0.25%	0.05%
2008	60 (06-08)	12.04%	2.14%	0.62%	3.79%	0.53%	0.12%	0.94%	0.05%	0.01%
2008	60 (08-10)	12.04%	2.14%	0.62%	3.79%	0.53%	0.12%	0.94%	0.05%	0.01%
2008	65 (06-08)	14.72%	3.05%	0.97%	4.77%	0.74%	0.18%	1.22%	0.09%	0.01%
2008	65 (08-10)	17.60%	4.04%	1.42%	5.82%	0.96%	0.30%	1.55%	0.14%	0.02%
2008	70 (06-08)	17.42%	3.97%	1.39%	5.76%	0.93%	0.29%	1.53%	0.13%	0.02%
2008	70 (08-10)	20.46%	5.31%	2.09%	7.01%	1.30%	0.42%	1.91%	0.20%	0.04%
2008	75 (06-08)	19.77%	4.96%	1.94%	6.71%	1.22%	0.39%	1.81%	0.19%	0.03%
2008	75 (08-10)	22.50%	6.46%	2.61%	7.77%	1.55%	0.51%	2.19%	0.25%	0.05%
2008	base	23.00%	6.78%	2.79%	7.94%	1.64%	0.52%	2.26%	0.26%	0.05%
2009	60 (08-10)	9.52%	1.52%	0.37%	2.87%	0.36%	0.09%	0.68%	0.03%	0.00%
2009	65 (08-10)	13.48%	2.75%	0.88%	4.23%	0.65%	0.16%	1.07%	0.07%	0.00%
2009	70 (08-10)	15.45%	3.58%	1.25%	4.89%	0.79%	0.20%	1.28%	0.10%	0.01%
2009	75 (08-10)	16.90%	4.35%	1.58%	5.23%	0.90%	0.24%	1.43%	0.13%	0.01%
2009	base	17.25%	4.55%	1.71%	5.36%	0.94%	0.26%	1.45%	0.13%	0.01%
2010	60 (08-10)	10.64%	1.73%	0.41%	3.18%	0.42%	0.10%	0.73%	0.05%	0.00%
2010	65 (08-10)	15.12%	3.19%	1.04%	4.71%	0.72%	0.21%	1.15%	0.11%	0.01%
2010	70 (08-10)	17.54%	4.11%	1.49%	5.58%	0.99%	0.28%	1.43%	0.13%	0.02%
2010	75 (08-10)	19.34%	5.01%	1.95%	6.14%	1.16%	0.34%	1.65%	0.17%	0.03%
2010	base	19.83%	5.31%	2.12%	6.25%	1.23%	0.37%	1.72%	0.17%	0.04%

Table 6B-8. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Detroit.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	7.49%	1.16%	0.28%	2.03%	0.28%	0.06%	0.47%	0.02%	0.00%
2006	65 (06-08)	9.57%	1.86%	0.51%	2.66%	0.42%	0.11%	0.63%	0.05%	0.01%
2006	70 (06-08)	11.37%	2.52%	0.81%	3.21%	0.54%	0.16%	0.79%	0.07%	0.01%
2006	75 (06-08)	13.64%	3.51%	1.28%	3.98%	0.77%	0.25%	1.00%	0.10%	0.02%
2006	base	17.53%	5.40%	2.33%	5.21%	1.19%	0.41%	1.38%	0.18%	0.04%
2007	60 (06-08)	9.07%	1.54%	0.42%	2.06%	0.29%	0.06%	0.47%	0.03%	0.01%
2007	65 (06-08)	12.04%	2.63%	0.79%	2.88%	0.44%	0.12%	0.71%	0.06%	0.01%
2007	70 (06-08)	14.54%	3.58%	1.24%	3.68%	0.63%	0.19%	0.95%	0.09%	0.02%
2007	75 (06-08)	17.79%	5.08%	2.07%	4.83%	0.94%	0.28%	1.31%	0.13%	0.03%
2007	base	23.67%	8.42%	3.88%	7.01%	1.65%	0.54%	2.15%	0.26%	0.06%
2008	60 (06-08)	7.05%	0.96%	0.20%	1.81%	0.22%	0.05%	0.41%	0.03%	0.00%
2008	60 (08-10)	8.44%	1.38%	0.35%	2.20%	0.31%	0.06%	0.50%	0.04%	0.00%
2008	65 (06-08)	8.89%	1.52%	0.40%	2.35%	0.34%	0.08%	0.53%	0.05%	0.00%
2008	65 (08-10)	11.07%	2.34%	0.70%	2.97%	0.48%	0.13%	0.68%	0.07%	0.01%
2008	70 (06-08)	10.46%	2.12%	0.59%	2.79%	0.43%	0.12%	0.63%	0.06%	0.01%
2008	70 (08-10)	13.70%	3.40%	1.21%	3.74%	0.67%	0.20%	0.95%	0.09%	0.02%
2008	75 (06-08)	12.68%	2.98%	0.99%	3.43%	0.60%	0.17%	0.83%	0.08%	0.01%
2008	75 (08-10)	15.80%	4.44%	1.78%	4.22%	0.86%	0.28%	1.14%	0.13%	0.02%
2008	base	15.80%	4.44%	1.78%	4.22%	0.86%	0.28%	1.14%	0.13%	0.02%
2009	60 (08-10)	7.31%	1.18%	0.28%	2.02%	0.27%	0.06%	0.43%	0.03%	0.00%
2009	65 (08-10)	9.49%	1.92%	0.57%	2.66%	0.43%	0.10%	0.61%	0.04%	0.01%
2009	70 (08-10)	11.50%	2.65%	0.94%	3.33%	0.58%	0.16%	0.81%	0.06%	0.01%
2009	75 (08-10)	13.11%	3.49%	1.39%	3.62%	0.70%	0.20%	0.90%	0.09%	0.02%
2009	base	13.11%	3.49%	1.39%	3.62%	0.70%	0.20%	0.90%	0.09%	0.02%
2010	60 (08-10)	9.24%	1.48%	0.37%	2.44%	0.34%	0.10%	0.54%	0.03%	0.00%
2010	65 (08-10)	12.12%	2.48%	0.73%	3.28%	0.55%	0.15%	0.77%	0.06%	0.02%
2010	70 (08-10)	14.67%	3.53%	1.20%	4.06%	0.76%	0.25%	1.05%	0.11%	0.02%
2010	75 (08-10)	17.12%	4.77%	1.80%	4.71%	0.98%	0.34%	1.24%	0.14%	0.03%
2010	base	17.12%	4.77%	1.80%	4.71%	0.98%	0.34%	1.24%	0.14%	0.03%

Table 6B-9. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Houston.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	8.88%	1.29%	0.29%	2.55%	0.28%	0.04%	0.50%	0.03%	0.00%
2006	65 (06-08)	11.63%	2.27%	0.73%	3.29%	0.41%	0.08%	0.70%	0.04%	0.01%
2006	70 (06-08)	13.82%	3.21%	1.12%	3.92%	0.57%	0.11%	0.89%	0.06%	0.01%
2006	75 (06-08)	16.15%	4.20%	1.58%	4.63%	0.77%	0.19%	1.15%	0.09%	0.01%
2006	base	26.83%	10.40%	5.22%	8.54%	2.21%	0.76%	2.74%	0.35%	0.10%
2007	60 (06-08)	7.40%	0.91%	0.22%	2.20%	0.22%	0.04%	0.46%	0.01%	0.00%
2007	65 (06-08)	9.29%	1.48%	0.38%	2.72%	0.31%	0.07%	0.57%	0.02%	0.00%
2007	70 (06-08)	10.74%	2.02%	0.60%	3.14%	0.40%	0.10%	0.67%	0.04%	0.00%
2007	75 (06-08)	12.31%	2.63%	0.83%	3.61%	0.50%	0.14%	0.79%	0.06%	0.01%
2007	base	19.86%	6.61%	2.85%	5.94%	1.30%	0.42%	1.57%	0.17%	0.03%
2008	60 (06-08)	7.53%	0.94%	0.19%	2.23%	0.24%	0.05%	0.51%	0.02%	0.00%
2008	60 (08-10)	9.14%	1.32%	0.33%	2.68%	0.33%	0.07%	0.62%	0.02%	0.00%
2008	65 (06-08)	9.35%	1.39%	0.35%	2.75%	0.34%	0.07%	0.64%	0.02%	0.00%
2008	65 (08-10)	11.68%	2.32%	0.70%	3.51%	0.49%	0.11%	0.86%	0.05%	0.01%
2008	70 (06-08)	10.61%	1.89%	0.52%	3.17%	0.42%	0.09%	0.76%	0.04%	0.00%
2008	70 (08-10)	13.97%	3.25%	1.09%	4.24%	0.67%	0.19%	1.06%	0.07%	0.01%
2008	75 (06-08)	11.91%	2.41%	0.73%	3.56%	0.51%	0.12%	0.89%	0.05%	0.01%
2008	75 (08-10)	16.18%	4.30%	1.62%	4.99%	0.87%	0.25%	1.30%	0.10%	0.02%
2008	base	18.24%	5.58%	2.30%	5.49%	1.07%	0.34%	1.49%	0.16%	0.03%
2009	60 (08-10)	9.29%	1.50%	0.40%	2.72%	0.37%	0.09%	0.58%	0.03%	0.00%
2009	65 (08-10)	12.02%	2.65%	0.89%	3.52%	0.57%	0.12%	0.83%	0.07%	0.01%
2009	70 (08-10)	14.29%	3.78%	1.44%	4.23%	0.76%	0.20%	1.08%	0.10%	0.01%
2009	75 (08-10)	16.61%	4.99%	2.06%	4.96%	1.03%	0.30%	1.31%	0.16%	0.02%
2009	base	19.11%	6.59%	3.10%	5.41%	1.30%	0.44%	1.55%	0.22%	0.06%
2010	60 (08-10)	9.42%	1.48%	0.37%	2.86%	0.35%	0.06%	0.59%	0.04%	0.00%
2010	65 (08-10)	12.21%	2.46%	0.76%	3.60%	0.50%	0.11%	0.76%	0.06%	0.01%
2010	70 (08-10)	14.54%	3.50%	1.21%	4.32%	0.66%	0.17%	0.97%	0.08%	0.02%
2010	75 (08-10)	16.75%	4.63%	1.76%	4.98%	0.87%	0.24%	1.18%	0.10%	0.02%
2010	base	19.23%	6.09%	2.64%	5.53%	1.14%	0.32%	1.44%	0.15%	0.03%

Table 6B-10. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Los Angeles.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	11.20%	1.70%	0.37%	4.95%	0.59%	0.15%	1.02%	0.05%	0.01%
2006	65 (06-08)	13.55%	2.41%	0.70%	6.11%	0.83%	0.24%	1.32%	0.08%	0.01%
2006	70 (06-08)	15.69%	3.21%	1.06%	7.31%	1.14%	0.33%	1.65%	0.12%	0.03%
2006	75 (06-08)	18.15%	4.22%	1.49%	8.56%	1.50%	0.43%	2.06%	0.19%	0.04%
2006	base	28.03%	11.04%	5.60%	12.69%	3.46%	1.39%	4.12%	0.76%	0.25%
2007	60 (06-08)	10.92%	1.60%	0.37%	4.89%	0.60%	0.12%	0.97%	0.05%	0.01%
2007	65 (06-08)	13.12%	2.29%	0.64%	5.99%	0.85%	0.20%	1.29%	0.08%	0.01%
2007	70 (06-08)	15.08%	3.06%	0.96%	7.03%	1.10%	0.30%	1.63%	0.10%	0.02%
2007	75 (06-08)	17.45%	3.99%	1.40%	8.31%	1.41%	0.44%	2.03%	0.15%	0.03%
2007	base	25.15%	9.32%	4.52%	11.00%	2.80%	1.05%	3.40%	0.52%	0.16%
2008	60 (06-08)	11.60%	1.85%	0.46%	5.10%	0.63%	0.14%	1.08%	0.06%	0.01%
2008	60 (08-10)	11.87%	1.94%	0.48%	5.20%	0.65%	0.15%	1.11%	0.06%	0.01%
2008	65 (06-08)	14.03%	2.56%	0.74%	6.26%	0.88%	0.21%	1.41%	0.09%	0.02%
2008	65 (08-10)	14.29%	2.66%	0.76%	6.40%	0.91%	0.23%	1.45%	0.10%	0.02%
2008	70 (06-08)	16.25%	3.34%	1.06%	7.49%	1.18%	0.31%	1.79%	0.13%	0.02%
2008	70 (08-10)	16.57%	3.48%	1.12%	7.70%	1.25%	0.32%	1.84%	0.14%	0.02%
2008	75 (06-08)	18.60%	4.34%	1.52%	8.91%	1.60%	0.46%	2.23%	0.21%	0.04%
2008	75 (08-10)	18.70%	4.39%	1.54%	8.95%	1.61%	0.46%	2.25%	0.21%	0.04%
2008	base	27.62%	10.51%	5.26%	12.88%	3.40%	1.31%	4.08%	0.69%	0.18%
2009	60 (08-10)	11.92%	1.79%	0.47%	5.27%	0.65%	0.15%	1.12%	0.06%	0.01%
2009	65 (08-10)	14.25%	2.55%	0.74%	6.40%	0.94%	0.25%	1.47%	0.10%	0.02%
2009	70 (08-10)	16.48%	3.39%	1.06%	7.57%	1.26%	0.34%	1.82%	0.13%	0.02%
2009	75 (08-10)	18.55%	4.24%	1.44%	8.75%	1.60%	0.48%	2.21%	0.18%	0.05%
2009	base	25.91%	9.38%	4.53%	11.51%	2.89%	1.06%	3.56%	0.61%	0.16%
2010	60 (08-10)	10.23%	1.47%	0.34%	4.78%	0.59%	0.13%	0.93%	0.06%	0.01%
2010	65 (08-10)	12.33%	2.07%	0.58%	5.77%	0.84%	0.21%	1.25%	0.09%	0.02%
2010	70 (08-10)	14.33%	2.76%	0.89%	6.91%	1.11%	0.29%	1.65%	0.12%	0.03%
2010	75 (08-10)	16.26%	3.52%	1.18%	8.04%	1.38%	0.42%	1.98%	0.14%	0.04%
2010	base	19.70%	6.34%	2.84%	8.34%	1.76%	0.58%	2.41%	0.35%	0.07%

Table 6B-11. Percents of persons with lung function decrement > 10, 15, 20%. Study area=New York.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	65 (06-08)	2.43%	0.16%	0.03%	0.66%	0.06%	0.01%	0.12%	0.00%	0.00%
2006	70 (06-08)	9.25%	1.85%	0.58%	2.31%	0.29%	0.07%	0.51%	0.03%	0.00%
2006	75 (06-08)	12.72%	3.20%	1.17%	3.20%	0.49%	0.14%	0.78%	0.06%	0.01%
2006	base	23.21%	8.56%	4.09%	6.63%	1.63%	0.62%	2.05%	0.25%	0.06%
2007	65 (06-08)	2.88%	0.26%	0.06%	0.80%	0.08%	0.01%	0.15%	0.01%	0.00%
2007	70 (06-08)	10.62%	2.13%	0.58%	2.73%	0.37%	0.08%	0.61%	0.04%	0.02%
2007	75 (06-08)	14.16%	3.46%	1.18%	3.79%	0.60%	0.15%	0.88%	0.06%	0.02%
2007	base	23.68%	8.52%	3.92%	6.99%	1.69%	0.57%	2.05%	0.24%	0.05%
2008	65 (06-08)	2.58%	0.19%	0.05%	0.68%	0.06%	0.01%	0.12%	0.01%	0.00%
2008	65 (08-10)	3.85%	0.37%	0.07%	1.03%	0.11%	0.02%	0.20%	0.01%	0.00%
2008	70 (06-08)	9.42%	1.85%	0.53%	2.53%	0.38%	0.09%	0.59%	0.05%	0.01%
2008	70 (08-10)	11.69%	2.60%	0.94%	3.17%	0.52%	0.15%	0.77%	0.06%	0.01%
2008	75 (06-08)	12.74%	2.95%	1.14%	3.44%	0.59%	0.18%	0.85%	0.06%	0.02%
2008	75 (08-10)	16.38%	4.56%	1.88%	4.55%	0.90%	0.31%	1.22%	0.12%	0.02%
2008	base	21.41%	7.49%	3.26%	6.18%	1.51%	0.55%	1.81%	0.23%	0.05%
2009	65 (08-10)	3.31%	0.33%	0.06%	0.93%	0.08%	0.02%	0.17%	0.01%	0.00%
2009	70 (08-10)	8.44%	1.58%	0.43%	2.19%	0.31%	0.06%	0.51%	0.03%	0.00%
2009	75 (08-10)	11.41%	2.69%	0.84%	3.01%	0.48%	0.14%	0.75%	0.07%	0.01%
2009	base	13.83%	3.79%	1.47%	3.53%	0.63%	0.20%	0.94%	0.10%	0.01%
2010	65 (08-10)	4.36%	0.49%	0.11%	1.20%	0.12%	0.02%	0.24%	0.01%	0.00%
2010	70 (08-10)	13.62%	3.01%	1.06%	3.59%	0.57%	0.14%	0.91%	0.07%	0.01%
2010	75 (08-10)	18.63%	5.22%	2.08%	5.19%	1.03%	0.30%	1.45%	0.12%	0.03%
2010	base	23.60%	7.86%	3.53%	6.81%	1.60%	0.53%	2.10%	0.24%	0.05%

Table 6B-12. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Philadelphia.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	9.21%	1.51%	0.35%	2.19%	0.24%	0.05%	0.49%	0.02%	0.01%
2006	65 (06-08)	11.46%	2.15%	0.62%	2.80%	0.36%	0.08%	0.66%	0.03%	0.01%
2006	70 (06-08)	13.90%	3.14%	1.06%	3.50%	0.50%	0.12%	0.92%	0.05%	0.01%
2006	75 (06-08)	16.35%	4.23%	1.59%	4.40%	0.71%	0.20%	1.17%	0.07%	0.01%
2006	base	25.08%	8.82%	4.09%	7.70%	1.77%	0.57%	2.48%	0.26%	0.06%
2007	60 (06-08)	10.39%	1.82%	0.46%	2.52%	0.29%	0.05%	0.58%	0.03%	0.00%
2007	65 (06-08)	12.82%	2.70%	0.84%	3.24%	0.44%	0.11%	0.78%	0.05%	0.01%
2007	70 (06-08)	15.69%	3.89%	1.40%	4.20%	0.67%	0.17%	1.08%	0.09%	0.01%
2007	75 (06-08)	18.41%	5.17%	2.03%	5.13%	0.86%	0.27%	1.41%	0.12%	0.03%
2007	base	27.22%	10.21%	4.97%	8.76%	2.22%	0.79%	2.88%	0.38%	0.10%
2008	60 (06-08)	8.19%	1.22%	0.24%	1.92%	0.21%	0.04%	0.46%	0.02%	0.01%
2008	60 (08-10)	10.17%	1.84%	0.48%	2.41%	0.30%	0.05%	0.60%	0.04%	0.01%
2008	65 (06-08)	10.17%	1.84%	0.48%	2.41%	0.30%	0.05%	0.60%	0.04%	0.01%
2008	65 (08-10)	12.60%	2.75%	0.88%	3.14%	0.44%	0.12%	0.80%	0.06%	0.01%
2008	70 (06-08)	12.60%	2.75%	0.88%	3.14%	0.44%	0.12%	0.80%	0.06%	0.01%
2008	70 (08-10)	15.57%	4.01%	1.50%	4.15%	0.70%	0.19%	1.12%	0.10%	0.02%
2008	75 (06-08)	14.90%	3.72%	1.36%	3.96%	0.64%	0.17%	1.04%	0.10%	0.02%
2008	75 (08-10)	18.64%	5.38%	2.23%	5.27%	0.99%	0.29%	1.52%	0.16%	0.03%
2008	base	23.84%	8.19%	3.78%	7.30%	1.64%	0.56%	2.25%	0.31%	0.07%
2009	60 (08-10)	7.60%	0.99%	0.21%	1.82%	0.20%	0.03%	0.40%	0.02%	0.00%
2009	65 (08-10)	9.04%	1.44%	0.34%	2.19%	0.26%	0.05%	0.51%	0.03%	0.00%
2009	70 (08-10)	10.75%	2.01%	0.57%	2.73%	0.35%	0.08%	0.63%	0.04%	0.01%
2009	75 (08-10)	12.51%	2.73%	0.86%	3.25%	0.48%	0.12%	0.78%	0.06%	0.01%
2009	base	15.31%	4.06%	1.54%	4.03%	0.69%	0.19%	1.03%	0.10%	0.02%
2010	60 (08-10)	11.26%	1.99%	0.55%	2.65%	0.31%	0.04%	0.65%	0.04%	0.01%
2010	65 (08-10)	13.74%	2.92%	0.95%	3.43%	0.45%	0.10%	0.89%	0.06%	0.01%
2010	70 (08-10)	16.88%	4.16%	1.50%	4.46%	0.73%	0.18%	1.20%	0.11%	0.02%
2010	75 (08-10)	19.76%	5.51%	2.24%	5.59%	1.04%	0.29%	1.61%	0.15%	0.03%
2010	base	24.84%	8.23%	3.70%	7.45%	1.63%	0.57%	2.37%	0.29%	0.07%

Table 6B-13. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Sacramento.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	9.76%	1.64%	0.42%	2.40%	0.25%	0.03%	0.50%	0.03%	0.00%
2006	65 (06-08)	12.85%	2.72%	0.83%	3.45%	0.40%	0.10%	0.78%	0.06%	0.01%
2006	70 (06-08)	15.25%	3.63%	1.28%	4.20%	0.59%	0.14%	1.03%	0.07%	0.01%
2006	75 (06-08)	17.92%	4.75%	1.77%	5.15%	0.85%	0.21%	1.31%	0.12%	0.02%
2006	base	29.22%	10.91%	5.23%	9.95%	2.51%	0.91%	3.07%	0.52%	0.12%
2007	60 (06-08)	7.39%	0.97%	0.25%	1.80%	0.14%	0.02%	0.37%	0.02%	0.00%
2007	65 (06-08)	9.59%	1.62%	0.48%	2.35%	0.23%	0.03%	0.49%	0.03%	0.00%
2007	70 (06-08)	11.20%	2.17%	0.69%	2.78%	0.30%	0.07%	0.61%	0.04%	0.00%
2007	75 (06-08)	13.04%	2.87%	0.96%	3.35%	0.46%	0.10%	0.77%	0.07%	0.01%
2007	base	21.38%	6.95%	3.03%	6.22%	1.35%	0.41%	1.76%	0.22%	0.05%
2008	60 (06-08)	9.41%	1.61%	0.49%	2.38%	0.25%	0.06%	0.49%	0.02%	0.00%
2008	60 (08-10)	9.41%	1.61%	0.49%	2.38%	0.25%	0.06%	0.49%	0.02%	0.00%
2008	65 (06-08)	12.30%	2.65%	0.86%	3.26%	0.43%	0.11%	0.72%	0.05%	0.00%
2008	65 (08-10)	11.97%	2.49%	0.81%	3.15%	0.40%	0.10%	0.69%	0.05%	0.00%
2008	70 (06-08)	14.43%	3.44%	1.22%	3.99%	0.60%	0.14%	0.92%	0.09%	0.00%
2008	70 (08-10)	14.09%	3.33%	1.16%	3.87%	0.57%	0.13%	0.87%	0.07%	0.00%
2008	75 (06-08)	16.79%	4.45%	1.77%	4.85%	0.86%	0.20%	1.21%	0.13%	0.01%
2008	75 (08-10)	16.43%	4.29%	1.67%	4.75%	0.82%	0.19%	1.16%	0.12%	0.01%
2008	base	27.44%	10.39%	4.96%	9.51%	2.27%	0.86%	2.92%	0.48%	0.13%
2009	60 (08-10)	8.61%	1.37%	0.36%	2.18%	0.23%	0.04%	0.43%	0.03%	0.00%
2009	65 (08-10)	10.98%	2.15%	0.68%	2.87%	0.38%	0.09%	0.61%	0.05%	0.01%
2009	70 (08-10)	13.02%	2.88%	1.01%	3.56%	0.52%	0.13%	0.80%	0.07%	0.01%
2009	75 (08-10)	15.38%	3.81%	1.41%	4.33%	0.75%	0.19%	1.04%	0.10%	0.02%
2009	base	25.55%	8.97%	4.30%	8.32%	2.14%	0.78%	2.44%	0.36%	0.10%
2010	60 (08-10)	6.56%	0.77%	0.19%	1.66%	0.13%	0.02%	0.32%	0.02%	0.00%
2010	65 (08-10)	8.30%	1.29%	0.36%	2.10%	0.18%	0.03%	0.42%	0.02%	0.00%
2010	70 (08-10)	9.81%	1.75%	0.53%	2.47%	0.24%	0.04%	0.54%	0.04%	0.00%
2010	75 (08-10)	11.50%	2.35%	0.77%	3.02%	0.33%	0.07%	0.68%	0.05%	0.01%
2010	base	19.22%	5.96%	2.54%	5.44%	1.02%	0.26%	1.50%	0.17%	0.04%

Table 6B-14. Percents of persons with lung function decrement > 10, 15, 20%. Study area=St. Louis.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	8.82%	1.39%	0.32%	2.33%	0.29%	0.07%	0.49%	0.03%	0.01%
2006	65 (06-08)	11.80%	2.38%	0.71%	3.26%	0.49%	0.13%	0.75%	0.06%	0.01%
2006	70 (06-08)	15.20%	3.65%	1.25%	4.43%	0.74%	0.22%	1.08%	0.11%	0.02%
2006	75 (06-08)	18.64%	5.11%	2.00%	5.73%	1.12%	0.36%	1.49%	0.15%	0.04%
2006	base	24.21%	8.11%	3.58%	7.99%	1.87%	0.64%	2.35%	0.28%	0.07%
2007	60 (06-08)	10.00%	1.92%	0.53%	2.53%	0.31%	0.07%	0.57%	0.04%	0.00%
2007	65 (06-08)	13.43%	3.16%	1.06%	3.71%	0.54%	0.13%	0.84%	0.07%	0.02%
2007	70 (06-08)	17.08%	4.66%	1.82%	5.13%	0.90%	0.25%	1.28%	0.12%	0.03%
2007	75 (06-08)	20.80%	6.44%	2.77%	6.69%	1.36%	0.43%	1.78%	0.20%	0.06%
2007	base	27.07%	9.70%	4.64%	9.20%	2.30%	0.83%	2.79%	0.38%	0.10%
2008	60 (06-08)	5.72%	0.69%	0.12%	1.56%	0.18%	0.04%	0.31%	0.01%	0.00%
2008	60 (08-10)	8.23%	1.31%	0.31%	2.22%	0.27%	0.08%	0.49%	0.02%	0.00%
2008	65 (06-08)	7.62%	1.14%	0.24%	2.02%	0.24%	0.06%	0.45%	0.02%	0.00%
2008	65 (08-10)	10.82%	2.08%	0.65%	3.04%	0.42%	0.13%	0.69%	0.05%	0.01%
2008	70 (06-08)	9.61%	1.67%	0.49%	2.69%	0.34%	0.10%	0.60%	0.03%	0.01%
2008	70 (08-10)	13.20%	2.96%	1.04%	3.79%	0.60%	0.17%	0.91%	0.08%	0.02%
2008	75 (06-08)	11.73%	2.46%	0.78%	3.34%	0.49%	0.14%	0.77%	0.06%	0.01%
2008	75 (08-10)	14.64%	3.57%	1.29%	4.26%	0.71%	0.19%	1.07%	0.11%	0.02%
2008	base	15.08%	3.80%	1.41%	4.38%	0.76%	0.20%	1.12%	0.11%	0.02%
2009	60 (08-10)	7.25%	1.11%	0.27%	1.91%	0.20%	0.05%	0.39%	0.02%	0.00%
2009	65 (08-10)	9.64%	1.81%	0.54%	2.58%	0.34%	0.08%	0.54%	0.04%	0.01%
2009	70 (08-10)	11.72%	2.62%	0.88%	3.29%	0.47%	0.13%	0.73%	0.06%	0.01%
2009	75 (08-10)	13.39%	3.29%	1.19%	3.76%	0.61%	0.18%	0.87%	0.09%	0.01%
2009	base	13.86%	3.53%	1.32%	3.89%	0.65%	0.22%	0.93%	0.09%	0.01%
2010	60 (08-10)	9.91%	1.79%	0.51%	2.75%	0.41%	0.10%	0.67%	0.05%	0.00%
2010	65 (08-10)	13.17%	3.01%	0.99%	3.92%	0.66%	0.18%	1.00%	0.09%	0.01%
2010	70 (08-10)	16.14%	4.19%	1.54%	4.95%	0.94%	0.29%	1.31%	0.14%	0.03%
2010	75 (08-10)	18.44%	5.26%	2.09%	5.68%	1.18%	0.39%	1.59%	0.18%	0.05%
2010	base	19.07%	5.59%	2.27%	5.94%	1.27%	0.44%	1.70%	0.19%	0.05%

Table 6B-15. Percents of persons with lung function decrement > 10, 15, 20%. Study area=Washington, DC.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	7.73%	1.19%	0.30%	2.01%	0.26%	0.07%	0.41%	0.03%	0.01%
2006	65 (06-08)	10.45%	1.98%	0.63%	2.81%	0.40%	0.11%	0.56%	0.05%	0.01%
2006	70 (06-08)	13.16%	2.94%	1.00%	3.69%	0.57%	0.17%	0.79%	0.08%	0.02%
2006	75 (06-08)	15.89%	4.00%	1.49%	4.51%	0.79%	0.25%	1.04%	0.10%	0.03%
2006	base	25.95%	9.34%	4.41%	8.38%	2.03%	0.73%	2.38%	0.30%	0.08%
2007	60 (06-08)	8.97%	1.38%	0.32%	2.39%	0.29%	0.06%	0.50%	0.04%	0.01%
2007	65 (06-08)	11.65%	2.23%	0.61%	3.20%	0.45%	0.09%	0.72%	0.06%	0.01%
2007	70 (06-08)	14.33%	3.28%	1.04%	4.09%	0.67%	0.17%	0.97%	0.09%	0.02%
2007	75 (06-08)	16.89%	4.34%	1.51%	4.98%	0.91%	0.26%	1.22%	0.12%	0.03%
2007	base	26.33%	9.23%	4.23%	8.64%	2.08%	0.74%	2.49%	0.33%	0.10%
2008	60 (06-08)	6.99%	0.97%	0.21%	1.85%	0.23%	0.05%	0.34%	0.02%	0.00%
2008	60 (08-10)	7.82%	1.19%	0.29%	2.07%	0.26%	0.06%	0.38%	0.03%	0.00%
2008	65 (06-08)	9.07%	1.54%	0.41%	2.42%	0.32%	0.07%	0.45%	0.03%	0.00%
2008	65 (08-10)	11.12%	2.24%	0.70%	3.03%	0.43%	0.12%	0.63%	0.05%	0.01%
2008	70 (06-08)	11.12%	2.24%	0.70%	3.03%	0.43%	0.12%	0.63%	0.05%	0.01%
2008	70 (08-10)	14.05%	3.37%	1.24%	3.92%	0.67%	0.20%	0.94%	0.07%	0.02%
2008	75 (06-08)	13.22%	3.05%	1.06%	3.66%	0.60%	0.17%	0.84%	0.06%	0.02%
2008	75 (08-10)	17.96%	5.11%	2.12%	5.23%	1.03%	0.33%	1.35%	0.13%	0.03%
2008	base	21.46%	6.92%	3.08%	6.29%	1.37%	0.45%	1.72%	0.17%	0.04%
2009	60 (08-10)	6.15%	0.79%	0.15%	1.63%	0.18%	0.04%	0.32%	0.02%	0.01%
2009	65 (08-10)	8.30%	1.31%	0.34%	2.14%	0.26%	0.07%	0.44%	0.03%	0.01%
2009	70 (08-10)	10.12%	1.83%	0.57%	2.64%	0.35%	0.09%	0.59%	0.05%	0.01%
2009	75 (08-10)	12.33%	2.73%	0.88%	3.30%	0.47%	0.13%	0.78%	0.07%	0.01%
2009	base	14.05%	3.47%	1.17%	3.61%	0.58%	0.15%	0.91%	0.09%	0.01%
2010	60 (08-10)	9.68%	1.59%	0.39%	2.67%	0.35%	0.08%	0.59%	0.04%	0.01%
2010	65 (08-10)	13.39%	2.87%	0.92%	3.93%	0.63%	0.16%	0.96%	0.07%	0.02%
2010	70 (08-10)	16.80%	4.20%	1.58%	5.07%	0.93%	0.29%	1.29%	0.12%	0.03%
2010	75 (08-10)	21.14%	6.22%	2.54%	6.65%	1.41%	0.46%	1.82%	0.19%	0.05%
2010	base	24.63%	8.24%	3.57%	7.87%	1.83%	0.66%	2.25%	0.28%	0.07%

Table 6B-16. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Atlanta.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	86,531	14,268	4,024	30,711	3,716	751	7,625	424	19
2006	65 (06-08)	113,815	23,664	7,452	41,706	6,316	1,444	10,802	732	58
2006	70 (06-08)	136,420	32,675	11,707	52,161	9,627	2,176	14,537	1,059	116
2006	75 (06-08)	165,360	45,499	17,618	66,564	14,249	3,909	19,524	1,887	308
2006	base	264,811	100,876	49,542	124,020	33,619	14,017	44,633	6,277	1,656
2007	60 (06-08)	85,876	15,192	4,390	29,845	4,178	770	6,778	154	39
2007	65 (06-08)	113,045	23,433	7,721	41,513	6,585	1,560	10,147	578	39
2007	70 (06-08)	135,727	32,675	11,553	51,526	8,742	2,484	13,960	982	77
2007	75 (06-08)	163,396	44,594	17,945	66,121	12,978	3,909	18,870	1,463	173
2007	base	259,939	97,448	47,193	122,845	33,195	12,978	41,398	5,815	1,155
2008	60 (06-08)	60,518	7,779	1,733	21,296	2,696	520	5,141	270	19
2008	60 (08-10)	84,047	14,614	3,870	29,826	4,390	1,001	7,471	558	39
2008	65 (06-08)	78,232	13,016	3,119	28,112	3,966	886	6,989	520	19
2008	65 (08-10)	104,765	21,334	7,105	39,183	6,258	1,656	9,531	905	116
2008	70 (06-08)	94,695	17,945	5,257	34,697	5,218	1,367	8,491	732	77
2008	70 (08-10)	132,665	32,367	12,053	52,565	9,088	2,773	13,382	1,232	231
2008	75 (06-08)	114,951	25,551	8,896	43,882	7,432	2,137	10,860	1,021	154
2008	75 (08-10)	165,456	47,771	19,062	66,294	13,478	4,178	19,081	2,080	404
2008	base	194,704	62,154	27,091	80,677	17,849	6,046	24,569	2,984	558
2009	60 (08-10)	63,367	9,454	2,465	22,162	2,965	674	4,852	289	58
2009	65 (08-10)	79,946	14,268	4,217	28,824	4,217	982	6,547	462	58
2009	70 (08-10)	102,262	21,354	7,259	37,316	5,988	1,598	8,876	674	96
2009	75 (08-10)	128,622	31,751	11,534	47,501	8,376	2,619	12,477	1,136	193
2009	base	149,436	42,091	16,501	55,588	11,187	3,504	15,558	1,656	308
2010	60 (08-10)	84,702	13,440	3,485	28,516	3,678	693	6,489	385	116
2010	65 (08-10)	104,110	19,236	5,988	35,891	4,968	1,175	8,665	462	135
2010	70 (08-10)	127,929	27,939	9,589	45,903	7,028	2,022	12,458	866	154
2010	75 (08-10)	155,694	39,126	14,326	57,418	9,801	3,004	16,347	1,386	173
2010	base	177,202	49,350	19,255	67,372	12,766	4,159	19,736	1,791	250

Table 6B-17. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Baltimore.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	48,470	8,307	2,253	12,758	1,823	464	3,225	221	55
2006	65 (06-08)	64,421	14,261	4,330	17,453	2,762	817	4,860	464	99
2006	70 (06-08)	78,914	19,872	6,959	22,435	3,877	1,215	6,672	663	122
2006	75 (06-08)	94,080	26,047	10,339	27,936	5,435	1,801	8,826	873	166
2006	base	136,983	49,199	23,142	46,228	11,510	4,065	16,514	2,231	530
2007	60 (06-08)	48,526	8,263	2,176	11,532	1,546	409	3,292	188	11
2007	65 (06-08)	61,880	12,780	4,087	15,973	2,287	674	4,573	287	33
2007	70 (06-08)	73,357	17,265	5,965	19,971	3,104	950	6,053	387	66
2007	75 (06-08)	85,630	22,501	8,483	24,081	4,253	1,215	7,799	574	110
2007	base	117,719	39,214	17,287	35,712	8,086	2,728	13,233	1,624	287
2008	60 (06-08)	37,391	5,490	1,337	9,378	1,160	276	2,253	144	33
2008	60 (08-10)	40,009	6,263	1,613	10,218	1,303	309	2,441	166	33
2008	65 (06-08)	48,216	8,914	2,795	12,350	1,668	431	3,181	210	44
2008	65 (08-10)	49,630	9,422	2,982	12,869	1,701	464	3,303	210	44
2008	70 (06-08)	57,849	12,350	4,021	15,376	2,121	674	4,076	353	66
2008	70 (08-10)	60,367	13,255	4,429	16,138	2,364	740	4,330	409	77
2008	75 (06-08)	67,580	16,635	5,965	18,524	3,060	895	5,214	486	99
2008	75 (08-10)	69,955	17,674	6,440	19,353	3,281	983	5,634	508	99
2008	base	97,449	30,443	13,587	28,521	6,131	1,944	9,964	972	210
2009	60 (08-10)	34,066	4,264	862	8,638	1,149	298	2,154	77	11
2009	65 (08-10)	41,202	6,285	1,524	10,461	1,469	365	2,750	122	22
2009	70 (08-10)	49,067	8,969	2,264	12,559	1,878	541	3,513	199	33
2009	75 (08-10)	55,904	11,267	3,314	14,802	2,287	641	4,175	320	55
2009	base	73,523	19,253	6,882	19,861	3,535	1,094	5,987	486	88
2010	60 (08-10)	53,607	9,853	2,530	14,095	1,690	508	3,424	254	11
2010	65 (08-10)	65,669	14,029	4,628	18,038	2,507	784	4,750	398	33
2010	70 (08-10)	79,057	19,618	7,014	22,523	3,833	1,116	6,329	596	55
2010	75 (08-10)	91,396	25,229	9,942	27,372	5,026	1,646	8,152	795	110
2010	base	122,855	41,799	18,734	39,766	8,848	3,292	14,150	1,767	398

Table 6B-18. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Boston.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	63,224	9,588	2,314	20,289	2,492	601	5,072	267	0
2006	65 (06-08)	81,333	15,839	4,249	27,274	3,671	1,001	7,897	400	22
2006	70 (06-08)	106,761	25,628	8,387	35,861	6,451	1,713	11,613	779	156
2006	75 (06-08)	123,423	33,614	12,569	42,024	8,431	2,447	14,416	1,268	222
2006	base	156,170	49,921	21,713	55,661	12,302	4,116	19,844	2,403	445
2007	60 (06-08)	80,421	15,350	4,071	23,603	2,781	623	6,229	512	111
2007	65 (06-08)	104,736	25,116	7,942	32,502	4,761	1,023	9,633	823	200
2007	70 (06-08)	137,327	39,999	15,083	45,294	8,120	2,314	15,639	1,424	378
2007	75 (06-08)	160,686	51,545	21,357	54,393	11,323	3,315	19,510	2,136	512
2007	base	198,082	70,766	34,082	69,565	16,307	5,406	27,341	3,381	890
2008	60 (06-08)	60,421	8,632	1,691	20,200	2,469	512	5,161	289	44
2008	60 (08-10)	69,431	11,679	2,670	22,691	2,870	667	6,474	356	44
2008	65 (06-08)	77,395	14,416	3,960	25,717	3,470	845	7,631	378	44
2008	65 (08-10)	92,768	19,933	6,140	30,856	4,961	1,201	9,722	489	67
2008	70 (06-08)	100,821	22,892	7,542	33,236	5,628	1,424	10,678	690	67
2008	70 (08-10)	116,772	28,943	10,545	39,176	7,208	2,024	13,214	1,046	111
2008	75 (06-08)	116,772	28,943	10,545	39,176	7,208	2,024	13,214	1,046	111
2008	75 (08-10)	135,303	38,575	15,528	46,228	9,344	2,959	16,195	1,424	267
2008	base	142,578	42,891	17,597	48,342	10,100	3,270	17,797	1,691	378
2009	60 (08-10)	66,784	12,325	3,315	21,023	2,781	712	5,050	245	67
2009	65 (08-10)	85,360	18,687	5,762	26,629	3,849	1,201	7,364	445	89
2009	70 (08-10)	101,221	25,606	9,455	31,723	5,295	1,713	9,900	734	89
2009	75 (08-10)	109,475	29,477	11,101	33,570	6,251	1,980	11,123	734	111
2009	base	112,144	30,878	11,679	33,815	6,496	1,913	11,435	779	89
2010	60 (08-10)	72,234	11,257	2,380	22,691	2,714	578	5,806	378	67
2010	65 (08-10)	94,080	18,598	5,228	29,454	3,960	801	8,787	623	89
2010	70 (08-10)	115,593	27,474	8,810	37,174	5,851	1,379	11,746	845	133
2010	75 (08-10)	130,297	33,281	12,458	41,401	6,763	1,602	13,748	1,001	156
2010	base	134,858	35,950	13,659	42,891	7,030	1,735	14,438	1,135	156

Table 6B-19. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Chicago.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	156,351	27,874	8,053	49,780	7,052	1,794	11,475	751	83
2006	65 (06-08)	198,453	41,727	13,686	62,841	10,599	2,545	15,814	1,335	209
2006	70 (06-08)	238,177	57,625	21,406	75,526	13,394	4,006	20,321	1,961	417
2006	75 (06-08)	273,228	74,733	29,793	84,497	16,899	5,091	24,702	2,712	793
2006	base	276,315	78,864	31,337	83,537	16,899	5,007	24,535	2,754	709
2007	60 (06-08)	204,086	41,268	12,143	62,215	8,930	2,671	15,689	751	83
2007	65 (06-08)	263,130	64,385	22,533	83,996	14,563	4,256	24,076	1,669	250
2007	70 (06-08)	321,923	89,588	34,341	105,277	20,196	6,134	31,838	2,629	459
2007	75 (06-08)	373,789	116,919	49,530	123,845	25,662	9,013	40,851	3,755	709
2007	base	382,552	123,094	53,327	125,055	26,622	9,305	42,144	4,173	793
2008	60 (06-08)	134,319	19,194	4,548	42,603	4,965	1,294	8,888	459	42
2008	60 (08-10)	156,643	25,453	6,301	49,238	5,675	1,753	10,891	626	42
2008	65 (06-08)	165,071	27,748	6,843	51,825	6,259	1,919	12,017	626	42
2008	65 (08-10)	187,020	35,051	9,722	57,625	7,344	2,337	14,479	918	125
2008	70 (06-08)	192,569	36,970	10,307	59,169	7,886	2,378	14,855	960	125
2008	70 (08-10)	211,597	45,649	14,896	62,674	8,846	2,587	17,025	1,043	209
2008	75 (06-08)	212,139	45,816	15,230	62,215	8,554	2,462	16,732	1,085	209
2008	75 (08-10)	209,761	46,233	15,397	59,795	8,262	2,420	16,774	1,085	125
2008	base	209,761	46,233	15,397	59,795	8,262	2,420	16,774	1,085	125
2009	60 (08-10)	154,974	27,581	7,970	52,075	7,553	2,128	11,725	793	125
2009	65 (08-10)	187,228	38,723	12,059	62,924	9,555	2,921	15,147	1,043	209
2009	70 (08-10)	214,852	51,992	16,899	69,767	11,642	3,380	18,068	1,252	209
2009	75 (08-10)	214,560	52,993	17,525	65,553	11,391	3,255	17,191	1,252	209
2009	base	214,560	52,993	17,525	65,553	11,391	3,255	17,191	1,252	209
2010	60 (08-10)	205,713	40,058	11,433	70,560	11,600	3,463	17,025	1,043	209
2010	65 (08-10)	250,403	59,503	19,320	86,375	15,898	4,548	22,574	1,502	209
2010	70 (08-10)	291,295	78,947	27,790	99,060	19,737	5,842	27,832	2,253	459
2010	75 (08-10)	296,344	83,662	31,087	95,763	19,904	5,675	27,456	2,295	584
2010	base	296,344	83,662	31,087	95,763	19,904	5,675	27,456	2,295	584

Table 6B-20. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Cleveland.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	25,461	2,585	364	7,163	619	67	2,087	121	0
2006	65 (06-08)	44,459	7,432	1,723	13,316	1,818	256	4,282	242	67
2006	70 (06-08)	61,047	12,414	3,824	18,850	3,016	660	6,220	592	121
2006	75 (06-08)	77,837	18,863	6,786	24,922	4,847	1,225	8,415	902	188
2006	base	100,309	29,891	12,266	34,455	7,594	2,477	12,481	1,616	431
2007	60 (06-08)	31,345	3,932	956	7,594	714	148	2,329	121	0
2007	65 (06-08)	57,600	10,664	3,353	15,376	1,898	565	4,672	350	67
2007	70 (06-08)	78,645	18,446	6,382	22,795	3,299	1,010	7,836	727	108
2007	75 (06-08)	98,504	26,686	10,650	31,062	5,601	1,750	11,216	1,239	148
2007	base	125,271	41,012	18,486	41,928	9,263	3,137	17,557	2,020	431
2008	60 (06-08)	27,696	2,801	404	7,365	714	162	2,033	94	0
2008	60 (08-10)	27,696	2,801	404	7,365	714	162	2,033	94	0
2008	65 (06-08)	49,441	7,917	2,208	13,491	1,723	417	4,416	229	27
2008	65 (08-10)	43,409	6,490	1,468	11,606	1,387	323	3,608	175	27
2008	70 (06-08)	67,011	13,909	4,578	19,092	3,083	727	6,557	417	81
2008	70 (08-10)	62,986	12,131	3,985	17,692	2,733	660	5,951	323	67
2008	75 (06-08)	83,936	21,650	7,769	25,219	4,551	1,225	9,196	808	121
2008	75 (08-10)	81,580	20,546	7,325	24,451	4,268	1,118	8,752	727	94
2008	base	106,031	31,991	13,033	33,270	6,974	2,100	13,047	1,319	296
2009	60 (08-10)	24,936	3,258	525	7,042	619	81	1,737	94	13
2009	65 (08-10)	35,599	5,790	1,373	9,721	1,252	202	2,599	202	27
2009	70 (08-10)	48,902	9,169	2,854	13,693	2,020	350	4,228	350	27
2009	75 (08-10)	61,235	13,383	4,537	17,907	3,029	767	5,897	525	40
2009	base	74,269	18,931	6,974	21,974	4,093	1,198	7,473	727	148
2010	60 (08-10)	29,581	2,774	539	7,904	660	67	2,060	81	0
2010	65 (08-10)	45,065	6,019	1,333	12,360	1,441	242	3,770	148	13
2010	70 (08-10)	64,211	11,956	3,272	18,554	2,679	700	5,884	404	67
2010	75 (08-10)	82,832	19,213	6,194	25,528	4,214	1,118	8,577	673	94
2010	base	107,027	29,716	12,037	33,634	7,096	2,087	12,454	1,225	296

Table 6B-21. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Dallas.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	139,213	28,519	9,397	47,830	6,272	1,410	13,249	893	70
2006	65 (06-08)	171,444	41,205	15,129	61,831	9,209	2,490	17,830	1,480	211
2006	70 (06-08)	207,739	56,052	22,059	79,896	13,367	4,041	24,432	2,185	423
2006	75 (06-08)	236,916	70,147	29,412	96,646	17,877	5,662	30,187	3,265	681
2006	base	328,723	119,621	58,495	146,942	37,540	12,850	53,327	7,165	1,738
2007	60 (06-08)	95,636	16,515	4,557	30,140	3,759	822	7,494	423	47
2007	65 (06-08)	118,799	24,173	7,635	38,879	5,168	1,292	10,125	775	47
2007	70 (06-08)	144,992	34,016	12,098	49,239	7,470	1,903	13,132	1,175	211
2007	75 (06-08)	165,971	42,943	16,891	58,143	9,538	2,678	16,162	1,574	305
2007	base	235,178	79,144	36,013	89,598	20,626	6,907	28,519	3,759	869
2008	60 (06-08)	92,699	14,401	3,406	30,140	3,759	564	7,564	258	23
2008	60 (08-10)	92,699	14,401	3,406	30,140	3,759	564	7,564	258	23
2008	65 (06-08)	114,946	21,096	6,037	37,493	5,215	1,175	9,843	399	47
2008	65 (08-10)	114,946	21,096	6,037	37,493	5,215	1,175	9,843	399	47
2008	70 (06-08)	139,237	29,506	9,420	46,960	6,883	1,879	12,686	869	94
2008	70 (08-10)	139,237	29,506	9,420	46,960	6,883	1,879	12,686	869	94
2008	75 (06-08)	157,889	37,916	12,803	55,324	8,880	2,655	15,223	1,104	164
2008	75 (08-10)	163,481	39,889	13,813	57,720	9,350	2,796	16,092	1,151	188
2008	base	215,421	65,895	27,650	81,517	16,233	5,474	24,408	2,514	376
2009	60 (08-10)	104,751	19,381	5,215	33,406	4,604	1,104	8,363	470	23
2009	65 (08-10)	129,840	27,744	9,162	43,672	6,249	1,856	11,464	752	70
2009	70 (08-10)	157,702	38,151	14,236	55,465	9,303	2,631	15,199	1,292	117
2009	75 (08-10)	186,503	50,931	20,767	69,795	12,521	3,970	20,649	1,738	305
2009	base	253,878	86,075	39,279	101,979	22,458	8,387	32,818	3,970	775
2010	60 (08-10)	92,605	14,330	3,688	29,670	3,430	681	7,048	352	23
2010	65 (08-10)	112,221	20,626	6,343	37,775	4,957	1,034	9,632	705	23
2010	70 (08-10)	135,619	28,613	9,796	47,289	6,836	1,480	12,169	1,104	117
2010	75 (08-10)	159,675	38,621	13,484	57,203	9,397	2,420	15,646	1,597	211
2010	base	210,371	63,898	26,734	76,654	15,740	5,309	24,197	2,702	564

Table 6B-22. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Denver.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	69,871	12,934	4,058	28,455	4,058	893	8,338	630	13
2006	65 (06-08)	84,762	18,620	6,211	36,203	5,857	1,287	11,319	880	118
2006	70 (06-08)	99,613	25,146	9,139	43,359	7,852	2,180	13,906	1,379	236
2006	75 (06-08)	113,335	31,567	12,370	50,398	9,848	2,994	16,716	1,904	394
2006	base	134,884	43,425	19,408	61,270	14,549	5,003	22,021	3,283	748
2007	60 (06-08)	63,896	11,004	3,178	25,658	3,545	748	7,157	473	79
2007	65 (06-08)	77,159	15,862	4,950	31,869	5,082	1,050	9,113	788	118
2007	70 (06-08)	90,303	20,629	7,288	37,345	6,198	1,563	11,109	1,077	210
2007	75 (06-08)	102,174	25,619	9,809	42,834	7,826	2,245	13,302	1,379	263
2007	base	119,454	35,349	14,418	50,398	10,137	3,204	16,532	2,140	420
2008	60 (06-08)	67,416	12,002	3,493	28,613	4,005	919	8,181	473	66
2008	60 (08-10)	67,416	12,002	3,493	28,613	4,005	919	8,181	473	66
2008	65 (06-08)	82,464	17,057	5,436	35,993	5,568	1,326	10,636	814	118
2008	65 (08-10)	98,576	22,612	7,931	43,963	7,262	2,245	13,459	1,182	184
2008	70 (06-08)	97,552	22,257	7,787	43,451	7,051	2,193	13,341	1,169	171
2008	70 (08-10)	114,583	29,729	11,726	52,906	9,783	3,151	16,611	1,720	328
2008	75 (06-08)	110,735	27,772	10,886	50,660	9,231	2,955	15,731	1,628	276
2008	75 (08-10)	126,007	36,203	14,602	58,618	11,674	3,847	19,053	2,140	420
2008	base	128,817	37,989	15,600	59,931	12,396	3,952	19,697	2,259	473
2009	60 (08-10)	53,326	8,496	2,088	21,627	2,744	643	5,909	302	13
2009	65 (08-10)	75,518	15,403	4,924	31,935	4,885	1,182	9,336	604	39
2009	70 (08-10)	86,548	20,038	7,025	36,899	6,001	1,510	11,148	827	79
2009	75 (08-10)	94,637	24,371	8,850	39,459	6,776	1,838	12,422	1,090	105
2009	base	96,646	25,514	9,560	40,457	7,117	1,996	12,645	1,142	118
2010	60 (08-10)	59,589	9,678	2,311	24,030	3,151	748	6,395	446	26
2010	65 (08-10)	84,683	17,885	5,804	35,559	5,423	1,602	9,993	919	92
2010	70 (08-10)	98,248	23,045	8,325	42,085	7,498	2,114	12,462	1,169	210
2010	75 (08-10)	108,345	28,048	10,912	46,340	8,732	2,534	14,339	1,497	302
2010	base	111,077	29,755	11,857	47,180	9,310	2,771	14,943	1,484	328

Table 6B-23. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Detroit.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	76,155	11,774	2,835	23,731	3,315	663	6,790	320	23
2006	65 (06-08)	97,279	18,884	5,190	31,139	4,870	1,326	9,145	732	91
2006	70 (06-08)	115,661	25,629	8,253	37,586	6,356	1,875	11,317	1,052	160
2006	75 (06-08)	138,706	35,734	13,032	46,548	9,054	2,926	14,472	1,509	297
2006	base	178,281	54,893	23,708	60,928	13,969	4,801	19,959	2,629	549
2007	60 (06-08)	92,227	15,638	4,298	24,120	3,361	686	6,744	434	91
2007	65 (06-08)	122,405	26,703	8,025	33,631	5,121	1,395	10,242	823	206
2007	70 (06-08)	147,874	36,443	12,574	43,073	7,339	2,195	13,672	1,235	320
2007	75 (06-08)	180,887	51,669	21,056	56,424	10,997	3,246	18,953	1,943	457
2007	base	240,741	85,597	39,438	81,939	19,273	6,356	30,933	3,681	846
2008	60 (06-08)	71,674	9,762	2,012	21,216	2,538	549	5,921	412	23
2008	60 (08-10)	85,871	14,060	3,544	25,743	3,612	732	7,247	617	46
2008	65 (06-08)	90,398	15,478	4,047	27,481	3,978	960	7,659	732	46
2008	65 (08-10)	112,574	23,754	7,087	34,774	5,647	1,532	9,762	960	137
2008	70 (06-08)	106,356	21,536	6,036	32,602	5,075	1,395	9,031	823	91
2008	70 (08-10)	139,346	34,568	12,254	43,759	7,819	2,309	13,717	1,349	251
2008	75 (06-08)	128,898	30,293	10,105	40,101	6,996	2,035	11,911	1,166	183
2008	75 (08-10)	160,654	45,153	18,061	49,360	10,105	3,269	16,438	1,920	343
2008	base	160,654	45,153	18,061	49,360	10,105	3,269	16,438	1,920	343
2009	60 (08-10)	74,326	12,026	2,858	23,571	3,201	663	6,196	412	23
2009	65 (08-10)	96,525	19,524	5,807	31,139	5,007	1,166	8,848	572	137
2009	70 (08-10)	116,987	26,955	9,534	38,889	6,790	1,829	11,660	846	206
2009	75 (08-10)	133,311	35,460	14,129	42,295	8,208	2,309	13,009	1,257	297
2009	base	133,311	35,460	14,129	42,295	8,208	2,309	13,009	1,257	297
2010	60 (08-10)	93,964	15,089	3,772	28,487	3,932	1,166	7,796	457	69
2010	65 (08-10)	123,297	25,171	7,453	38,317	6,379	1,806	11,134	914	251
2010	70 (08-10)	149,177	35,894	12,209	47,462	8,871	2,949	15,181	1,623	297
2010	75 (08-10)	174,051	48,537	18,267	55,098	11,431	4,001	17,810	2,058	434
2010	base	174,051	48,537	18,267	55,098	11,431	4,001	17,810	2,058	434

Table 6B-24. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Houston.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	86,135	12,541	2,767	28,378	3,081	432	6,339	334	39
2006	65 (06-08)	112,865	22,078	7,045	36,601	4,592	864	8,812	550	98
2006	70 (06-08)	134,158	31,126	10,853	43,529	6,339	1,217	11,206	805	137
2006	75 (06-08)	156,727	40,742	15,367	51,477	8,557	2,100	14,444	1,178	177
2006	base	260,388	100,972	50,653	94,967	24,610	8,498	34,501	4,357	1,236
2007	60 (06-08)	71,809	8,871	2,100	24,433	2,492	491	5,848	118	39
2007	65 (06-08)	90,178	14,385	3,650	30,282	3,415	824	7,222	294	39
2007	70 (06-08)	104,191	19,566	5,868	34,894	4,475	1,138	8,400	530	39
2007	75 (06-08)	119,479	25,513	8,046	40,134	5,613	1,511	9,930	746	98
2007	base	192,720	64,194	27,691	65,980	14,483	4,632	19,802	2,100	432
2008	60 (06-08)	73,065	9,145	1,884	24,826	2,630	530	6,417	216	39
2008	60 (08-10)	88,687	12,855	3,160	29,811	3,631	746	7,811	314	59
2008	65 (06-08)	90,747	13,463	3,415	30,537	3,748	746	8,046	314	59
2008	65 (08-10)	113,375	22,530	6,771	38,976	5,495	1,217	10,872	569	79
2008	70 (06-08)	102,974	18,330	5,044	35,208	4,632	1,001	9,538	451	59
2008	70 (08-10)	135,552	31,518	10,598	47,081	7,458	2,080	13,345	864	137
2008	75 (06-08)	115,612	23,433	7,085	39,545	5,691	1,315	11,167	608	98
2008	75 (08-10)	157,041	41,723	15,720	55,422	9,715	2,767	16,367	1,217	236
2008	base	177,020	54,146	22,314	61,015	11,893	3,729	18,801	1,963	393
2009	60 (08-10)	90,198	14,562	3,925	30,262	4,141	981	7,301	373	39
2009	65 (08-10)	116,633	25,689	8,635	39,074	6,300	1,335	10,460	864	79
2009	70 (08-10)	138,711	36,680	14,012	47,061	8,498	2,237	13,561	1,276	137
2009	75 (08-10)	161,163	48,416	19,959	55,088	11,500	3,336	16,446	2,002	314
2009	base	185,478	63,939	30,066	60,112	14,405	4,946	19,566	2,728	707
2010	60 (08-10)	91,395	14,385	3,591	31,832	3,905	648	7,379	451	59
2010	65 (08-10)	118,497	23,845	7,359	40,016	5,554	1,217	9,518	726	118
2010	70 (08-10)	141,125	33,991	11,697	47,984	7,301	1,864	12,168	962	236
2010	75 (08-10)	162,576	44,922	17,035	55,402	9,616	2,649	14,896	1,276	255
2010	base	186,676	59,111	25,650	61,525	12,717	3,533	18,094	1,943	353

Table 6B-25. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Los Angeles.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	405,677	61,670	13,530	209,305	25,042	6,503	45,599	2,168	299
2006	65 (06-08)	490,820	87,235	25,416	258,342	35,208	10,017	58,605	3,588	598
2006	70 (06-08)	567,963	116,089	38,348	308,874	48,290	13,829	73,257	5,532	1,196
2006	75 (06-08)	657,142	152,867	53,896	361,723	63,539	18,090	91,720	8,671	1,719
2006	base	1,014,904	399,623	202,727	536,418	146,140	58,830	183,216	34,012	10,988
2007	60 (06-08)	395,362	57,858	13,231	206,763	25,191	5,158	43,132	2,093	224
2007	65 (06-08)	474,898	82,974	23,098	253,035	36,030	8,372	57,260	3,364	523
2007	70 (06-08)	546,136	110,932	34,760	296,989	46,421	12,783	72,360	4,485	748
2007	75 (06-08)	631,727	144,495	50,607	351,333	59,801	18,389	90,151	6,728	1,121
2007	base	910,550	337,579	163,557	465,030	118,407	44,477	151,372	22,949	6,952
2008	60 (06-08)	420,179	67,127	16,520	215,584	26,537	5,831	47,991	2,691	299
2008	60 (08-10)	429,748	70,192	17,268	219,920	27,359	6,204	49,187	2,766	374
2008	65 (06-08)	508,013	92,767	26,686	264,472	37,152	9,045	62,866	4,111	673
2008	65 (08-10)	517,431	96,205	27,658	270,452	38,497	9,718	64,585	4,336	673
2008	70 (06-08)	588,296	121,098	38,348	316,424	49,859	13,082	79,461	5,980	897
2008	70 (08-10)	599,882	126,106	40,515	325,245	52,625	13,605	82,077	6,354	972
2008	75 (06-08)	673,588	157,278	55,167	376,450	67,725	19,286	99,270	9,194	1,794
2008	75 (08-10)	677,250	158,847	55,840	378,169	68,174	19,585	100,093	9,194	1,794
2008	base	1,000,103	380,486	190,393	544,267	143,523	55,466	181,422	30,573	8,148
2009	60 (08-10)	431,766	64,810	17,193	222,611	27,434	6,429	49,785	2,841	449
2009	65 (08-10)	516,086	92,393	26,836	270,676	39,917	10,764	65,482	4,485	673
2009	70 (08-10)	596,892	122,742	38,422	319,937	53,447	14,502	80,807	5,831	1,047
2009	75 (08-10)	671,794	153,689	52,177	369,722	67,576	20,482	98,448	7,924	2,093
2009	base	938,134	339,597	164,080	486,409	122,144	44,702	158,548	27,135	7,251
2010	60 (08-10)	370,395	53,298	12,259	202,054	24,743	5,457	41,263	2,542	523
2010	65 (08-10)	446,641	74,826	21,005	244,064	35,582	8,746	55,840	3,812	673
2010	70 (08-10)	518,926	100,018	32,367	292,204	46,869	12,259	73,257	5,233	1,271
2010	75 (08-10)	588,819	127,526	42,833	339,821	58,306	17,641	88,132	6,204	1,645
2010	base	713,430	229,413	102,709	352,529	74,378	24,593	107,493	15,474	2,915

Table 6B-26. Counts of persons with lung function decrements > 10, 15, 20%. Study area=New York.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	65 (06-08)	93,438	6,297	1,019	32,134	3,056	278	7,131	278	0
2006	70 (06-08)	355,415	70,935	22,225	112,329	14,261	3,426	29,448	1,667	278
2006	75 (06-08)	488,858	123,164	44,821	155,760	23,614	6,668	45,654	3,334	648
2006	base	892,058	328,931	157,242	322,448	79,269	30,004	119,274	14,631	3,426
2007	65 (06-08)	110,662	9,909	2,130	38,894	3,889	556	8,797	648	93
2007	70 (06-08)	408,107	81,770	22,318	132,702	17,780	3,982	35,467	2,500	926
2007	75 (06-08)	544,050	133,165	45,284	184,283	28,985	7,316	51,303	3,519	1,019
2007	base	910,301	327,356	150,852	339,580	82,140	27,689	119,274	13,798	2,871
2008	65 (06-08)	99,179	7,408	1,852	32,967	2,963	648	6,945	463	0
2008	65 (08-10)	147,889	14,261	2,778	49,914	5,186	1,111	11,483	741	93
2008	70 (06-08)	362,176	71,028	20,558	122,979	18,243	4,538	34,356	2,778	556
2008	70 (08-10)	449,316	100,013	36,301	153,908	25,281	7,316	44,728	3,241	741
2008	75 (06-08)	489,507	113,348	43,802	167,243	28,707	8,612	49,451	3,612	926
2008	75 (08-10)	629,524	175,393	72,324	221,232	43,802	15,002	71,028	7,131	1,389
2008	base	823,067	287,999	125,108	300,223	73,620	26,948	105,384	13,520	3,149
2009	65 (08-10)	127,238	12,594	2,223	45,376	3,704	741	9,909	370	0
2009	70 (08-10)	324,300	60,656	16,669	106,680	15,095	3,149	29,911	1,852	185
2009	75 (08-10)	438,574	103,346	32,226	146,407	23,429	6,575	43,431	3,797	463
2009	base	531,364	145,759	56,581	171,411	30,745	9,816	54,544	5,649	648
2010	65 (08-10)	167,429	18,984	4,352	58,433	5,834	833	13,705	463	0
2010	70 (08-10)	523,400	115,663	40,561	174,559	27,596	6,668	52,970	3,797	463
2010	75 (08-10)	716,109	200,581	79,918	252,532	50,006	14,354	84,270	6,853	1,759
2010	base	907,060	302,261	135,851	330,875	77,602	25,929	122,238	14,168	3,056

Table 6B-27. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Philadelphia.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	113,333	18,586	4,268	28,719	3,194	661	8,233	358	110
2006	65 (06-08)	141,033	26,433	7,655	36,731	4,736	991	11,097	551	110
2006	70 (06-08)	171,101	38,686	12,996	45,928	6,553	1,597	15,475	881	193
2006	75 (06-08)	201,334	52,068	19,550	57,768	9,307	2,561	19,550	1,239	248
2006	base	308,775	108,570	50,334	101,025	23,267	7,517	41,522	4,350	936
2007	60 (06-08)	127,899	22,358	5,672	33,124	3,772	688	9,692	523	83
2007	65 (06-08)	157,774	33,179	10,381	42,486	5,727	1,404	13,079	826	165
2007	70 (06-08)	193,156	47,855	17,237	55,070	8,784	2,175	18,118	1,459	248
2007	75 (06-08)	226,639	63,633	24,947	67,350	11,317	3,524	23,597	2,065	468
2007	base	335,043	125,641	61,237	114,903	29,104	10,408	48,324	6,443	1,735
2008	60 (06-08)	100,860	15,062	2,946	25,167	2,726	523	7,737	330	165
2008	60 (08-10)	125,201	22,606	5,865	31,665	3,993	716	10,023	633	193
2008	65 (06-08)	125,201	22,606	5,865	31,665	3,993	716	10,023	633	193
2008	65 (08-10)	155,103	33,895	10,876	41,247	5,782	1,514	13,437	1,074	220
2008	70 (06-08)	155,103	33,895	10,876	41,247	5,782	1,514	13,437	1,074	220
2008	70 (08-10)	191,725	49,425	18,503	54,464	9,224	2,478	18,724	1,707	303
2008	75 (06-08)	183,382	45,845	16,714	51,958	8,343	2,203	17,485	1,597	303
2008	75 (08-10)	229,475	66,221	27,480	69,140	12,969	3,855	25,415	2,643	551
2008	base	293,521	100,832	46,589	95,738	21,505	7,297	37,668	5,232	1,184
2009	60 (08-10)	93,618	12,143	2,643	23,845	2,643	413	6,691	413	28
2009	65 (08-10)	111,268	17,705	4,213	28,719	3,469	661	8,591	523	55
2009	70 (08-10)	132,332	24,781	7,021	35,878	4,626	1,074	10,628	743	138
2009	75 (08-10)	154,030	33,592	10,601	42,624	6,278	1,569	13,024	1,019	193
2009	base	188,531	49,921	18,999	52,894	9,114	2,506	17,209	1,625	330
2010	60 (08-10)	138,555	24,506	6,801	34,776	4,130	551	10,931	661	110
2010	65 (08-10)	169,119	35,988	11,702	44,964	5,920	1,349	14,841	1,074	138
2010	70 (08-10)	207,777	51,215	18,476	58,484	9,555	2,423	20,183	1,762	275
2010	75 (08-10)	243,270	67,873	27,535	73,298	13,630	3,772	27,012	2,588	551
2010	base	305,746	101,273	45,515	97,748	21,422	7,489	39,760	4,791	1,129

Table 6B-28. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Sacramento.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	45,497	7,639	1,975	11,425	1,185	125	2,977	164	10
2006	65 (06-08)	59,888	12,658	3,872	16,415	1,907	462	4,662	347	48
2006	70 (06-08)	71,072	16,944	5,982	19,969	2,803	674	6,127	433	67
2006	75 (06-08)	83,557	22,146	8,246	24,506	4,036	983	7,822	732	144
2006	base	136,230	50,872	24,400	47,327	11,955	4,306	18,322	3,131	722
2007	60 (06-08)	34,448	4,528	1,166	8,544	665	106	2,187	116	0
2007	65 (06-08)	44,697	7,543	2,216	11,165	1,098	164	2,938	193	19
2007	70 (06-08)	52,220	10,115	3,198	13,236	1,435	318	3,622	260	19
2007	75 (06-08)	60,794	13,399	4,460	15,914	2,196	462	4,566	405	39
2007	base	99,673	32,415	14,112	29,554	6,425	1,927	10,510	1,300	289
2008	60 (06-08)	43,869	7,494	2,264	11,319	1,194	279	2,919	116	0
2008	60 (08-10)	43,869	7,494	2,264	11,319	1,194	279	2,919	116	0
2008	65 (06-08)	57,336	12,359	4,027	15,499	2,023	511	4,316	299	19
2008	65 (08-10)	55,794	11,598	3,776	14,960	1,907	453	4,133	270	10
2008	70 (06-08)	67,248	16,049	5,693	18,987	2,832	684	5,491	511	29
2008	70 (08-10)	65,668	15,519	5,385	18,399	2,688	617	5,211	443	29
2008	75 (06-08)	78,249	20,759	8,236	23,061	4,075	944	7,205	780	87
2008	75 (08-10)	76,602	20,008	7,783	22,560	3,901	915	6,897	742	77
2008	base	127,907	48,454	23,129	45,227	10,808	4,094	17,445	2,861	771
2009	60 (08-10)	40,131	6,387	1,676	10,384	1,108	193	2,591	202	29
2009	65 (08-10)	51,190	10,018	3,150	13,650	1,830	433	3,661	279	39
2009	70 (08-10)	60,697	13,428	4,720	16,916	2,485	597	4,768	414	77
2009	75 (08-10)	71,708	17,773	6,589	20,586	3,545	896	6,184	617	116
2009	base	119,083	41,798	20,037	39,534	10,182	3,718	14,555	2,129	626
2010	60 (08-10)	30,585	3,583	867	7,880	607	87	1,927	106	0
2010	65 (08-10)	38,696	6,001	1,657	9,999	867	154	2,514	106	10
2010	70 (08-10)	45,728	8,140	2,466	11,762	1,137	202	3,208	212	29
2010	75 (08-10)	53,627	10,943	3,583	14,382	1,589	318	4,055	289	48
2010	base	89,596	27,801	11,839	25,855	4,865	1,233	8,949	1,031	250

Table 6B-29. Counts of persons with lung function decrements > 10, 15, 20%. Study area=St. Louis.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	46,537	7,314	1,673	13,036	1,603	374	3,651	234	47
2006	65 (06-08)	62,276	12,556	3,768	18,266	2,726	749	5,535	456	59
2006	70 (06-08)	80,238	19,237	6,576	24,819	4,154	1,240	8,016	784	176
2006	75 (06-08)	98,364	26,972	10,555	32,074	6,272	2,024	11,011	1,077	316
2006	base	127,782	42,816	18,910	44,724	10,461	3,569	17,424	2,059	538
2007	60 (06-08)	52,763	10,134	2,773	14,194	1,732	410	4,189	281	35
2007	65 (06-08)	70,888	16,675	5,605	20,782	3,042	749	6,190	538	117
2007	70 (06-08)	90,114	24,573	9,595	28,716	5,043	1,404	9,467	901	246
2007	75 (06-08)	109,773	33,993	14,615	37,445	7,641	2,434	13,199	1,486	421
2007	base	142,865	51,206	24,503	51,499	12,883	4,669	20,630	2,785	772
2008	60 (06-08)	30,167	3,628	655	8,718	983	222	2,282	94	23
2008	60 (08-10)	43,413	6,892	1,627	12,415	1,498	456	3,639	176	23
2008	65 (06-08)	40,195	5,991	1,240	11,339	1,357	363	3,312	152	23
2008	65 (08-10)	57,116	10,953	3,429	17,038	2,329	702	5,079	351	59
2008	70 (06-08)	50,715	8,811	2,609	15,048	1,919	573	4,435	257	47
2008	70 (08-10)	69,648	15,598	5,476	21,215	3,347	948	6,764	573	129
2008	75 (06-08)	61,925	12,977	4,119	18,711	2,738	796	5,734	433	82
2008	75 (08-10)	77,289	18,863	6,822	23,871	3,990	1,088	7,945	831	152
2008	base	79,606	20,068	7,466	24,527	4,283	1,147	8,320	843	140
2009	60 (08-10)	38,253	5,863	1,428	10,707	1,147	269	2,855	129	12
2009	65 (08-10)	50,855	9,572	2,843	14,452	1,896	468	4,025	269	47
2009	70 (08-10)	61,878	13,831	4,669	18,442	2,656	726	5,406	433	82
2009	75 (08-10)	70,666	17,389	6,284	21,040	3,417	1,030	6,436	632	82
2009	base	73,147	18,652	6,974	21,777	3,628	1,205	6,881	667	94
2010	60 (08-10)	52,295	9,467	2,668	15,411	2,282	550	4,973	363	23
2010	65 (08-10)	69,531	15,879	5,219	21,964	3,709	983	7,384	632	82
2010	70 (08-10)	85,188	22,093	8,121	27,721	5,277	1,615	9,724	1,053	211
2010	75 (08-10)	97,311	27,756	11,023	31,817	6,611	2,212	11,748	1,334	339
2010	base	100,669	29,488	11,959	33,256	7,103	2,446	12,544	1,404	374

Table 6B-30. Counts of persons with lung function decrements > 10, 15, 20%. Study area=Washington, DC.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	74,740	11,471	2,924	24,606	3,149	810	6,208	427	90
2006	65 (06-08)	101,033	19,118	6,073	34,345	4,858	1,305	8,524	787	112
2006	70 (06-08)	127,214	28,452	9,694	45,119	6,950	2,024	11,921	1,147	247
2006	75 (06-08)	153,597	38,686	14,440	55,150	9,672	3,036	15,699	1,462	382
2006	base	250,897	90,260	42,600	102,428	24,809	8,907	36,122	4,566	1,282
2007	60 (06-08)	86,751	13,360	3,126	29,172	3,531	742	7,625	607	90
2007	65 (06-08)	112,594	21,525	5,893	39,091	5,488	1,125	10,841	967	157
2007	70 (06-08)	138,527	31,714	10,009	49,999	8,210	2,069	14,732	1,417	315
2007	75 (06-08)	163,246	41,992	14,620	60,908	11,111	3,194	18,443	1,822	517
2007	base	254,518	89,225	40,868	105,599	25,393	9,064	37,696	5,038	1,462
2008	60 (06-08)	67,588	9,424	2,069	22,604	2,834	607	5,196	292	22
2008	60 (08-10)	75,640	11,516	2,767	25,303	3,216	675	5,825	382	22
2008	65 (06-08)	87,673	14,845	3,981	29,622	3,959	877	6,815	472	67
2008	65 (08-10)	107,489	21,660	6,815	37,044	5,263	1,439	9,469	720	180
2008	70 (06-08)	107,489	21,660	6,815	37,044	5,263	1,439	9,469	720	180
2008	70 (08-10)	135,828	32,568	11,943	47,863	8,165	2,497	14,215	1,080	337
2008	75 (06-08)	127,844	29,442	10,256	44,759	7,377	2,024	12,730	945	270
2008	75 (08-10)	173,592	49,392	20,490	63,922	12,618	3,981	20,468	1,912	495
2008	base	207,465	66,936	29,779	76,877	16,689	5,555	26,113	2,564	630
2009	60 (08-10)	59,446	7,625	1,417	19,905	2,249	450	4,836	247	90
2009	65 (08-10)	80,206	12,685	3,239	26,181	3,216	810	6,725	405	90
2009	70 (08-10)	97,840	17,701	5,511	32,276	4,296	1,102	8,997	720	112
2009	75 (08-10)	119,207	26,428	8,502	40,283	5,735	1,642	11,853	1,102	135
2009	base	135,851	33,513	11,358	44,107	7,130	1,867	13,720	1,350	225
2010	60 (08-10)	93,589	15,339	3,734	32,591	4,318	1,035	8,929	630	135
2010	65 (08-10)	129,441	27,732	8,907	48,065	7,647	1,957	14,485	1,057	315
2010	70 (08-10)	162,414	40,575	15,227	61,943	11,313	3,509	19,478	1,867	517
2010	75 (08-10)	204,361	60,098	24,539	81,286	17,229	5,578	27,575	2,946	697
2010	base	238,076	79,689	34,503	96,108	22,357	8,007	34,120	4,206	1,080

Table 6B-31. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Atlanta.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	311,580	39,934	8,395	56,647	5,199	982	12,188	443	19
2006	65 (06-08)	458,918	73,149	18,369	84,278	9,281	1,887	18,446	963	58
2006	70 (06-08)	602,077	110,599	31,597	111,119	15,115	2,965	25,782	1,425	135
2006	75 (06-08)	806,774	171,964	53,894	151,169	24,300	5,295	36,391	2,753	366
2006	base	1,664,477	488,705	194,126	331,451	70,935	23,549	93,540	11,014	2,368
2007	60 (06-08)	313,698	41,918	8,780	55,550	5,988	1,078	9,916	193	39
2007	65 (06-08)	462,384	74,843	19,081	81,813	10,186	2,137	16,078	732	58
2007	70 (06-08)	608,547	111,119	31,212	107,673	14,595	3,466	23,452	1,348	96
2007	75 (06-08)	811,049	170,539	53,990	147,357	23,452	5,699	33,715	2,137	231
2007	base	1,686,832	490,111	191,623	329,545	71,685	22,721	86,954	9,493	1,694
2008	60 (06-08)	190,256	18,388	3,331	37,065	3,716	616	7,413	347	19
2008	60 (08-10)	301,992	39,376	8,126	55,646	6,701	1,290	11,418	693	39
2008	65 (06-08)	273,745	34,312	6,489	51,564	5,911	1,098	10,513	616	19
2008	65 (08-10)	414,882	64,561	16,174	76,287	9,916	2,195	15,962	1,155	154
2008	70 (06-08)	357,330	51,333	11,514	65,543	8,010	1,771	13,671	905	96
2008	70 (08-10)	577,700	107,326	30,827	108,231	15,385	3,909	23,144	1,771	308
2008	75 (06-08)	473,609	79,618	21,315	87,667	11,880	2,927	18,485	1,348	212
2008	75 (08-10)	794,740	171,310	55,377	146,702	23,895	6,104	34,177	3,100	539
2008	base	990,773	240,993	84,047	182,439	32,329	9,146	45,268	4,467	809
2009	60 (08-10)	192,567	22,066	4,409	37,065	4,043	732	6,701	347	58
2009	65 (08-10)	261,133	36,526	8,491	49,388	6,007	1,175	9,570	539	58
2009	70 (08-10)	360,372	60,133	16,058	67,064	9,107	2,022	13,806	751	96
2009	75 (08-10)	491,901	96,466	29,190	90,209	13,209	3,350	19,794	1,348	231
2009	base	602,905	131,452	42,957	108,269	17,811	4,756	25,070	2,080	347
2010	60 (08-10)	304,726	38,952	7,702	51,892	5,083	847	9,839	443	135
2010	65 (08-10)	413,284	61,269	13,767	69,086	7,529	1,444	13,786	578	154
2010	70 (08-10)	562,778	98,796	25,532	94,252	11,264	2,619	20,391	1,059	193
2010	75 (08-10)	745,544	149,667	44,324	124,270	16,540	4,101	27,785	1,906	250
2010	base	902,605	199,036	64,407	149,841	22,528	5,796	34,639	2,580	327

Table 6B-32. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Baltimore.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	161,638	19,552	4,131	22,600	3,060	707	5,313	287	55
2006	65 (06-08)	239,557	38,463	8,969	32,796	4,684	1,270	8,285	574	99
2006	70 (06-08)	315,268	60,113	16,160	43,511	6,606	1,977	11,499	917	155
2006	75 (06-08)	408,143	87,585	26,356	56,921	9,356	2,806	15,697	1,314	199
2006	base	718,727	203,624	78,008	107,479	21,849	7,003	32,895	3,634	729
2007	60 (06-08)	158,733	19,408	3,711	20,513	2,342	641	4,838	243	11
2007	65 (06-08)	226,136	34,596	8,119	29,471	3,601	1,016	7,070	365	33
2007	70 (06-08)	292,071	51,066	13,123	37,999	4,971	1,447	9,577	574	77
2007	75 (06-08)	365,218	73,214	21,186	48,040	7,047	1,944	13,012	851	122
2007	base	584,086	153,011	54,678	79,190	14,824	4,507	24,511	2,408	376
2008	60 (06-08)	108,617	11,134	1,922	15,420	1,679	320	3,491	177	33
2008	60 (08-10)	118,912	12,935	2,397	16,901	1,900	376	3,800	221	44
2008	65 (06-08)	151,962	19,596	4,717	21,065	2,452	519	4,982	331	55
2008	65 (08-10)	157,960	20,844	5,059	21,860	2,530	563	5,114	331	55
2008	70 (06-08)	195,064	29,946	7,456	27,052	3,325	862	6,462	497	88
2008	70 (08-10)	207,391	33,083	8,550	28,841	3,623	972	7,003	608	99
2008	75 (06-08)	244,771	43,975	11,852	34,353	4,728	1,193	8,483	773	155
2008	75 (08-10)	256,811	47,752	13,145	36,055	5,070	1,326	9,157	862	155
2008	base	402,731	97,780	33,856	57,186	10,019	2,938	16,669	1,569	376
2009	60 (08-10)	93,947	8,152	1,160	14,437	1,624	353	3,281	99	11
2009	65 (08-10)	121,187	13,211	2,132	18,171	2,121	464	4,164	166	22
2009	70 (08-10)	154,635	20,468	3,667	22,545	2,828	685	5,379	320	44
2009	75 (08-10)	185,774	27,450	5,877	26,776	3,579	817	6,440	453	66
2009	base	268,399	52,215	14,194	36,762	5,479	1,535	9,356	696	133
2010	60 (08-10)	190,800	24,655	4,639	25,307	2,861	751	5,379	320	11
2010	65 (08-10)	256,845	40,053	9,290	34,066	4,220	1,160	7,799	519	44
2010	70 (08-10)	338,663	61,549	16,293	45,764	6,517	1,767	10,869	862	66
2010	75 (08-10)	420,615	86,392	25,638	57,760	8,848	2,585	14,581	1,071	155
2010	base	639,151	167,868	59,428	89,827	17,033	5,523	26,643	2,684	530

Table 6B-33. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Boston.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	166,848	18,420	3,582	31,056	3,181	734	7,030	334	0
2006	65 (06-08)	233,143	33,036	7,564	42,891	4,805	1,179	10,901	556	22
2006	70 (06-08)	331,027	59,265	15,750	59,999	8,498	2,069	17,219	1,112	200
2006	75 (06-08)	399,858	82,201	24,093	72,079	11,546	3,003	22,180	1,802	289
2006	base	533,425	130,431	45,650	95,148	17,219	5,117	31,301	3,203	645
2007	60 (06-08)	221,397	30,255	6,518	36,195	3,404	690	9,099	556	133
2007	65 (06-08)	320,193	56,261	14,571	52,702	6,118	1,179	14,060	1,001	222
2007	70 (06-08)	464,840	102,089	30,878	77,529	10,990	2,736	23,759	1,958	423
2007	75 (06-08)	573,425	140,553	46,918	98,085	15,817	4,271	30,722	2,937	623
2007	base	766,769	215,635	82,846	131,632	24,760	7,453	46,740	5,206	1,201
2008	60 (06-08)	158,973	17,063	2,759	30,811	3,203	578	7,052	311	44
2008	60 (08-10)	192,921	23,759	4,316	35,750	3,849	756	9,054	378	44
2008	65 (06-08)	221,397	30,010	6,585	40,733	4,650	979	10,612	445	44
2008	65 (08-10)	280,950	44,604	10,656	50,499	6,563	1,379	13,949	623	67
2008	70 (06-08)	311,673	52,680	13,237	55,549	7,430	1,691	15,795	868	67
2008	70 (08-10)	379,124	71,411	19,777	67,807	9,811	2,425	20,022	1,290	133
2008	75 (06-08)	379,146	71,411	19,777	67,807	9,811	2,425	20,022	1,290	133
2008	75 (08-10)	458,855	99,731	31,412	80,866	13,014	3,515	24,916	1,735	311
2008	base	487,019	110,943	36,106	85,360	14,371	3,915	27,341	2,024	423
2009	60 (08-10)	161,443	21,379	4,939	31,568	3,493	823	6,474	245	67
2009	65 (08-10)	218,482	35,127	8,943	41,868	4,939	1,313	9,588	556	89
2009	70 (08-10)	276,256	50,833	14,994	51,656	6,807	1,935	13,103	845	89
2009	75 (08-10)	305,622	60,488	18,821	53,614	7,942	2,269	14,861	823	111
2009	base	312,540	64,137	19,977	54,170	8,142	2,247	15,372	868	89
2010	60 (08-10)	209,005	24,582	4,338	36,062	3,804	645	8,921	534	67
2010	65 (08-10)	297,613	44,181	9,633	49,098	5,495	1,023	14,015	934	89
2010	70 (08-10)	392,516	68,831	17,575	64,159	8,164	1,757	18,776	1,268	133
2010	75 (08-10)	459,945	89,942	26,206	73,013	9,344	2,113	21,979	1,424	178
2010	base	480,768	97,929	29,365	75,326	9,877	2,291	23,159	1,646	200

Table 6B-34. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Chicago.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	473,892	63,467	13,812	87,084	11,058	2,796	16,440	835	83
2006	65 (06-08)	630,952	101,021	24,994	110,701	15,898	3,672	22,574	1,460	209
2006	70 (06-08)	785,926	144,083	40,892	133,484	20,655	5,591	29,125	2,253	417
2006	75 (06-08)	890,869	187,562	57,667	145,126	24,494	6,676	35,510	3,380	793
2006	base	881,897	192,695	59,836	140,494	23,909	6,551	35,092	3,380	709
2007	60 (06-08)	715,699	106,445	23,325	110,660	13,645	3,380	22,157	793	83
2007	65 (06-08)	1,003,615	183,181	48,236	153,763	21,573	5,675	35,259	1,753	292
2007	70 (06-08)	1,301,544	274,897	81,952	200,957	30,878	8,512	48,904	3,296	501
2007	75 (06-08)	1,560,543	372,579	125,640	236,675	39,599	12,226	63,550	4,882	751
2007	base	1,579,612	390,897	134,945	235,673	40,642	12,518	64,760	5,341	876
2008	60 (06-08)	405,752	40,642	7,803	70,393	8,178	1,878	12,351	626	42
2008	60 (08-10)	498,094	56,665	11,183	81,868	9,347	2,462	15,439	835	42
2008	65 (06-08)	532,852	63,675	12,894	86,583	10,307	2,712	16,941	793	42
2008	65 (08-10)	626,279	86,500	18,109	97,975	11,725	3,296	20,780	1,127	125
2008	70 (06-08)	649,312	92,425	19,945	100,729	12,518	3,463	21,698	1,168	125
2008	70 (08-10)	714,155	114,874	28,291	104,860	13,645	3,338	24,368	1,377	209
2008	75 (06-08)	705,351	114,248	28,833	102,940	13,186	3,130	24,035	1,377	209
2008	75 (08-10)	677,853	111,870	28,666	96,264	11,976	2,921	23,576	1,335	125
2008	base	677,853	111,870	28,666	96,264	11,976	2,921	23,576	1,335	125
2009	60 (08-10)	454,197	61,172	14,855	88,544	10,766	2,837	16,566	960	125
2009	65 (08-10)	570,782	90,339	23,909	107,155	13,978	3,881	22,074	1,252	209
2009	70 (08-10)	648,561	118,463	32,213	116,251	16,524	4,340	25,871	1,460	250
2009	75 (08-10)	616,389	116,126	32,338	103,357	15,272	3,881	24,535	1,502	250
2009	base	616,389	116,126	32,338	103,357	15,272	3,881	24,535	1,502	250
2010	60 (08-10)	730,429	104,776	23,117	129,979	18,068	4,465	25,245	1,210	250
2010	65 (08-10)	935,600	162,860	40,308	162,401	24,619	6,176	34,466	1,669	292
2010	70 (08-10)	1,093,077	218,357	61,464	184,808	30,628	8,053	42,520	2,629	584
2010	75 (08-10)	1,064,160	222,780	65,511	172,374	29,459	7,636	40,892	2,754	668
2010	base	1,064,160	222,780	65,511	172,374	29,459	7,636	40,892	2,754	668

Table 6B-35. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Cleveland.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	59,108	3,918	431	10,542	673	67	2,827	148	0
2006	65 (06-08)	125,864	14,945	2,572	21,193	2,302	269	5,992	296	81
2006	70 (06-08)	191,704	28,948	6,584	32,220	4,174	808	9,385	741	162
2006	75 (06-08)	264,384	48,364	13,262	44,284	6,880	1,535	13,249	1,185	229
2006	base	373,363	84,407	27,857	63,201	11,566	3,124	20,870	2,222	539
2007	60 (06-08)	79,062	7,082	1,319	11,135	929	162	3,110	135	0
2007	65 (06-08)	179,344	25,097	6,113	24,774	2,652	646	6,665	404	67
2007	70 (06-08)	279,194	48,687	13,626	40,110	4,928	1,225	11,768	875	148
2007	75 (06-08)	389,682	80,099	25,717	58,475	8,429	2,275	18,338	1,575	188
2007	base	544,480	138,749	50,908	85,606	15,215	4,268	30,281	2,881	525
2008	60 (06-08)	68,923	5,036	539	11,566	902	175	2,760	94	0
2008	60 (08-10)	68,923	5,036	539	11,566	902	175	2,760	94	0
2008	65 (06-08)	151,405	17,800	3,635	23,132	2,329	458	6,517	256	27
2008	65 (08-10)	127,627	13,774	2,343	19,604	1,818	337	5,332	202	27
2008	70 (06-08)	230,306	35,007	8,725	35,249	4,268	875	10,192	525	94
2008	70 (08-10)	210,984	29,971	7,298	31,816	3,676	794	9,115	404	67
2008	75 (06-08)	315,844	58,556	16,521	48,902	6,597	1,602	14,797	1,077	135
2008	75 (08-10)	303,241	55,338	15,309	46,923	6,113	1,468	13,962	969	108
2008	base	429,899	97,091	30,416	66,177	10,879	2,733	21,691	1,818	337
2009	60 (08-10)	58,098	5,089	687	10,556	687	81	2,316	108	13
2009	65 (08-10)	92,822	10,596	2,073	15,780	1,454	202	3,810	215	27
2009	70 (08-10)	139,597	19,954	4,537	23,226	2,612	404	6,301	417	27
2009	75 (08-10)	189,186	31,520	8,429	31,385	4,160	902	9,142	673	40
2009	base	239,192	46,667	14,097	38,777	5,763	1,495	11,593	942	148
2010	60 (08-10)	76,679	5,413	646	12,333	902	94	3,137	81	0
2010	65 (08-10)	137,779	13,989	2,329	20,291	1,952	296	5,938	202	13
2010	70 (08-10)	225,970	31,991	6,557	32,839	3,797	902	9,815	539	67
2010	75 (08-10)	323,949	57,115	14,636	48,188	6,422	1,481	14,663	983	135
2010	base	455,037	98,154	30,079	67,671	10,906	2,881	21,502	1,737	350

Table 6B-36. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Dallas.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	611,002	93,592	21,707	93,991	9,679	1,621	22,317	1,081	94
2006	65 (06-08)	833,072	151,053	40,242	130,756	15,904	3,242	31,667	2,091	258
2006	70 (06-08)	1,112,297	230,621	69,184	181,053	25,019	6,155	46,538	3,218	540
2006	75 (06-08)	1,362,604	312,044	101,274	228,812	34,862	8,880	60,280	5,098	799
2006	base	2,225,534	653,288	257,026	397,249	81,212	24,620	116,215	13,343	2,443
2007	60 (06-08)	319,068	38,245	7,142	52,035	5,051	1,034	10,783	446	47
2007	65 (06-08)	427,460	61,643	14,072	70,147	7,353	1,644	15,246	916	47
2007	70 (06-08)	562,092	96,834	25,301	92,182	11,417	2,537	21,213	1,433	211
2007	75 (06-08)	680,727	131,884	38,527	113,325	15,082	3,688	27,133	2,161	305
2007	base	1,054,648	271,473	98,243	182,368	34,392	10,008	49,145	5,403	1,034
2008	60 (06-08)	330,908	36,084	5,920	51,588	4,698	681	11,535	305	23
2008	60 (08-10)	330,908	36,084	5,920	51,588	4,698	681	11,535	305	23
2008	65 (06-08)	444,350	58,166	11,840	68,503	7,071	1,339	15,481	470	47
2008	65 (08-10)	444,350	58,166	11,840	68,503	7,071	1,339	15,481	470	47
2008	70 (06-08)	578,959	89,199	21,331	89,645	10,125	2,349	20,720	1,057	94
2008	70 (08-10)	578,959	89,199	21,331	89,645	10,125	2,349	20,720	1,057	94
2008	75 (06-08)	695,432	121,829	31,150	109,520	13,813	3,359	25,630	1,339	164
2008	75 (08-10)	729,848	130,451	34,204	115,604	14,589	3,547	27,274	1,433	188
2008	base	1,051,171	241,662	78,369	169,095	26,405	7,564	43,554	3,383	423
2009	60 (08-10)	373,381	48,182	9,820	58,072	6,108	1,386	12,897	470	23
2009	65 (08-10)	499,510	76,325	18,324	79,473	9,021	2,255	18,183	916	70
2009	70 (08-10)	660,782	118,306	31,973	106,372	14,142	3,524	25,042	1,621	117
2009	75 (08-10)	842,539	171,421	52,129	139,260	20,626	5,474	34,322	2,490	305
2009	base	1,263,562	332,270	120,044	216,666	40,195	12,827	58,096	6,225	893
2010	60 (08-10)	317,329	34,016	6,084	51,283	4,933	799	10,830	352	23
2010	65 (08-10)	417,945	54,055	11,065	67,798	7,470	1,339	14,870	775	23
2010	70 (08-10)	541,607	83,490	19,193	88,565	10,712	1,997	19,733	1,269	117
2010	75 (08-10)	679,223	120,138	31,526	111,281	15,458	3,336	26,593	1,926	211
2010	base	951,401	217,395	69,701	154,460	26,475	7,470	41,933	3,876	634

Table 6B-37. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Denver.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	296,332	41,783	8,969	55,427	6,894	1,405	14,379	880	39
2006	65 (06-08)	399,123	67,691	16,729	74,034	10,072	2,206	20,261	1,274	144
2006	70 (06-08)	504,566	99,521	27,536	93,494	13,958	3,611	25,566	2,101	315
2006	75 (06-08)	611,559	134,398	41,206	113,637	17,977	4,990	32,263	2,955	499
2006	base	777,551	201,419	71,119	145,848	28,166	8,417	44,068	5,134	1,011
2007	60 (06-08)	265,079	33,379	6,237	49,255	5,581	1,103	12,304	709	79
2007	65 (06-08)	355,435	55,427	12,081	64,763	8,233	1,602	16,860	1,300	131
2007	70 (06-08)	441,970	80,074	19,999	79,142	10,610	2,429	21,325	1,891	276
2007	75 (06-08)	527,572	106,494	29,926	93,809	13,775	3,493	25,947	2,456	368
2007	base	647,027	153,228	49,163	112,403	18,830	5,226	32,999	3,729	591
2008	60 (06-08)	292,248	40,116	7,669	58,801	6,894	1,444	14,142	801	105
2008	60 (08-10)	292,248	40,116	7,669	58,801	6,894	1,444	14,142	801	105
2008	65 (06-08)	398,059	64,343	14,221	78,525	10,137	2,127	19,736	1,287	184
2008	65 (08-10)	513,246	96,068	24,700	100,441	13,998	3,598	25,947	1,970	302
2008	70 (06-08)	505,512	93,665	24,004	98,799	13,670	3,480	25,540	1,957	289
2008	70 (08-10)	640,947	137,103	39,420	125,311	18,738	5,200	33,419	2,797	552
2008	75 (06-08)	609,392	126,165	35,572	119,100	17,478	4,819	31,541	2,613	460
2008	75 (08-10)	730,567	169,117	53,037	140,977	22,664	6,605	38,606	3,440	683
2008	base	750,014	178,374	57,383	144,811	23,859	6,789	39,774	3,637	775
2009	60 (08-10)	207,026	23,833	3,939	40,838	4,491	1,011	9,625	368	13
2009	65 (08-10)	336,631	53,181	11,766	64,605	7,958	1,851	16,230	959	39
2009	70 (08-10)	404,703	72,497	18,016	77,290	10,019	2,377	19,618	1,313	79
2009	75 (08-10)	446,907	88,347	23,649	82,779	11,529	2,823	21,877	1,602	105
2009	base	455,048	92,536	25,593	83,908	11,936	3,046	22,192	1,641	118
2010	60 (08-10)	240,590	28,547	4,648	45,841	4,990	1,142	10,492	525	26
2010	65 (08-10)	409,772	66,877	15,784	74,467	9,428	2,390	18,265	1,234	92
2010	70 (08-10)	506,969	95,214	25,369	91,721	12,921	3,191	23,111	1,773	236
2010	75 (08-10)	579,467	118,667	34,167	103,014	15,613	3,952	26,525	2,272	328
2010	base	596,393	125,364	37,595	105,522	16,572	4,268	27,549	2,337	368

Table 6B-38. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Detroit.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	219,845	24,028	4,321	40,238	4,664	846	10,311	480	23
2006	65 (06-08)	301,189	42,067	8,711	54,207	7,133	1,738	14,563	1,075	160
2006	70 (06-08)	376,155	60,494	14,426	67,696	9,465	2,401	18,267	1,532	274
2006	75 (06-08)	477,641	90,124	24,920	87,037	13,877	3,772	24,531	2,241	412
2006	base	622,017	142,158	46,959	109,739	20,873	6,150	33,219	3,704	709
2007	60 (06-08)	284,042	35,277	6,767	41,655	4,550	983	10,745	594	114
2007	65 (06-08)	418,816	66,895	16,027	61,317	7,430	1,875	16,918	1,143	251
2007	70 (06-08)	544,354	100,526	27,709	81,070	10,974	3,064	23,205	1,829	412
2007	75 (06-08)	729,013	158,802	50,892	110,082	17,650	4,572	33,699	3,041	617
2007	base	1,039,530	283,585	105,167	163,238	31,459	9,419	54,641	5,738	1,257
2008	60 (06-08)	204,733	19,913	3,086	35,963	3,269	640	9,602	457	23
2008	60 (08-10)	264,655	31,024	5,807	44,902	4,641	846	11,911	754	46
2008	65 (06-08)	283,768	34,957	6,767	48,194	5,098	1,075	12,826	869	46
2008	65 (08-10)	385,483	58,848	13,695	63,923	7,819	1,783	17,124	1,235	137
2008	70 (06-08)	353,750	51,509	11,363	59,054	6,813	1,600	15,684	1,052	91
2008	70 (08-10)	506,059	91,884	24,554	83,836	11,728	2,835	23,525	1,966	251
2008	75 (06-08)	456,768	77,801	19,662	75,286	10,174	2,446	20,530	1,669	183
2008	75 (08-10)	575,789	120,439	36,854	91,427	14,975	3,864	26,269	2,561	343
2008	base	575,789	120,439	36,854	91,427	14,975	3,864	26,269	2,561	343
2009	60 (08-10)	210,334	24,234	4,435	40,055	4,435	846	10,357	526	23
2009	65 (08-10)	298,766	43,347	9,717	54,733	7,087	1,463	14,906	914	137
2009	70 (08-10)	384,020	64,746	17,238	69,502	10,037	2,309	19,319	1,463	229
2009	75 (08-10)	416,599	82,419	24,531	72,039	11,660	2,858	20,142	1,829	320
2009	base	416,599	82,419	24,531	72,039	11,660	2,858	20,142	1,829	320
2010	60 (08-10)	306,905	36,328	6,699	52,218	6,424	1,738	13,169	594	69
2010	65 (08-10)	449,200	68,130	15,249	73,503	10,471	2,561	18,930	1,486	251
2010	70 (08-10)	588,661	106,813	27,343	95,336	14,975	4,298	26,429	2,332	320
2010	75 (08-10)	682,351	144,399	41,587	106,927	18,427	5,601	30,270	2,835	503
2010	base	682,351	144,399	41,587	106,927	18,427	5,601	30,270	2,835	503

Table 6B-39. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Houston.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	318,714	30,694	4,671	53,184	4,494	491	10,205	412	59
2006	65 (06-08)	449,772	60,269	12,815	70,514	7,202	1,158	14,385	667	137
2006	70 (06-08)	556,946	88,490	22,353	85,782	9,950	1,707	18,840	1,060	196
2006	75 (06-08)	675,796	122,756	34,815	103,896	13,522	2,826	24,512	1,590	236
2006	base	1,248,677	364,795	145,188	201,022	40,389	12,089	60,976	7,458	1,668
2007	60 (06-08)	253,617	20,587	3,081	45,629	4,023	707	8,851	177	39
2007	65 (06-08)	336,887	36,385	6,476	57,090	5,436	1,178	11,500	412	39
2007	70 (06-08)	401,984	51,575	11,402	66,137	7,026	1,590	13,581	687	39
2007	75 (06-08)	473,244	69,591	16,995	77,481	8,988	2,021	16,485	981	98
2007	base	801,673	198,627	68,060	126,681	22,785	6,614	32,794	3,081	628
2008	60 (06-08)	269,318	22,255	3,081	48,200	4,651	765	9,930	294	39
2008	60 (08-10)	343,187	33,932	5,554	58,169	6,339	1,119	12,639	412	59
2008	65 (06-08)	352,980	35,973	6,005	59,563	6,594	1,138	12,972	412	59
2008	65 (08-10)	469,868	63,684	13,600	77,638	9,459	1,884	17,879	824	79
2008	70 (06-08)	415,526	50,241	9,636	69,061	8,046	1,531	15,543	628	59
2008	70 (08-10)	583,028	93,868	23,354	95,300	12,560	3,062	22,785	1,276	157
2008	75 (06-08)	482,134	66,589	14,366	78,952	9,773	2,002	18,467	864	98
2008	75 (08-10)	697,855	130,076	37,151	113,532	16,387	4,376	28,182	1,923	275
2008	base	750,745	166,638	53,126	118,497	19,213	5,436	31,518	3,160	530
2009	60 (08-10)	332,903	35,659	6,339	57,934	6,202	1,236	11,775	530	39
2009	65 (08-10)	448,869	65,352	15,759	74,792	9,302	1,727	16,740	1,099	118
2009	70 (08-10)	551,058	96,125	27,593	90,394	12,305	2,963	21,647	1,629	216
2009	75 (08-10)	651,029	131,234	41,939	105,545	16,760	4,357	27,044	2,512	412
2009	base	680,290	166,599	61,486	106,840	19,979	6,280	30,262	3,513	844
2010	60 (08-10)	354,962	38,250	6,908	60,269	6,123	922	12,246	510	59
2010	65 (08-10)	485,294	68,041	15,681	77,461	8,871	1,629	16,603	981	118
2010	70 (08-10)	601,004	101,247	26,828	93,907	11,736	2,551	21,490	1,472	236
2010	75 (08-10)	714,792	139,457	40,664	110,392	15,484	3,690	26,887	2,002	353
2010	base	772,824	179,728	60,446	116,162	19,429	5,004	30,851	2,846	530

Table 6B-40. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Los Angeles.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	1,836,948	216,331	39,245	446,940	40,814	9,269	92,169	4,186	374
2006	65 (06-08)	2,434,140	342,961	76,994	610,796	61,969	14,950	127,302	6,728	673
2006	70 (06-08)	3,065,119	496,800	126,106	777,044	91,421	21,678	165,874	10,764	1,570
2006	75 (06-08)	3,816,299	700,349	196,896	982,312	129,769	30,648	220,817	17,043	2,766
2006	base	5,668,272	1,699,330	691,005	1,415,573	291,905	100,317	421,375	61,072	17,342
2007	60 (06-08)	1,734,165	199,737	34,311	439,316	42,534	8,297	83,498	3,887	224
2007	65 (06-08)	2,297,718	317,246	66,828	585,231	64,660	13,605	117,734	6,055	523
2007	70 (06-08)	2,877,641	454,565	110,109	741,163	87,385	21,005	157,352	8,970	1,047
2007	75 (06-08)	3,588,680	634,791	174,695	944,338	122,443	31,097	208,482	13,754	1,944
2007	base	4,694,257	1,307,856	516,534	1,142,430	217,976	68,846	322,255	38,647	9,344
2008	60 (06-08)	1,945,712	230,908	42,459	474,449	44,029	8,746	94,262	5,158	374
2008	60 (08-10)	2,002,000	243,093	45,225	489,773	46,271	9,269	97,850	5,233	449
2008	65 (06-08)	2,582,895	360,154	80,582	637,782	68,547	14,726	132,460	7,998	822
2008	65 (08-10)	2,651,592	377,720	84,469	656,544	71,762	15,548	137,468	8,297	897
2008	70 (06-08)	3,247,139	517,282	129,320	813,373	98,597	21,977	177,685	11,661	1,420
2008	70 (08-10)	3,354,931	547,257	137,767	843,947	104,129	22,874	184,861	12,633	1,570
2008	75 (06-08)	4,046,235	730,100	201,755	1,037,628	141,430	33,339	234,421	17,193	2,766
2008	75 (08-10)	4,080,546	740,341	204,820	1,046,300	142,776	33,937	236,813	17,567	2,766
2008	base	5,829,736	1,683,035	677,400	1,488,680	294,970	92,842	433,784	56,139	12,783
2009	60 (08-10)	1,991,909	236,888	42,085	498,444	47,766	9,344	102,335	4,784	523
2009	65 (08-10)	2,615,487	375,478	80,582	660,955	73,406	17,193	139,038	8,447	822
2009	70 (08-10)	3,300,661	541,576	132,684	849,105	105,848	25,565	185,309	11,736	1,346
2009	75 (08-10)	4,000,860	725,615	199,064	1,057,064	141,281	35,582	237,112	16,670	2,915
2009	base	5,227,013	1,415,573	539,483	1,269,957	236,963	73,855	358,285	47,542	10,390
2010	60 (08-10)	1,602,078	177,909	29,153	440,886	42,235	8,970	84,768	4,859	822
2010	65 (08-10)	2,112,408	277,628	56,512	579,027	63,614	14,577	119,154	7,400	972
2010	70 (08-10)	2,657,124	398,053	96,878	746,545	89,029	20,856	162,510	10,390	1,719
2010	75 (08-10)	3,219,705	543,520	142,103	918,250	119,005	30,573	205,418	14,203	2,841
2010	base	3,494,119	848,656	300,502	844,171	132,086	36,404	232,328	26,911	3,663

Table 6B-41. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=New York.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	65 (06-08)	192,061	9,631	1,111	42,783	3,519	370	9,075	278	0
2006	70 (06-08)	1,114,678	156,594	35,838	180,115	18,706	3,982	41,857	1,945	278
2006	75 (06-08)	1,673,916	296,334	84,826	265,497	32,504	7,871	68,064	4,075	648
2006	base	3,473,774	995,774	384,771	601,743	118,534	39,172	187,894	19,447	4,075
2007	65 (06-08)	232,344	16,391	2,593	52,229	4,352	556	11,576	741	93
2007	70 (06-08)	1,355,357	199,840	46,950	225,769	23,522	4,815	52,599	3,612	926
2007	75 (06-08)	1,999,883	375,048	98,253	325,782	40,005	9,168	77,325	5,186	1,111
2007	base	3,914,663	1,104,307	415,608	670,733	135,017	39,172	195,951	18,243	3,797
2008	65 (06-08)	208,638	12,224	2,315	44,821	3,612	648	8,890	463	0
2008	65 (08-10)	355,138	24,911	4,445	72,231	6,482	1,111	15,187	741	93
2008	70 (06-08)	1,168,204	170,670	37,783	209,656	23,799	5,464	51,488	3,149	556
2008	70 (08-10)	1,543,807	259,292	71,213	269,571	34,264	8,705	68,342	3,797	833
2008	75 (06-08)	1,716,607	300,686	87,882	297,260	39,449	10,464	76,028	4,445	1,019
2008	75 (08-10)	2,392,896	498,860	167,521	412,182	62,786	18,613	112,885	9,723	1,574
2008	base	3,280,324	869,555	323,282	572,387	109,458	36,394	172,614	17,780	3,334
2009	65 (08-10)	274,387	21,392	2,500	63,341	4,630	833	14,076	463	0
2009	70 (08-10)	943,360	133,721	29,541	171,966	20,373	3,612	43,709	2,593	370
2009	75 (08-10)	1,372,582	237,715	63,249	241,883	32,597	8,149	64,453	5,093	648
2009	base	1,671,138	354,860	111,866	274,572	41,857	12,039	77,880	7,408	833
2010	65 (08-10)	422,646	33,245	5,186	87,789	7,316	926	18,984	648	0
2010	70 (08-10)	2,033,313	345,785	95,197	328,745	39,079	9,075	85,752	5,278	556
2010	75 (08-10)	3,184,571	686,939	214,286	509,694	77,510	19,262	144,555	9,816	2,408
2010	base	4,291,285	1,142,182	419,127	689,254	130,202	36,579	207,804	19,169	4,075

Table 6B-42. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Philadelphia.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	372,132	42,431	7,242	46,727	4,130	771	13,162	771	110
2006	65 (06-08)	500,610	68,038	14,043	62,146	6,305	1,156	18,173	1,074	193
2006	70 (06-08)	665,626	109,396	26,323	82,467	9,417	2,010	25,580	1,542	275
2006	75 (06-08)	842,839	159,867	44,248	106,973	13,547	3,166	33,014	2,313	413
2006	base	1,542,222	424,614	156,921	214,496	38,576	10,959	76,684	7,159	1,459
2007	60 (06-08)	445,898	57,107	11,399	54,078	4,901	771	14,786	909	110
2007	65 (06-08)	596,348	91,388	22,799	74,729	7,985	1,597	21,450	1,377	248
2007	70 (06-08)	797,655	144,145	40,118	101,548	12,831	2,671	30,040	2,203	441
2007	75 (06-08)	1,007,139	208,273	62,724	131,010	18,063	4,571	40,862	3,194	688
2007	base	1,795,900	513,303	197,149	255,192	51,049	15,970	94,940	10,298	2,671
2008	60 (06-08)	317,008	32,381	4,708	40,889	3,910	606	11,785	523	193
2008	60 (08-10)	425,522	53,115	10,436	53,996	5,672	854	15,888	909	220
2008	65 (06-08)	425,522	53,115	10,436	53,996	5,672	854	15,888	909	220
2008	65 (08-10)	572,310	87,561	20,513	73,380	8,288	2,010	21,422	1,652	330
2008	70 (06-08)	572,310	87,561	20,513	73,380	8,288	2,010	21,422	1,652	330
2008	70 (08-10)	768,027	143,676	39,320	101,108	13,905	3,524	31,307	2,698	523
2008	75 (06-08)	723,421	130,377	34,556	94,472	12,556	3,084	28,884	2,423	496
2008	75 (08-10)	994,831	213,202	66,111	133,791	20,706	5,507	43,588	3,993	909
2008	base	1,395,710	367,617	136,765	198,718	36,566	10,849	69,415	7,958	1,625
2009	60 (08-10)	267,445	26,957	4,598	36,676	3,359	496	10,133	468	28
2009	65 (08-10)	335,621	41,275	7,930	45,487	4,598	743	12,804	743	55
2009	70 (08-10)	429,295	62,229	13,602	58,264	6,250	1,212	16,356	1,019	138
2009	75 (08-10)	530,870	87,891	21,670	72,527	8,839	1,955	20,486	1,514	193
2009	base	696,437	141,033	42,872	92,820	13,162	3,359	27,287	2,340	358
2010	60 (08-10)	514,350	66,331	13,630	60,494	5,755	606	17,485	1,019	110
2010	65 (08-10)	683,413	107,551	25,800	81,283	8,894	1,707	24,451	1,762	138
2010	70 (08-10)	916,825	171,074	46,782	113,085	14,841	3,166	35,272	2,753	358
2010	75 (08-10)	1,168,163	247,565	77,263	150,037	21,945	5,177	48,654	3,937	799
2010	base	1,600,266	414,453	148,550	215,184	37,723	11,262	74,757	7,159	1,569

Table 6B-43. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Sacramento.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	170,427	21,819	4,807	19,160	1,628	144	4,479	202	10
2006	65 (06-08)	252,038	41,065	10,433	29,506	2,977	539	7,379	453	48
2006	70 (06-08)	319,680	58,761	16,521	38,233	4,325	819	10,144	578	87
2006	75 (06-08)	402,611	83,162	25,508	49,542	6,473	1,378	13,939	1,031	173
2006	base	847,289	254,234	100,087	118,707	23,370	7,273	40,170	5,289	1,060
2007	60 (06-08)	113,255	11,752	2,495	13,987	934	135	3,034	135	0
2007	65 (06-08)	161,141	21,193	5,183	19,256	1,609	222	4,373	212	19
2007	70 (06-08)	199,046	29,785	7,793	23,639	2,158	414	5,606	289	19
2007	75 (06-08)	245,950	41,537	11,656	29,564	3,217	636	7,273	443	39
2007	base	480,946	118,283	42,501	61,410	10,384	2,678	18,813	1,772	328
2008	60 (06-08)	162,065	20,827	4,720	19,401	1,580	337	4,422	125	0
2008	60 (08-10)	162,065	20,827	4,720	19,401	1,580	337	4,422	125	0
2008	65 (06-08)	236,143	38,243	10,038	28,571	3,005	617	6,897	347	19
2008	65 (08-10)	226,674	35,748	9,209	27,223	2,774	549	6,522	308	10
2008	70 (06-08)	296,667	54,388	15,182	36,702	4,316	867	9,325	617	29
2008	70 (08-10)	286,090	51,710	14,209	35,305	4,075	800	8,737	549	29
2008	75 (06-08)	372,566	76,139	23,803	47,240	6,367	1,339	12,937	973	106
2008	75 (08-10)	361,584	72,787	22,358	45,603	6,136	1,272	12,292	934	87
2008	base	766,690	222,609	89,298	111,868	20,904	6,599	36,201	4,701	1,060
2009	60 (08-10)	142,655	17,359	3,400	17,118	1,474	222	3,795	231	29
2009	65 (08-10)	198,767	29,959	7,562	23,793	2,524	511	5,578	328	39
2009	70 (08-10)	249,466	42,867	11,955	30,431	3,555	751	7,629	511	77
2009	75 (08-10)	315,153	60,929	18,206	39,062	5,269	1,175	10,307	771	116
2009	base	649,408	181,640	70,687	89,905	17,571	5,606	28,292	3,179	761
2010	60 (08-10)	98,372	9,296	1,753	12,667	828	87	2,803	106	0
2010	65 (08-10)	133,648	16,328	3,449	16,790	1,214	164	3,872	125	10
2010	70 (08-10)	168,086	22,724	5,626	20,412	1,734	222	5,038	241	29
2010	75 (08-10)	209,951	32,271	9,007	25,470	2,428	385	6,550	347	48
2010	base	417,783	100,588	34,997	52,683	7,774	1,859	16,126	1,512	318

Table 6B-44. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=St. Louis.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	150,775	17,506	3,230	21,566	2,200	456	5,453	293	47
2006	65 (06-08)	228,252	34,684	7,805	33,127	3,943	901	8,811	620	82
2006	70 (06-08)	327,493	60,415	15,973	48,620	6,635	1,744	13,539	1,135	222
2006	75 (06-08)	440,753	93,835	28,283	66,664	10,754	2,879	19,191	1,767	386
2006	base	655,057	171,359	60,930	100,236	19,319	5,593	33,361	3,745	854
2007	60 (06-08)	183,189	25,685	5,313	24,176	2,340	538	6,483	410	35
2007	65 (06-08)	279,435	48,609	12,685	38,335	4,400	1,018	10,251	807	164
2007	70 (06-08)	397,715	80,847	24,761	56,062	7,957	1,884	15,996	1,369	351
2007	75 (06-08)	531,476	124,575	42,278	77,839	12,860	3,440	23,953	2,375	608
2007	base	778,767	219,148	82,344	118,058	23,918	7,126	40,417	4,727	1,252
2008	60 (06-08)	83,128	7,501	924	13,433	1,240	222	3,031	105	23
2008	60 (08-10)	134,967	15,844	2,808	20,490	2,235	550	5,313	211	23
2008	65 (06-08)	121,170	13,410	2,153	18,500	1,942	433	4,669	176	23
2008	65 (08-10)	196,833	28,318	6,553	29,956	3,464	831	8,027	410	59
2008	70 (06-08)	168,480	22,163	4,751	25,708	2,867	679	6,623	304	47
2008	70 (08-10)	256,617	43,249	11,315	38,206	5,079	1,275	11,070	726	140
2008	75 (06-08)	219,394	33,829	8,226	33,385	4,002	960	9,069	503	82
2008	75 (08-10)	298,274	55,208	15,107	43,659	6,085	1,556	13,012	1,030	164
2008	base	310,046	59,046	16,698	45,367	6,448	1,627	13,609	1,077	152
2009	60 (08-10)	109,668	12,708	2,223	16,160	1,533	316	4,084	187	12
2009	65 (08-10)	159,891	22,760	4,997	23,345	2,516	550	6,026	386	47
2009	70 (08-10)	208,464	35,222	9,174	30,424	3,522	866	8,179	585	94
2009	75 (08-10)	249,338	46,385	12,942	35,526	4,622	1,229	9,970	866	117
2009	base	260,759	50,574	14,674	36,989	4,961	1,404	10,742	924	129
2010	60 (08-10)	179,643	24,339	5,032	26,399	3,206	702	7,583	398	23
2010	65 (08-10)	268,424	45,952	11,491	39,856	5,535	1,404	11,936	878	94
2010	70 (08-10)	357,180	69,765	19,904	53,593	8,671	2,282	16,499	1,556	234
2010	75 (08-10)	428,759	93,239	29,067	63,938	11,093	3,276	20,513	2,083	433
2010	base	450,454	101,242	32,577	67,308	11,936	3,628	22,034	2,200	468

Table 6B-45. Counts of person-days with lung function decrement > 10, 15, 20%. Study area=Washington, DC.

year	scenario	FEV10 ages 5to18	FEV15 ages 5to18	FEV20 ages 5to18	FEV10 ages 19to35	FEV15 ages 19to35	FEV20 ages 19to35	FEV10 ages 36to55	FEV15 ages 36to55	FEV20 ages 36to55
2006	60 (06-08)	247,748	29,307	5,600	43,747	5,106	1,125	10,189	585	90
2006	65 (06-08)	364,391	54,813	12,640	63,292	7,895	1,822	14,710	1,147	135
2006	70 (06-08)	497,498	88,955	23,437	88,101	11,246	2,901	21,435	1,822	292
2006	75 (06-08)	647,631	131,510	39,181	114,394	16,307	4,453	28,655	2,564	495
2006	base	1,298,433	372,443	144,960	234,658	47,188	14,170	70,827	8,547	1,867
2007	60 (06-08)	306,564	36,999	6,500	53,936	5,488	1,035	12,505	765	90
2007	65 (06-08)	444,079	67,476	14,237	77,147	9,402	1,664	18,961	1,439	180
2007	70 (06-08)	601,500	106,994	27,418	103,980	14,327	3,104	26,203	2,204	360
2007	75 (06-08)	769,492	154,587	44,129	133,129	20,355	5,151	34,705	3,171	675
2007	base	1,479,875	409,914	151,055	257,509	50,922	15,902	76,562	9,109	2,317
2008	60 (06-08)	209,759	21,817	3,576	38,281	4,116	832	8,322	315	22
2008	60 (08-10)	244,936	27,575	5,061	43,612	4,858	1,012	9,447	450	22
2008	65 (06-08)	296,780	38,236	7,647	52,249	6,073	1,305	11,718	607	67
2008	65 (08-10)	395,295	60,728	14,372	68,488	8,434	2,204	16,352	990	180
2008	70 (06-08)	395,295	60,728	14,372	68,488	8,434	2,204	16,352	990	180
2008	70 (08-10)	547,924	102,136	28,407	93,161	13,180	3,891	24,696	1,619	382
2008	75 (06-08)	503,008	89,360	23,976	85,582	11,898	3,126	22,177	1,417	292
2008	75 (08-10)	768,795	169,836	55,105	131,218	21,120	6,095	37,359	3,014	697
2008	base	957,591	239,246	84,997	160,277	28,362	8,569	48,965	4,341	922
2009	60 (08-10)	168,936	15,924	2,722	32,073	3,284	540	7,332	405	90
2009	65 (08-10)	250,807	30,342	6,253	44,331	4,903	1,102	11,066	607	135
2009	70 (08-10)	328,584	47,390	11,268	56,769	6,703	1,484	14,732	1,035	202
2009	75 (08-10)	428,920	73,683	19,276	71,974	9,064	2,294	19,276	1,574	270
2009	base	500,242	97,682	27,260	78,856	11,133	2,654	22,402	1,912	382
2010	60 (08-10)	345,048	44,286	8,479	59,648	6,703	1,462	14,845	900	157
2010	65 (08-10)	559,890	94,983	23,594	97,232	13,158	3,036	25,978	2,002	360
2010	70 (08-10)	774,890	155,554	45,299	136,458	20,558	5,758	37,292	3,554	765
2010	75 (08-10)	1,079,295	252,134	84,030	189,921	32,816	9,604	55,083	5,645	1,237
2010	base	1,325,221	347,724	124,785	230,362	44,286	13,810	69,522	7,917	1,777

APPENDIX 6C

Comparison of E-R Function Risk Results with the 2007 Review

In this Appendix we compare lung function risk estimates for school-aged children for this review and the previous review, based on the population exposure-response (E-R) function methodology that was used in previous ozone reviews. A single summary table follows (Table 6C-1).

Of the alternative standards for which risk results are available for the 2007 ozone (O_3) NAAQS review, the standard with level 0.074 ppm with the same form as the existing standard (which has level 0.075) is the most comparable for comparison with risks estimated to remain after just meeting the existing standard of 0.075 ppm. Table 6C-1 compares the estimated percents of asthmatic school-aged children with responses ≥ 10% and the estimated percents of all school-aged children with responses ≥ 15% for these two scenarios. The results for Atlanta overlap, but the existing standard results tend to be lower than the results for the 2007 review. The existing standard results for Los Angeles are uniformly higher than the corresponding results for the 2007 review. In the previous review the response was extrapolated down to, and set to zero below, background levels, which ranged from 0.013 to 0.033 ppm. For the existing standard analysis, the response is calculated down to exposure concentrations of zero. We do not expect this to result in much difference; the exposure response function is close to zero at levels at or near background levels (see Table 6A-1 in Appendix 6A). While the level of the standard evaluated for each scenario is almost the same, the starting distribution of air quality from which attainment was simulated is different, since the last review used different years of air quality data. This will result in some differences.

Table 6C-1. Comparison of existing standard results with the 2007 O3 NAAQS review, using the population exposure-response method: Ranges (over years) of responses[a] for asthmatic and all school-aged children.

	FEV_1 decrement ≥ 10%, asthmatic school-aged children				FEV_1 decrement ≥ 15%, all school-aged children			
	Existing 0.075 ppm standard, 2006-2010		2007 review 0.074 ppm standard, 2002-2004		Existing 0.075 ppm standard, 2006-2010		2007 review 0.074 ppm standard, 2002-2004	
Urban area	min	max	min	max	min	max	min	max
Atlanta	3.8%	5.6%	4.6%	7.3%	0.9%	1.7%	1.2%	2.2%
Chicago	3.5%	6.3%	2.1%	6.5%	0.8%	2.0%	0.5%	2.0%
Houston	3.4%	5.3%	3.9%	4.4%	0.8%	1.6%	1.0%	1.2%
Los Angeles	4.3%	4.8%	1.9%	2.0%	1.0%	1.2%	0.5%	0.5%
New York	3.7%	5.7%	2.7%	6.6%	0.9%	1.7%	0.6%	2.0%

[a] Percents of school-aged children estimated to experience lung function responses associated with 8-hour O_3 exposure while engaged in moderate or greater exertion. Results from the 2007 review are from Tables 3-23 and 3-27 in the 2007 O_3 Risk Assessment TSD.

APPENDIX 6D

Comparison of the MSS Model with Results from a Clinical Study with Children Ages 8-11

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This Appendix compares the predictions of the MSS model for 8-11 year old children using the age term extension described in Section 6.2.4 with FEV_1 responses for this age group reported by McDonnell et al. (1985).

Table 6D-1 gives the FEV_1 responses for a clinical study with children ages 8-11, exposed to 120 ppb ozone over 2.5 hours at heavy exertion levels done by McDonnell et al. (1985). The numbers of subjects with clean-air adjusted responses greater than 10%, 15%, and 20% are respectively 4, 2, and 1, corresponding to 18.2%, 9.1%, and 4.5% of the number of subjects.

Figure 6D-1 shows the distribution of clean-air corrected FEV_1 decrements across subjects in the McDonnell et al. (1985) study (the last column in Table 6D-1). Figure 6D-2 displays the last 3 columns in Table 6D-1 and illustrates the variability of responses typical of these studies of ozone exposure.

Without ventilation rate measurements, this study cannot be used to fit the MSS model for children. However, McDonnell et al. (1985) report mean values for ventilation rates normalized by body surface area (BSA) of 32.4 (±3.3) for the clean air exposures and 33.3 (±3.4) $L/min/m^2$ for the ozone exposures (standard deviations in parentheses). We can run the MSS model with this study's exposure/exercise protocol for a sample of 8-11 year old children with exercising ventilation rates sampled from Gaussian distributions with these means and standard deviations, constraining the normalized ventilation rates to be within 1.5 standard deviations of the mean. Resting ventilation rates were assumed to be 10.4 L/min (Avol et al., 1985) and BSA to be 1.08 m^2 (EPA Exposure Factors Handbook[1]). Table 6D-2 compares the results of this simulation with the results of McDonnell et al. (1985). The agreement is fairly good. Due to the limited sample size of 22 subjects from only one study and the assumptions made in running the MSS model, this does not provide confirmation that the age term extension is correct; however, this comparison is supportive of the age term extension.

[1] U.S. EPA. Exposure Factors Handbook 2011 Edition (Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-09/052F, 2011.

Table 6D-1. FEV1 responses measured during clean air and exposures to 120 ppb ozone.

Subject [a]	Clean air pre-exposure	Clean air post-exposure	Ozone pre-exposure	Ozone post-exposure	−(CA post − CA pre)/CA pre	−(O_3 post − O_3 pre)/O_3 pre	CA-adjusted FEV1 decrement
1	2,256	2,274	2,324	2,299	−0.80%	1.08%	1.87%
2	1,669	1,832	1,831	1,780	−9.77%	2.79%	12.55%
3	1,954	1,935	1,949	1,845	0.97%	5.34%	4.36%
4	1,675	1,656	1,709	1,697	1.13%	0.70%	−0.43%
5	2,331	2,264	2,245	2,090	2.87%	6.90%	4.03%
6	2,511	2,490	2,409	2,541	0.84%	−5.48%	−6.32%
7	2,281	2,345	2,252	2,287	−2.81%	−1.55%	1.25%
8	1,937	1,911	2,061	1,919	1.34%	6.89%	5.55%
9	1,841	1,807	1,795	1,714	1.85%	4.51%	2.67%
10	1,431	1,686	1,615	1,513	−17.82%	6.32%	24.14%
11	2,251	2,122	2,179	2,147	5.73%	1.47%	−4.26%
12	1,824	1,789	1,803	1,700	1.92%	5.71%	3.79%
13	1,670	1,638	1,794	1,788	1.92%	0.33%	−1.58%
14	1,519	1,495	1,532	1,312	1.58%	14.36%	12.78%
15	1,542	1,465	1,524	1,191	4.99%	21.85%	16.86%
16	2,372	2,205	2,233	2,121	7.04%	5.02%	−2.02%
17	1,643	1,654	1,673	1,583	−0.67%	5.38%	6.05%
18	2,349	2,416	2,353	2,287	−2.85%	2.80%	5.66%
19	2,519	2,549	2,545	2,590	−1.19%	−1.77%	−0.58%
20	2,340	2,365	2,487	2,424	−1.07%	2.53%	3.60%
21	1,606	1,416	1,502	1,592	11.83%	−5.99%	−17.82%
22	1,824	1,801	1,836	1,759	1.26%	4.19%	2.93%

[a] from Table 2, McDonnell et al. (1985)

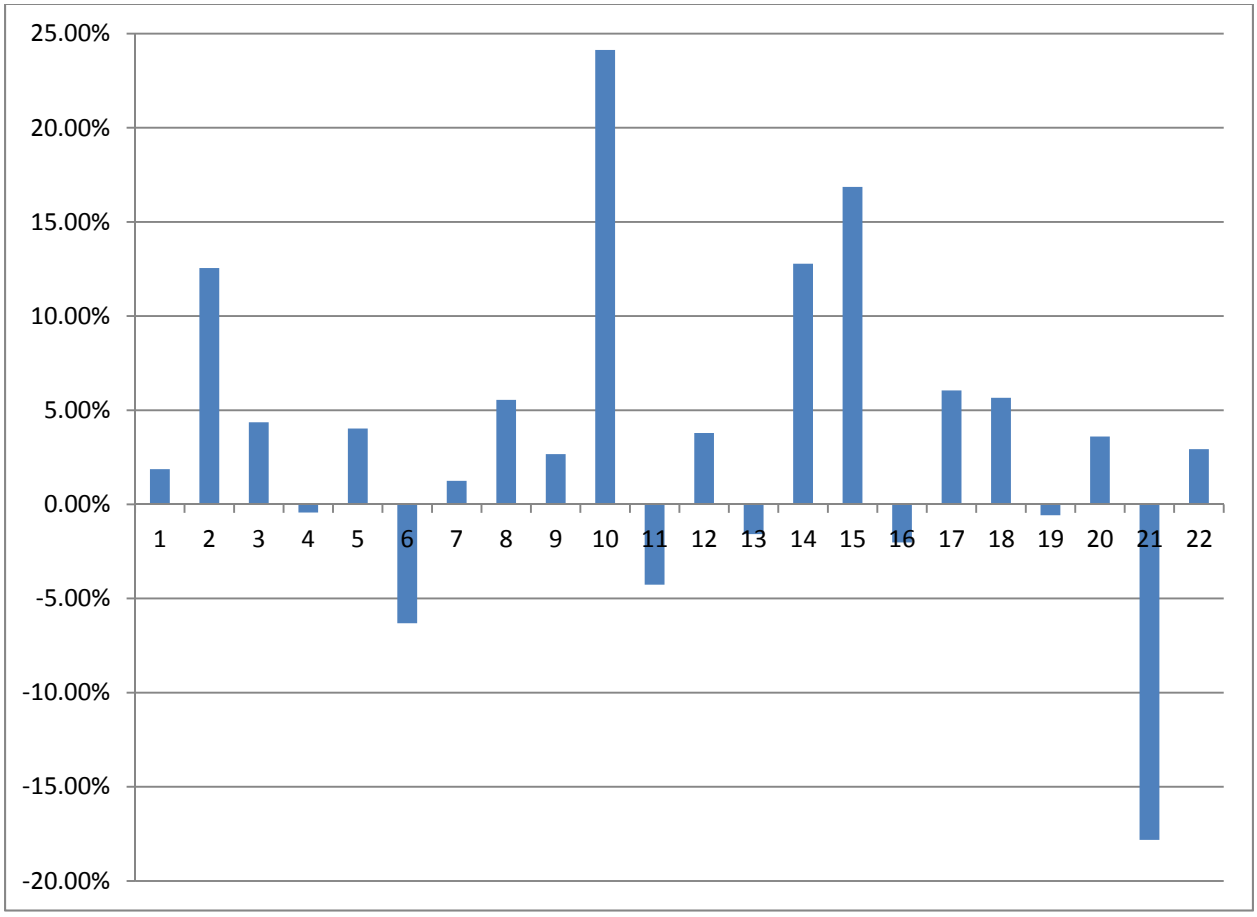

Figure 6D-1. Clean-air corrected FEV_1 decrement vs. subject ID.

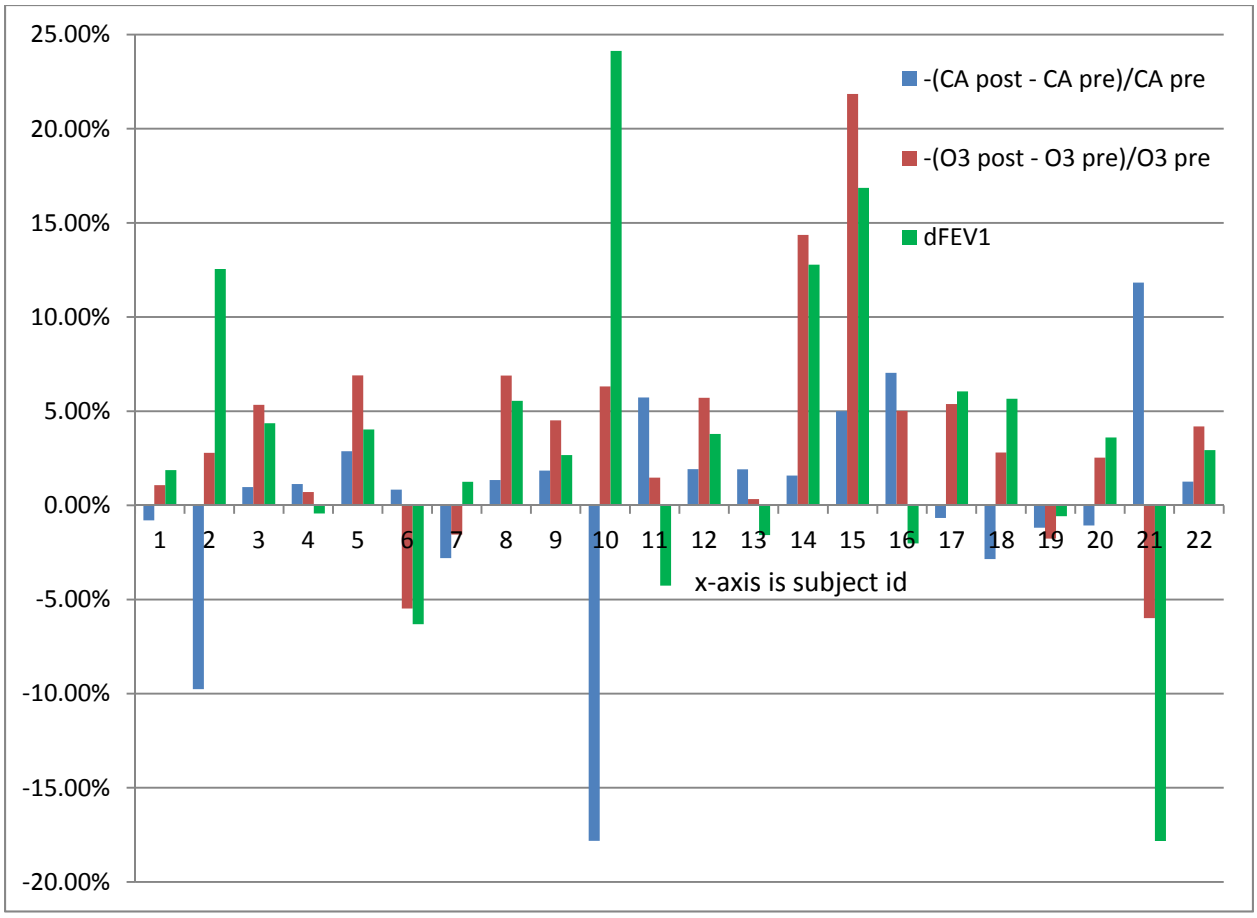

Figure 6D-2. FEV_1 responses measured during clean air and exposures to 120 ppb ozone. (derived from data in McDonnell et al., 1985).

Table 6D-2. Comparison of responses from the MSS model with responses from McDonnell et al. (1985).

	≥ 10% FEV_1 decrement		≥ 15% FEV_1 decrement		≥ 20% FEV_1 decrement	
	MSS model	**McDonnell et al. (1985)**	**MSS model**	**McDonnell et al. (1985)**	**MSS model**	**McDonnell et al. (1985)**
Percent responding	18.4%	18.2% (4 subjects)	6.8%	9.1% (2 subjects)	2.3%	4.5% (1 subject)

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APPENDIX 6E

Factors Related to Age

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6E-1 OVERVIEW

There are several factors related to the age of an individual that influence the risk of the individual of experiencing FEV_1 decrements (ΔFEV_1) in excess of 10, 15, and 20%. These factors include the parameters of the MSS model and the inputs to the MSS model calculated by APEX: time-series of exposures and ventilation rates normalized by body surface area (Figure 6E-1). Figure 6E-2 illustrates the combined effect of these factors on modeled FEV_1 decrements across ages. Children are estimated to have the highest risk and older adults the lowest risk. In this section we present sensitivity analyses which reveal the most influential underlying components driving age-related differences in risk.

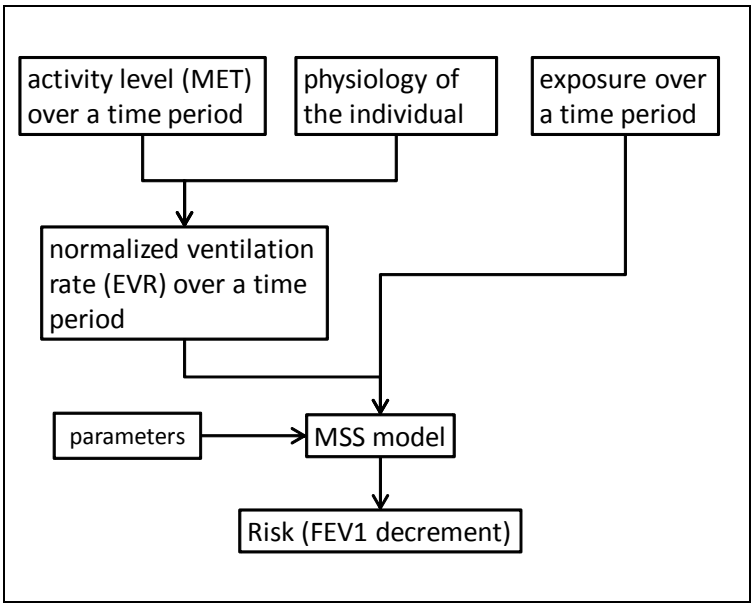

Figure 6E-1. Factors That Contribute to Risk (FEV_1 Decrements).

The times series of exposures modeled by APEX depend on ozone concentrations and activity patterns. The times series of ventilation rates modeled by APEX depend on activity patterns, exertion levels, and individual physiological characteristics. Figure 6E-3 provides an overview of how APEX models these quantities to estimate risk (the acronyms are defined in Table 6E-1). As this figure shows, there are several quantities input to APEX whose distributions depend on age: MOXD, BM, VO2max, MET, BM, RMR, VE regression coefficients, CHAD diary locations, and CHAD diary activities. These factors are

intercorrelated, so there is not a unique way to apportion their influences on FEV_1 decrements. Since the highest exposures occur when an individual is outdoors, additional relevant factors include the amount of time spent outdoors and the O_3 concentrations when individuals are outdoors.

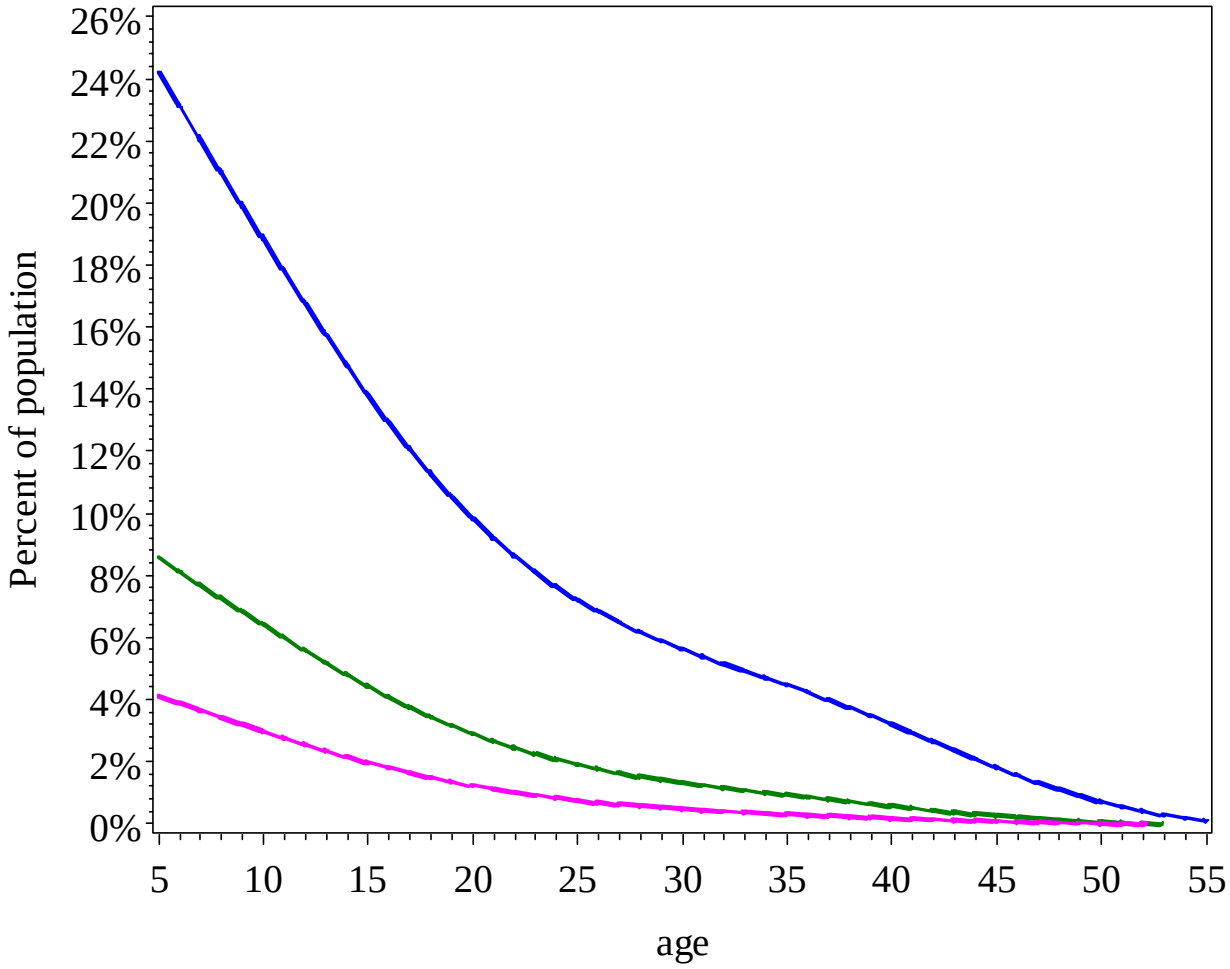

Figure 6E-2. The Relationship between Age and Percent of Population with Exceedances of 10% (blue), 15% (green), and 20% (red) FEV1 Decrements. Based on the MSS (2012) Threshold Model in an APEX Simulation of Atlanta for April-June 2006 (ages 5-95, 250,000 profiles).

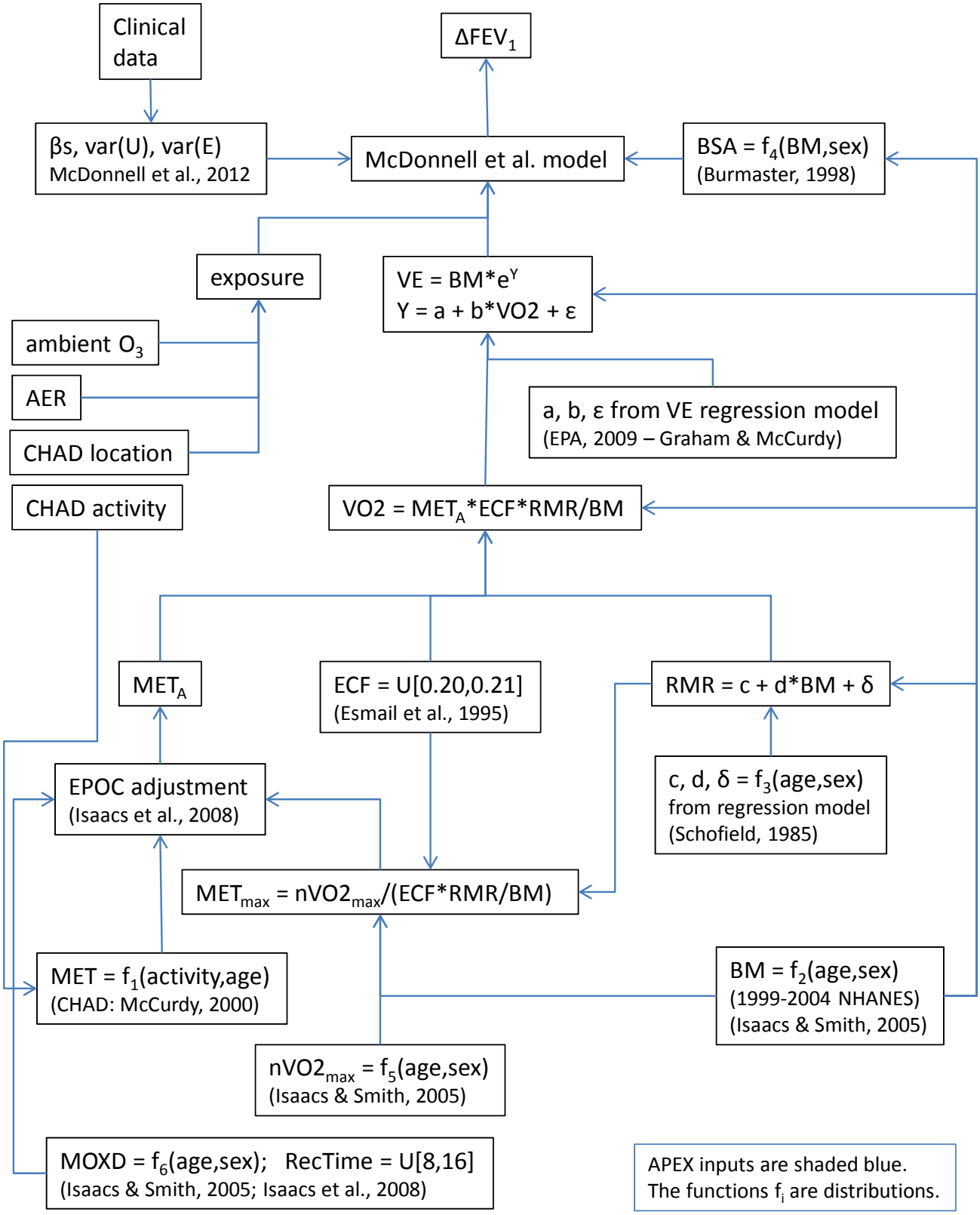

Figure 6E-3. Overview Chart of APEX Modeling of Factors Input to the MSS Model.

Table 6E-1. APEX acronyms.

Acronym	Description
AER	Air exchange rate (1/h)
BM	Body mass (kg)
BSA	Body Surface Area (m^2)
CHAD	Consolidated Human Activity Database
ECF	Energy conversion factor (L O_2/kcal)
EE	Energy expenditure (kcal/min)
EErest	Resting Energy expenditure (kcal/min)
EPOC	Excess post-exercise oxygen consumption
EVR	Equivalent ventilation rate. EVR = VE / BSA (L/min-m^2)
FEV_1	Forced expiratory volume in 1 second
MET	Metabolic equivalent of work. MET = EE / EErest (unitless)
MET_A	MET adjusted for EPOC
METmax	Maximum achievable MET for an individual (unitless)
MOXD	Maximal oxygen deficit that can be obtained (M-h)
RecTime	Oxygen debt recovery time (h). Time required to recover from F=1 to 0 while at rest, where F is the fractional oxygen deficit.
RMR	Resting metabolic rate (kcal/min)
VE	Ventilation rate (L/min)
VO_2	Oxygen consumption (L O_2/min)
VO_2max	Maximum oxygen consumption for an individual (L O_2/min)
nVO_2max	Maximum normalized oxygen consumption (L O_2/min/kg)

6E-2 MSS MODEL AGE TERM

Figure 6E-4 illustrates the interaction of age and ozone level for the prediction of risk in the MSS threshold model. This figure assumes moderate exercising conditions of a typical 6.6-hour clinical study (EVR = 20 L/min-m^2 BSA) and varies the ozone exposure level (constant over the 6.6 hour period) from 40 to 120 ppb. The lung function decrement is the median value predicted at the end of the 6.6 hour period (U_i and ε_{ijk} = 0 in equation 6-3). The trend of the slope vs. age increasing with O_3 exposure concentrations is consistent with the findings of McDonnell et al. (1993, Figures 3 and 4). In our application of the model, the response is flat for ages below 18 and declines out to age 55, after which we assume no response (Figure 6E-5).

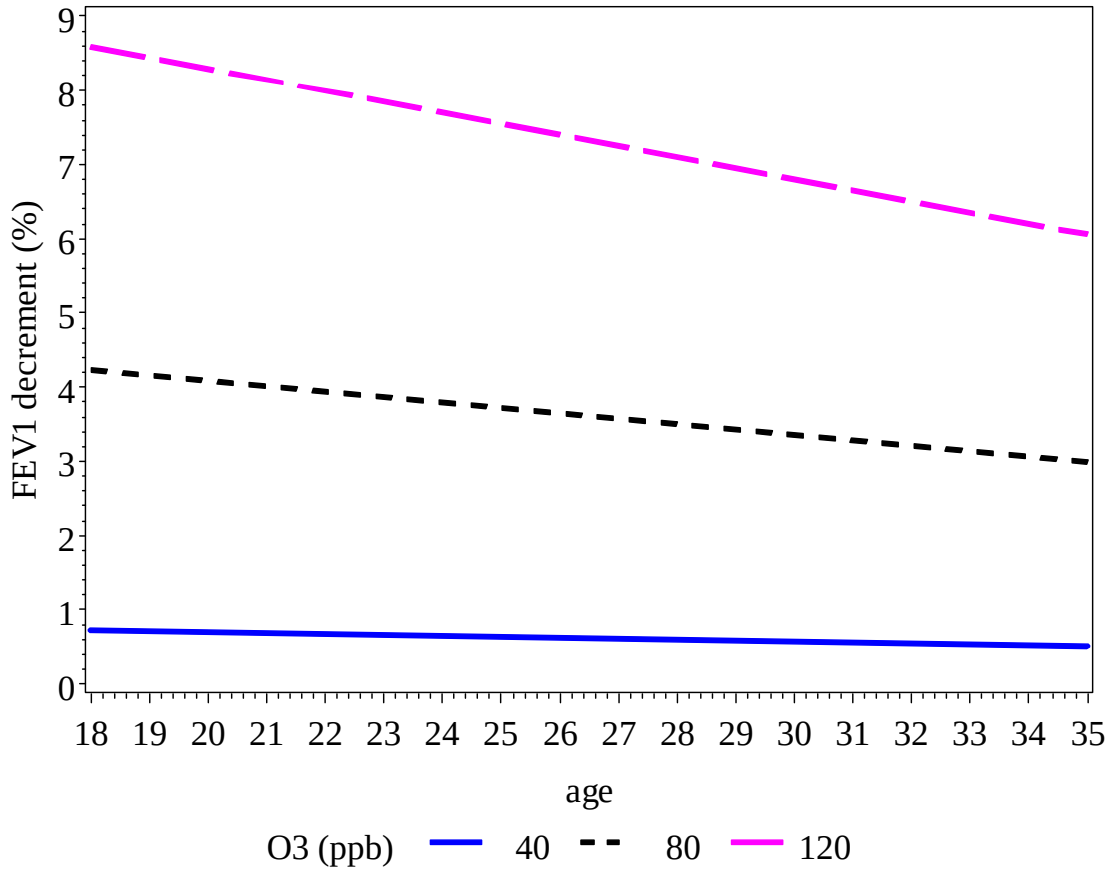

Figure 6E-4. Variation by Age of the Median Response (Lung Function Decrements in FEV_1) Predicted by the MSS Model after 6.6 Hour Exposure to Ozone Under Intermittent Moderate Exercise.

Figure 6E-5 shows the median response predicted by the McDonnell-Stewart-Smith model for a 6.6 hour exposure to 80 ppb ozone under intermittent moderate exercise (40 L/min, BSA=2 m^2). This was obtained by running the MSS model for different ages with the concentration and ventilation rate time series fixed, according to a typical protocol for a 6.6 hour exposure study. Subjects alternated 50 minutes of moderate exercise with 10 minutes of rest for the first three hours, with the exercise occurring first. For the next 35 minutes, subjects continued exposure at rest. For the remaining three hours of the exposure period, subjects again alternated 50 minutes of exercise with 10 minutes of rest.

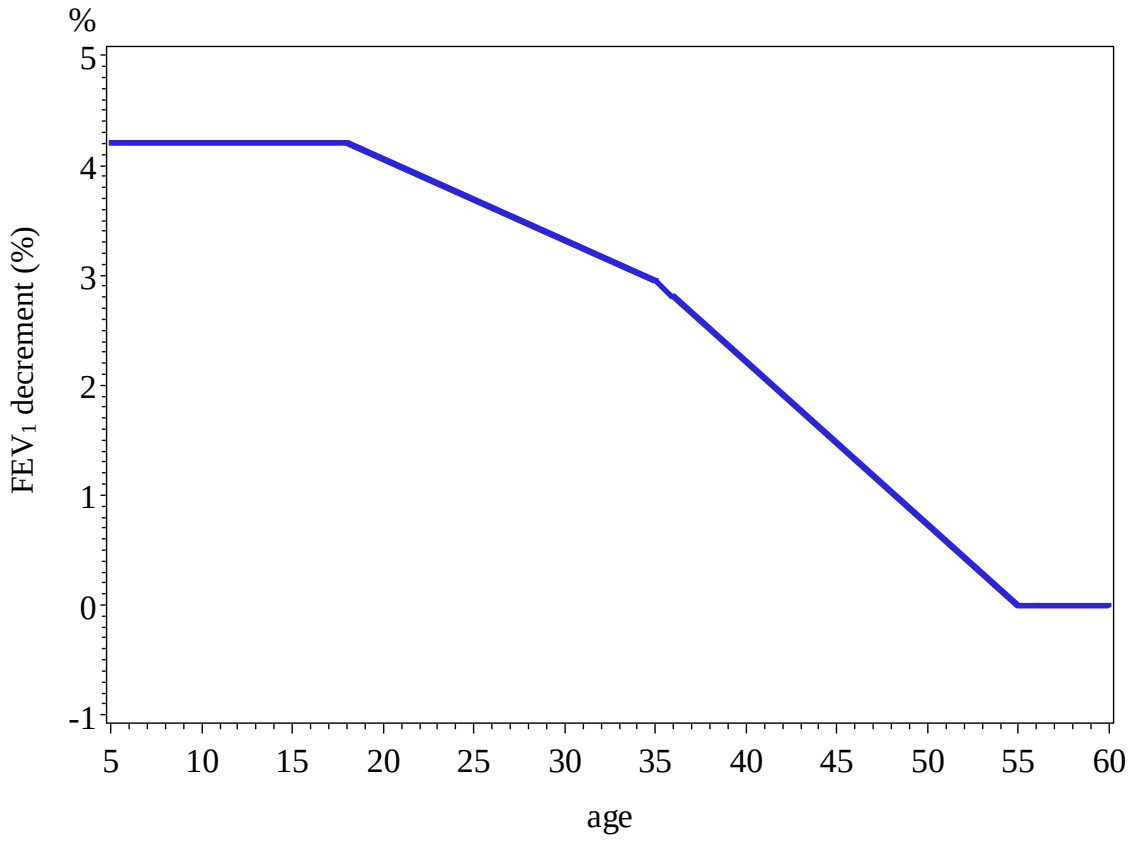

Figure 6E-5. Median Response Predicted by the MSS Model for a 6.6 Hour Exposure to 80 ppb O_3 under Intermittent Moderate Exercise (40 L/min, BSA=2 m^2).

6E-3 INFLUENTIAL FACTORS ON AGE TERM

The primary age-related factors in APEX of interest influencing estimated FEV_1 decrements (except the MSS model age term parameters) are given in Table 6E-2 and include physiology, ventilation rates, and outdoor exposures.

Table 6E-2. Selected factors in APEX which influence estimated FEV_1 decrements.

Factor	Description
BSA	Body surface area is a basic physiological quantity which is an increasing function of age. Distributions of BSA that depend on age and sex are input to the APEX model.
RMR	Resting metabolic rate is a basic physiological quantity which depends on age. APEX models RMR using age- and sex-dependent distributions.
MET	Unadjusted MET distribution is a function only of the CHAD diary activity, which in turn depends on age. MET is a measure of the level of exertion during an activity.
MET_A	MET adjusted for excess post-exercise oxygen consumption (EPOC) is calculated in APEX as a function of unadjusted MET, RMR, MOXD, RecTime, VO_2max, BM, and ECF.
VE	Ventilation rate is an input to the MSS model. VE is calculated in APEX as a function of adjusted MET, VE regression coefficients, RMR, ECF, and BM.
EVR	Equivalent ventilation rate = VE/BSA is the term in the MSS model that incorporates all of the physiological variables.
Time outdoors	Time spent outdoors is a function only of the CHAD diary location, which in turn depends on age.
Exposure to ambient O_3 while outdoors	The ambient concentration levels while an individual is outdoors. This is related to age since it depends on the times of day and duration that an individual is outdoors, which depend on the CHAD diary activity patterns, which depend on age.

We find the hours of 2 pm to 9 pm are most relevant to exposures and activities leading to higher FEV_1 decrements, and have restricted this analysis to averages of quantities over these hours (data not shown). BSA, RMR, METmax, and VO_2max increase with age until around age 18 and then more or less level off. Looking at the 90^{th} percentiles of the daily (hours of 2 pm to 9 pm) averages, we find that from ages 5 to 15, unadjusted MET decreases while adjusted MET increases. Ventilation rate (VE) increases with age from 5 to 15 while ventilation rate normalized by body surface area (EVR) decreases. Time spent outdoors is highest for ages 5 to 10 and around age 18, a result of the composition of the CHAD diaries. The ambient concentrations of O_3 exposed to while spending time outdoors is highest for ages 5 to 15. The four most influential of these factors on the relationship of FEV_1 decrement with age are the decreasing adjusted MET and decreasing EVR (with increasing age), the high time spent

outdoors, and the high exposure concentration while outdoors. These all lead to children having higher FEV_1 decrements than adults.

The graphs of boxplots by age on the following pages show the distribution of the factor for each age. The boxes indicate the 25^{th} and 75^{th} percentiles, the midlines are the medians, and the whiskers extend to the minima and maxima. The graphs of single lines are the 90^{th} percentiles for each age. The factors are daily averages over hours 14 to 21 from an APEX simulation of the Atlanta metropolitan area for April-June 2006 (10,000 profiles simulated, ages 5 to 35).

VE is an increasing function of the exertion level as measured by MET_A (among other factors). We see that while younger children (within the 5-18 age range) have higher CHAD activity levels as measured by MET, they have lower exertion levels as measured by MET_A. This is primarily due to smaller maximum MET levels, smaller maximum VO_2, and smaller MOXD for the younger children, which result in lower ventilation rates. Normalization of VE by BSA results in higher levels of EVR for the younger children. It is this factor (EVR) which drives the trend for children we see in Figure 6E-2.

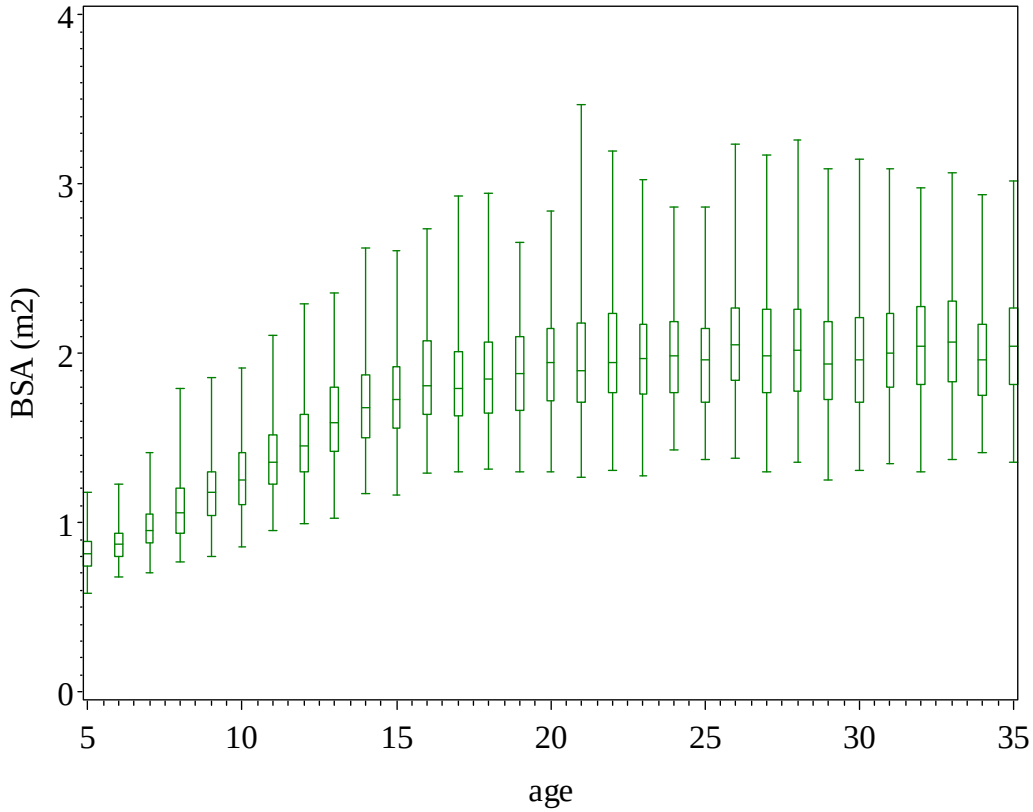

Figure 6E-6. Distribution of Daily Average (hours 14-21) BSA (m^2) vs. Age.

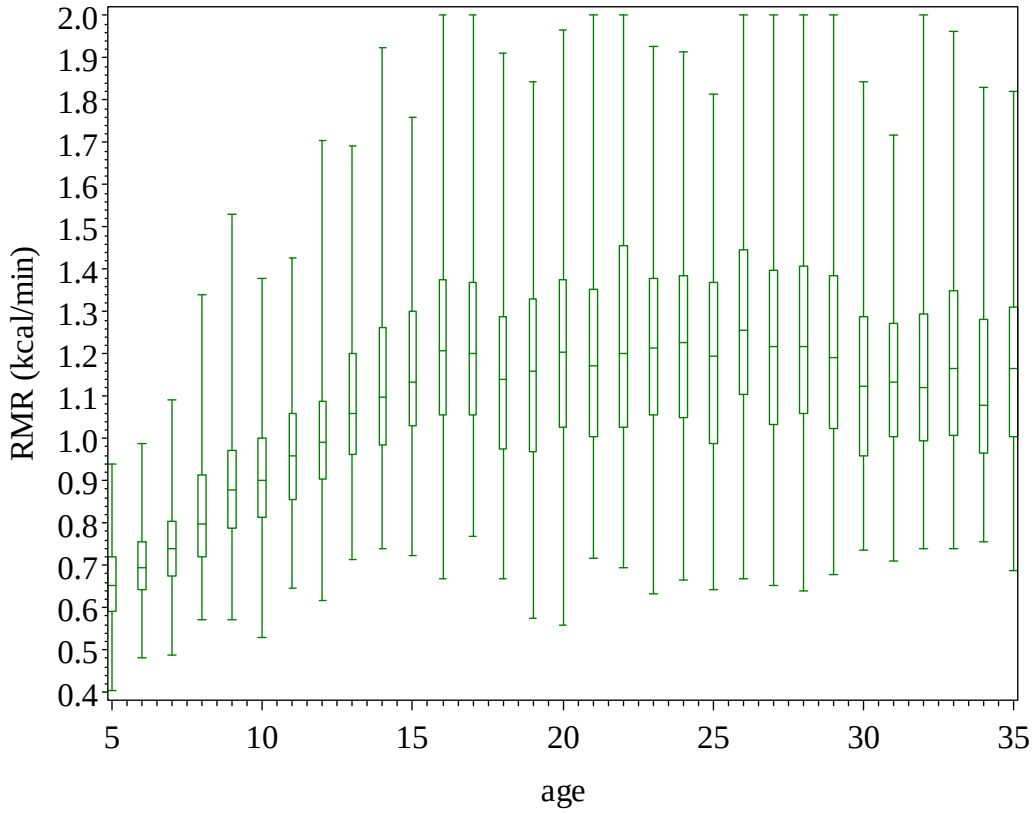

Figure 6E-7. Distribution of Daily Average (hours 14-21) RMR (kcal/min) vs. Age.

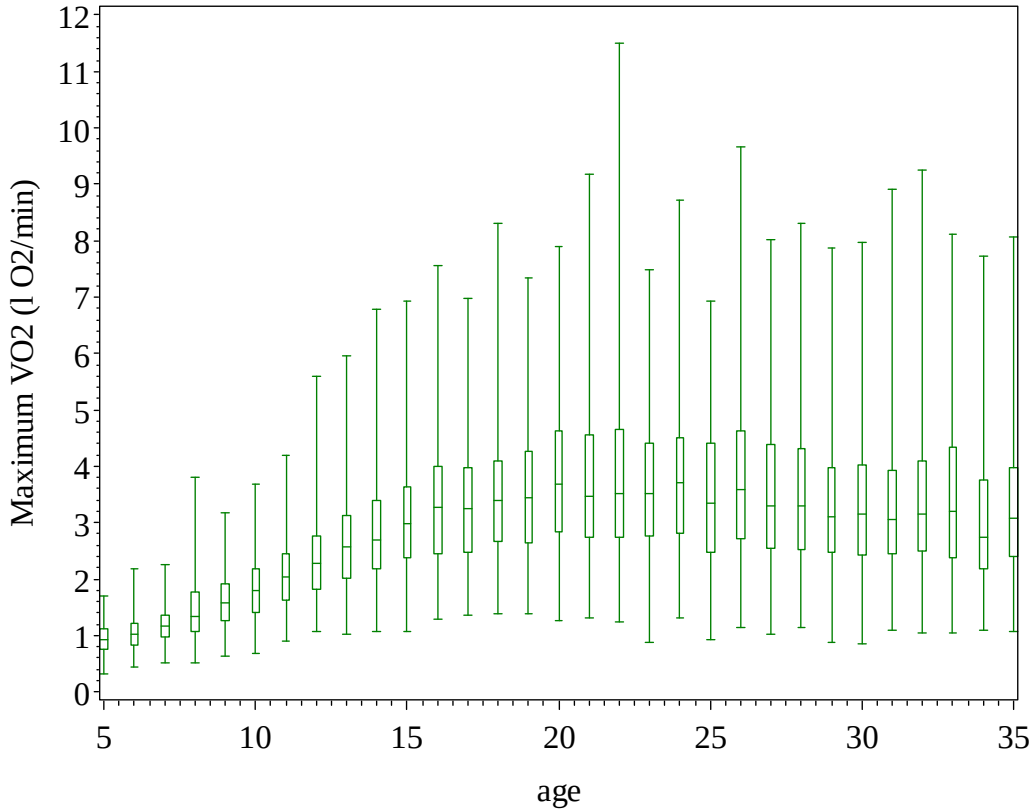

Figure 6E-8. Distribution of Daily Average (hours 14-21) Maximum VO_2 (L O_2/min) vs. Age.

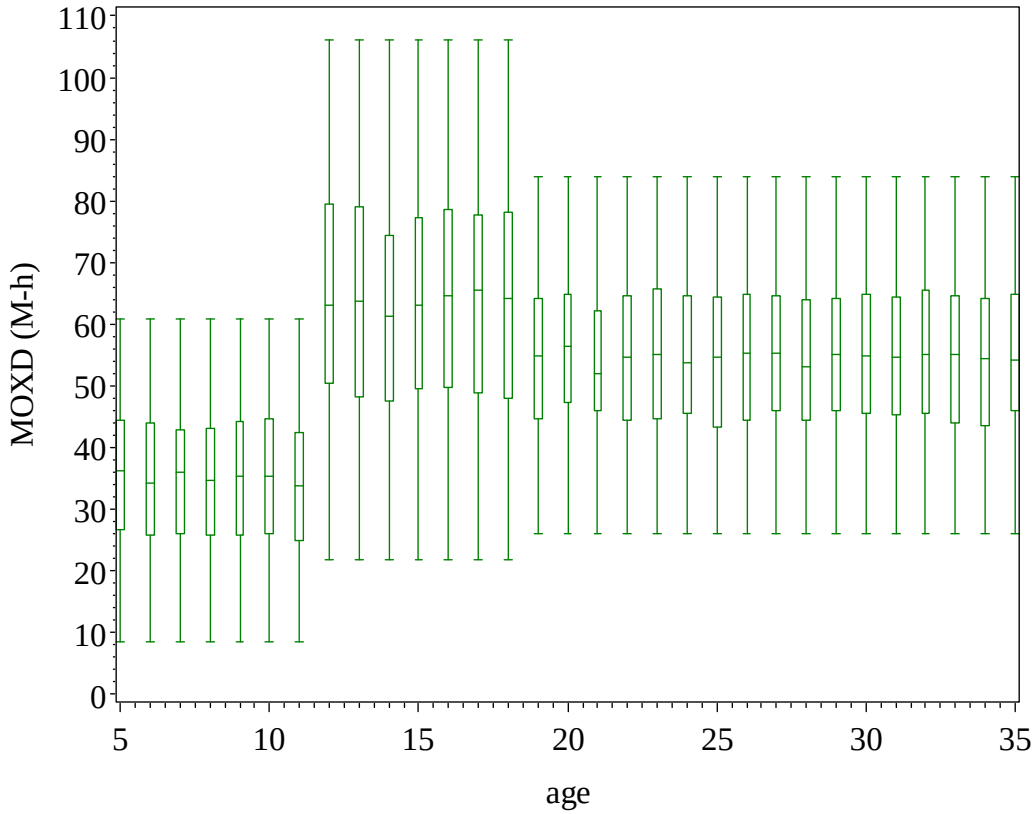

Figure 6E-9. Distribution of Daily Average (hours 14-21) MOXD (M-h) vs. Age.

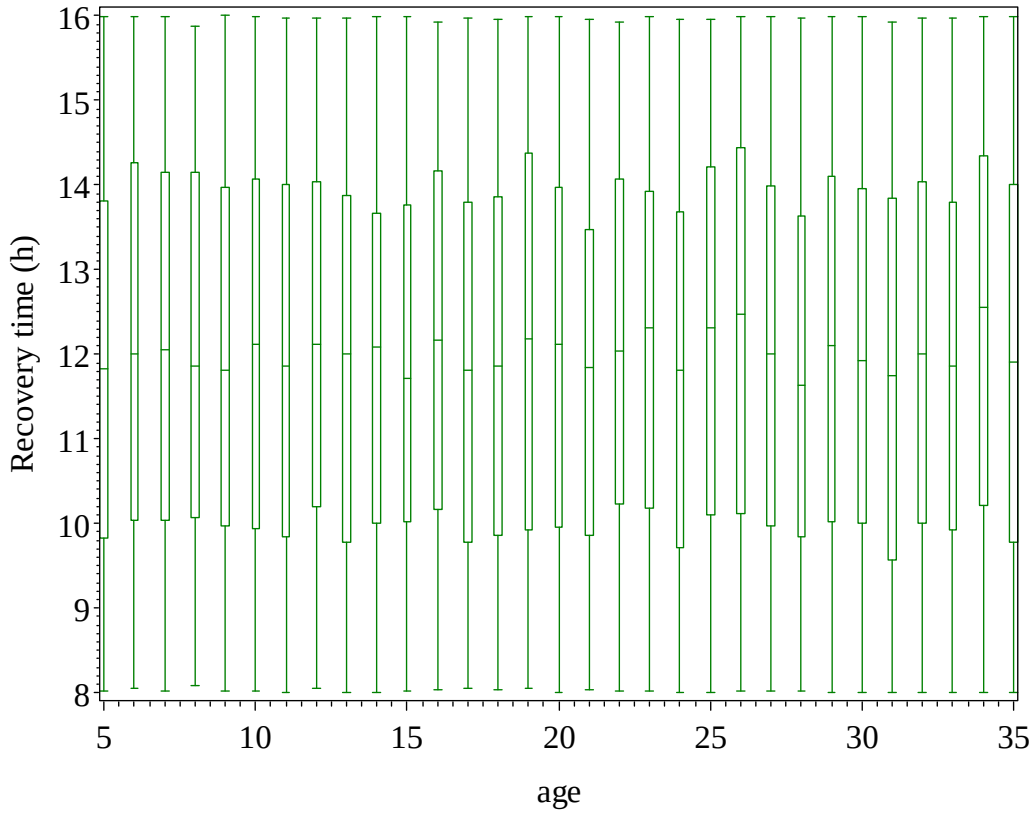

Figure 6E-10. Distribution of Daily Average (hours 14-21) Recovery Time (hours) vs. Age.

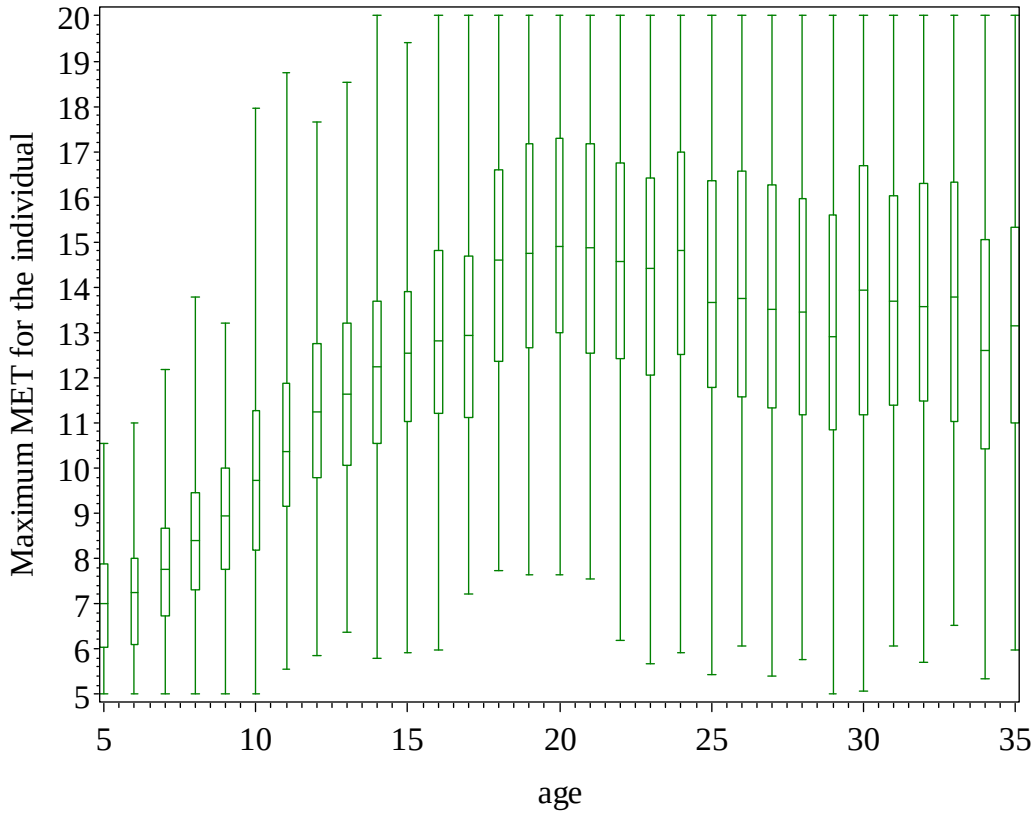

Figure 6E-11. Distribution of Maximum MET vs. Age

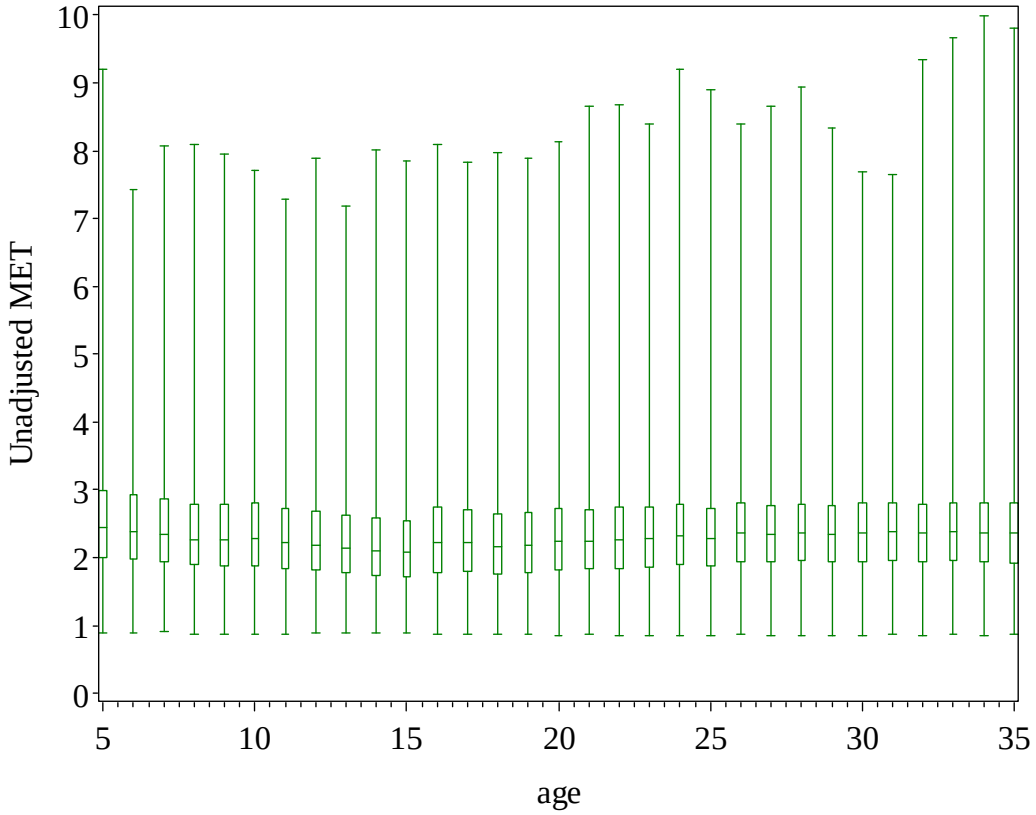

Figure 6E-12. Distribution of Daily Average (hours 14-21) Unadjusted MET vs. Age.

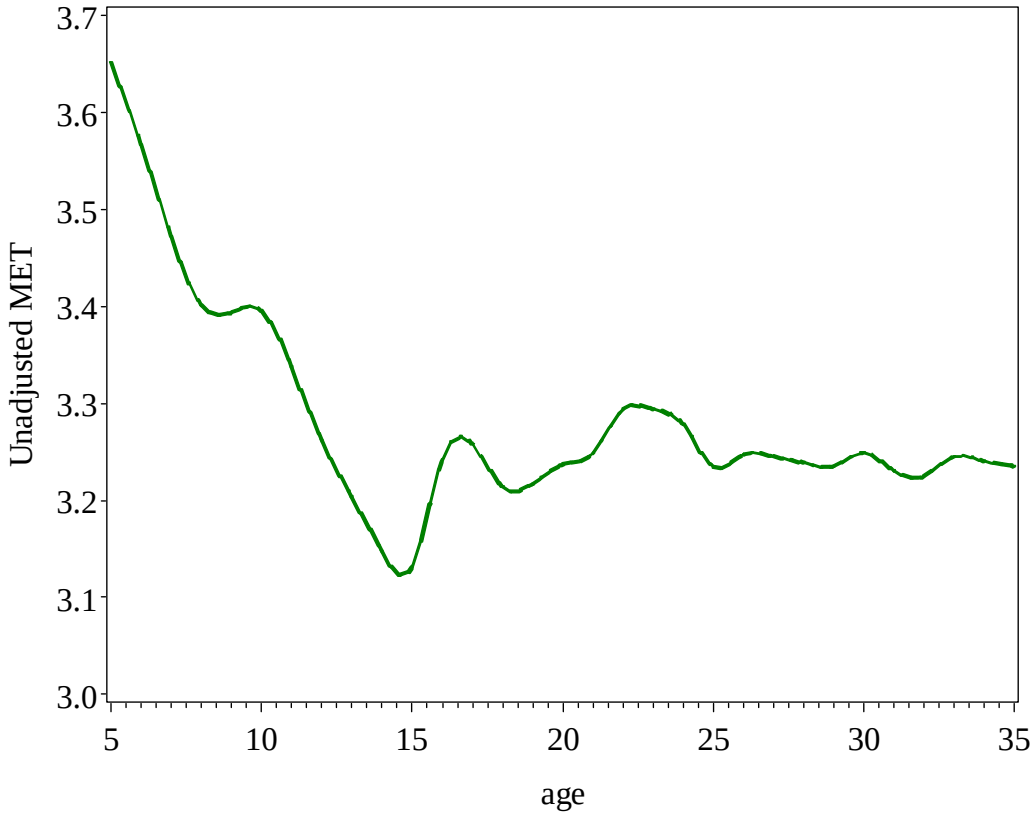

Figure 6E-13. Daily Average (hours 14-21) Unadjusted MET (90th percentiles) vs. Age.

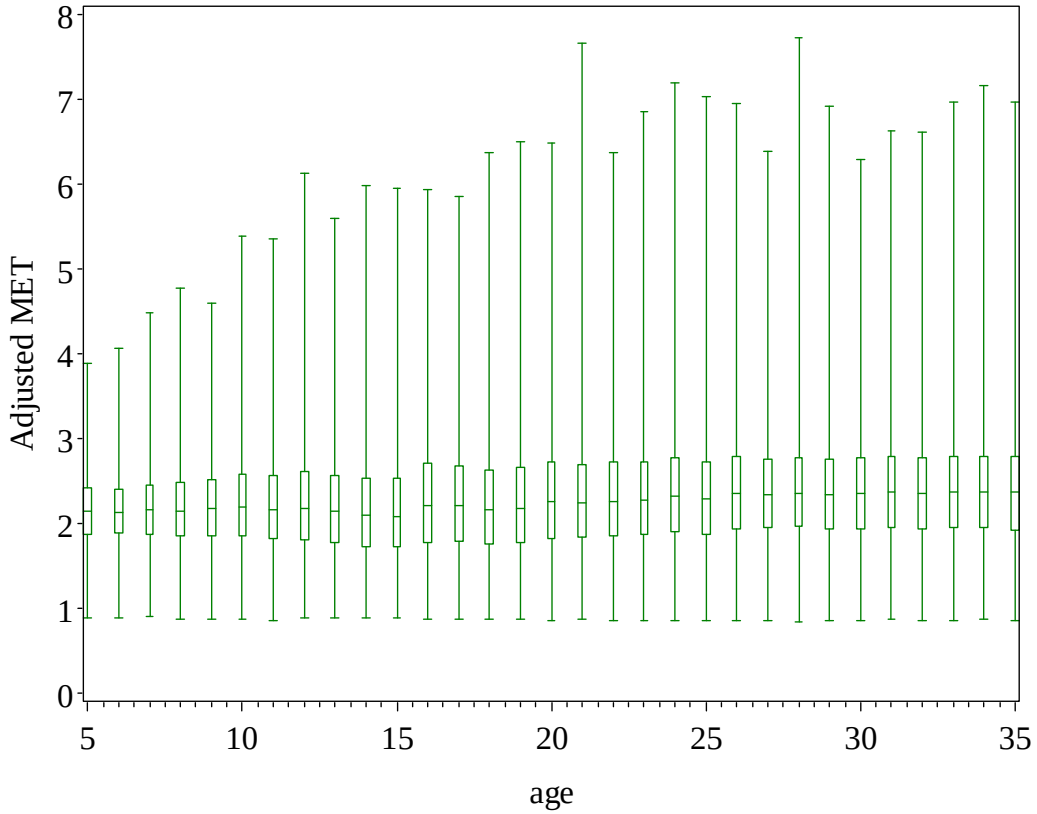

Figure 6E-14. Distribution of Daily Average (hours 14-21) Adjusted MET vs. Age.

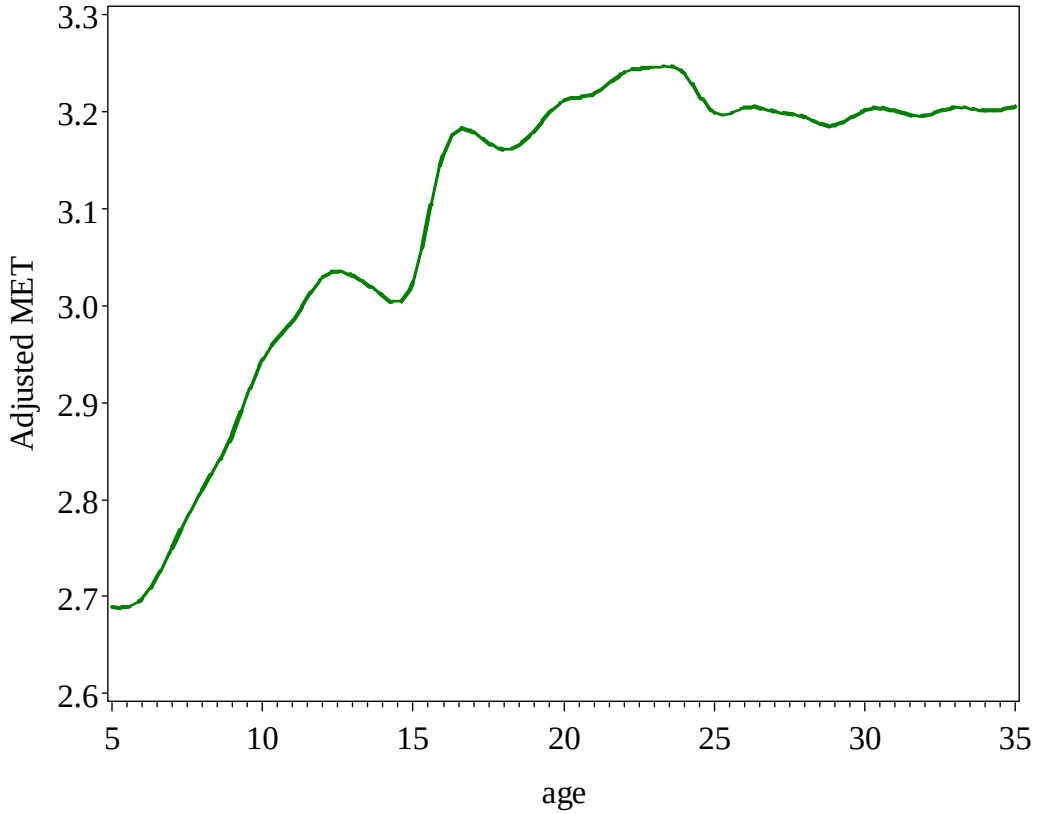

Figure 6E-15. Daily Average (hours 14-21) Adjusted MET (90th percentiles) vs. Age.

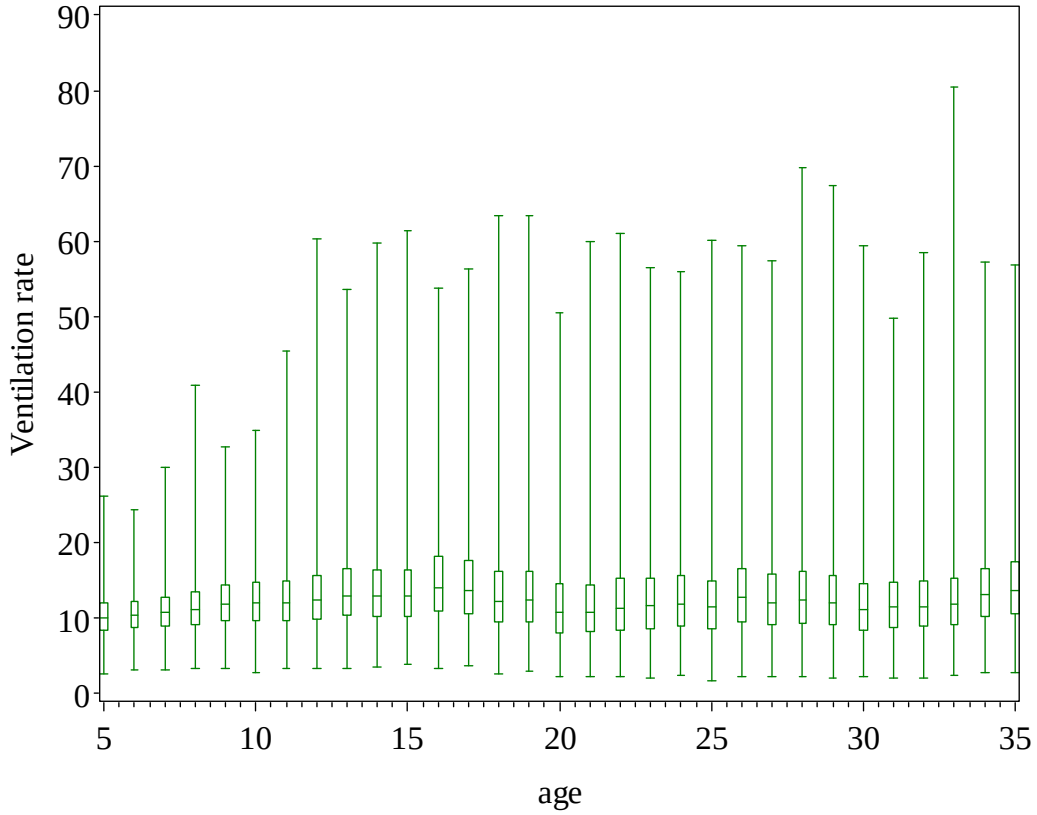

Figure 6E-16. Distribution of Daily Average (hours 14-21) Ventilation Rate (L/min) vs. Age.

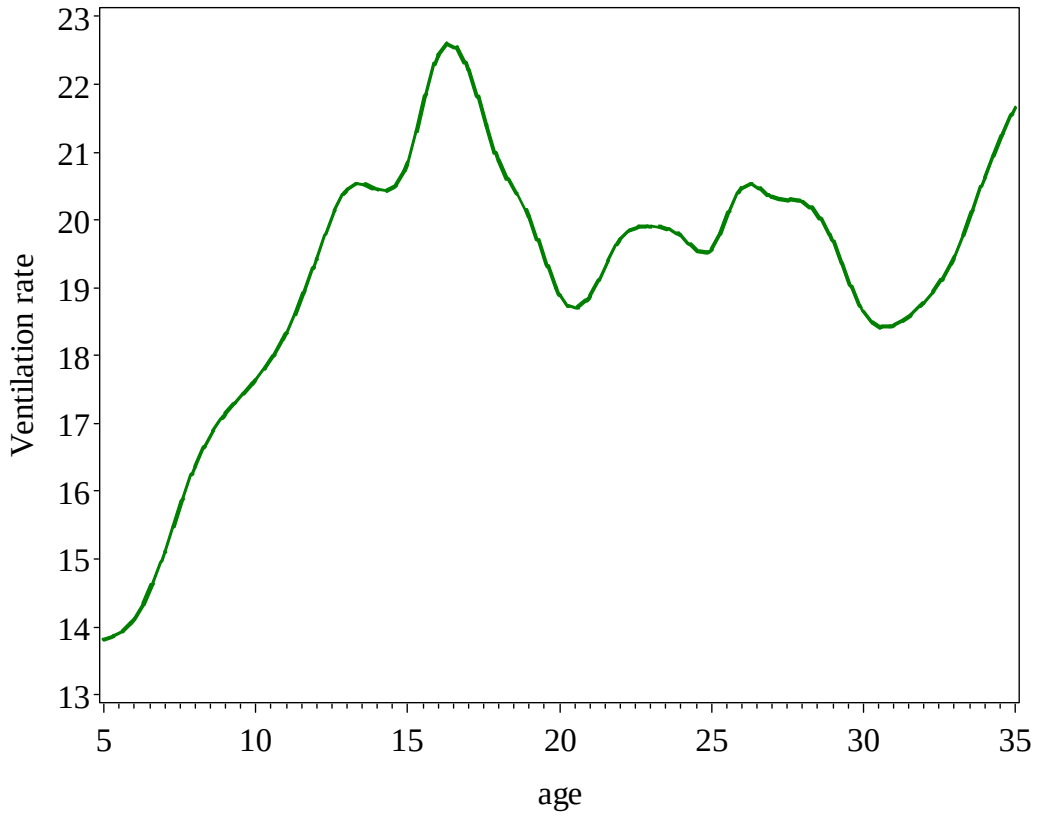

Figure 6E-17. Daily Average (hours 14-21) Ventilation Rate (L/min) (90th percentiles) vs. Age.

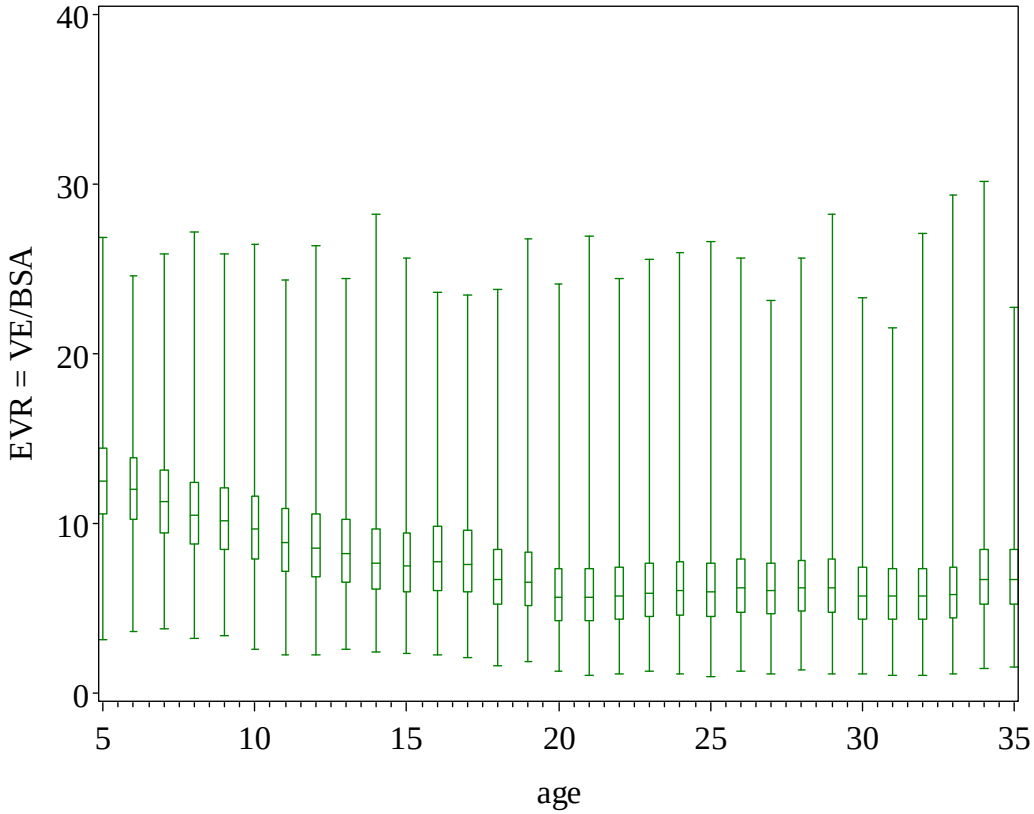

Figure 6E-18. Distribution of Daily Average (hours 14-21) EVR (L/min/m^2) vs. Age.

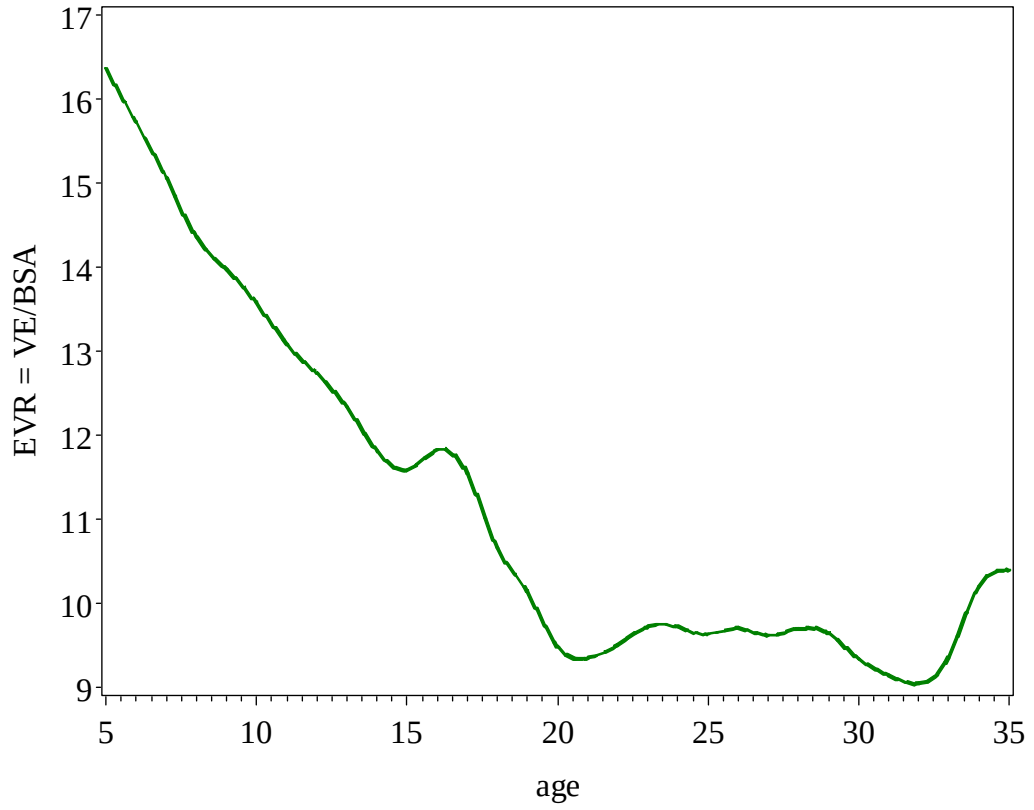

Figure 6E-19. Daily Average (hours 14-21) EVR (L/min/m^2) (90th percentiles) vs. Age.

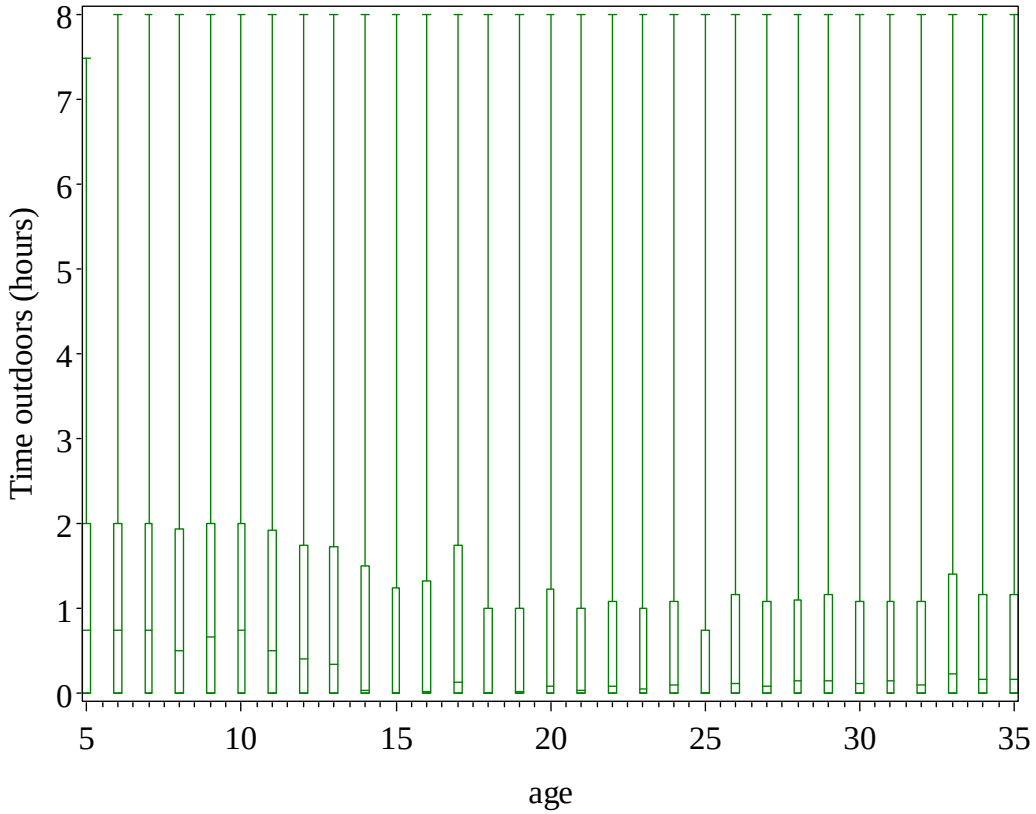

Figure 6E-20. Distribution of Daily Average (hours 14-21) Time Outdoors (hours) vs. Age.

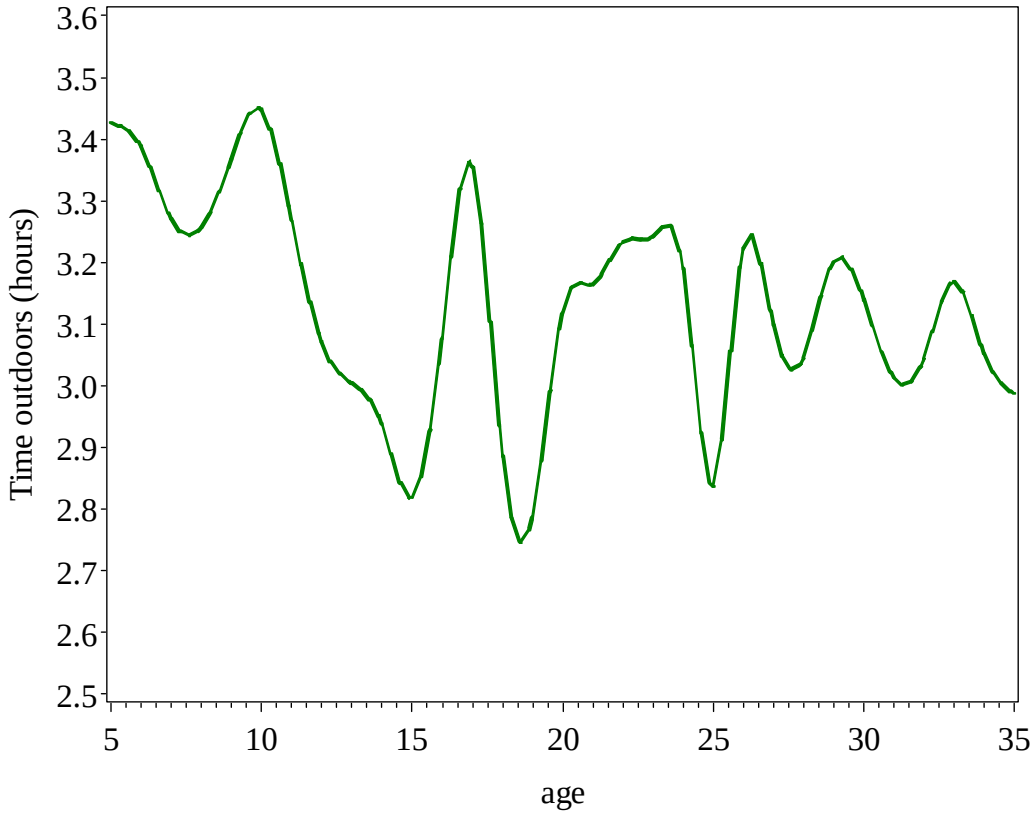

Figure 6E-21. Daily Average (hours 14-21) Time Outdoors (hours) (90th percentiles) vs. Age.

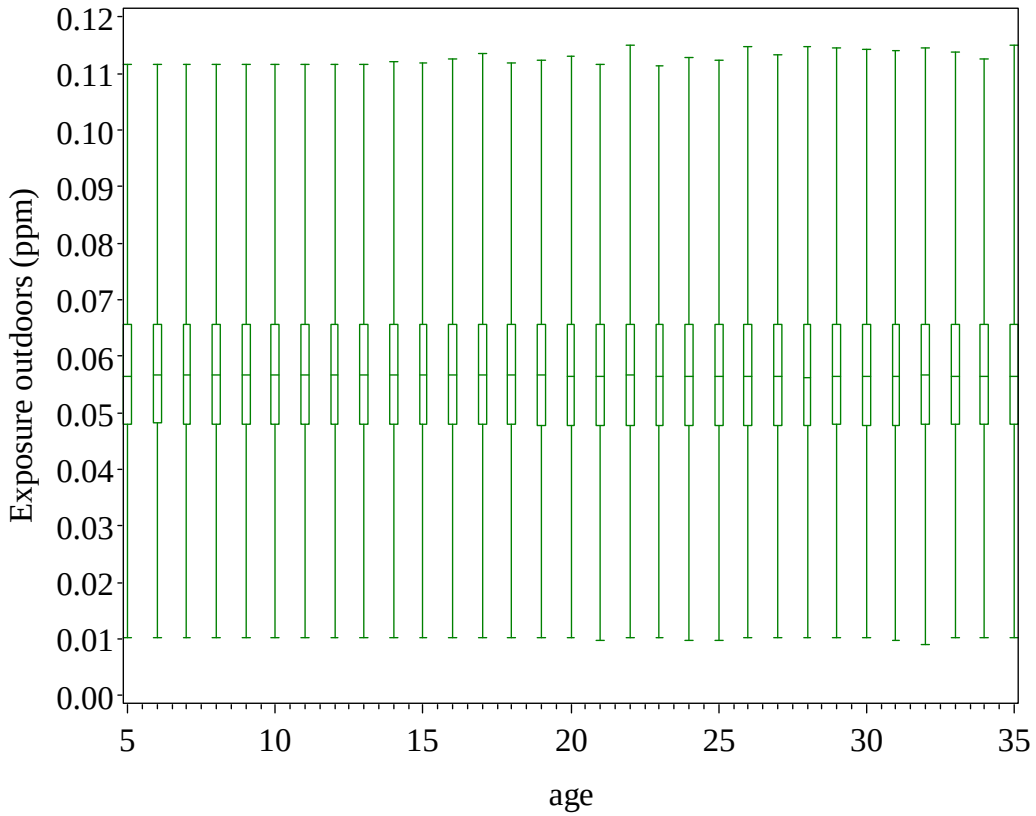

Figure 6E-22. Distribution of Daily Average (hours 14-21) Exposure Outdoors (ppm) vs. Age.

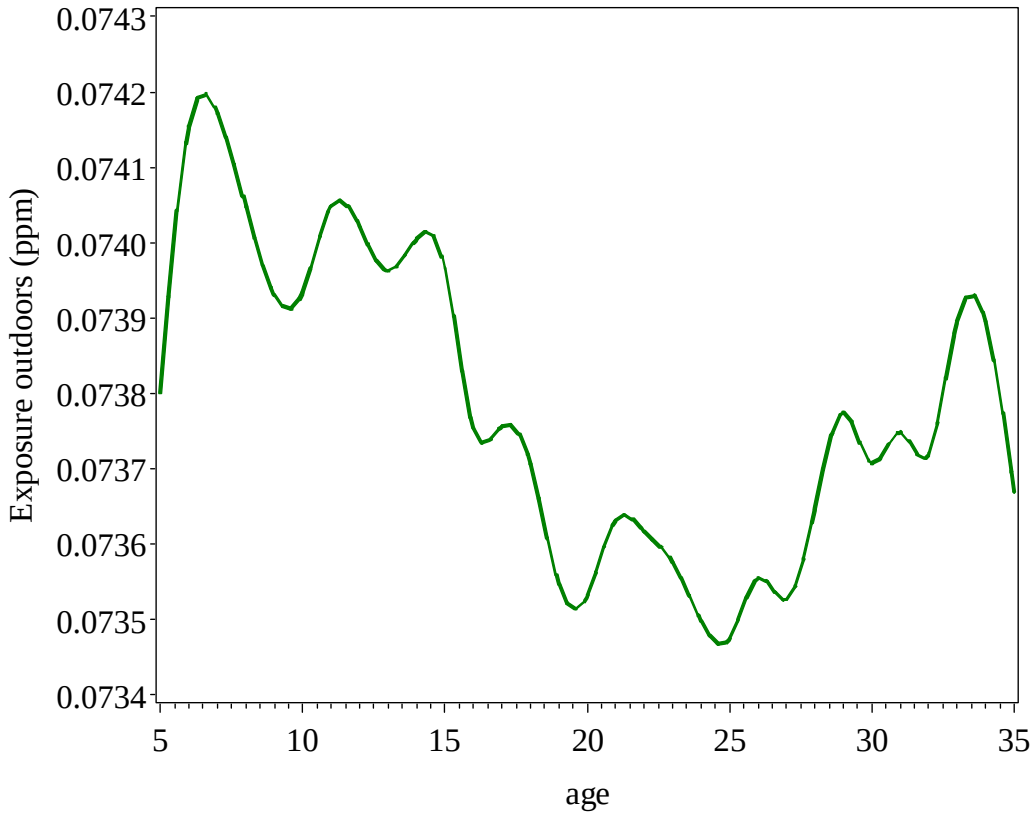

Figure 6E-23. Daily Average (hours 14-21) Exposure Outdoors (ppm) (90th percentiles) vs. Age.

6E-4 EVALUATION OF ALTERNATIVE AGE TERM FOR CHILDREN

The results of an APEX simulation of the Atlanta 2006 base case (March 1 – October 30) using an alternative age term for children are presented in Table 6E-3. This age term is based on the assumption that the responsiveness of children to ozone is about the same as for young adults (ISA, 2012, p. 6-21) and the age term is set to the average age term over ages 18 to 35 ($\alpha_1 = 0$ and $\alpha_2 = 2.7$, see HREA Section 6.2.4). The alternative age term results in estimates that are lower, but not dramatically so. Most of the age effects are due to the factors discussed in the previous section.

Table 6E-3. Percents of the population ages 5 to 18 with one or more days during the ozone season with lung function (FEV_1) decrements more than 10, 15, and 20% (Atlanta 2006 base case). MSS threshold model and MSS threshold model with alternative age term.

Model	$\Delta FEV_1 \geq 10\%$	$\Delta FEV_1 \geq 15\%$	$\Delta FEV_1 \geq 20\%$
MSS	31%	13%	6.4%
MSS, alternative age term	27%	10%	4.6%

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APPENDIX 6F

Comparison of APEX Simulation Results Using Monitors and Tracts Air Quality

In this Appendix, we provide a comparison of APEX simulation results using ambient monitoring data and for where modeled tract level air quality was used as an input. Two tables (Table 6F-1 and Table 6F-2) are provided to summarize the results.

Comparison of APEX Simulation Results Using Monitors and Tracts Air Quality

In the first draft REA, monitor-level air quality was provided as input to the APEX model. As discussed in Chapter 5, tract-level air quality was used in APEX for this final REA. Monitor-level air quality is used for the APEX simulations for most of the sensitivity analyses conducted, since these simulations take less time to run. This does not affect the analyses, since the two air quality formats yield very similar results, as can be seen by comparing Table 6F-1 with Table 6F-2, which are based on Atlanta 2006 base case APEX simulations of 200,000 individuals, 52,436 of which are children ages 5 to 18. These simulations used the same random number seed to hold all variables constant except for the air quality input files.

Table 6F-1. Percents of the population by age group with one or more days during the ozone season with lung function (FEV_1) decrements more than 10, 15, and 20% (Atlanta 2006 base case). MSS Threshold model, monitors air quality.

Age Group	$\Delta FEV_1 \geq 10\%$	$\Delta FEV_1 \geq 15\%$	$\Delta FEV_1 \geq 20\%$
5 to 18	31%	13%	6.4%
19 to 35	11%	3.1%	1.3%
36 to 55	3.7%	0.60%	0.14%

Table 6F-2. Percents of the population by age group with one or more days during the ozone season with lung function (FEV_1) decrements more than 10, 15, and 20% (Atlanta 2006 base case). MSS Threshold model, tracts air quality.

Age Group	$\Delta FEV_1 \geq 10\%$	$\Delta FEV_1 \geq 15\%$	$\Delta FEV_1 \geq 20\%$
5 to 18	30%	12%	5.7%
19 to 35	11%	2.9%	1.1%
36 to 55	3.3%	0.50%	0.12%

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