Analysis of Relative Risk (RR) by City Associated with PM2.5 Level in 2000 HEI Reanalysis Report Based on Figures 5 and 21 and Appendix D: Cities Sorted by PM2.5 Level

PM2.5 Level Rank	Table D.1 City Number	Table D.1 City	Table D.1 State	Table D.1 PM2.5 Level (Annual µg/m³)	Appendix D US Region	Figure 5 RR (Ruler Measure)	Figure 21 PM2.5 Rank (Low,Med,High)	Figure 21 RR Rank (Low,Med,High)	RR Level Rank
1	83	Albuquerque	NM	9.0	W	0.710	L	M	4
2	150	Spokane	WA	9.4	W	0.810	L	M	8
3	8	Fresno	CA	10.3	W/CA	0.680	L	L	2
4	44	Topeka	KS	10.3	W	0.830	L	M	11
5	28	Tampa	FL	11.4	E	0.845	L	M	16
6	85	Reno	NV	11.8	W	0.670	L	L	1
7	149	Seattle	WA	11.9	W	0.780	L	M	7
8	13	San Francisco	CA	12.2	W/CA	0.890	L	M	25
9	14	San Jose	CA	12.4	W/CA	0.885	L	M	24
10	124	Providence	RI	12.9	OV/NE	0.890	L	M	26
11	70	Omaha	NB	13.1	W	0.880	L	M	23
12	138	Houston	TX	13.4	W	0.700	L	M-->L	3
13	45	Wichita	KS	13.6	W	0.890	L	M	27
14	63	Minneapolis	MN	13.7	E	0.815	L	M	10
15	109	Portland	OR	14.7	W	0.830	L	M	12
16	21	Hartford	CT	14.8	OV/NE	0.845	L	M	17
17	5	Phoenix	AZ	15.2	W	0.855	L	M	21
18	144	Salt Lake City	UT	15.4	W	1.025	L	H	46
19	136	El Paso	TX	15.7	W	0.910	L	M	28
20	66	Jackson	MS	15.7	E	0.930	L	H	32
21	107	Oklahoma City	OK	15.9	W	0.985	L	H	40
22	16	Denver	CO	16.1	W	0.925	L	H	31
23	135	Dallas	TX	16.5	W	0.850	L	M	19
24	129	Chattanooga	TN	16.6	E	0.840	L	M	14
25	73	Raleigh	NC	16.8	E	1.000	L	H	42
26	146	Norfolk	VA	16.9	E	0.910	L	M	29
27	79	Jersey City	NJ	17.3	OV/NE	0.810	M	M	9
28	4	Little Rock	AR	17.8	E	0.870	M	M	22
29	110	Allentown	PA	17.9	OV/NE	1.005	M	H	43
30	100	Dayton	OH	18.8	OV/NE	0.980	M	H	37
31	157	Charleston	WV	20.1	OV/NE	1.005	M	H	44
32	106	Youngstown	OH	20.2	OV/NE	1.060	M	H	47
33	29	Atlanta	GA	20.3	E	0.840	M	M	15
34	132	Nashville	TN	20.5	E	0.845	M	M	18
35	3	Mobile	AL	20.9	E	0.950	M	H	34
36	33	Chicago	IL	21.0	E	0.945	M	H	33
37	37	Indianapolis	IN	21.1	OV/NE	0.970	M	H	36
38	117	Philadephia	PA	21.4	OV/NE	0.910	M	H	30
39	9	Los Angeles	CA	21.8	W/CA	0.760	M	M	5
40	23	Washington	DC	22.5	E	0.850	M	M	20
41	71	Charlotte	NC	22.6	E	0.835	M	M	13
42	97	Cincinnati	OH	23.1	OV/NE	0.980	M	H	38
43	104	Steubenville	OH	23.1	OV/NE	1.145	M	H	49
44	87	Buffalo	NY	23.5	OV/NE	0.960	M	H	35
45	1	Brimingham	AL	24.5	E	0.760	M	M	6
46	95	Akron	OH	24.6	OV/NE	1.060	M	H	48
47	98	Cleveland	OH	24.6	OV/NE	0.980	M	H	39
48	36	Gary	IN	25.2	OV/NE	0.995	H	H	41
49	158	Huntington	WV	33.4	OV/NE	1.020	H	H	45

Analysis of Relative Risk (RR) by City Associated with PM2.5 Level in 2000 HEI Reanalysis Report Based on Figures 5 and 21 and Appendix D: Cities Sorted by US Region & CA

PM2.5 Level Rank	Table D.1 City Number	Table D.1 City	Table D.1 State	Table D.1 PM2.5 Level (Annual µg/m³)	Appendix D US Region	Figure 5 RR (Ruler Measure)	Figure 21 PM2.5 Rank (Low,Med,High)	Figure 21 RR Rank (Low,Med,High)	RR Level Rank
3	8	Fresno	CA	10.3	W/CA	0.680	L	L	2
8	13	San Francisco	CA	12.2	W/CA	0.890	L	M	25
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6	85	Reno	NV	11.8	W	0.670	L	L	1
7	149	Seattle	WA	11.9	W	0.780	L	M	7
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27	79	Jersey City	NJ	17.3	OV/NE	0.810	M	M	9
29	110	Allentown	PA	17.9	OV/NE	1.005	M	H	43
30	100	Dayton	OH	18.8	OV/NE	0.980	M	H	37
31	157	Charleston	WV	20.1	OV/NE	1.005	M	H	44
32	106	Youngstown	OH	20.2	OV/NE	1.060	M	H	47
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46	95	Akron	OH	24.6	OV/NE	1.060	M	H	48
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48	36	Gary	IN	25.2	OV/NE	0.995	H	H	41
49	158	Huntington	WV	33.4	OV/NE	1.020	H	H	45
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34	132	Nashville	TN	20.5	E	0.845	M	M	18
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36	33	Chicago	IL	21.0	E	0.945	M	H	33
40	23	Washington	DC	22.5	E	0.850	M	M	20
41	71	Charlotte	NC	22.6	E	0.835	M	M	13
45	1	Brimingham	AL	24.5	E	0.760	M	M	6

September 29, 2010	Table D.1 PM2.5 Level (Annual µg/m³)	Appendix D US Region	Figure 5 RR (Ruler Measure)
Average for 4 California Cities (Fresno, LA, SF, San Jose)	12.750	CA Average	0.804
Average for 19 Cities in Western States (see Appendix D)	13.616	West Average	0.835
Average for 19 Cities in Ohio Valley States (see Appendix D)	21.375	OV/NE Average	0.976
Average for 14 Cities in Eastern States (see Appendix D)	18.657	East Average	0.874
Average for all 49 US Cities	17.590	Total Average	0.892
Median for all 49 US Cities (City 25)	16.800	Median City	0.890
Average for 13 Cities west of and including Denver, CO		West (Denver) Ave	0.825
Average for 36 Cities east of Denver, CO		East (Denver) Ave	0.916

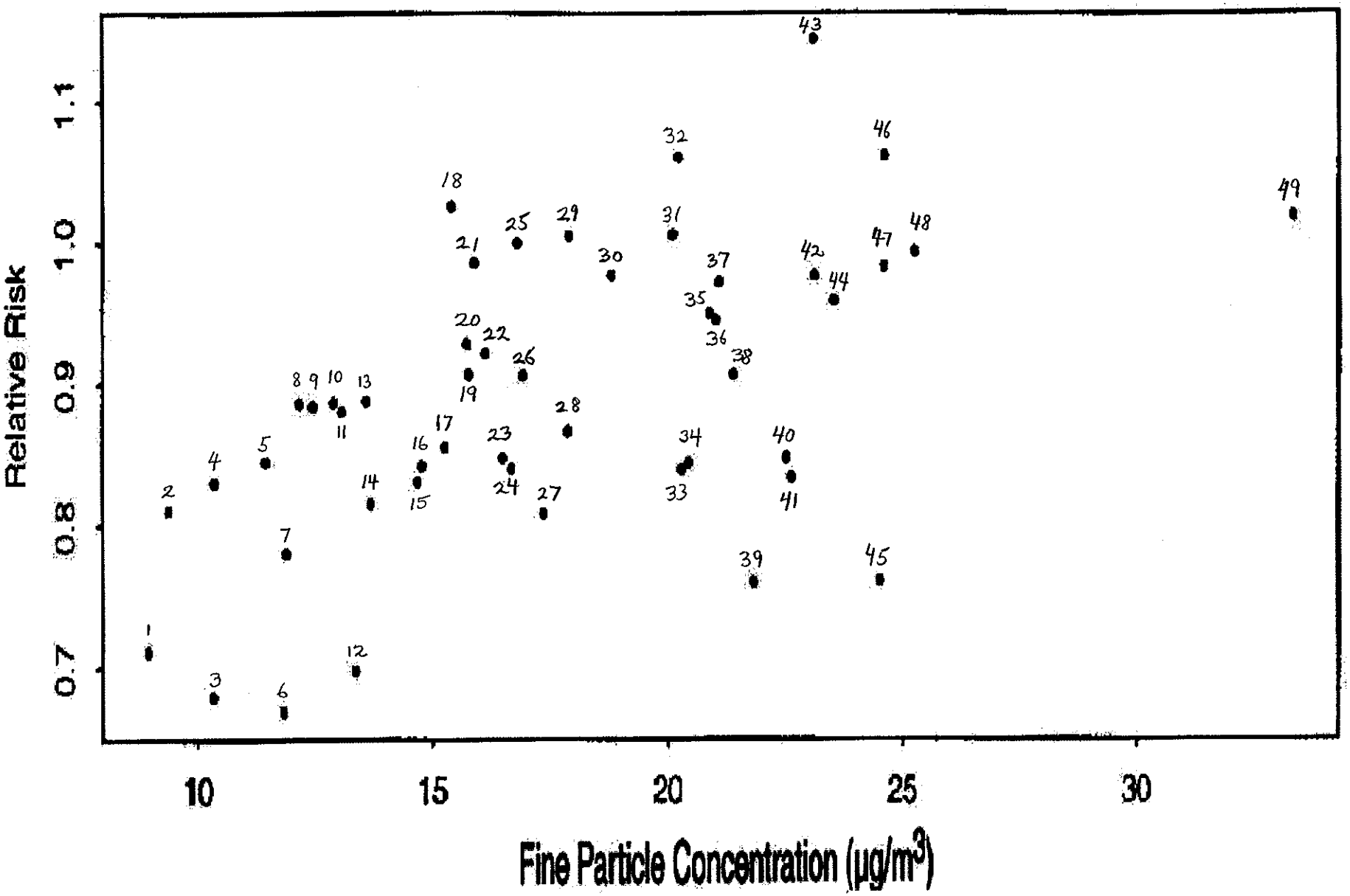
Figure 21 Definition of Levels of Fine Particles (PM2.5 in µg/m³) and Relative Risk of Mortality (RR)

Interval Classifications for Fine Particles (PM2.5 in µg/m³): Low (L) = 8.99 - 17.03; Medium (M) = 17.03 - 25.07; High (H) = 25.07 - 33 [or 33.4]
Interval Classifications for Relative Risk of Mortality (RR): Low (L) = 0.502 - 0.711; Medium (M) = 0.711- 0.919; High (H) = 0.919-1.128 [or 1.145]

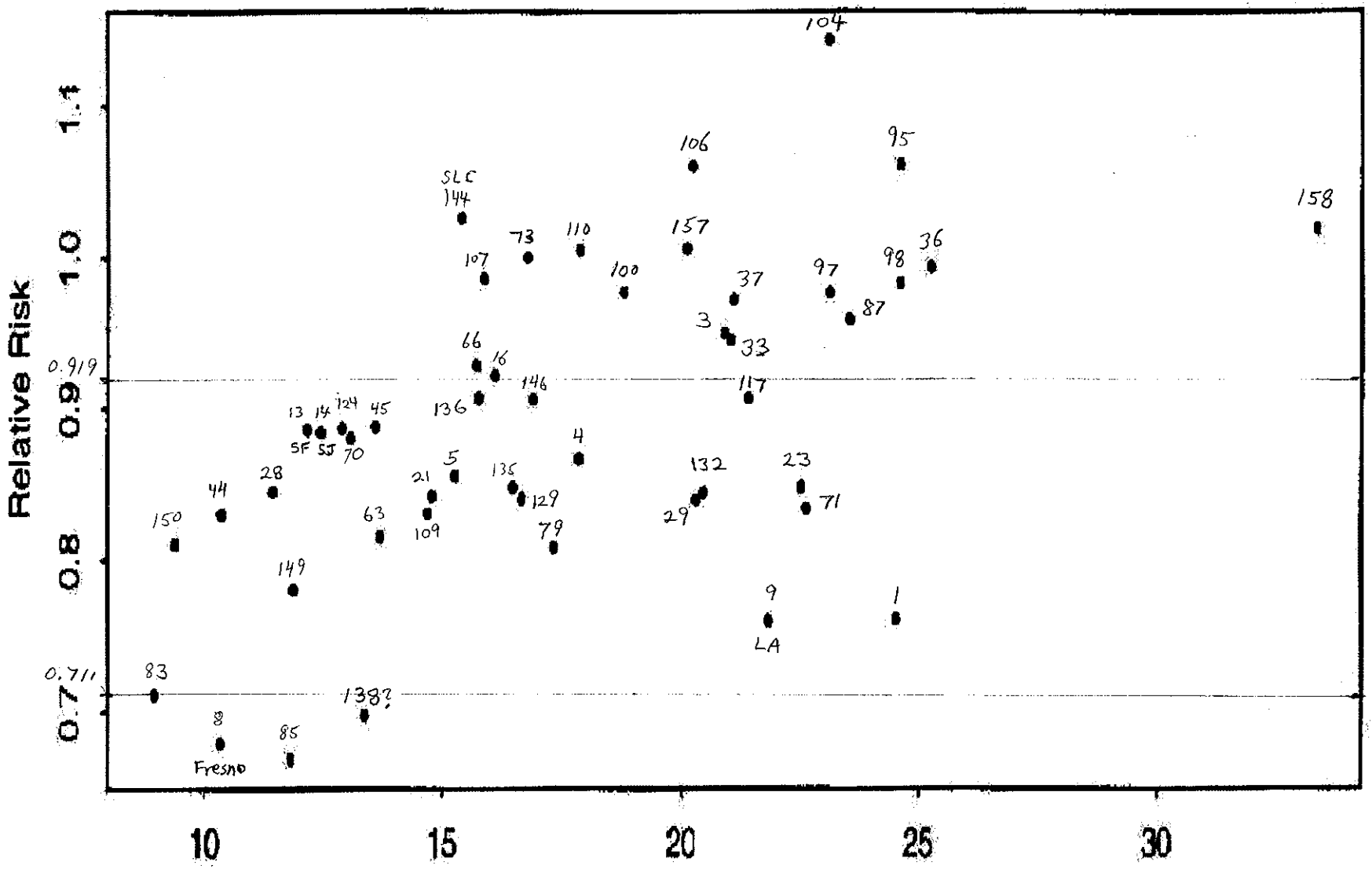
Appendix D Definition of US Regions: West (W), East (E), Ohio Valley/Northeast (OV/NE)
Note: California (CA or W/CA) is one state within the West

We then divided the United States into three regions corresponding to the cities used in the artifact adjustment analysis: West – Washington, Oregon, California, Montana, Utah, New Mexico, Nevada, Arizona, Colorado, North Dakota, Nebraska, Kansas, Oklahoma, Texas; East – Minnesota, Wisconsin, Illinois, Iowa, Missouri, Arkansas, Louisiana, Alabama, Mississippi, Georgia, Florida, South Carolina, North Carolina, Kentucky, Tennessee, Virginia, Maryland, DC, New Hampshire, Maine; Ohio Valley/Northeast – Indiana, Ohio, Pennsylvania, West Virginia, New York, Rode Island, Connecticut, New Jersey, and Massachusetts. We adjusted the sulfate data from the high-volume samplers using three

All Cause Mortality (Excluding Boise City, Idaho)



All Cause Mortality (Excluding Boise City, Idaho)



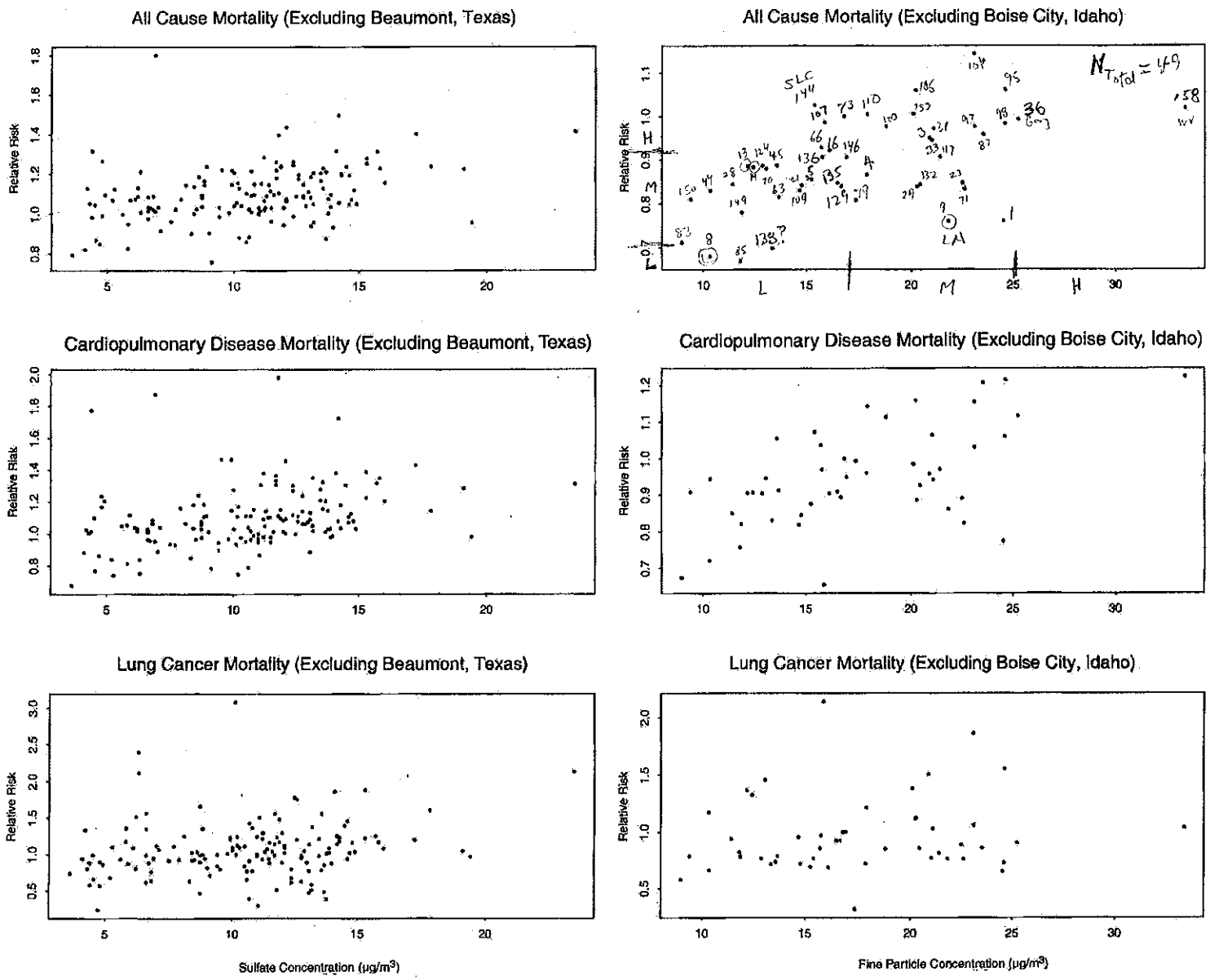


Figure 5. Shape of concentration-response function (relative risks) in the ACS Study. Relative risks of mortality from all causes, cardiopulmonary disease, and lung cancer by ambient concentrations of sulfate (linear-quadratic model) or fine particles (linear-quadratic-cubic model) for the reanalysis of the ACS Study. Based on the Extended Model and calendar year as the time axis. Relative risk scaled to unity at minimum concentration. Baseline hazard function stratified by 1-year age groups, gender, and race.