



APPENDIX AVAILABLE ON REQUEST

Research Report 137

The Influence of Improved Air Quality on Mortality Risks in Erfurt, Germany

Annette Peters et al.

Appendix C. Sensitivity Analyses of Other Pollutants

Note: Appendices Available on the Web appear in a different order than in the original Investigators' Report. HEI has not changed these documents. Appendices were relettered as follows:

Appendix B was originally Appendix A
Appendix C was originally Appendix B
Appendix D was originally Appendix C
Appendix E was originally Appendix D

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This document was reviewed by the HEI Health Review Committee
but did not undergo the HEI scientific editing and production process.

Appendix B. Sensitivity analyses of other pollutants

When we omitted the imputed $MC_{0.01-2.5}$ values then the risk estimate increased slightly to 0.9% (95% CI: -1.3; 3.1%). When we, additionally, excluded those twenty $MC_{0.01-2.5}$ values which were not in good agreement with the $PM_{2.5}$ Harvard Impactor measurements, i.e. ratio $(MC_{0.01-2.5}/PM_{2.5} HI) > 2$ or < 0.5 on days only, which were characterized by a good agreement of the Harvard Impactor measurements of $PM_{2.5}$ and PM_{10} , i.e. $0.6 < \text{ratio} (PM_{2.5} HI/PM_{10} HI) < 0.8$, then the risk estimate for $MC_{0.01-2.5}$ amounted to 0.8% (95% CI: -1.5; 3.1%).

We allowed the spline that adjusts for trend and seasonality in the final model for the analysis period from 1991 to 2002 to have more degrees of freedom per year compared to the analysis period from 1995 to 2001. When the number of degrees of freedom was decreased, the risk estimates increased slightly with the exception of ozone (Table B. 1). Using indicator variables for all days of the week instead for Sundays only increased the risk estimates for ozone and did not change it for NO_2 and CO. Using the same temperature model as in the previous study in Erfurt (Wichmann et al 2000) increased the risk estimates for NO_2 and CO and decreased the risk estimate slightly for ozone.

Table B. 1: Sensitivity analysis for gaseous pollutants for the analysis period from 1991 to 2002,
Erfurt, old city limits.

Table B. 1: Sensitivity analysis for gaseous pollutants for the analysis period from 1991 to 2002, Erfurt, old city limits.

Pollutant	Type	IQR	% change per IQR	Confidence interval	<i>p</i>
CO, lag 3 days (mg/m ³)	Original model (22 df for trend)	0.48	1.4	-0.4 ; 3.2	0.12
CO, lag 3 days (mg/m ³)	Trend with 11df (less df than in original model)	0.48	1.4	-0.3 ; 3.2	0.12
CO, lag 3 days (mg/m ³)	Trend with 7df (less df than in original model)	0.48	1.5	-0.2 ; 3.2	0.09
CO, lag 3 days (mg/m ³)	Indicator for all days of the week instead of Sunday indicator	0.48	1.4	-0.4 ; 3.2	0.14
CO, lag 3 days (mg/m ³)	Temperature model as in Wichmann et al 2000	0.48	1.9	0.1 ; 3.8	0.04
CO, lag 4 days (mg/m ³)	Original model (22 df for trend)	0.48	1.9	0.2 ; 3.7	0.03
CO, lag 4 days (mg/m ³)	Trend with 11df (less df than in original model)	0.48	1.9	0.2 ; 3.6	0.03
CO, lag 4 days (mg/m ³)	Trend with 7df (less df than in original model)	0.48	2.0	0.3 ; 3.7	0.02
CO, lag 4 days (mg/m ³)	Indicator for all days of the week instead of Sunday indicator	0.48	1.9	0.2 ; 3.7	0.03
CO, lag 4 days (mg/m ³)	Temperature model as in Wichmann et al. 2000	0.48	2.3	0.5 ; 4.1	0.01
NO ₂ ^a , lag 3 days (µg/m ³)	Original model (22 df for trend)	19.7	1.5	-0.4 ; 3.5	0.12
NO ₂ ^a , lag 3 days (µg/m ³)	Trend with 11df (less df than in original model)	19.7	1.5	-0.4 ; 3.4	0.13
NO ₂ ^a , lag 3 days (µg/m ³)	Trend with 7df (less df than in original model)	19.7	1.5	-0.4 ; 3.4	0.12
NO ₂ ^a , lag 3 days (µg/m ³)	Indicator for all days of the week instead of Sunday indicator	19.7	1.1	-0.9 ; 3.2	0.28
NO ₂ ^a , lag 3 days (µg/m ³)	Temperature model as in Wichmann et al 2000	19.7	1.9	-0.1 ; 4.0	0.06
NO ₂ ^a , lag 4 days (µg/m ³)	Original model (22 df for trend)	19.7	1.4	-0.5 ; 3.3	0.14

Pollutant	Type	IQR	% change per IQR	Confidence interval	<i>p</i>
NO ₂ ^a , lag 4 days (µg/m ³)	Trend with 11df (less df than in original model)	19.7	1.4	-0.5 ; 3.3	0.14
NO ₂ ^a , lag 4 days (µg/m ³)	Trend with 7df (less df than in original model)	19.7	1.4	-0.4 ; 3.3	0.13
NO ₂ ^a , lag 4 days (µg/m ³)	Indicator for all days of the week instead of Sunday indicator	19.7	1.5	-0.5 ; 3.6	0.13
NO ₂ ^a , lag 4 days (µg/m ³)	Temperature model as in Wichmann et al. 2000	19.7	1.8	-0.2 ; 3.8	0.07
O ₃ (max 8h mean), lag 2 days (µg/m ³)	Original model (22 df for trend)	43.8	4.6	1.1 ; 8.3	0.01
O ₃ (max 8h mean), lag 2 days (µg/m ³)	Trend with 11df (less df than in original model)	43.8	4.7	1.4 ; 8.1	0.00
O ₃ (max 8h mean), lag 2 days (µg/m ³)	Trend with 7df (less df than in original model)	43.8	4.6	1.4 ; 7.9	0.00
O ₃ (max 8h mean), lag 2 days (µg/m ³)	Indicator for all days of the week instead of Sunday indicator	43.8	5.0	1.3 ; 8.7	0.01
O ₃ (max 8h mean), lag 2 days (µg/m ³)	Temperature model as in Wichmann et al. 2000	43.8	4.0	0.8 ; 7.3	0.01

a) Plausible data only, period from April 1st, 1994 to January 31st, 1995 omitted