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Reply to Comment on 'Premature deaths attributed to source-specific BC emissions in six urban US regions'

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REPLY

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In response to Morfeld and Erren’s comment that the estimations of premature deaths in our article titled ‘Premature deaths attributed to source-specific BC emissions in six US regions’ are potentially biased, we stand by the approach taken in our publication. Morfeld and Erren note that the theoretical bounds on $F = (RR1)/RR$ are quite large, where RR is the relative risk. They further claim that the uncertainty associated with an estimate of RR should be presented in terms of the % difference between the bounds and the value of RR employed. In our work, we account for uncertainty associated with RR using the 95% confidence interval reported in Krewski *et al* [1]. While the limits of RR may be bounded in the range as suggested by Greenland [2], the fit parameters from Krewski *et al* [1] are asymptotically normally distributed as discussed therein. Their reported uncertainty is thus interpreted as an error variance, and propagated through the dose-response equation (equation (1) of Turner *et al* [3]) using well-established (e.g., Ku [4]) error variance propagation techniques (equation (S1) of Turner *et al* [5]) to arrive at uncertainties in estimates of premature death. Hence, this use of the 95% confidence intervals from Krewski *et al* [1] is a valuable assessment of uncertainty, and more useful than stating the minimum and maximum theoretical bounds of F , as promoted by Morfeld and Erren, as the latter is not associated with any particular likelihood. Further, our interpretation of the error associated with estimating premature deaths using RR from Krewski *et al* [1] is consistent with several previous studies that have

estimated uncertainties in health impact assessments when using the dose-response relationship based on Krewski *et al* [1], such as Li *et al* [6], Dedoussi and Barrett [7], Anenberg *et al* [8], Caiazzo *et al* [9].

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