

Interactive comment on “Long-term trends in the PM_{2.5}- and O₃-related mortality burdens in the United States under emission reductions from 1990 to 2010” by Yuqiang Zhang et al.

Anonymous Referee #1

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General comments: This is an interesting and useful contribution which evaluates the contribution of underlying factors to long-term air pollution-related mortality trends in the continental US, with the aim of highlighting the importance of concentration reductions. This appears to be the first application of a multi-decadal air quality modeling exercise to analyse such a question.

The manuscript is clearly written, with balanced arguments and inclusion of recent, relevant literature. The methods employed are appropriate, clearly described, and well supported.

It would be helpful to have additional information on the accuracy of the linear interpo-

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lation method for population across Census years. Can they discuss the accuracy of this, perhaps with reference to sources that estimate inter-Census population? There are a variety of sources for this, with more sophisticated methods than linear interpolation that rely, e.g., on the American Community Survey. Geolytics Inc. has annual products for population, or perhaps LandScan Global population.

Specific comments: Page 10, Lines 1-3: The authors are careful to talk about "reduced mortality burden", but here they mention 'avoided deaths'. Perhaps add "premature" in front of deaths.

Page 7, line 1: recommend introducing Table 1 here, since this seems to be the first time its results are mentioned.

Figure 5(a) color bars took a moment to interpret, since for (b) using symmetric saturation with cool = reduction and warm increase, but for (a) these are all reductions. Despite the note, it still took a moment. Perhaps consider only using cool colors for 5(a)?

Figure S1 – can you add a legend, perhaps, and/or indicate color of population increase line in caption?

Technical corrections: Page 6 Line 18 - refers to the split decadal trend, which is in Table S5 not Table 1. Page 6 Line 28: Table 1 says 54% not 53% Page 5 Line 29: "Zhang" instead of Zhaneg

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