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Dr. Jeremy Berg
Editor-in-Chief, *Science*

Dear Dr. Berg:

On behalf of my co-authors, I would like to submit our paper titled "National and county life expectancy loss from particulate matter pollution in the USA" for consideration as a Report in *Science*.

Although it is widely acknowledged that particulate matter pollution is harmful to human health, the local and national impacts of pollution have not been directly measured. We present the **first-ever direct national and county-level estimates** of number of deaths and longevity loss due to current pollution in the USA.

To achieve this, we obtained and analysed data on all ~42 million deaths in the USA from 1999 to 2015 with information on age, gender, medical cause of death and, importantly, county of residence, which we obtained through a special request and which allowed us to match deaths to air pollution data. We also developed a set of novel statistical models so that we can test the sensitivity of our results to how the data are analysed. We show that a significant health burden is attributed to current air pollution concentrations after any reasonable control for other determinants of mortality, with larger loss of longevity in poorer counties.

In addition to its novel scope and significant empirical contribution, our paper is **very timely**. As a few news pieces and a recent Policy Forum article in *Science* have shown, the current US administration has heavily restricted the nature of data that can inform environmental regulation, under the premise of publicly-available data requirement. The health data in our analysis are from national vital statistics and hence public; the air pollution data will be available for download on an open basis upon the publication of the paper. This makes our study only one of the two using public data, the only one whose data is available to all US researchers through request to relevant government agencies, and the only one that directly measures the impacts of air pollution for the entire contemporary population of the USA.

We have not only fully described our statistical methods, but also will make our computer code available at the same time as the publication of the paper which will allow other researchers and government agencies to replicate and modify our analysis providing **fully transparent and replicable analysis**.

Given the enormous scientific, policy and public interest in air pollution, we expect this novel paper to be of interest to a diverse range of readers, and to become one of the most important pieces of scientific evidence in the current debates about air pollution regulation in the USA.

I confirm that this paper has not been published nor is under consideration elsewhere. The main paper is ~1,700 words, and has four small figures. Technical details of data and methods are presented in Supplementary Materials. We would of course be happy to take guidance from the Editors to adjust the manuscript length and organisation as needed.

The following independent people are qualified to review this paper:

Dr. Daniel Greenbaum
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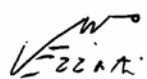
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We look forward to your response and would be happy to answer any questions that you may have on this paper.

Sincerely,



Majid Ezzati