Reviewer's report

Title: Socioeconomic position and health status of people who live near busy roads: the Rome Longitudinal Study (RoLS)

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Reviewer: Michael Jerrett

Reviewer's report:

This paper used a very large sample of clinical patients to assess exposures to air pollution, their social distributions, and potential health effects. Recommendations for refinement and improvement are below:

Background

Para 2 - statement that traffic is by far the most relevant source of air pollution is not accurate when it refers to the American Cancer Society and Harvard 6 cities studies - the biggest component of pollution in these studies comes from power plants and industry in the US Midwest.

Main point is that traffic is growing quickly and other sources are tending to decline, so the relative contribution of traffic to air pollution compared to other sources is growing. Also need to cite Jerrett et al. 2009a and b (two papers in EHP, one on mortality and one on asthma using individual measures of exposure).

Need to follow through on the HEI panel - don't just mention this, but give the main conclusion.

Methods

p.5 was this composite indicator of SEP validated against individual samples - hard to know how well this performs without some validation?

Need to mention how many links have traffic data - what percentage - to give readers some idea of how good and complete traffic counts are. Particularly important because poor numbers of counts could lead to biased measures of traffic and exposure error.

p.7 On the health data, is this a universal system offering population-wide estimates or are there some exclusions for people not in the health care system. Again important for readers to know this to assess the sample and
potential biases.

p.8 Did you control for clustering in the small census areas of the study to account for likely non-independence of the sample by proximity? Some GEE cluster estimation should be used as a sensitivity analysis.

Results

Health characteristics - could you take accidents out of the assessment since these might be associated with traffic accidents that you would not really want in your analysis?

Discussion

The authors have found similar results to those in the Netherlands. There is also another study by Buzzelli and Jerrett - cited in the Jerrett commentary that found an unexpected association between higher pollution and higher dwelling values that could be cited. The authors need to push themselves to explain why Rome and the Netherlands would be different - it seems that it is linked to the dwelling values and the higher incomes of the older established residents.

While the authors have not found the inverse association by SEP, they have found that more elderly are generally more exposed. This is another kind of environmental injustice that should be couched this way. Recent papers by Jane Clougherty using some of these demographic groups to conduct environmental justice analysis.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.