Reviewer's report

Title: Socioeconomic deprivation and environmental noise exposure in Montreal, Canada

Version: 4 Date: 29 October 2014

Reviewer: Julii Brainard

Reviewer's report:

1. Overall comments:

I like this very much. My chief criticism is minimal rigorous statistical analysis with what looks like a very interesting dataset. I was torn whether to consider this comment a major or minor revision; I've put it in major compulsory category but it really isn’t that major, just essential. Also, I’d like more analysis of where the noise is in Montreal, what kinds of land use is generating it & where. This could be done entirely in text, although maps could be very useful.

Sometimes the language reads oddly, perhaps reflects French speakers working in English (this is not a problem, just a few odd phrasings here and there. I’ve suggested alternatives).

I’ve attached comments to line numbers corresponding to manuscript supplied to me; can authors please have copy of that document so that they can easily find the typos & comments to which I refer? There is no easier way to point out these minor but useful issues to them.

2. Major Compulsory Revisions

Needs more statistical analysis on the data (in the Results section). One possibility is to copy approach of Mitchell & Dorling 2003 (http://www.sasi.group.shef.ac.uk/publications/2003/mitchell_and_dorling_air_quality.pdf) who sorted their data into deciles (similar to your quintiles) and then compared pollution to deprivation quintiles in similar approach to you. For you to emulate something like their analysis would not be a lot more work but would give more depth to your findings. Please do not use universal-size global dataset confidence interval bars on the charts, though. It’s not right (yes I reviewed that paper too and am still peeved they did that); the range bars should be within quintile only. Mitchell+Dorling not only possible way to do more stats this paper is begging for, but might be easiest for authors.

3. Minor Essential:

Line 59-60: “Zoning regulations typically result in a lower tolerance of 60 pollutants in affluent neighborhoods.”: I want a reference for that, or more explanation, or both

Line 75: say specifics about the health impacts of excess noise; this is a health
journal; something about the thresholds x-many people in Montreal are exposed to and specifics about what impacts those noise levels have (in say raised blood pressure) would be appropriate.

Line 101: “this information is no longer mandatory”: which information? Which census questions are not asked in 2011?

Line 119: why is “proportion of people over the age of 25 without a diploma” a material rather than social indicator? You don’t seem to return to this taxonomy of indicators (social deprivation vs. material indicators) again in the paper so I suggest just list them as 6 indicators of likely social deprivation and don’t bother with the distinctions. Else you need to clarify why the distinctions are important.

Line 127: All comparisons made on basis of a 2 week sampling period in summer. How might noise differ in winter (snow dampens noise, I think?) Traffic levels & industry activity may be quite different in winter? At very least you need to comment in discussion about the limitations of the noise data and a bit more on how reliable it is, probably lots of material there.

Line 142: it’s a bit cherry-picking that you picked on median income to correlate because it gave strongest response; Some comment on lack of weaker correlation with the other deprivation indicators (and why) is indicated.

Please give another sentence with Explanation of the Pearson statistic, what it means, how to interpret it, essential for the audience (mostly not statisticians).

4. Discretionary:

Lines 108-109: what are dissemination ‘blocks’ and why do they matter? Can you delete this altogether?

Line 113: Area sizes in square metres or hectares would be better than km^2

Line 125: resolution of 20m, might be better explained as values for 20x20m regular cells, or cells on a regular grid.

As a geographer, but may not be appropriate for this journal, editor should comment:

I would quite like to see Figures S1 & S3 in the main paper so that authors can comment about the types of landuse that contribute to noise; although they would need to appear in a reduced size format, I like knowing where main roads are compared to noise. Something about how environmental noise impacts health and impacts the health of the poor unfairly, needs to be teased out much better by showing the landscape. There may need to be discussion of topography here, too (& not enough is said about the generation of the noise maps, really).

As a geographer I’d like to see more discussion of the pattern of where people live in cities depending on cultural context, but this is not appropriate for this journal. Nevertheless, you could add a sentence more specifically about patterns of affluence & deprivation & inequities in specifically French Canadian cities
(Quebec?). I’m also interested in the health-economic benefits trade-offs that people make. Yes living in the city you get noise & air pollution, but you are closer to jobs with low commuting distances, sometimes essential for low wage workers. A sentence or 2 about the risk-benefit tradeoffs that people make, seeing benefits in spite of the problems would be appropriate. Could also comment about how social deprivation changes over a lifetime (the Mitchell+Dorling paper touched on that), so many young families over time become more affluent so get to move out eventually.

5. “Minor issues not for publication”
Line 41: I suggest “merits” rather than “demands” investigation & concern
Line 63: “traffic density”: I suggest delete density
Line 79: “a complex setting”: how is Montreal any more complex than any other world city? I suggest delete this text.
Line 86: replace “exist” with “are”
Line 88: “visible minority” a very Canadian concept, you could at least reference its origins
Line 90: replace evidencing with “with”
Line 92: replace “manifests” with “translates”
Line 103: replace “respect several delineation criteria” with “meet several useful criteria”
Line 105: replace “targeted at” with “containing”
Line 107: delete delineated
Line 114: suggest “4877, mean= 585” rather than “4877 and the mean was 585”
Line 115: “considered” rather than “studied”
Line 116: “are” rather than “can be classified as”
Line 268: typo, writhing should be writing.

**Level of interest:** An article whose findings are important to those with closely related research interests

**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'