Title: Associations between neighbourhood environmental characteristics and obesity and related behaviours among adult New Zealanders

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Reviewer: Daniel Harrington

Reviewer's report:

The objective of this study is to examine environmental factors associated with overweight, obesity, and weight-related behaviours in New Zealand, adjusting for individual-level covariates. The authors analyze data from the 2006/7 New Zealand Health Survey, as well as geographic information that was linked to individual-level information at the census area unit level.

Overall, I am positive about this paper. It is well written, and addresses a timely topic that would be of interest to the readership of BMC Public Health. However, there are several issues that the authors need to address, as outlined below.

Major Compulsory Revisions

1. This is more of a question/comment than a revision per se. The first issue that the authors should provide comment on is related to the methodology chosen. Given the hierarchical structure of the data, I wonder about the rationale for using logistic regression models over multilevel models that seem to be more apt for this type of analysis.

Minor Essential Revisions

2. The introduction does a good job of reviewing the relevant literature on GIS-based measures of environmental variables, however, there is no discussion of the important individual-level covariates of overweight/obesity, or the other environmental influences (e.g. deprivation). These do, however, appear in the methods section of the paper, which also outlines the Sallis et al framework. These should appear within the introduction section alongside the other literature reviewed, rather than the methods section.

3. Though Table 2 provides a summary of demographic characteristics at the individual level, there should also be some summary of the ecological variables beyond the description provided in Table 1. For example, what is the average distance to nearest food outlet within each quintile? This information would be helpful to the reader.

4. Results section, paragraph 3. The authors state that "The lowest level of access to greenspace was significantly associated with decreased odds of being overweight." However, the model (Table 4) shows the opposite. This appears to be merely an error in the wording of the sentence.
5. It is somewhat confusing that two of the measures of accessibility (i.e. food outlets, sports/leisure facilities) are constructed by decreasing access (1=best, 5 = worst), while the measure of access to greenspace is the opposite (1=worst, 5 = best). All 3 measures should be in the same 'direction' for consistency.

Discretionary Revisions

6. The inclusion of unadjusted results does not appear to contribute to the paper in any meaningful way, beyond showing the evolution of the models from unadjusted to fully-adjusted. Though their inclusion does not detract from the paper, the authors might consider removing these, or the discussion of the unadjusted regressions in the results section, and focusing solely on discussion of the adjusted models.

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