Reviewer's report

Title: Inequities of social and physical environment and adverse birth outcomes: low birth weight and preterm births in Eastern Massachusetts

Version: 1 **Date:** 1 February 2008

Reviewer: Ann Aschengrau

Reviewer's report:

This manuscript describes a very interesting topic and analysis but the work is poorly described. In addition, some of the analytic decisions were non-standard (for example, the definition of small for gestational age). I would suggest some additional analyses and extensive editing. Below are some specific comments.

1. The term "low birth weight" is used in several places but the dichotomous outcome "low birth weight" defined as less than 2500 grams was not studied. Lower or reduced birth weight would be better terms to use.

2. Small for gestational age was defined in a non-standard way. Please justify or reanalyze using the standard definition which incorporates norms.

3. The reference group for preterm delivery was also non-standard because it incorporated birth weight. Please justify or use more standard referent based only on gestational duration.

4. The definition of preterm delivery is usually LESS than 37 weeks' gestation. Was a different one used in this paper? If yes, redo the analyses.

5. It is difficult to go from the text to the results tables. A few key numeric results should be given in the text. Also, the text is often unclear about the referent group.

6. More details should be given about the geocoding process. For example, were the addresses geocoded to parcels?

7. The methods section on distance to roadways is confusing.

8. Tables 1 and 2 and the accompanying text on SGA and preterm birth are confusing because it is unclear how the comparisons should be made.

9. Tables 3 and 4 are unclear regarding variables that were controlled. This needs to be much more explicit. I would show the crude results for SES measures alone, the crude results for the traffic measures alone, and then the adjusted results for the two.

10. The following issues needed to be considered and mentioned in the manuscript:

a. Moving during pregnancy. What impact would this have on the results?

b. Multiple births per woman. Again, what impact on the analysis?

c. Other limitations like residual confounding.

11. I think that the title of the paper should be more specific.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

Quality of written English: Not suitable for publication unless extensively edited

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