Reviewer’s report

Title: Focusing on Fast Food Restaurants Alone Underestimates Exposure to Fast Food in a Large Rural Area

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Reviewer: Angela Liese

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The manuscript contributes to food environment research by investigating access to fast foods comparing a restricted, traditional estimation of fast food access to a broader estimation including fast food opportunities. This is a novel approach which may address gaps in the food environment literature as it relates to prepared food exposures in rural and other defined environments.

Major Compulsory Revisions

1. The authors have previously published using similar measures of “food outlet” spatial access and neighborhood socioeconomic deprivation in the 2006 Brazos Valley Food Environment. In addition, their healthier food options measurement has been described and published by Creel and colleagues in 2008. It would be helpful if they could distinguish a bit more clearly the current paper’s focus from earlier work?

2. The title and introduction of the manuscript suggests an ultimate, sole focus on the estimation of fast food access, however, the results (including tables) are heavily focused on the relationship between the various fast food spatial access measures, including healthier food options, with neighborhood deprivation. The authors should reflect this emphasis of healthier food options measures and neighborhood deprivation in the title and abstract. This would better characterize the theme of the manuscript.

3. The authors found that “high deprivation neighborhoods had better spatial access to a variety of healthier fast food entrée and side dish options than residences of low deprivation neighborhoods”, however, in the conclusions it’s suggested that the “lack of available healthier options should be considered as an intervention point for improving nutritional health in rural populations”. This language may be misleading to readers. For example, does this mean low deprived areas should be targeted over high deprived areas as far as healthier food options and interventions?

Minor Essential Revisions

1. In the methods, the authors chose to create a variety score for the number of different lunch or dinner entrees and side dishes respectively, and then dichotomized those variables. What was the criteria and reasoning for the categorization, hence why #2 different lunch/dinner entrees vs. 0/1 lunch/dinner entrees? Was this based on the results of the Creel 2008 results or some arbitrary cut point?
2. As written, the abstract is rather lengthy with several redundancies. Example: “However, restricting the estimation of fast food access to fast food restaurants alone may underestimate potential spatial to fast food entrées and side dishes. Not capturing a complete picture of fast food availability limits our understanding of potential access to fast food.” Editing the abstract to be more concise and possibly within the 250 word limit would seem useful, especially since it will then not be truncated in PubMed once published.

3. Regarding the maps, it is very hard to identify patterns in the map given that all levels of deprivation are indicated with some type of diagonal lines (or cross-bars). It would be much preferable if the lowest level of deprivation would be indicated through an absence of any lines overlaid on the colors. That way the reader can more easily identify areas that have extreme characteristics (light yellow vs. navy blue; no diagonals vs. crossbars.)

4. Also, for the first 2 maps, a heading is needed above the legends indicating distance categories.

5. Lastly, it is not intuitive to me why increasing distance (maps 1-2) is indicated with an increasing darkness scale, but increasing number of fast food opportunities (maps 3-4) or health food options (map 5) are also indicated with increasing darkness scale. To my mind, opposing color schemes for these concepts would seem more intuitive.

6. The authors mentioned the five urban clusters in the study area as a potential explanation for differences between deprivation neighborhoods, hence, ” the five urban clusters the greatest population density, and clustering of socioeconomic deprivation characteristics, and therefore more fast food restaurants, convenience stores, and supermarkets/grocery stores “. The urban clusters should be designated in the Chloropleth maps.

**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