Author’s response to reviews

Title: Food Access and Perceptions of the Community and Household Food Environment as Correlates of Fruit and Vegetable Intake among Rural Seniors

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Author’s response to reviews: see over
Response to Reviewers

We thank the reviewers for taking their time to review our manuscript and providing insightful comments and suggestions for improving our article. We will address the comments by reviewer.

Reviewer: Julie Locher

Discretionary Revisions:

1. Could the authors provide some speculation on some of their findings in the Discussion section? Specifically, in the case of gender and age (which are the opposite of the Brooklyn findings), why is fruit and vegetable intake higher?

RESPONSE: The following was added to the discussion section: “First, the mean intake of combined fruit and vegetables was lower among the present study of rural seniors (3.58 in the rural sample compared with approximately 5 servings in the Brooklyn sample). The mean difference in combined fruit and vegetable intake may be explained by the instruments used to estimate intake. The present study used a two-item screener that separately asked each respondent to indicate the number of servings usually consumed each day of fruit or vegetables. The intake among Brooklyn seniors was estimated using the National Cancer Institute Fruit and Vegetable Screener, which separately asks the frequency over the last month and the amount consumed each time for 100% juice, fruit, lettuce salad, French fries or fried potatoes, other white potatoes, cooked dried beans, other vegetables, tomato sauce, vegetable soup, and other mixtures that include vegetables (references). Separate questions on lettuce salads, French fried potatoes, tomato sauce, vegetable soups, and mixtures that included vegetables may be responsible for the larger estimated intake in the Brooklyn sample.”

2. Social support is not really discussed much. Are these variables including in their data? I know this is not a comparative study between urban and rural seniors, but might some differences be explained by having family nearby?

RESPONSE: Since this was a community assessment of a variety of health-related topics among adults, specific questions on social support were not included.

3. What role might gardens and canning play for these rural seniors?

RESPONSE: Data did not capture the role of gardens, canning, or food sharing. From focus group work we have conducted as part of other projects, we found few adults with produce gardens and even fewer who regularly canned.

Minor Essential Revisions:

1. In abstract, under results, there is something missing in the sentence that begins “The inclusion of canned and frozen fruit ...”

   RESPONSE: The sentence was rewritten as follows: “When canned and frozen fruit and vegetables were included in the measurement of overall fruit or vegetables, the median distance for a good selection of fruit or vegetables decreased to 3.6 miles for overall fruit and 3.3 miles for overall vegetables.”

2. Page 15, extra space before period in second sentence.

   RESPONSE: The extra space has been deleted.

3. In Table 3, categories are either phrases or sentences (and only one sentence ends with a period)—this is a minor matter of consistency.

   RESPONSE: We consider the statements to be phrases and eliminated the lone period.
Reviewer: Donna Johnson

Revisions

1. The relationship between educational level and fruit and vegetable intake was confusing. On page 11, the authors state that "...limited education were associated with increased intake," but on page 13, they state that "gender, age and education were positively associated with intake." If it appears that limited education is indeed associated with increased fruit and vegetable intake in this population, it might be interesting to address this in the discussion.

RESPONSE: After re-examining the data, we found education not to be related to fruit and vegetable intake. This variable was removed from the multivariable models.

Page by page comments:

1. Consider revising the first sentence in the Sample and Study Design section. I found it difficult to follow. Consider breaking into 2 sentences.

RESPONSE: As suggested, this long sentence was rewritten as two sentences: "In this study, we used data from the 2006 Brazos Valley Health Assessment (BVHA), the 2006-2007 Brazos Valley Food Environment Project (BVFEP), and the decennial 2000 U.S. Census Summary File 3 (SF-3) for a 6-county rural area (see Figure 1). The rural study area included 101 census block groups (CBG), land area of approximately 4,500 square miles, and population of more than 119,650 people (references)."

2. Page 10 - Consider saying, "Many (31.6%) of respondents reported little variety of foods." - Consider putting sentence that begins, "For many seniors there were problems with....." as the second sentence in the paragraph.

RESPONSE: We reorganized and revised the sentences as follows: “For many seniors, there were problems with variety, freshness, or price of fruits and vegetables in the stores where most of their groceries were purchased. Almost 60% of the seniors reported there were few grocery stores or supermarkets in their community; many (31.6%) believed there was little variety of foods; and almost 80% of respondents considered food prices as high.”
3. Page 14 - Consider adding "NEGATIVE perceptions" to beginning of second sentence.

RESPONSE: This sentence has been rewritten as follows: “... negative perceptions of community and household food resources were consistently associated with decreased fruit and vegetable intake.”

4. Page 17 The suggestion that interventions should also focus on frozen and canned fruits and vegetables has important programmatic implications. I wonder if it would be possible to support this concept a little more throughout the manuscript. Consider a sentence in the background section about the current focus on fresh fruits and vegetable in much of the existing literature with a little information about the nutritional qualities of other forms. The discussion section then could also include a sentence reminding the reader that in the current study, the distance to fruits and vegetables was decreased when frozen and canned were included and any other studies that have looked at this issue.

RESPONSE: The following sentence was added to the Introduction (background section): “However, the current focus on fruit and vegetables is limited to fresh fruit and vegetables (references), which ignores dietary recommendations and the nutrient benefits of canned and frozen fruit and vegetables (references).”

The following was modified in the discussion section: “Several additional findings warrant further mention: 1) the distance to the nearest food store with a good selection of fruit or vegetables decreased when fruit or vegetables included canned, frozen, and 100% juice types in addition to fresh;”
Reviewer: Peter Hannan

Major problems:

1. First, these mainly arise through lack of clarity in the writing. The text has not been scrutinized for convoluted sentence structure, for redundancies, or simply for inaccuracies or for ambiguities. As an example, in the Abstract Results we find “The inclusion of canned and frozen fruit changed the median distance for a good selection of fruit to 3.6 miles, and 3.3 miles.” We have a singular “distance” but two values. The reader can work out what is meant, but the writing should be correct. Numerous other examples of poor writing occur in the text, some of them making for confusion.

RESPONSE: The text in the abstract was rewritten as follows: “When canned and frozen fruit and vegetables were included in the measurement of overall fruit or vegetables, the median distance for a good selection of fruit or vegetables decreased to 3.6 miles for overall fruit and 3.3 miles for overall vegetables.” Additional redundancies have been removed from the manuscript.

2. Page 4 onto page 5 starts with a floating participle! The term “shopping opportunities” is introduced, and never again used. Aim a) uses “neighborhood access” while aim c) uses “neighborhood characteristics”, but the reader has no clear idea of the difference at this stage of the article.

RESPONSE: The first part of the sentence with the “dangling participle” has been deleted. The information is presented in the methods section. We start the sentence with “The aims of this study ...”

The term “shopping opportunities” is deleted. The aims section was rewritten as follows: “The aims of this study are to (a) depict potential spatial access to a mix of retail food stores that market fruit and vegetables from rural neighborhoods; (b) describe individual and neighborhood characteristics, fruit and vegetable intake, and spatial access to food resources; and (c) examine the associations among individual and neighborhood characteristics, perceived and objective measures of food access, and fruit and vegetable intake of the BVHA seniors.”
3. Redundancies occur.
   a. The Methods (page 5) begin with what was introduced in the paragraph immediately above!

   RESPONSE: Mention of the data source in the Introduction section was deleted to remove the redundancy with the methods.

   b. As another example of loose writing, at the bottom of page 13 the authors have a paragraph comparing their results to the Brooklyn findings. Then they digress with the sentence “Perception of community and household food resources, which were not included in the urban regression analyses ...” to repeat results.

   RESPONSE: This section has been rewritten.

   c. And the bottom of the next page (15) comes another similar summary of results.

   RESPONSE: Much of the redundancy has been deleted.

   d. In the first paragraph of Results (page 9) the authors intrude a sentence that belongs in the methods: “Using a previous determination ... residence.”

   RESPONSE: The “intrusion” was deleted as suggested: “Almost one-fourth of respondents resided in a high deprivation neighborhood; the neighborhood population density for more than one-fourth of respondents, was less than 14 persons/mi² and 47% resided in areas with 14-127 persons/mi².”

4. Convolution, confusion. The first sentence of the Methods is convoluted. After mentioning the BVFEP, the text runs on about the CBG, until finally, after an “and”, comes the Census. At the end of the third sentence in the Results the connective “, as well as...” leaves the meaning unclear.

   RESPONSE: The first paragraph of the Methods was rewritten as follows: “We used data from the 2006 Brazos Valley Health Assessment (BVHA), the 2006-2007 Brazos Valley Food Environment Project (BVFEP), and the decennial 2000 U.S. Census Summary File 3 (SF-3) for a 6-county rural area (see Figure 1). The rural study area included 101 census block groups (CBG), land area of approximately 4,500 square miles, and population of more than 119,650 people (references). Regular public transportation services, such as fixed route, commuter, or taxi services,
were not available in the study area (references. Data for the BVHA were collected from 663 rural seniors (age ≥60 years) who were recruited into a large community assessment through random digit dialing and follow-up mail survey; detailed methodology has been described elsewhere (reference). The analytic sample included rural seniors with residential addresses and complete nutrition data (n = 589); all participants were geocoded to their residence. In the BVHA, respondents were asked about daily intake of fruits and vegetables, availability and perception of community retail food resources, household food resources, and demographic characteristics. The BVHA and BVFEP were approved by the Institutional Review Board at Texas A&M University.”

5. Inaccuracies.
   a. Page 5 (fourth last line) says “all data were geocoded.” This is absurd. Does the “All data” include the “complete nutrition data” which ends the previous sentence!

   RESPONSE: The term “all data were geocoded” is customarily used to describe the geocoding of all participants and linking their responses to a location. We rewrote to be specific about geocoding: “... all participants were geocoded to their residence.”

   b. An egregious example is on page 13 at the top of the third paragraph of the Discussion where it is said “2) gender, age and education were positively associated with intake;”, but the data is that LOW education (<HS) was positively associated with fruit and vegetable intake. The authors know what they mean to say, but do not say it accurately, leading to great confusion.

   RESPONSE: “Low” was added to the text to describe education.

6. Lack of clarity occurs when different terms are used in different places for the same concept. As an example, in the Results (page 9, line -5) the authors use “high deprivation neighborhood”, whereas on page 7 (line -5) the term is “high socioeconomic deprivation” as it is in Table 1.

   RESPONSE: We now describe socioeconomic deprivation scores and the construction of three categories of neighborhood deprivation. Table 1 changed from “socioeconomic deprivation” to “deprivation”.
7. Second, the text could be simplified which would reduce the need for complex terminology and verbiage, as well as allowing for a simplified Table 4 (and its description, pages 8/9). The results show no difference in the separate analyses of fruits and vegetables so everything would be much clearer and simpler if fruits and vegetables are a single combined item. Indeed, the data at the bottom of Table 1 shows (from the standard deviations of the individual items, and the standard deviation of the combination) that the two individual items cluster. I use Var(F+V)=Var(F) + Var(V)+2COV(F,V) to get 2.56=1.81+2Cov(F,V) whence Cov(F,V)=0.38. The pooled variance of F or V is 0.9, so the intraclass correlation of F,V within respondent is estimated as 0.38/0.9= 0.42.

RESPONSE: We report in separate tables results for fruit intake, vegetable intake, and combined fruit and vegetable intake.

8. Simplify by dropping the supermarket measure – only 11 exist, for 589 seniors and Model 2 does not really add to the picture. Simplify Results – Objective measures of potential food access – first 4 lines, by restricting the food stores to 185 in the methods section. Further, separating into parallel analyses for “fresh” versus the equally nutritious, and likely used as frequently by seniors, “fresh/canned/frozen” would simplify the presentation without jeopardizing the interpretation. The distinction between the categories could be handled with a single sentence in the presentation of the results. And the messy description of the models (Statistical Analyses, pages 8/9) and in the footnote to Table 4 would be avoided.

RESPONSE: We respectfully disagree with this reviewer. Model 2 (supermarket) is important, given the general use in the literature of supermarkets as a proxy for fruit and vegetable access.

The text in the second sentence of the “objective measures of potential food access” was modified as follows: “Fruit and vegetable data were collected in 185 food stores; one convenience store was excluded because of refusal for an in-store survey of food items (reference).”

9. “Environmental press” is introduced (page16) but the concept can be used without burdening the reader with newly introduced terminology entering into the very end of the paper.

RESPONSE: The term “environmental press” has been removed from the manuscript.
10. The base model shows an R2 of 14% which is increased to 16% with the inclusion of the measured distance to the nearest food store source of quality fruit/vegetables. The coefficient (labeled merely “b” in the Table 4) is marked **which I presume is to represent p<0.01 but nowhere is that stated. Further, with a simplified set of variables it would be easy to replace the asterisks with printed p-values with 3 digits much more in accord with modern statistical practice. This table is in great need of reformatting to make it cleaner and clearer. Begin by reducing the number of models and the number of rows; the footnote will benefit also, and can be arranged much more informatively.

RESPONSE: Tables were revised to make clearer and more informative.

11. Nowhere in the text is the magnitude of the regression coefficient brought back to real units (approximately half a serving of F/V between a senior close to a food source, versus a senior at the 75th percentile of the distance to the nearest food store for quality vegetables). What are the implications of a difference in F/V intake of half a serving?

RESPONSE: The following was added to the discussion section: “The implications of the findings regarding distance measures, however, should be tempered with the magnitude of the regression coefficients. For participants at the 75th percentile for distance to the nearest supermarket, distance was associated with less than one-fifth serving of fruit, one-tenth of a serving of vegetables, and more than one-fourth of a serving of combined fruit and vegetables. At the same percentile for distance to the nearest food store with a good selection of fresh and processed fruit, this equated to one-fifth of a serving of combined fruit and vegetables. This equated to almost one-third of a serving for the 75th percentile of distance to the nearest food store with a good selection of fresh and processed vegetables.”

Minor problems:

1. Organization of the section Measures (page 6) is confusing. The formatting of italicized test presumably is to note major measures. But then underlining is used in three places, for what purpose. In many journals the major measure (italicized) commences each new paragraph which is then very clear.
RESPONSE: Underlining has been removed.

2. Numerous sentences introduce a clause with variants of “There is”, “There was”, “There were” which is careless writing.
   
a. Abstract- Results line 6 in two phrases
   
   RESPONSE: This was rewritten to remove “careless writing” as follows: “Seniors reported few grocery stores or supermarkets in their community (59%), little variety of foods (31.6%), and high food prices (79%).”
   
b. page 4 line -6

   RESPONSE: This was rewritten.
   
c. page 10 line -5, line -3

   RESPONSE: Rewritten as follows: “Sample characteristics between the analytic sample of 589 seniors who completed all nutrition-related questions in the BVHA and the 663 rural seniors who returned surveys were not significantly different (data not shown).”
   
d. Results page 19

   RESPONSE: Rewritten as suggested.
   
e. page 13 line 2

   RESPONSE: Rewritten as suggested.
   
f. page 14 at “...major strengths ...”

   RESPONSE: Rewritten as suggested.
   
3. In presenting results from a table (page 10 bottom) it is easier on the reader if the order follows the table rather than jumping around.

   RESPONSE: Rewritten so that the order follows the table (Table 3).
   
4. Reference 53 has no source

   RESPONSE: This has been corrected.
Discretionary items, typos...:

1. No reference is given for the measure of fruit/vegetable intake – was it some form of a food frequency?

   RESPONSE: References (Resnicow et al and Campbell et al) are provided.

2. page 9 Results fourth line – no need for the decimal .2 in 28.2%

   RESPONSE: Decimal deleted.

3. page 9 line -3 include “only” before 14.3% to emphasize concern.

   RESPONSE: Rewritten as suggested.

4. page 10 line -4: Text says “For many seniors...” but I see a 45% for concerned about price, with 10% (variety) and 13% freshness. It is likely that these are the same people (you cannot just add up the percentages). Better might be to include numbers with no concerns, 1 concern, 2, or 3 concerns.

   RESPONSE: “Many” removed from the text. We did not want to lose the valuable information of individual concerns and did not combine into a sum of total concerns.

5. A similar approach might be taken with the “food insecurity” variables as they also are likely to show high overlap.

   RESPONSE: Household food resource measures (“food insecurity”) are not equivalent in terms of severity (e.g., no food compared with balanced meals) or frame of reference (last month compared with past 12 months). Therefore, we are not combining into a summary measure.

6. page 11 line 4 “Bivariate correlations ..” might become “Bivariate correlations with fruit/vegetable intake ...”

   RESPONSE: Rewritten as suggested.

7. page 13 line 8: need to insert “low” before “education”.

   RESPONSE: Tables 1 and 4 and methods changed to describe “low” education as <high school). Education has been deleted from the tables.
8. page 17 line -5 of text – an extraneous “:” occurs after “in rural areas”.

RESPONSE: “:” replaced with “;”

9. Table 1: Instead of “Length of residence” why not “Years of residence”?

RESPONSE: “Length of residence” was changed to “years of residence” in the Methods (page 7) and Table 1.