Reviewer's report

Title: Trends in US home food preparation and consumption: analysis of national nutrition surveys and time use studies from 1965-1966 to 2007-2008

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Reviewer: Colin Rehm

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Using multiple large national databases, this study sought to evaluate trends in eating away-from-home and food preparation/cooking among working-age adults in the US. I found the study to be generally well written and to interpret the data appropriately. Re-shifting focus on store-bought foods/beverages in the context of obesity in the United States is important and is illustrated by these data. I have identified a number of major and minor issues that should be addressed. Major comments are provided first, followed by minor and discretionary comments.

Major Compulsory Revisions
- The section on categorization of food intake was not entirely clear, though the supplemental documentation was useful. From the description provided it is quite unclear whether these approaches are truly comparable, though they certainly represent a good effort given the available data. With regards to CSFII and recent NHANES cycles it seems the definition of home food may be overly narrow. I am less concerned with the infrequently sourced foods (e.g., mail-order or food pantry), but have some concerns regarding the inclusion of “from someone else/gift” foods in the away-from-home category. Of course, it is impossible to determine whether these foods are from bought and then cooked/prepared by person A and given to person B (e.g., “I made you a cake from scratch”) or if they are items purchased and simply given from Person A to Person B (e.g., “I bought you a hamburger from McDonald’s”). From the evaluation of foods in this category it would seem to be predominately the former. I would recommend that the authors conduct some sensitivity analyses to determine what impact this coding decision may have on their results. For example, if 50% of “gift” foods are from store, how might this impact the results? Given that the previous data points do not have a similar variable this may represent a source of bias.

- I am not convinced that the reliance on a dichotomous significance test is appropriate here. First, given the exploratory/descriptive nature of this work, it seems that describing the strength of the results beyond this simple cut-off is important. Second, given the exceptionally large sample sizes for which these data are based on, I find that failing to present more precise p-values doesn’t allow for an interpretation of the actual strength of the results. Given the sample sizes it would be best if the p-value could more closely reflect the actual public health significance of differences, rather than the fact that association may be explained by chance. If the authors prefer to stick with this single cut-point for the
evaluation of statistical significance, a justification needs to be provided.

- Results, Tables. For Table 1 I found it confusing that adults over the age of 60 are included in the proportion estimates. If these adults were excluded from the study they should also be excluded from this table. Additionally, since age is an important determinant of many food choices it is critical that the age groups be expanded here into at least 10-year age groups. This is important to determine the impact of a changing age distribution on the observed trends. There is certainly an adequate sample size to facilitate the further disaggregation of the data. The same issue applies to the time-use data.

- A related point. I was curious as to why no analyses (primary or sensitivity analyses) evaluated the potential role that changes in the population distribution may have in explaining the observed trends. For example, I left myself wondering whether changes in the age distribution of US adults during these periods would potentially explain the observed associations. I convinced myself that accounting for changes in the underlying population with regards to age would likely strengthen the results. It would be helpful for the authors to adjust for age and race/ethnicity to determine whether such changes might explain the observed association. I understand that each survey is representative of the US at that particular time point, but this doesn’t account for changes in population distribution. It seems that this could be done quite easily with standardization. It would be helpful for the authors to address this issue and include a statement as to whether the observed changes were at all explained by changes in the population distribution.

- Discrepancies in total sample size are present from Table 1 to Figure 1 for each survey cycle. Table 1 should only include those actually included in this study (see comment above) and authors’ should confirm that the numbers match.

- Table 1, for CSFII 94-96, NHANES 2003-04, the complementary age distribution from the time-use surveys do not match. Given that both surveys are weighted to represent the US population at that time point I was surprised to see such major differences. Some difference would be expected due to subtle differences in each survey (such as 2007-08 data), but the differences in 94-96 and 2003-04 years seemed somewhat troubling.

- Figures 3a-d. I found these figures to be challenging to interpret and understand. I recommend that the figures be replaced with a table outlining the median and IQR for cooking times for the overall population and by specific population sub-group. This will make it much easier to compare the data between years and by sub-groups. It is unclear from the methods whether these medians account for the survey weights. If they do not, it may be important to do this since the unadjusted median will be biased towards over-sampled groups and thus not reflect the actual “population” median. These values can be obtained in Stata.

- Discussion. In lines 230-235 the authors argue that consumption of away-from-home foods may be associated with adverse dietary and health consequences. References 15, 40-49. In terms of the health consequences the authors should ensure that cross-sectional studies are not being used to justify this strong statement. It appears that many of these studies are cross-sectional.
- I found the evaluation of cooking by gender to be very interesting. Given the emphasis on the role of SES in this paper; it would seem interesting to further stratify these data by income if the sample size is sufficient. Are men more likely to spend time cooking in higher-income households or lower-income households? This is an important and interesting question to address and would certainly be of interest to other readers.

- Line 275-283; I found the role of home economics to receive disproportionate discussion. In terms of cooking knowledge and ability, it is likely that informal education by family members would play an equally large role in learning cooking skills. Clearly, this is off the table due to the same social factors previously described, but this merits discussion in addition to formal educational programs. Furthermore, my understanding is that these types of courses were mainly eliminated in the 1990s, which wouldn’t really explain the changes given that a very small proportion of adults in these datasets wouldn’t have been potentially exposed to this type of class.

- Related note for conclusion. Considering the scale of diet and obesity-related issues in the US, the suggestion that a reinvestment in home economics represent the best policy in moving forward is somewhat disheartening (especially when considering the predominant eating habits of adolescents and young adults). If the authors have any other recommendations, especially with data to support their efficacy, they should be provided here.

- Line 307-309; It is equally possible that societal changes can lead to shifts in marketing and product development. This consideration should be included here.

- Line 323, this is certainly a strategy but its feasibility could be questioned given the paucity of time people spend cooking.

Minor essential revisions

- Line 56-60, this sentence seems wordy and was not terribly clear.

- Line 105, clarify that 71,025 is among those in the age range for this study.

- For Table 1, a footnote should be included reminding readers that the income distributions for the dietary surveys cannot be compared to HFCS.

- Table 2, it would be helpful to provide “c” for the high-income group as well as the low-income group to facilitate comparisons.

- Figure 1, it would be helpful to provide “****” for the high-income group, as well as the low-income group to facilitate comparisons.

- Line 176, missing word between “men” and “increased”.

- Line 263, replace “high” with “major” or something similar.

- Line 273, missing word between “it” and “to”.

- Line 299, missing word between “amount” and “time”.

- Line 304, the first sentence is awkward as written and needs to be revised.

- Line 306, perhaps use term “processed” to avoid any confusion regarding use of “semi” and “ultra” processed foods.
Discretionary Revisions

- Line 34, it would be helpful to define how healthy diet was defined here.

- Citing that half of food expenditures are away from home isn’t terribly informative here since food at restaurants is more expensive than at the store. Citing population-level data on sources of energy would be more informative.

- Line 64, there are a number of USDA reports, including this one (http://www.ers.usda.gov/media/198978/err40_1__-pdf) that should be cited here.

- Line 262, the authors may want to cite some data showing growing disparities in food prices, which would pose an additional challenge to those discussed (see Monsivais, Food Policy, 2010 and others)

- Line 262, may also want to discuss role of taste and acceptability/familiarity.

- Line 307, it would be helpful to discuss what other societal changes may have played a role.

- Line 313, it would be helpful to note when these trends appeared to stabilize.

- Line 313, the results of this study can’t really justify any explicit interventions. These seem to be reasonable directions, but the results of this study can’t be used to specifically suggest them.

- Line 326, missing word after “fast-food”. Also, the term “fast food” and “fast-food” is used throughout the paper. Suggest sticking to one, preferable the more common “fast food”.

Quality of written English: Needs some language corrections before being published

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

Declaration of competing interests:

I declare I have no competing interests.