Reviewer's report

Title: Drinking in transition: trends in alcohol consumption in Russia 1994-2004

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Reviewer: Arun Karlamangla

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The paper reports on a study of longitudinal trends in heavy alcohol consumption in Russia between 1994 and 2004, a period that includes the financial crash of 1998. The authors hypothesize that consumption of cheaper, home-distilled spirits increases during times of economic hardship, and that the consumption of home-distilled spirits and frequent heavy drinking leads to increased mortality. To test these hypotheses, they examine national trends in frequent, heavy drinking and in consumption of samogon (Russian for home-distilled spirits) over the study period and ‘compare’ them to national trends in per-capita GDP and in age-standardized male mortality.

The study and the paper have many strengths (including the measurement of samogon consumption, national representativeness of the cohort, frequency of survey, data on beverage type and conversion of number of drinks to alcohol level, age-standardization etc.), and I very much enjoyed reading it. I do however, have a few concerns that need addressing.

Major Compulsory Revisions

The following are issues that require revisions to be made.

1. The case for a mortality effect is not well made. Is there data that suggests that heavy, frequent drinking (at the levels used to define frequent heavy drinking in this study) have a causal effect on premature deaths? Ditto question re: samogon: Is there previous data that suggests samogon causes a substantial number of premature deaths? Also not clear why heavy frequent drinking and samogon consumption are hazardous only to men?

2. The analyses meant to uncover associations between per-capita GDP and hazardous drinking and between hazardous drinking and male mortality rates is rather rudimentary. It appears that simple correlations were examined between national statistics for these variables over the 9 years (i.e., 9 data points for each quantity). No attempt is made to account for potential confounding or for possibly different effects within diverse demographic strata.

3. The results of the analyses of associations between hazardous drinking and GDP/mortality are not numerically presented; only subjective statements are made in the Results section. How strong, for instance, is the association between the 1996-2000 decrease in GDP and the concurrent increase in samogon consumption? In figure 2, the male death trends appear to parallel the trends in heavy, frequent drinking by men (both trends show a dip in 1998 and a bounce
back, then a leveling off). What was the strength of this apparent association? Is it statistically significant?

4. Were the data weighted (using probabilities of sampling and inclusion) to estimate national trends? Was the complex survey design accounted for in the analysis?

5. Since there is individual-level data available over all 9 survey years, it is not clear why the individual-level quantitative analysis was limited to the 1996-98 period. It would be helpful, for instance, to know if differences in trends in frequent, heavy drinking (and samogon consumption) over the 9 years by age, education, employment status and change, marital status, wealth, financial optimism, urban vs. rural, etc (depicted in Figure 3 panels) are statistically significant. A table parallel to table 2 for 10-year trends would quantify these differences.

Minor Essential Revisions

1. The surprising finding that those who became unemployed in the 1998 financial crisis reduced their frequent, heavy drinking and did not commence samogon use needs discussion.

2. The models of Table 2 need more explanation. Not clear that each column lists outputs from multiple models (e.g., separate models for optimism and employment status).

Discretionary Revisions

1. It would be nice to have a clear statement in the results section of the overall 10-year trends in drinking; something like – In men, frequency of drinking increased and prevalence of heavy drinking decreased, but there was no overall change in the prevalence of frequent heavy drinking. Superimposed on this was a transient decline in 1998 in both frequency of drinking and prevalence of frequent, heavy drinking. In women, there was an increase in the frequency of drinking and in the prevalence of frequent, heavy drinking, but no change in prevalence of heavy drinking. Superimposed was a transient decline in 1998 in the frequency of drinking.

2. My examination of the trends as depicted in Figure 2 suggests that the male death rate lags the samogon consumption trend by 2-4 years. Is this real? Why might that be the case?

**Level of interest:** An article of importance in its field

**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.
Declaration of competing interests:

I have no competing interests