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Title	Trends in binge drinking in Canada from 1996 to 2013: a repeated cross-sectional analysis
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Reviewer 1	Norman Giesbrecht
Institution	Centre for Addiction and Mental Health, Social Prevention and Health Policy Research Department, Toronto, Ont.
General comments (author response in bold)	<p>My comments are primarily organized by page - top right corner of manuscript.</p> <p>1. pg 4. For citation no. 1 there is more recent information on this topic, for example, S. Lim et al. in Lancet v. 380. Two of the latest 2013 GBD studies now cited in the first paragraph of the Introduction; this updates and expands the information.</p> <p>2. pg. lines 12-18. Could also mention traffic crashes, sexual violence, homicide, and harm to others from alcohol. Added as suggested</p> <p>3. pg 4, lines 48-53. There are studies from Europe, Australia and New Zealand that might be mentioned. Studies from New Zealand and Australia has been added to the Introduction on page 4 paragraph 1...A UK study is cited in the Discussion also.</p> <p>4. pg 5 general - Suggest providing more details about the questions and design of the survey. What was the specific wording of the questions used? Did it change over the period of the study? Were all questions asked for each year used in the analysis? Was the order of the questions the same each year? Were the questions in the same location in the survey instrument each year -- that is, was there consistency in which questions proceeded this group each year? Specific wording of the questions now added to Methods on page 5 paragraph 2. The exact same questions were asked in the same order in each survey. We used the questions needed to address the goals of our study and did not include three other unrelated questions. However there were 3 types of survey (CCHS, CCHS-Mental Health and NPHS) so the location of the questions in the surveys varied, this has been added as a limitation (page 11 paragraph 3.).</p> <p>5. pg 5 - Low risk drinking guidelines [LRDG]. The apparent operating definition used here is flawed. Some could drink 14 or less drinks a week for men, and 9 or less drinks a week for women and still exceed the guidelines., since the guidelines also had a daily upper limit for men and women The old guidelines, they have now been replaced, also had guidelines on the maximum number of drinks per day which apparently were not taken into account here. Therefore those classified according to this analysis as meeting the LRDG actually included some false positives - namely those who drank more than recommended drinks per day even if they did not drink more than 14 per week for men or 9 per week for women. Once this group is removed and placed into the group as currently classified as exceeding the guidelines, then the overall portion exceeding the guidelines - now appropriately operationalized - might change. I hypothesize that the proportions exceeding the guidelines might actually go up using this analysis. In any case, I think this part of the analysis should be redone. This is an important point. We redid the analysis and the proportions of people exceeding LRDG approximately doubled (new Fig 2). (Incidentally we had in fact used 15 and 10 drinks in the original analysis, the numbers 14 and 9 were incorrect).</p> <p>6. Furthermore, I strongly recommend creating three categories for the reanalysis: a. those meeting the LRDG including both weekly and daily limits; b. those exceeding the LRDG but not binge drinking; c. those exceeding LRDG and binge drinking. In other words, anyone who binge drinks exceeds the LRDG because of the daily upper limit. Category (a) has been created as recommended and results are shown in Figure 2. Since binge drinking shows a clear increase from 1996 to 2013, but LRDG does not, it is important to keep the binge drinking data as separate category (Figure 1)</p> <p>7. pg 6. I can understand why age 18+ is used. However only three provinces have age 18: Alberta, Manitoba, Quebec. The combined population in these three provinces does not represent the majority of Canadians. We ran a number of sensitivity analyses. Separate analyses of Alberta,</p>

	<p>Manitoba and Quebec (using 18+) versus the rest of the provinces (using 19+) gave very similar results for binge drinking, as now stated in the end of first paragraph on page 7.</p> <p>8. Results I do not have a comment other than a reanalysis - see point 5 above, would likely provide different findings for the drinking above the LRDG variable.</p> <p>9. Interpretation. Some interesting information is provided, including comparisons with data on binge drinking in other countries.</p> <p>10. However the paper does not provide a hypothesis of why the proportion binge drinking has been increasing. This seems to be a significant short-coming of this section of the paper. An OECD report and its conclusions have been added to near to the end of paragraph 2 on page 10</p> <p>11. Other analysis. The authors use a large data set. Why not also conduct a further analysis by province or for at least several provinces focusing on trends in binge drinking? We ran a number of additional analyses comparing BC, the Prairies, Ontario, Quebec and the Maritimes and found very similar trends in binge drinking. This is now reported at end of the first paragraph on page 7.</p> <p>12. Also, there is extensive research literature showing that overall population level of alcohol sales are associated with trends in harm from alcohol - see publications by Mats Ramstedt, Ingeborg Rossow, Thor Norstrom, Ole-Jorgen Skog, including research focusing on Canada. The proportion binge drinking or drinking above guidelines will impact level of harm from alcohol. We are grateful for being directed to this interesting research and have cited three studies in the Conclusions on page 12.</p> <p>In order to provide some context for the analysis in this paper, the authors are encouraged to also add a few graphs showing changes in per capita [age 15+] consumption in pure alcohol, by province, during the period under study. These data are available from Statistics Canada. The focus of this paper is on patterns of consumption and quite different from sales/consumption. However we did not ignore this comment, but looked into the issue which turns to be non-trivial. For example Statistics Canada Table 183-0023 shows a slight drop in absolute volume per capita alcohol sales from 2009-2014.</p> <p>13. A revised version, as recommended above, would also involve changing the title of the paper and the abstract. Abstract has been changed and the results section, but we feel the title should be the same.</p>
Reviewer 2	Stephanie Choi
Institution	University of Toronto, Toronto, Ont.
General comments (author response in bold)	<p>Thank you for the great opportunity to review this interesting paper that estimated and compared abstinence, binge drinking and over guideline drinking in Canadian population from 1996 to 2013</p> <p>The paper is well written but may require some more editing to</p> <p>1. Ensure consistency of the terms (e.g. p.7 line #4 vs. p.7 line 17 on "Figure" and "Fig") Corrected</p> <p>2. Ensure consistency of decimal places in reporting Checked</p> <p>3. Provide a citation for STATA program Added</p> <p>4. May include a discuss of possible limitations of meta-analysis with random effects on the trend analysis and how may this impact on the estimates We have added sentences to the paper (first paragraph on page 6) stating that the decision to use a random effects model was made a priori. It is a more conservative approach since it does not assume a common distribution and if the inter-study variability is small (Tau squared approaches zero) it becomes increasingly similar and ultimately equivalent to a fixed effects model.</p> <p>5. May provide trend by age groups since prior evidences show that there may</p>

be bigger impacts in young age group

This is a good point. We have taken an initial look at the data and realize this if affected by birth cohort, age and period effects. This is a study in itself and beyond the scope of the present paper. We had stated this point in the first draft (now at the end the first paragraph on page 11).