

Article details: 2020-0241	
Title	Ranking the relative importance of COVID-19 immunization strategies in Canada: a priority-setting exercise
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<b>Reviewer 1</b>	Dr. Kumanan Wilson
Institution	Toronto General Hospital
General comments (author response in bold)	<p>This is a potentially valuable contribution. The topic is timely and the premise well founded. However, the way the paper is presented it appears more of a skeleton of a more substantive contribution.</p> <p>My suggestions:</p> <ol style="list-style-type: none"> <li>1. Abstract: The interpretation does not really seem to be an interpretation. What do the authors believe these results mean.</li> </ol> <p><b>RESPONSE: Thank you very much for your helpful comments. We revised the interpretation section of the Abstract to better describe what we found, which is that there is a general alignment in the values and preferences of the various stakeholder groups based on the results of the priority-setting exercise. (pg. 2)</b></p> <ol style="list-style-type: none"> <li>2. Introduction: The introduction seems overly long. Much of, for example paragraph 6 could be put in the discussion.</li> </ol> <p><b>RESPONSE: The Introduction section has been reduced in length. The COVID-19 vaccine prioritization guidance that this priority-setting exercise has directly informed over the past several months since the original submission of this manuscript has also been included in the Introduction. (pg. 3)</b></p> <ol style="list-style-type: none"> <li>3. Methods: How were the scenarios developed - based on literature, in expert consultation? Were they pre-tested? How was the sampling strategy arrived at?</li> </ol> <p><b>RESPONSE: The Methods section has been expanded to provide more details on how the pandemic scenarios were developed and the sampling strategy that was used. (pg. 4)</b></p> <ol style="list-style-type: none"> <li>4. Results: The results are very brief. What was the sample size contacted by each group and what were the response rates for each group? More quantitative results from the Tables should be included in the results. Were predictors of response examined?</li> </ol> <p><b>RESPONSE: We have added the sample size and response rate for each stakeholder group to the Results section. The analysis has been updated where the median, mode (as suggested in comment 6 below), and mean (as suggested by the statistician reviewer above) calculations have been removed in favour of clearer presentation of the percentage of relative rankings. The differential response rate among the stakeholder groups and the potential for selection bias have been discussed in the limitations section of the manuscript. (pg. 7)</b></p> <ol style="list-style-type: none"> <li>5. Discussion: this is also very sparse. How do these results fit with</li> </ol>

	<p>previous literature or with work being conducted internationally? What do these results mean for Canada's strategy? Are they consistent? Should we consider changes? What future work needs to be conducted? Limitations should include sample size and responder bias.</p> <p><b>RESPONSE: The limitations section has been expanded. Among the limitations, the limited sample size and potential for response bias have been discussed. (pgs. 6-7)</b></p> <p><b>The results of this priority-setting exercise on pandemic immunization strategies are discussed in the context of other surveys conducted in Canada on the prioritization of pandemic strategies. As the COVID-19 immunization has already been launched since the time of the original submission of this manuscript, how the survey results compare to the initial COVID-19 vaccine prioritization in Canada is also discussed; the priority-setting exercise aligned with the field experience with the COVID-19 vaccine rollout. Further, the results of this priority-setting exercise have already been used to directly inform prioritization guidance by Canada's National Advisory Committee on Immunization since the original submission of this manuscript and this has been included in the manuscript. (pg. 6)</b></p> <p><b>Future work includes validation of the findings in different stakeholders and in different contexts. This has been added to the concluding paragraph of the article. (pg. 7)</b></p> <p>6. Tables: It would be helpful in Table 3 to have the raw data (i.e. 18/25). Mode and likely median are not necessary to present.</p> <p><b>RESPONSE: The raw data contributing to the %s have been added to results tables (i.e., Supplementary Files 4 and 5). Mean, median, and mode have been removed from the analysis, as discussed above.</b></p>
<b>Reviewer 2</b>	Dr. Holly Witteman
Institution	Universite Laval Faculte de medecine
General comments (author response in bold)	<p>Thank you for the opportunity to review this very interesting paper about an important topic. The authors conducted surveys to ascertain individual stakeholders or organisations' preferences regarding who ought to receive COVID-19 vaccines first in the event of shortages. They used an emailed survey and received responses from 74/156 stakeholders contacted. The survey used a simple ranking method to determine preferences. The manuscript is well-written and describes important findings. I outline a few suggestions to strengthen it below.</p> <p>Background. On pages three and four the authors compare a 2006 survey on flu pandemic strategic planning conducted with university staff and students to a more recent survey conducted with members of the Canadian public about COVID-19 strategic planning. The authors state, "Though the methodologies of these studies are different, the marked differences in results reveal the importance of assessing values and preferences of stakeholders in different contexts." I would argue that they are putting a bit too much emphasis on context here and not enough on study population. While context may certainly matter, and should be mentioned, part of the issue here is that you have entirely different groups of stakeholders. University staff and students are often younger, more educated, and in better health than</p>

members of the general population. I would therefore suggest that the authors note the importance of assessing values and preferences of different stakeholders in different contexts, and perhaps highlights for naïve readers the potential gaps between the priorities of young healthy people and society more broadly. The authors may want to refer to well-known literature in health economics demonstrating that people who live with conditions rate their quality of life higher than people who imagine what it must be like to live in those conditions. For example, see this classic paper: Brickman P, Coates D, Janoff-Bulman R. Lottery winners and accident victims: is happiness relative? *J Personality Soc Psych*, 1978. or a more recent paper citing it and further advancing understanding of this phenomenon: Ubel et al., Do Nonpatients Underestimate the Quality of Life Associated with Chronic Health Conditions because of a Focusing Illusion? *Med Dec Mak*, 2001.

**RESPONSE: Thank you very much for your helpful comments. We revised the Introduction section for brevity, but the importance of assessing values and preferences of different stakeholders in different contexts is well received and we have highlighted this in the concluding paragraph, calling for further validation in follow up surveys in different stakeholders and different contexts. (pgs. 3, 7)**

1. Study population. The sample population for this study is essentially a convenience sample. The authors contacted people and groups they knew. To get opinions from people who might be more affected by COVID-19 vaccine strategies, they reached out to the CanCOVID network, but that network only added patient partners upon being pressured to do so. It is likely not a representative group of patient and community advocates. This should be listed as a potential limitation.

**RESPONSE: We added details in the Methods section that the sample for the survey is a convenience sample. We also added the potential lack of representativeness of the patient and community advocates of the CanCOVID network as a limitation in the Discussion section. (pgs. 4, 6)**

2. Survey methods. Simple ranking is certainly one way to determine priorities. It is not, however, always the best method for doing so. Among other issues, ranking provides no information about the extent to which one option might be preferred over another. I am wondering if the authors might wish to include some description of their reasoning for choosing simple ranking over other approaches (e.g., conjoint analysis, allocation of points, or even forms of ranking that allow for items to be placed at different distances from each other; e.g., {1, 2, 6, 9}.) I would hazard a guess they might have chosen simple ranking because of its straightforwardness among forced tradeoff methods. However, this is never clearly stated. The authors should explain their rationale for using simple ranking.

**RESPONSE: We clarified in the Methods section that simple ranking was used. The rationale for the use of simple ranking (i.e., chosen for its straightforwardness for data collection and analysis) was added in Methods under Data source. The limitation in using simple ranking is discussed in the Interpretation section. (pgs. 4, 7)**

3. Statistical analyses. The authors tabulated mean, median, and mode

rankings and compared these by inspection. The author should clarify their analytical strategy and justify this simple approach as opposed to, for example, replacing ranks with their Z-scores and analyzing them as a linear model.

**RESPONSE: Because of the small sample size, convenience sample, and our interest in establishing general trends rather than statistical differences, we have opted to use a simple analytical approach. The analysis has also been revised based on reviewer comments, where descriptive statistics have been removed in favour of qualitative analysis to identify overall trends. These changes have been reflected in the Methods section. (pg. 4)**

4. Statistical analyses. Related to the above, it is not entirely clear whether they adjusted rankings in cases in which the respondent offered a fifth choice. From the results and figures, it seems like in such cases they used numbers {1,2,3,4,5} but it is not entirely clear. This should be stated, and the authors should justify why they did not normalize all rankings and instead compared response sets {1,2,3,4} and {1,2,3,4,5} together.

**RESPONSE: The rankings have been adjusted to be out of four, with the write-in strategies discussed in the Results section rather than presented in the Figure. The analysis section in Methods has been updated to reflect this change. (pg. 4)**

5. Statistical analyses. Members of expert groups (e.g., NACI) each provided individual expert responses, whereas organisational or provincial/territorial representatives each provided a single response on behalf of their organisation or jurisdiction. Yet, all responses were pooled and equally and equally weighted. Did the authors conduct any sensitivity analysis to investigate whether this equal weighting might have influenced the overall findings? Since they report no differences in ranked priorities between groups, I would expect that the findings would be robust to the sensitivity analyses. However, it would strengthen the paper to make this clear to readers.

**RESPONSE: We conducted subgroup analysis by stakeholder group (i.e., those who provided individual expert responses and those who provided a response on behalf of an organization/jurisdiction were not pooled together) and found that the strategy to protect the most vulnerable was generally considered the most important across stakeholder groups and across pandemic scenarios. The trends in the relative rankings of the other strategies are less clear due to small sample sizes. (pgs. 5-6)**

6. Results. On page 5, the authors write that, "19 (25.7%) were patient or community advocacy representatives or experts from the CanCOVID network." This seems like a broad clumping together. Can this group be separated more?

**RESPONSE: We found that in the subgroup analysis by stakeholder group, the trends were less clear due to smaller sample sizes in each of the stakeholder groups, but the strategy to protect those who are most vulnerable to severe illness and death from COVID-19 remained the most important in all stakeholder groups and across pandemic scenarios. We**

**think that more granular analysis of the CanCOVID network will unlikely add value to the analysis. However, we do think that follow up surveys of different stakeholder groups and in different contexts would be of value and included this as the next steps in our concluding remarks. (pg. 7)**

7. Results. I would really like to see the results by respondent group. I understand that the scenarios were central to this survey but since there don't seem to be many differences between scenarios, would it be reasonable to add another figure or table to give mean ranks by respondent group?

**RESPONSE: We added a data table (Supplementary File 4) that presents the findings for each stakeholder group.**

#### MINOR COMMENTS

8. It would be useful to have more details within the manuscript about the meaning of some of the ranked strategies. "Protect critical infrastructure" is particularly vague and would benefit from some additional explanation right in the text so that readers don't have to go hunting in the appendix.

**RESPONSE: We added examples in manuscript to each of the four pre-determined immunization strategies. (pg. 5)**

9. Was the survey pilot tested? If not, this should be noted as a limitation. (E.g., is it possible that some respondents might have accidentally inverted the numbers for ranking? How would you know?)

**RESPONSE: No, the survey was not formally pilot tested. The lack of pilot testing has been added as a limitation. (pg. 7)**

10. Figure 2 uses two shades of blue for 1 (most important) and 5 (least important). These are difficult to distinguish. Please revise the colour palette.

**RESPONSE: We changed the colour used in Figure 2 to greyscale (to minimize ambiguity) with dark to lighter grey representing most to least important rankings, respectively.**