Article details: 2019-0085	
Title	**Income-related disparities in private prescription drug coverage in Canada**
Authors	Talshyn Bolatova BSc, Michael R. Law PhD
Reviewer 1	Dr. Reed Beall
Institution	Cumming School of Medicine, University of Calgary, Calgary, Alta.
General comments (author response in bold)	Point 1: A word is missing in introduction: "…we do not have recent [data?] on…" **We thank the reviewer for catching this omission, which we have added as suggested.** Point 2: If word count allows, suggest adding an intermediate income and coverage range (e.g., $40k-$59.9k) to demonstrate dose response relationship or simply reword to describe the observed dose relationship as one that begins at 19.9% and peaks at 76.2%. **We added have added the intermediate income group suggested by the reviewer to this line: "…19.8% of individuals in the lowest income band reported private drug insurance, compared to 49.0% in the income band between $40,000 to $59,999 and 76.2% in the highest income band (Table 1)." (Page 8, para 1)** Point 3: if word counts allow, consider adding differential exposure/vulnerability to financial distresses due to medicine expenses for those falling between insurance gaps. **We agree that this is an interesting point, and have added the following line in the interpretation section as a result: "It is also notable that the characteristics we found to be associated with private drug insurance are very similar to those who report cost-related non-adherence to prescription drugs and foregoing of other household spending to afford prescription medications.13" (Page 9, para 3)** Point 4: If the authors agree that a key population generally falling between insurance gaps in Canada is the "working poor", this may be worth mention in the introduction (more comments to follow about this issue) (see https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3940574/, https://www.ncbi.nlm.nih.gov/pubmed/15607380) **We agree with the reviewer's suggestion, and have now included the following line in the introduction: "As a result, the so-called "working poor" are thought to be a key group lacking effective drug coverage." (Page 5, para 1)** Point 5: Analytical sample: Regarding the exclusions, some readers may wonder about the characteristics of the 11% of respondents who were excluded on the basis of "don't know", "refused...", or "not stated" and whether this population is concentrated amongst a particular population/incoming grouping (or whether they're equally distributed). If they're lumped amongst lower income, for example, it's possible that this response is code for not having private insurance and could result in over-estimations of private insurance and the lower end of the income categories. Perhaps consider an appendix Table 1 for the excluded population or just a comment saying there was no pattern to worry about. If they're lumped somewhere on the income spectrum, perhaps consider a sensitivity test in which they're reintegrated as having or as not having insurance to see if results would change substantially. **As suggested, we analysed the available socio-economic and demographic characteristics of the excluded individuals. The excluded individuals were not concentrated in a particular income group (or any other explanatory variable).** Point 6a: Study variables: Readers may wonder if there's an employment status variable (aside from indirectly via 'employer-based insurance' response). If it is available, it may be informative to stratify to full-time employed, part-time employed, vs unemployed. Lower-income employed persons often have no employer-based benefits offered or they find a way to opt out for higher take-home. If this variable is unavailable, it may be worth stating. **Unfortunately, employment status was only available in the survey on an individual basis. We note that dependent individuals such as non-working spouses or young children would not**

	be employed but could get employer-based coverage if available to one individual. Thus, we felt that the employment variable would mis-represent the true association between someone in the household working and private insurance coverage. As a result, we chose to focus on household-level income instead (which is, of course, also highly correlated with employment status). Point 6b: Other variables that may be of interest could be citizenship (e.g., year since immigration), first language, number in household, disabled persons, difficulties accessing health information, minor and major health care services received. **We appreciate the reviewer's suggestions for other variables to consider for inclusion. We agree that ethnicity is of interest and have now included a variable indicating whether an individual was a landed immigrant or Canadian born. We felt that disability status and health care services received were both likely to be collinear with the number of chronic conditions, so did not add them to our model. Finally, it was unclear to us what theoretical link would exist between accessing health information and private insurance coverage, particularly given that this type of coverage is more often provided by employers rather than by individual purchase.** Point 6c: Readers may wonder whether you tested whether the other variables may be interacting/functioning as effect modifiers rather than just as confounders. **This is an important point. As a result, we tested for a potential interaction between age and household income and reported age stratified results in our paper.** Point 7: Sample characteristics: Regarding 11% of excluded surveys, please see above comment. With so many in the included sample falling into the highest income categories, readers may wonder if these excluded surveys are from the lower income ranges. **Please see our response to this Reviewer, Point 5.** Point 8: Interpretation: Typo on page 14, lines 12-13, "that" should be "than" **We thank the reviewer for catching this error, which has been corrected.** Point 9a: Limitations: I agree that the self-reports may be subject to some level of misclassification; however, I must disagree that it may bias towards the null. As not having insurance may be a source of shame (especially for parents) and is connected to status/class, respondents without insurance may misrepresent themselves as having insurance or as being uncertain of their insurance status. This may be more likely amongst lower income populations, causing an over-estimation of insurance coverage in these groups. **We agree with the reviewer's concern and have changed this line to simply read "biased our results" rather than asserting it would be toward the null. (Page 10, para 3)** Point 9b: Another limitation may be that the study is unable to assess the adequacy of the insurance plans (as this may vary tremendously with less useful coverage amongst lower income populations vs higher) **The reviewer is correct that the CCHS question ("Do you have insurance that covers all or part of the cost of your prescription medications?") did not allow us to distinguish between comprehensive and less comprehensive plans. We have now noted this limitation in our paper: "We were also unable to assess the generosity of coverage and whether this varied between different groups." (Page 11, para 1)** Point 9c: I wonder if one could help address the matter of a lack of public insurance by focusing the group believe to be falling in the cracks (non-senior, working poor living slight above poverty lines). **This is an interesting idea. Unfortunately, we feel that with the dozens of different public plans**

	across Canada and their differing eligibility criteria, this task would be impossible with just the CCHS variables. Point 10: Conclusions: I completely agree with the conclusion. Perhaps to build on this, consider mentioning the irony that those Canadians who least at risk of health troubles and of financial distress imposed by medicine costs are also the most protected from such contingencies; the least protected are at greater risk. This may be considered a manifestation of the "inverse care law" in action in Canada (https://doi.org/10.1016/S0140-6736(71)92410-X, https://www.ncbi.nlm.nih.gov/pubmed/30065009). The existence of public plans reduces the severity of this phenomenon and should be expanded. **While this argument is interesting, we feel such a suggestion would make our conclusion more editorial in nature and thus would be best addressed in future commentary on this topic.**
Reviewer 2	Maude LaBerge PhD
Institution	Operations and Decision System, Universite Laval Faculte des sciences de l'administration, Laval, Que.
General comments (author response in bold)	Point 1: The researchers examine characteristics associated with having private drug insurance. From a policy perspective, the need for this information is not clear. A portion of the population is covered with a public plan (people over 65 and various groups depending on the province). In Quebec, people who do not have a private drug plan from their employers participate in the public plan. **We respectfully disagree with the reviewer on this point. Our own previous work (Law et al. 2019) demonstrated that individuals who reported not holding private insurance were much more likely to forego prescription drugs due to cost (2). Given that private insurance coverage is associated with variables for populations that are not publicly insured, we feel that this data is valuable for considering public policy responses.** Point 2: Drug insurance is an important issue, but the value of the research question needs to be better argued. **Please see our response to this Reviewer, Point 1.** Point 3: Why was age used in categories instead of as a continuous variable? **Please see our response to the Editors, Point 3.** Point 4: What are the income categories based on? And education? I think there are more response options for education than those mentioned. The fact that "more than 60% had completed post-secondary education" raises questions over the choices of education categories. **Please see our response to the Editors, Point 3.** Point 5: The sample included individuals as young as 12 years old. I don't think that people that age are aware of their insurance, that they are most likely getting from their parents. Are they responding for themselves? **We feel that this is not a concern, as the CCHS methodology is that the person most knowledgeable would have answered this question on behalf of any respondent over the age of 12 and under the age of 17 (3). If they did not know, they would not have been included in our sample.** Point 6: The choice of a modified Poisson needs to be better justified. It is more frequent to use a logit or a probit when the outcome variable is binary. The choice of the authors is questionable. **When the frequency of a binomial outcome is high, the literature suggests that the odds ratio can significantly overestimate the prevalence ratio, and cannot adequately control for confounding (4,5). Log binomial regression is also used to directly measure prevalence ratios, however, it was previously shown that when there is a risk of model misspecification, modified Poisson models produce more unbiased estimates of prevalence ratio (6). As a**

	result, we opted to use a modified Poisson regression with robust error estimates. Point 7: There is a word missing : « we do not have recent on the characteristics… » **Please see our response to Reviewer 1, Point 1.** Point 8: P4, l45: “As one would expect” **We have removed this phrase.** Point 9: P5 l12: Missing word: “were more likely fill” **We have modified this line.**