Reviewer's report

Title: Using Funnel Plots in Public Health Surveillance

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Reviewer: Tanja Srebotnjak

Using Funnel Plots in Public Health Surveillance
Douglas C Dover1, Donald Schopflocher2
1Alberta Health and Wellness, Edmonton, Canada
2School of Public Health, University of Alberta, Edmonton, Canada

The paper addresses the use of funnel plots in disease and public health surveillance, especially with respect to small area measurement. It demonstrates in a step-by-step manner the use of funnel plots using motor vehicle fatalities in the Canadian province of Alberta and the small areas contained therein as defined by Alberta health care authorities. The paper is well written and presented. Its scope fits the topics addressed by Population Health Metrics, although an applied statistics journal focusing on graphical visualizations could also be of interest. However, the authors have managed to link the visualization aspects of funnel plots quite well to public health policy and interventions. Below are my comments.

Major Compulsory Comments:

1. In the Discussion section I miss a discussion of the limits of funnel plots, e.g., an empirical evaluation of the use of funnel plots found that more than half of the time researchers failed to recognize correctly the presence/absence of publication bias using funnel plots (Terrin et al., Journal of Clinical Epidemiology, Vol 58(9), 2005).

2. In the Conclusions section the utility for small area measurement could be emphasized more, e.g., funnel plots show (or accounts for) the increased variation due to smaller sample sizes. They help to detect anomalies in the disease or outcome-generating process by pointing to localities or sub-populations outside of control limits that take sample sizes into account.

Minor Essential Revisions:

1. Please provide references for the following statement: “In the case of misspecification due to a missing covariate, random effects models make the strong assumption that the missing covariate value is essentially proportional to the observed rate.”

2. Please provide references for the following statement: “Following the institutional performance literature, funnel plots of disease rates, risk factors, or
changes in these could also be used as performance measurement tools.”

3. Correct typo in affiliation of Dr. Schopflocher: health not heath

4. Missing word: A population of 20,000 was chosen as a minimum target within each sub-region in order to ensure that rates be relatively stable and this target was met in almost all cases.

5. Word missing? The use of funnel plots in health surveillance modelling activities naturally focuses attention to the level that policy recommendations should be made.

Discretionary Revisions:

6. Add a legend to the plots or a note below them to explain that solid black lines are for 99.8 % control limits and dashed black lines are for 95% control lines.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.