Reviewer's report

Title: Regional disparities in infant mortality in Canada: a reversal of egalitarian trends

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Reviewer: Martin Wald

Reviewer's report:

The authors try to define changes of the quality of the Canadian health care system with different territorial variances of infant mortality rate. The authors define the disproportionate reduction of infant mortality rate in territories with high mortality rate at 1960 with the implementation of a generally health insurances. Fiscal troubles of the Canadian health care system are hold responsible for trend reversal with disproportionate reduction of infant mortality rate in territories with low mortality rate at 1990.

Any approach to analyze the effect of economic factors at the health care system of a country is more than welcome.

Major Revisions:
Changes in the infant mortality rate of a country will be a good parameter to evaluate the quality of a health care system. But to use changes in the mortality rate of very low birthwight infants for this evaluation must be questioned. The authors admitted that not only fiscal changes are important for the changes of the infant mortality rate. Some of these influences should be named in there work. One of them would be the centralization of risk pregnancies and neonatal intensive care units into few specialized centers in the last decades. An extrapolation of the numbers of obstetric clinics and neonatal wards per 1000 preterm live births can give an idea about the homogeneous ore inhomogeneous quality of the neonatal intensive care in the different territories.

Beyond these generally influences on the preterm infant mortality rate the authors should name some important medical developements at least in there discussion. As well as the antenatal steroide therapy and the surfactant application was established between 1980 and 1990. These two developements reduced the preterm infant mortality rate dramatically. (Wauer et al. Zentralbl Gynakol. 1976;98:769-73, Merritt et al, N Engl J Med. 1986;315:785-90).

The authors base their analysis on calculation of patterns of change of infant mortality rates and using correlation coefficients for each time period. In spite of this simple correlation analysis, the paper does not convey the increasing disparity in rates between provinces concisely by this measure.

Lots of correlations coefficients and p-values in Table 4 rather confuse. Furthermore, the many p-values used are prone to the multiple test problems,
which is not addressed in the paper.

Figure 2 is more comprehensible than Table 4. Nevertheless, since ratios of rates especially extreme rates (lowest vs. highest) are liable to strong variability, confidence intervals for the observed rate ratios would be meaningful.

Additionally, though patterns of relative change seem to be the primary target of the manuscript, time series (figures) of absolute infant mortality rates for each province not necessarily aggregated to 5-year periods should be included.

Furthermore, since most of the provinces are included, a spatio-temporal analysis of the rates would be interesting maybe giving some more insight into the problem of increasing disparities.

A more formal test or model for a possible change point in the time-series before/after the fiscal crisis in the 1990s should be done.

Ontario was excluded because of concerns regarding data quality. Since date of death should be easily obtainable, what are the main causes for these concerns?

Minor Revisions: The number of decimals for p-values in table 4 ranges between 1 and 3 randomly.

Figure 1, Top: Though use of the non-parametric spearman correlation coefficient makes sense, the (parametric) regression line certainly does not because of lack of fit. It should be dropped. The regression line seems unnecessary for Figure 2, too.

Very Minor Revisions: The coefficients (-0.86,0.46) rounded to 2 decimals in Table 1 and 2 correspond to values (-0.854,0.454) and should therefore read -0.85 and 0.45, respectively.

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

**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