Reviewer's report

Title: Effects of Neighborhood Geodemographic Profiles on Healthcare Service Wait Time: A Case Study on Cardiac Care

Version: 2 Date: 27 November 2012

Reviewer: Lu Wang

Reviewer's report:

The manuscript examines the effects of neighbourhood geodemographic characteristics on patterns of using hospital-based cardiac care. The study utilizes a range of secondary data from different sources and analyzes the data by applying PLS-based SEM modeling. The study provides timely implications for public health planning pertaining to cardiac care, specifically for disadvantaged population groups. I made the following comments and suggestions for the authors to further improved their manuscript.

Please number your comments and divide them into

- Major Compulsory Revisions

1. Explicit definition and clarification of key concepts would be helpful to head off questions that may arise when reading the manuscript. For example, what does ‘moderating effect’ mean in the context of the study? Is there any difference in treating education as a moderating effect of the relationship between age and demand from hypothesizing age to moderate the effects of education and demand? How is ‘demand’ defined? And ‘neighbourhood’?

2. Conceptually, the study aims to investigate the relationship between selected geodemographic census variables and demand for cardiac services. From an economics perspective, demand is largely decided by needs for goods and services and from a population health perspective, health needs are found to be associated with population geodemographics. In the study, the demand is measured by statistical data on, for example, the number of completed cardiac surgery cases in hospitals. In my view, the “demand”, as conceptualized in the paper, has a closer meaning to “use” or service utilization pattern. Having a demand or need for services does not guarantee one is able to use the service when needed. For example, on p5, Hypothesis 5.1 states that travel time has a direct negative effect on demand. In fact, remote areas with a large number of seniors but low service accessibility could have the same or even a higher demand for cardiac services than “younger” neighbourhoods with good service accessibility and consisting of individuals of high socioeconomic status.

3. The limitations were discussed extremely briefly. I would like to see an expansion of the limitation on the chosen methodology and including a discussion on datasets, conceptualization of neighbourhoods, and even the conceptualization of the study.
4. The study considers geographic accessibility, defined as 60-min driving time to nearest hospitals. There is no justification as to why a 60-minutes threshold was used despite that the choice of threshold is critically important and it may potentially affect the conclusions drawn. A 60-min driving time threshold is quite large for urban areas. Also, difference in patient travel times between large urban centres like Toronto and small towns need to be recognized and discussed.

5. Partially related to point 4, geographic accessibility perhaps plays a more important role in using cardiac care provided by physicians as one with low service accessibility would likely be more willing travel to a hospital for scheduled surgery than go to a physician for regular checkups (preventive care).

6. The paper examines the effect of neighbourhood geodemographic profiles on use of cardiac surgery services; neighbourhoods are defined as LHINs (Local Hospital Integrated Networks). There are 14 LHINs in Ontario; some are quite large geographic units and some have large populations. For example, the entire city of Toronto is one LHIN but it is nearly impossible to view Toronto as one single neighbourhood and in fact most of the literature on neighbourhoods and health use census tracts or communities as proxy of neighbourhoods. What are the pros and cons of using LHINs as proxy of neighbourhoods in the study? Also, it would be beneficial to further discuss the importance of examining neighbourhood contextual effects on health, in addition to individual compositional effects by including a stronger literature review in this area.

7. In Discussion (p11), the authors mentioned immigration and the effect of population diversity on use of cardiac services. Some statistics and preliminary correlation analysis results were also included. I find this part not well connected with the rest of the paper. There is also no concrete evidence to show that “immigration has indeed led to increases in the demand for cardiac surgery services in the recent years” (p12). I suggest to remove the discussion and analysis related to immigration or include it as a factor when establishing hypotheses. It is also unusual to see new (correlation) analysis presented in Discussion.

- Minor Essential Revisions

The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

8. There is much room to improve the maps that largely lack of essential cartographical elements. The overall presentation/design of the maps could have been improved as well (e.g., in Figure 2, the large symbol representing urban centres could be smaller, especially in the inset, and transparent…In Figure 3, no text and label, no legend, …low resolution for both maps)

9. All the figures have no title.

10. The level of writing is acceptable but there is room to further improve the writing of the paper. For example, should “in prior literature” be “in the literature”
or “in the prior literature”? Should “geographic accessibility of healthcare services” be “geographic accessibility to healthcare services”…

- Discretionary Revisions

N.A.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests