Reviewer's report

Title: Spatial variation in the management and outcomes of survivors from an acute coronary syndrome

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Reviewer: Richard Glazier

Reviewer's report:

General
This paper is interesting and makes a useful addition to the medical literature about proximity and access to specialized cardiac care in a well-defined cohort of patients. Some terms are not defined and some methods should be more fully explained. I have several suggestions for improvement that appear below.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
None

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. Abstract.
   a) Acute coronary syndrome should be defined.
   b) The conclusion relating to the potential benefits of ICP in the management of ACS should be removed. This is a statement about effectiveness of an intervention which is much better made on the basis of randomized trials and not on the basis of associations found in administrative data.

2. Background. Acute coronary syndrome should be defined.

   a) The method for calculating distance should be better specified. If it was based on straight-line distances or if it took the road network into account is not clear.
   b) The terms 'specialized cardiology centre' and 'tertiary cardiology centre' should be defined and the way they were identified described.
   c) It is not clear why four groups were chosen for Hierarchical Cluster Analysis. This choice should be explained. The "notion of <<distance>>" could either be distance between variable values or it could be spatial distance or adjacency that was used. This is not at all clear and should be further explained.
   d) The authors should explain why a 20% sample was used for the Monte Carlo significance test instead of the whole study population.
   e) It is not clear whether Geographically Weighted Regression was used in the analysis or whether it was merely alluded to in the context of the Monte Carlo significance test. This should be clarified.

4. Results.
   a) It is not clear if the regressions depicted in Figure 2 controlled for all of the factors presented in Figure 2. It is also not clear if they controlled for sex and precocity. This should be clarified in the text and on the Figure.
   b) The spatial clustering of residuals indicates geographic autocorrelation that is not accounted for in the model. This can affect the accuracy of regression parameters and variance estimates. Do the authors feel that the magnitude of this effect warrants a correction such as use of spatial

5. Discussion.
a) The paradoxical finding of decreased length of stay with proximity to cardiology centre but increased length of stay with invasive cardiac procedures (where proximity and procedures are associated) should be further discussed.
b) The province of Quebec is referred to as a country but is a province.

Discretionary Revisions (which the author can choose to ignore)
1. Methods.
Given an expected skew in data distribution, length of stay could also be reported as a median time.

2. Results
It would be very useful to have the analysis repeated using different distance buffers such as 35 km, 50 km and 100 km. As this would require considerable additional analysis, I consider it to be a suggestion left to the authors' discretion.

What next?: Accept after minor essential revisions

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

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:
I declare that I have no competing interests.