Reviewer's report

Title: Bowel disorders and its spatial trend in Manitoba, Canada

Version: 2
Date: 22 February 2014
Reviewer: Al Ozonoff

Reviewer’s report:

This manuscript is a revision of a previous submission. The paper is improved, and some major problems addressed. The focus of the paper remains divided between methodological issues and the results of the spatial analysis. As a consequence there are some important ideas that remain underdeveloped, which diminishes enthusiasm for the work as presented. Detailed comments follow.

MAJOR COMPULSORY REVISIONS

1) Discussion p9. The author concludes ‘BYM and MLE did good jobs… compared to the methods CSS and FSS’. What constitutes a ‘good job’ in this context and how are the comparisons between methods made? Since the ‘true’ cluster is not known, simply comparing which regions are or are not included in a putative cluster does not differentiate the performance of methodologies.

2) Related to this, a previous reviewer suggested simulations ‘to investigate the ability of detecting spatial clusters using those four methods.’ Instead the author has designated specific regions as clusters and performed tests of these alternative hypotheses. This does not get to the fundamental question of whether the cluster identification by each method is appropriate. The advantage of using simulated data is that the ‘truth’ is known and thus the methods can be compared on performance and accuracy of detection.

3) Spatial analysis using these methods is very complex and poses many challenges. It is somewhat disappointing to see the discussion and limitations treated in so brief a manner. Through multiple rounds of peer review, the reviewers have identified important limitations and discussion points which have been dutifully added to the text by the author. A thoughtful, careful exploration of these issues, instead of a ‘laundry list’ mentioning each one after it has been raised during peer review, should be incorporated into the manuscript text before submission. The unknown ‘truth’ of the underlying disease risk is a major limitation to the current comparison of methods and this must be addressed and acknowledged in the discussion.

MINOR ESSENTIAL REVISIONS

4) Results p8. Typo ‘non’ -> ‘none’

5) Results p9. Typo ‘The all four methods’

6) Methods p6. The author has added an explanation of the importance of the
deviance residuals to evaluate model fit, and removed the figure of residuals, both at the suggestion of reviewers. However there should be an accompanying explanation in the results which describes the results of the investigation, and in particular the unusual pattern of residuals related to possibly dependent high density urban regions. Could this influence/impact the results? This might also be mentioned as a limitation. If in fact there is something important to discuss here, then perhaps the figure should be included again. However it is problematic to emphasize the importance of this step and then omit the results (with an unusual finding that should be mentioned).

DISCRETIONARY REVISIONS

7) Results p8. Long lists of regions embedded within the text are not especially helpful for the reader. These data are displayed nicely in Table 1. The text should reference important highlights of the table (and the table itself could be enhanced by highlighting particular sections or rows) without listing the regions as currently presented.

Level of interest: An article of limited interest

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

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

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