Author's response to reviews

Title: Using Funnel Plots in Public Health Surveillance

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Responses to Reviewer Comments

Reviewer #1 (point 1): Covariates for Risk Adjustment
The Data section of the manuscript explicitly mentions that the data are at the 70 sub-regions.

Reviewer #1 (point 2), #2 (point 1): Use of Asymptotic Normality for Limits
The method used to derive the funnel plot limits was of more interest than we expected! Another paper we have underway provides evidence that, for funnel plots as opposed to confidence intervals, limits based on asymptotic normality have superior performance characteristics. We have added a paragraph in the Discussion section that addresses the choice of method for the funnel plot limits.

Reviewer #1 (point 3) Term “Marginally Significant”
We understand Reviewer #1’s preference for precise language surrounding hypothesis testing. We agree that in a hypothesis testing framework, results will either be significant or not, and that “marginally significant” is a meaningless term. However, when model building and exploring data, a process much more judgment-driven, we do not believe that the hypothesis testing framework applies, and hence have made use of the less formal term marginally significant. We also do not believe that it is appropriate to use an adjusted significance level in order to maintain a hypothesis testing framework as the reviewer suggests. To address this concern however, we have removed the term marginally significant and substituted the terminology ‘close to significant’.

Reviewer #1 (point 4, 5): Ecologic Analysis / Interpretation Issues
We have made explicit that the analyses are ecologic in the Data section and noted the potential limitations with this type of study in the Discussion. Similarly, we have expanded the Discussion section to address the risk associated with the interpretation of proxy variables.

Reviewer #1 (point 6): Figure 5
We are not able to add axes the reviewer has requested. The figure axes were removed to protect confidentiality as these are national survey results based on very small cells. This rationale is now explicitly included in the Results section.

Reviewer #2 (point 1) Discussion
As requested, in the first paragraph of the discussion we have noted the difficulty in making judgments about publication bias when using funnel plots in meta-analysis and contrasted these type of judgments with the kind made in our proposed use of funnel plots.

Reviewer #2 (point 2): Conclusions / Small Sample Variation
We have explicitly included the reference to the small sample variation in the Conclusion.
Reviewer #2 (minor): references, typos
All typos have been corrected and references have been added.

Reviewer #3 (point 3), #2 (point 6): Colour and legends in graphs
We have taken the excellent suggestion and changed the colour of the funnel plot limits in our Figures. Legends have also been added.

Reviewer #3 (language/editor comments): Language
We have made the use of control limit more consistent and re-written its interpretation and definition.