Reviewer's report

Title: Extreme ambient temperatures and cardiorespiratory emergency room visits: assessing risk by comorbid health conditions in a time series study

Version: 1 Date: 12 December 2013

Reviewer: Ho Kim

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This paper effectively demonstrates heat and cold effects by the comorbid health status. This is one of few time-series analysis that empirically shows the vulnerability of the diabetes to extreme heat. And other findings are also very interesting. The messages are straight forward derived from standard methods. I have a few minor comments.

* The definition of heat and cold (RR's for 99th to 75th percentile and 1st to 25th percentile) should be taken more carefully. How robust are the results by changing this criteria? (What if you compare 1st to 90th percentiles?) Graphically presenting non-parametric relationships between temp and ER visits would be informative to understand the choice of this criteria. It is well known that morality shows J or V shape with temperature. I'd like to see the shapes of the association.

* There is no description about Table 2.

* Reference 29 and 31 are identical.

* First paragraph of the result on page 9: Air pollutants and weather variables are usually correlated. It's better to present the ranges of Pearson correlations and p-values in the text. NO2, CO, and O3 are always adjusted in the model. I am curious how much the results are changing depending on the choice of the air pollutants.

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.