

## **Author's response to reviews**

**Title:** Modifiers of Short-term Effects of Ozone on Mortality in Eastern Massachusetts -- A case-crossover analysis at individual level

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Editor  
Environmental Health

Dear Editor

Re: Environmental Health Manuscript ID#: 1186181283292774 entitled  
"Modifiers of Short-term Effects of Ozone on Mortality in Eastern  
Massachusetts-- A case-crossover analysis at individual level"

Thank you very much for your letter of the Sept 9, 2009 and the attached reviewers' comments. Please find enclosed a copy of our revised manuscript with the following changes, according to editor and reviewers' suggestions and comments:

Response to Reviewer: Andrea Baccarelli

Abstracts:

We have added the number of deaths that occurred during the time period evaluated [page 2].

We have added some brief information on how ozone exposure were assessed in the abstract [page 2].

Introduction:

We have revised the last paragraph in Introduction to clarify [page 5]. In general, the Poisson regression approach models counts of events among groups, and hence interactions are only testable after first aggregating into categories, and computing daily counts by category. If one decides to, e.g. split up age groups differently, one needs to go back to the original data and generate a new set of counts. This is much more straightforward in the Case-Crossover approach, since the analysis is at the individual level, but we agree that for categorical variables interactions can be modeled in Poisson regression as well. For continuous variables, such as median household income or age, however, the Poisson approach requires dividing into categories, while the case-crossover approach is more flexible in allowing a continuous interaction term.

Methods:

We have revised the last paragraph in Mortality, weather and pollution data in Methods section to make it clear how we calculated ozone concentrations and assigned the values to each case [the second paragraph from the bottom, page 7].

We have explained why we only focused on the warmer season and clarified the period using “between May 1st and September 30th ” (the last sentence of the last paragraph in Methods, page 9).

Results:

We have changed the sentence and edited other corresponding places in the Results section as the reviewer suggested.

Discussion:

We have added missed words.

We have revised the sentence to make it clear [the last sentence of the first paragraph on page 13].

We have edited the corresponding places in the section as the reviewer suggested.

General points:

We have used “characteristics” instead of “characters” at the corresponding places.

We have used “study population” instead of “population” at the title of Table 1 to make it clear.

We have changed “Marital” into “Marital Status” and added notes indicating the cut-offs at Table 3 as the reviewer suggested.

Thank you very much for your insightful comments.

Response to Reviewer Victor H Borja-Aburto

We have revised the last two sentences of the last paragraph in Introduction section to expand the significance of the statement [page 5].

We have added a paragraph to explain how variables selected as modifiers were evaluated [the second paragraph in Methods, page 6].

We completed the sentence [the last two sentences of the first paragraph in Discussion, page 12].

We added the sentence in the second paragraph in Discussion to indicate that other non-biological factors may also explain such vulnerability [page 12].

We revised the original paragraph and added two paragraphs to discuss the diabetes and stroke [paragraph 3-5 in Discussion, page 13-14].

Thank you very much for your insightful comments.

We greatly appreciate the opportunity of resubmitting our work and look forward to your decision.

Yours sincerely,

Cizao Ren, Joel Schwartz, Steve Melly