Reviewer's report

Title: Effects of high summer temperatures on mortality in Spain

Version: 1 Date: 21 January 2014

Reviewer: Cristina Linares

Reviewer's report:

This is a very interesting paper that investigates the relationship between high summer temperatures and total mortality using a nationwide dataset (50 Spanish cities) also evaluating whether a number of city-specific characteristics are responsible of the heterogeneity in the city-specific main effects.

The main strength of the study is the wide study base, which allows an evaluation of the temperature-mortality association nationwide, also because results are compared to what reported in the previous study on the same dataset, which evaluated the effect of administratively defined heat waves (Tobías et al. 2012). This is perhaps the most relevant part, because only few studies have addressed both exposures simultaneously: high summer temperatures and heat waves, at nationwide level.

Though the study is well conducted and the paper is clear and well written, few minor essential revisions could help to improve quality and interest of the paper.

Minor essential revisions

1. The effect modification by city characteristics is perhaps the most interesting part, but few socio-demographic characteristics have been included. Would it be possible to find other socio-demographic characteristics (like health expenditure or unemployment) as potential explanatory factors of the heterogeneity in the city-specific results?

2. The summary of the high temperatures effect is derived from the city-specific fitted spline comparing the 99th vs. 90th percentiles, allowing for comparison with previous US studies (Anderson and Bell 2009). However, others conducted in a similar Mediterranean setting (check Leone et all 2013) have reported estimates by 1°C increase. Although the authors also report the overall country estimate by 1°C increase, it would also be desirable to report all city-specific estimates by 1°C increase in Table 1.

3. Since the main strength of this paper is that allows compare the effect of high summer temperatures with previously published effects of administratively defined heat waves (Tobías et al. 2012). I do encourage the authors to report some comparison between both exposures, for example correlation between city-specific estimates for high temperatures and heat waves, also to discuss about similarities and differences in city-specific characteristics responsible of heterogeneity for both exposures.
Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

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