Reviewer’s report

Title: Regional differences in mortality in Greece (1984-2004): the case of Thrace

Version: 2 Date: 19 February 2008

Reviewer: Peter McCarron

Reviewer’s report:

This paper seeks to describe the regional mortality differences in Greece and to investigate whether any differences observed could be causality related to a number of socio-demographic variables.

Better understanding of regional mortality differences is important because it sheds light on the how well the aims of public health are being achieved, and also provides hypotheses for further testing with the goal of better understanding disease aetiology, and hence improving preventative efforts. However, as indicated below, I feel that this paper cannot, in its current form, contribute to this task.

Major Compulsory Revisions

The authors indicate why they carried out the study but I believe that they should justify why they examined the possible risk factors that could explain (in part) the differences reported. For example, why did they examine the per capita coverage by dentists in each region? And is the reason that smoking was not included because of lack of regional data? Are data on general practitioner coverage, childhood vaccination coverage available?

More importantly, I believe that the main weakness of the paper relates to the statistical analyses. I think that the authors need to examine their data more thoroughly and conduct some more analyses. There are three main areas in which statistical analyses are lacking:

(1) Comparison of the SMRs between the different regions in Greece: if confidence intervals were provided around these SMRs it would greatly help the reader to visualise whether there are indeed differences in mortality between regions. Furthermore, a formal test of whether the rate in Thrace differs from that in other areas is required.

(2) Although not strictly related to statistical analyses, are the authors able to acquire cause-specific mortality data? This could be very interesting. Given that the increased risk is seen largely in younger age groups, what is the role of accidents/violence? Perhaps this is not important, since female mortality shows the same pattern, but ascertaining cause of death could help in better understanding of mortality differences.

(3) Some modelling of the possible risk sociodemographic risk factors and the outcome (mortality) is required. I consider this to be the main weakness in the
Some simple univariable models, followed by a multivariable model would be easy to implement and are essential before any conclusions can be drawn regarding associations between the possible risk factors and regional mortality. For example, perhaps the high mortality (if it is truly different from that in other regions) is due in part to the low number of hospital beds, but do the authors believe, given that the mortality is high in the period from childhood to early adulthood, that the availability of hospital facilities is important? Statistical modelling would help to answer this question. Similarly, it may indeed be the case the GDP is a risk factor, but this needs to be investigated statistically. The authors suggest that the high proportion of Muslims in Thrace may be a possible risk factor, but other evidence does not support this, so again statistical analysis is required. The authors also speculate that the diet may be different in Thrace compared to the beneficial Cretan diet. But, there are no data on diet with which to test this, and without this it is just as plausible to argue that since Thrace is in Greece, even a northern Greek diet could not be so different from a Cretan diet to contribute to a mortality rate above the EU average. There appears to be a south-to-north trend in increasing mortality risk. Can the authors explore this further? Are such patterns seen in the putative risk factor data? I pose these questions to try to convey what is missing from the paper and how it could be strengthened by judicious, but simple, statistically modelling.

There are a few, more minor, issues:

On page 4 the authors state that statistical analysis was performed using SPSS. It would be helpful to have a paragraph detailing the analyses that were (or are to be) carried out.

The authors have not commented on the strengths and weaknesses of their paper they should consider doing this.

There are a few sections of the paper that require minor clarification, e.g. on page 4, under the subheading “Age category 0-4 years”, the authors should state again that this refers to Thrace.

Table 1 is probably not required

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

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.