Reviewer's report

Title: Falls on snow and ice in England: calculating the cost of emergency hospital admissions during winter

Version: 1 Date: 21 January 2011

Reviewer: jens lauritsen

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Review of
MS ID : 1754451531483258
Title : Falls on snow and ice in England: calculating the cost of emergency hospital admissions during winter
Authors: Caryl M Beynon, Sacha Wyke, Mark Robinson, Jenny J Mason, Karen Murphy, Ian H Jarman, Mark A Bellis and Clare Perkins

The paper addresses an important issue and highly important aspects of as well looking at occurrence and economical aspects

– to be honest – I have considered a similar paper based on Danish Data in our setting, where (unpublished data) we have seen a fourfold increase over the period studied here.

- Major Compulsory Revisions
I see only clarification issues in the paper, which the authors should address:

When working with large datasets covering a large variation in geographical and demographical composition there is an inherent problem of missing the “true” association. For the current study three additionel sets of analysis or verification are recommended. I am aware that some of this is covered in the analysis and methods section, but as I read the text there is insufficient clarity in the description of this.

1

Stability of association with temperature across regions. It seems to me that it should be possible to attain temperature data at the same level as the study units “per Government Office Region (using the patient’s postcode of residence to assign each admission to a region).” And the paper also states: “The UK’s Meteorological Office provided: 1) mean winter temperature data for England for winters 2005/06 to 2009/10, and 2) mean weekly temperature data for England television regions for winters 2005/06 to 2009/10.”
if one looks at e.g.:
http://www.metoffice.gov.uk/climate/uk/2010/january/averages.html there is a variation in actual mean temperature for January from -0.2 in East Scotland to 1.8 in England SW and Wales N. This variation is about a quarter of the total visualised range in figure 2. But either I am misreading or there is insufficient use of the actual regional data provided in “Television regions”.

2
The age and sex distribution calls for some sort of stratified or restricted analysis by age and possibly sex. At least verification that the overall relation in figure 2 is constant as indicated. Is there a variation in the temperature outcome relation with age and sex – or is there a uniform relation.

citation:
There is an exponential increase \[\text{Ln}(\text{rate of admissions}) = 0.456 - 0.463(\text{mean weekly temperature})\] in the rate of emergency hospital admissions for falls on snow and ice as temperature falls.

comment:
Although the correlation is high, it seems counterintuitive. Our experience is that some sort of threshold model would be appropriate. We have very slippery pavements and roads with icy conditions at temperatures oscillating around 0 degrees Centigrade, whereas constant temperatures below say -5 degrees pose less problems, since then there is mostly snow.

3
The analysis presented in figure 2 and 3 should be based on the same data.

4
Changes over the years. It would be interesting to know whether the temperature relation is completely absent over the years – although the number of datapoints may be too small before last winter. E.g. from:
http://www.metoffice.gov.uk/climate/uk/datasets/Tmean/date/Scotland_N.txt it is evident that the changes are more than small. :

<table>
<thead>
<tr>
<th>Year</th>
<th>Average January</th>
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<tbody>
<tr>
<td>2007</td>
<td>4.3</td>
</tr>
<tr>
<td>2008</td>
<td>3.1</td>
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<tr>
<td>2009</td>
<td>2.9</td>
</tr>
<tr>
<td>2010</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**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'

I do research in the field. But have no economic interests as such (apart from keeping my job).