Author's response to reviews

Title: Evaluating housing quality, health and safety using an Internet-based data collection and response system: a cross-sectional study

Authors:

Mari Turunen (mari.turunen@thl.fi)
Ari Paanala (ari.paanala@thl.fi)
Juha Villman (juha.villman@thl.fi)
Aino Nevalainen (aino.nevalainen@thl.fi)
Ulla Haverinen-Shaughnessy (ulla.haverinen-shaughnessy@thl.fi)

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Author's response to reviews: see over
Dear Editor-in-Chief,

Attached please find a revised version of the manuscript titled “Evaluating housing quality, health and safety using an Internet based data collection and response system”.

We are grateful for the reviewer’s comments. All the changes made to the manuscript are marked with track changes. Our responses for the reviewers’ comments are written below (marked with bold). We have also done all the changes presented in the email itself.

**Reviewer: Braubach**

**Major Compulsory Revisions**

1 - The internet-based data collection is only part of a larger survey. During the whole article it remains unclear to me to what extent this paper only addresses the internet data and relevance of the web-based tool (then the focus is on methodology), or whether it addresses the whole survey and its results (more a technical paper). In the background and aims of study-sections the web application is presented as the tool developed to collect data but during the paper itself it is mostly presented as an add-on to an existing study in order to increase response rate. Thus, it needs to be made more clear whether the paper discusses the web tool per se or the web tool as an addition to standard surveys. For example, in the abstract it is unexpected to read under "Methods" that respondents could choose between paper and web questionnaire after being informed under "Background" that the aim was to develop an internet-based system.

=> The text was modified to make these issues clearer for the readers.

2 - It is unclear whether the feedback to the responses provided by the system is an objective in itself (health promotion, awareness, advice...) or just a means to increase response rates.

=> Actually both, we wanted to raise awareness among the respondents about the housing and health issues and also wanted to provide feedback as an incentive. The research ethics are quite strict in our country, preventing us from offering monetary incentives, gift card, presents, etc. However, we are asking the respondents to spend quite some time in answering the questionnaires. Therefore it feels “appropriate” to be able to offer something for them in return. At the same time, one of the objectives given for national research institutes is to distribute information amongst the public. This approach has therefore multiple benefits.
3 - The tables present interesting results but if the idea to use the web to collect data is to be tested it would be necessary to split up the results by type of response mechanism. Are the results based on web responses different than the results based on paper questionnaire responses? If so, what does that mean? Unfortunately, the tables do not show these two dimensions and the question is not discussed.

⇒ Because we got only 80 answers through the internet, we decided to present the results as a whole and not to split them up by the type of the response mechanism. However, the background information (e.g. age, gender, marital status) by group of respondents is presented in Table 1, which is expected to explain most of the differences among the two groups. For example, the internet respondents reported cleaning their home less frequently. The text was modified.

4 - The discussion section can be improved significantly. It too often simply describes the data, partially repeating information provided already in the result section. I’d welcome more in-depth discussion of the results. What does it mean? What can we learn? Any unexpected data? Any health priorities to be identified? Another relevant aspect: given that a third wanted feedback on their answers, could it be that the option to get such feedback may have especially motivated residents in "bad" housing to participate in the survey? This could be tested by comparing the results of the group asking for feedback with those of the group not wanting feedback. I feel this should be part of the discussion section as it can not be excluded that it may affect the results. Overall it must be more clear whether the paper focuses on presenting a new technology to collect data, or whether the focus is on presenting the data. In this context, the introduction of the paper is more method-oriented but in results and discussion the web-based data is not featuring anymore and only overall results are shown.

⇒ The text was modified in order to improve the discussion section.

Minor essential revisions

5 - Did the paper questionnaire exist before and the web tool was added later or was both developed in parallel?

⇒ They were developed in parallel. We added this specification in the text.

6 - Page 5, list of items: how many feedback items? How long did it take to fill the questionnaire?

⇒ Three feedback items all together. On average it took 30 minutes to fill the questionnaire. Specifications were added to the text.

7 - In text (as well as tables) be more precise on the potential differences between web and paper results.

⇒ Please see the earlier response to this issue.
8 - Page 9: fifth of residents planning to move in next 12 months: is this a result expected? It seems quite high...

=> According to the statistics in 2004, there were about .87 million changes in addresses registered in Finland (http://www.stat.fi/til/muutl/2004/muutl_2004_2005-05-13_tie_001.html; in Finnish), where the total population was 5.2 million. If simplified, the difference in the percentage could be explained by assuming that not all who are planning to move actually does so. Also, with respect to this question, we were mainly interested in finding out if the reason for the moving plans were somehow related to the housing quality and health.

9 - Page 10: water supply disruptions in what time window? within a year, a month...? same issue for water damage. Also: signs of rodents are better termed an indicator of a lack of hygiene but it must be kept in mind this could also be an indicator of floor level.

=> We asked whether the respondents have had water supply disruptions within the last 12 months. Concerning water damage, the answer options were: “no damage”, “damage within the last 12 months”, “damage over 12 months ago” and “don’t know”. In the text we mentioned that eleven percent reported that they had some serious water damage in their house/apartment and 3 % of those had occurred within the last 12 months.

10 - The result section often only gives qualitative information (a small portion of households; the main source was...) and instead the percentages should be given.

=> Because the percentages can be seen in the Tables, we didn’t put them all in the text. We also thought that in that way the text would be more fluent.

11 - The discussion section could benefit from comparing with average national statistics to assess the accuracy of the study.

We added text to the discussion.

12 - The discussion section ends with a very short para on the response system. I feel this is something to be discussed in more detail; instead the result discussion could be shortened.

The discussion was modified.
Reviewer: Jacobs

Major Compulsory Revisions:

General comments
This is essentially a methods paper, but it is unclear how generalizable the results are. The results seem to suggest that in fact an internet based system is not workable, given the low response rate and the lack of certainty about the accuracy of respondent input. The English in the paper is also substandard and requires extensive copy editing. The idea that “feedback” is an incentive to participate is novel, but it is not known if the respondents actually acted on the feedback provided. The survey results also do not appear to have been validated by comparison to other housing or health surveys. The paper can be published after revisions.

=> Thank you for these constructive comments. We added specifications to make it clearer that the number of responses via the internet questionnaire was very low indeed. We had a language check performed by a native English speaker. We did not have a comprehensive housing and health survey against which we could have validated the questionnaire, but we used several sources to cover the essential areas. Some of the results can be compared with the information available in registries (e.g. Statistics Finland).

Specific comments

The word “Altti” in the title does not make sense and should be deleted

=> The word was deleted. The word “Altti” is an abbreviation of the Finnish project name, but we agree it is not very informative for the readers.

p. 2. The first sentence is an overstatement. In fact, there are a significant number of housing variables that have been linked to health. See for example WHO 2005 (Report on the WHO Technical Meeting On Quantifying Disease From Inadequate Housing, Bonn Germany, November 28-30, 2005, World Health Organization Regional Office for Europe, published April 2006) and Jacobs et al. 2009 (Jacobs DE and Baeder A. 2009. Housing interventions and health: A review of the evidence. National Center for Healthy Housing, Washington DC. http://www.nchh.org/LinkClick.aspx?fileticket=2lvaEDNBIdU%3d&tabid=229. It would be better to state that housing and health surveys are typically not integrated and therefore not representative of population health or national housing stocks.

=> The text was modified based to the reviewer’s comments.

p. 2. The abstract presents no housing or health results at all, although much of the article itself is devoted to that. The important housing and health results should be summarized in the abstract. The use of the term “feedback” is not clear. Do the authors mean to say “expert advice on reported health deficiencies”? Also, the abstract should state if
respondents were somehow compensated for their time in completing the survey.

=> The term feedback is explained in the Response system –section. The abstract was modified as a response to the reviewer’s comments.

p. 3. The conclusions need to make it clearer that all health results are self-reported.
=> Added.

p. 4. Should “institute employers” be “institute employees”?
=> Corrected.

p. 5. The method used for the power calculation is not clear
=> The text was clarified.

p. 8. The housing data that are not shown should be, because that is the only way the reader can determine if there is a bias in either demographic, health or housing characteristics in the final sample.
=> We added data in Table 1.

p. 8. The first section under “Background Information” seems to be mostly about commuting distances and time, but the connection with health is not apparent.
=> We agree that the connection is more subtle, and it may relate more directly to housing quality than health. The main point is that home location as such can have many implications to perceived housing quality and health. For example, a home location that enables the occupants to commute by bike or walk may promote their health more than many other housing parameters. A location that enables the occupants to use public transportation rather than a car may be environmentally friendly. However, public transportation also commonly results in dissatisfaction that may reflect into occupants responses about their living environments. The text was shortened a little.

p. 9. Bottom. The term “district heating” needs to be defined.
=> It is now defined in the List of Abbreviations.

p. 15. The discussion section does not discuss strengths and weaknesses, bias, and how we can know if respondents accurately entered their own data on the internet system.
=> Some discussion was added about the strengths and weaknesses. We have really no way knowing if respondents enter information accurately. On the other hand, we do not have to take QA/QC measures similar to what we do to ensure the data was entered correctly by the research personnel (normally 5-10% of the data double entered and analysed to make sure that the error rate is satisfactory low).
p. 16. It is not clear why size of home is necessarily related to health. Are the writers referring to crowding and communicable disease or some other endpoint?

=> Yes, we consider occupancy per square meter the more objective way to assess crowding. We also asked whether the occupants perceive their home large enough, but it is more subjective. The text was modified to better explain the reasoning.

p. 17. There is a statement that only a fraction of homes have an adequate ventilation system, but no reference supporting this assertion is provided. How does one know if this is actually true?

=> The text was modified in order to communicate this issue better.

p. 17. It appears the authors seem to think that electric heat is “not renewable”, but of course it could be (e.g. hydropower, solar power, etc.).

=> Authors are aware that electric heating can be “renewable”, however in Finland only 15% of the electricity consumption was covered with hydropower and only 0.3% with wind power in year 2009 (http://www.energia.fi/en/news/energy%20year%202009%20-%20electricity.html). A specification was added to the text.

p. 19. Why is it noticeable that half of the respondents do not know their radon system. What does this mean, is that positive or negative? What is the basis for this?

=> Because in Finland, indoor radon concentrations are among the highest in the world [Weltner et al., 2002]. We have added some text and a reference concerning this issue.

p. 19. Did respondents actually act on the feedback. How does the reader know that the feedback was accurate and produced a positive health outcome?

=> We do not know for sure whether the respondents acted on the feedback; although we have plans for a follow-up study concerning this issue.

Sincerely,
Mari Turunen, Researcher
Master of Science, PhD. student
E-mail: mari.turunen@thl.fi