Author's response to reviews

Title: Patterns of Long Term Care in 29 European countries: evidence from an exploratory study.

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

We would like to thank you for revising our manuscript. We also thank the reviewers for their critical comments, which helped us to improve our article significantly.

Please, find below our point to point response to the comments.

Yours Sincerely

Gianfranco Damiani, Valentina Farelli, Angela Anselmi, Lorella Sicuro, Alessandro Solipaca, Alessandra Burgio, Domenica Fioredistella Iezzi, Walter Ricciardi

Responses to Editorial requests

We thank you for having reminded us to add the Acknowledgement section to our article (see Acknowledgement page 15). An essential material (e.g. the access to the OECD Health Database) was provided by ISTAT (Italian National Institute of Statistics), which is the affiliation of the authors Alessandro Solipaca and Alessandra Burgio (please see Authors’ contribution). Authors did not receive any funding for the study.

Responses to Reviewer 1 (Jouke van der Zee)

We would like to thank you for your critical comments, which give us the opportunity to improve several aspects of our manuscript.

Please, find below our point to point response to your comments.
Comment: My first general comment about the study is that it contains too much information. It is both a mostly (that is: on this large scale) unexplored area (so, one would expect the authors to use room for questions about definitions, validity of data, methods, interpretation) and it contains a combination of cross-section and time series data, which, in my opinion, might deserve two separate papers. One paper about ‘Patterns’ and one about ‘Trends’. For the ‘Patterns’ part one could perhaps present one (as robust as possible) figure per variable per country, while the ‘Trends’ part would show whether the countries move into a certain direction and which direction that would be and what possible explanation the authors see. Only if the ‘Patterns’ part could not be constructed without the author’s use of time series data this general comment is not adequate, but it would make the paper and the line of reasoning far easier to understand. If the editors/authors decide to keep the paper as it is, I’d suggest a clear structure (in the first part we deal with crosssectional differences, in the second part we’ll analyze trends).

Response: We agree with your observations. We would like to highlight that, as showed in the Methods of the study, the statistical analysis is generated from time series data, more specifically, from a 3D matrix $I \times J \times K$, where $I$ are variables, $J$ countries and $K$ years. Principal Components are selected and patterns are defined through a global Principal Component Analysis (PCA) performed on a general matrix after separated PCAs on each yearly matrix. Therefore, the definition of the patterns and the analysis of each country respect to them, both the static and the dynamic one (trends) are closely linked, so that we prefer to keep the study as it is. However, taking into account your suggestion and in order to improve the clarity of the paper, we decided to separate Results into two sections (Patterns and Trends) (please see Results page 6).

The Discussion was kept as it was, because it is aimed at comparing European countries, providing integrated comments of them.

Comment: My second remark regards the rather stern policy recommendations or rather the recommendation that policy makers start applying the results into their policy preparation processes. This is a first attempt to reveal patterns and trends in Long Term Care based on a crosssectional/time series study with highly aggregated data. It is a long way from these (relevant and intriguing) results to policy applications. This requires studies on a lower aggregation level in order to reveal possible mechanisms behind the patterns and trends revealed.

Response: The Conclusions were revised in order to take into account your precious suggestions (please see Conclusions page 14 ).
Comment: The research question: clearly formulated (though better in the last sentence of the background part than in the last sentence of the abstract which sounds a bit tautological)

Response: The Abstract was changed in order to be more clear in expressing the aim of the study (please see Abstract page 2).

Comment: I'd suggest to move definitions and operationalizations (what is LTC, how are the data described) from the appendix to the method section. I realize that this may blur the clarity of the paper, but in this study that makes use of aggregated and routinely collected data a precise documentation (as provided in the appendix) is essential for the interpretation of the principal components.

Response: We added a table in the Methods section of the study, which summarizes variables’ definitions and sources to help the interpretation of the results. Nevertheless, we decided to keep the Appendix 1, which is useful to give more detailed descriptions of the variables (please see Methods page 5 and Table 1).

Comment: The description of the methods seems adequate to me; the graphs, however, are difficult to interpret (this correlation circle with all these years); can’t they be transformed by an expert in graphics?

Response: The correlation circle is a graphical output generated by SPAD (the software we used to perform the analysis) and the only alternative to that would have been a table with a lot of coefficients expressing the correlation between variables and Factors. In our opinion, the correlation circle remains the best way to represent the interpretation of the Principal Components. However, we tried to modify Figure 1 in the best way possible in order to improve the interpretation of results (please see new Figure 1).  

Comment: One more point; there is no definition of Long Term Care; I can understand why, but this’d better be explained than smoothed.

Response: We added a concise definition of LTC (given by OECD) in the Background section (please see Background page 3).

Comment: Are the data sound.? First of all, these are the best data available. They cannot, as far as I know, be replaced by similar or comparable data sets. But, any student in this matter knows that, especially in the sector of frail elderly care, a bed in a long term ward of a general hospital in
France is different from a (Dutch and medical) nursing home bed is different from a Danish home for the elderly. That is why I suggested earlier to devote a part of the discussion to this phenomenon; the authors can’t be blamed, but they can point out which elements of the data set are more valid than others and how this can be improved. Even an indicator like subjective health has a different scoring pattern in France (a bunch of grumpy people; see last week’s comment in the Economist) compared to Iceland or Denmark (these differences in grumpiness have their mirror in the bunch of literature on international differences in ‘happiness’)

Response: We thank you for this suggestion, which gave us the opportunity to improve Discussions, elaborating the limitation of the study derived from data comparability (please see Discussion page 11-12).

Comments: Discussion and conclusion well balanced? Discussion is adequate; the authors might devote some space to alternative explanations (cultural differences; value differences (Roman and Greek Catholic family values versus Lutheran/Protestant/agnostic emphasis on individualism; the international differences in family values are mentioned; the authors might try to refute or confirm this value theory with the data they dispose of.)

Authors acknowledge the work of others? Yes, to a certain extent. I miss references to the international SHARE-studies, that describe a lower number of countries (last version I thought 12) with rich and self collected data; In the SHARE study countries are divided into ‘family countries’ and ‘individual oriented’ countries, which might be useful. I also miss references to international value studies and/or the work of Geert Hofstede who distinguished between feminine European cultures (Nordic countries) and masculine cultures (Latin countries). Might be part of the discussion (alternative explanations). I already mentioned the worldwide happiness studies (Veenhoven and colleagues) where the same happy Icelanders and other nordic tribes pop up.

We thank you for these comments. We tried to devote more space to comment our results in the light of alternative explanations derived from cultural and value differences. Discussions were therefore modified (please see Discussion page 11). Your suggestions also helped us to update References with relevant international studies (please see References n.31, 32,33.)

Comment: The conclusions are too firm, in my opinion. This is a first analysis and a source of inspiration for studies at lower aggregation level; so I’d suggest to be more careful and to point to further research on intriguing results.
Response: Thanks for this suggestion. We modified Conclusions in order to be more careful and to point out the necessity of further researches with lower aggregated data (please see Conclusion page 14).

Comment: Aim clearly stated? Yes certainly in the background section; less so in the abstract

Response: Please see the revised Abstract.

Comment: Title and abstract; title is rather technical (do all readers understand what an ecological study is? I do, as a social scientist, but some readers might confuse it with an environment study). Abstract is extremely ‘abstract’. Might be a bit more down to earth.

Response: The title and the abstract were modified taking into account both this suggestion and the one provided by Referee 2 (please see Title and Abstract page 1 and 2)

Comment: Language; if you read the paper carefully and dissect the long sentences, the wording and phrasing are concise and basically clear.

Response: We revised some sentences in order to make them more clear.

Comment: Quality of written English: Needs some language corrections before being published

Response: The paper was reviewed by a native speaker.

Responses to Reviewer 2 (Sven Lueke)

We would like to thank you for your critical revision of our manuscript. Your comment helped us to improve the study.

Please, find below our point to point response to your comments.

Comment: Methods: A short explanation of the choice of cut-off-point (>=60% of total variance) is missing, though there are several other options, e.g. Kaiser Criterion, Horn’s Parallel Analysis etc.). Depending on cut-off-point, you could have gained e.g. 3 PCs. The manuscript could improve a lot, when taking into account this aspect. At least a critical discussion of the cut-off-point would be necessary.
Response: We thank you for your comment, that allows us to specify the reason of our choice of cut-off point.

To interpret the results of the analysis we took into consideration several options, such as the Scree plot and Kaiser Criterion rules. First of all, we excluded the Scree plot because this is a subjective method, used when the sample is large, i.e. composed by more than 300 units of analysis.

Kaiser Criterion was then also excluded because this rule, consisting in retaining factors with eigenvalue >1, is recommended if the sample size exceeds 250 and the average communality is greater than 0.6 or if there are less than 30 variables and communalities after extraction are greater than 0.7. In our case, we had less than 30 variables, but the communalities, excluding the first one, were always less than 0.7 for all variables (they ranged from 0.10 to 0.45).


Dunteman GH: Principal Component Analysis SAGE Publications 1989; Field A: Factor Analysis using SPSS. Research Methods II.)

Therefore, we followed the variance explained criteria, which is based on keeping enough factors to account for a certain degree of variance. The cut-off of 60% was chosen in order to explain enough variance with as few factors as possible. In addition, we selected a number of factors that were meaningfully interpreted and easily comprehensible to researchers and readers.


Ainleya DG, Speara LB, Tynanb CT, Barthc JA, Piercec SD, Fordd RG, CowlescTJ: Physical and biological variables affecting seabird distributions during the upwelling season of the northern California Current Deep-Sea Research 2005, 52: 123–143)

Taking into account your suggestion, we added a brief critical discussion of the cut-off point choice in the Methods (please see Methods page 6) and Discussion (please see Discussion page 12)

Comment: Conclusions, 2nd paragraph: This paragraph slightly overvalues the results. The findings of the study are first of all explorative and descriptive: two factors for describing patterns of LTC were identified (explaining 60% of total variance), that show mainly 4 patterns of LTC, and allow comparisons between the 29 European countries. This is the first very important step. In
order to gain meaningful policy-making evidence and to overcome several limitations of the study, additional subsequent research (in non-ecological design) would prove beneficial.

**Response:** We thank you for this comment. Taking into account your suggestions, Conclusions were revised in order not to overvalue the results and to point out the necessity of further studies in non ecological design (please see Conclusion page 14).

**Comment:** Title: The explorative design of the study aims to identify different patterns of LTC in Europe. This should be expressed by the title of the manuscript, e.g. ‘Patterns of Long Term Care in 29 European countries: evidence from an ecological study.’

**Response:** The title was modified taking into account both your suggestion and that one provided by Referee 1 (please see Title page 1)

**Comment:** Discussion, 10th paragraph: The last sentence ‘Finally, the number of variables […]’ is a limitation, not a strength of the study results.

**Response:** We thank you for this observation, which gave us the opportunity to clarify this point. We included this point among the strengths of the study, because we considered it as a strength of the statistical method (Multiple Factor Analysis) that allowed us to perform the analysis over an extended period of time (five years) even if the number of available variables differed in some years (i.e. for the first two years the variable related to self-perceived health were not available). However, we certainly agree with you in considering the partial lack of variables a loss of information and therefore a limitation of the study. We explicated this concept modifying the Discussions (please see Discussion page 12).

**Comment:** Background, 6th paragraph: Can patterns of LTC can be identified across Europe?

**Response:** We corrected the typo in the Background, 6th paragraph (please see Background page 4).

**Comment:** Discussion, 2nd paragraph: Western European countries mainly fulfil elderly needs[...].

**Response:** We corrected the typo in the Discussion, 2th paragraph (please see Discussion page 8).

**Comment:** References, Reference 17: When giving non-English references, an English translation would be useful for the reader.
Response: We provided an English translation of the Italian Reference (please see References)

Comment: References, Reference 19: Berlin DIW seems to be a co-author, but it is the institution of Erika Schulz.

Response: We corrected the typo related to former Reference 19 (please see References)