

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Patterns in wireless phone estimation data from a cross-sectional survey: what are the implications for epidemiology?
<b>AUTHORS</b>	Redmayne, Mary ; Smith, Euan; Abramson, Michael

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Elisabeth Cardis Research Professor and Head, Radiation Programme Centre for Research in Environmental Epidemiology (CREAL) Barcelona
<b>REVIEW RETURNED</b>	29-Mar-2012

<b>THE STUDY</b>	<p>This manuscript is very difficult to understand. The objectives stated in the abstract were to explore the mental process behind patterns evident in data we collected ... (this is unclear - patterns are not explained) to inform correct analytical procedure" (not clear what analytical procedure is meant here ... epidemiological risk analyses, recall studies?)</p> <p>The methods section is very short and not clear, neither is the outcome measure. It seems there were comparisons of distributions. No statistical method described.</p> <p>The abstract /summary are not clear and the sentence in Article Focus stating "Estimated extent of cellphone use is unreliable, although often all that is available for epidemiological studies." seems at odds with the sentence in the results section of the abstract which states "The distribution of recall data reflected that of actual use, despite large variance".</p>
<b>RESULTS &amp; CONCLUSIONS</b>	The research question is not very clear. There are no tables of results, only some graphs which need to be explained better.

<b>REVIEWER</b>	Florence Samkange-Zeeb, MPH BIPS - Institute for Epidemiology and Prevention Research Bremen, Germany
	I declare that I have no competing interests
<b>REVIEW RETURNED</b>	25-Apr-2012

<b>GENERAL COMMENTS</b>	The introduction section could be improved by adding some
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	<p>background information on the theory of magnitude estimation.</p> <p>I would also suggest that the authors move the last two sentences of the introduction to the results or conclusion section.</p> <p>Lastly, the authors begin the first sentence of the 5th paragraph of the discussion "There are circumstances of our survey that may have contributed to the spike.....", but do not explain which circumstances these were.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer 1: Elisabeth Cardis, Research Professor and Head, Radiation Programme Centre for Research in Environmental Epidemiology (CREAL) Barcelona

1. This manuscript is very difficult to understand. RESPONSE: See the opening response above. The objectives stated in the abstract were to explore the mental process behind patterns evident in data we collected ... (this is unclear - patterns are not explained) ... to inform correct analytical procedure" (not clear what analytical procedure is meant here ... epidemiological risk analyses, recall studies?) RESPONSE: The objective now reads: To explore the mental process behind estimating the extent of cellphone use (SMS-texts, calls etc.), to find explanations for commonly observed features in recall data and to use these to inform correct analytical procedure in epidemiological risk analyses which use recall data. (Abstract p.2 and a longer version in text top of p.4)
2. The methods section is very short and not clear RESPONSE: Agreed – it was too brief. This is now fully recorded with subtitles pp4-6
- 3., neither is the outcome measure. It seems there were comparisons of distributions. RESPONSE: The outcome measures in the abstract now reads: Main outcome measures Planned: Distribution of participants' estimated extent of SMS-texts sent and cordless phone calls (in both raw and log-transformed data), and the extent of rounding to a final zero or five within the full set of recall data and within each order. Unplanned: The distribution of the leading digits of this raw data. This was necessary to demonstrate the mental process of recall rather than merely reflecting the billed distribution.
4. No statistical method described. RESPONSE: This is now included in the Methods under its own sub-heading pp. 6-7
5. The abstract /summary are not clear and the sentence in Article Focus stating "Estimated extent of cellphone use is unreliable, although often all that is available for epidemiological studies." seems at odds with the sentence in the results section of the abstract which states "The distribution of recall data reflected that of actual use, despite large variance". RESPONSE: The abstract has been revised to align with the STROBE requirements and to clarify it. Point 1 in the Article Focus (p.3) now states, "Self-reported cellphone use is skewed and has a very large estimation error. This is important because estimated data are often all that is available for epidemiological studies."
6. As mentioned above, the research question is not very clear. RESPONSE: See response to point 1 above
7. There are no tables of results, only some graphs which need to be explained better. RESPONSE: We have now included a table in the results p.8. The figures are discussed in the discussion and we have clarified the annotations to the figures. (Two figures have been changed for ones which demonstrate our argument more clearly).

Reviewer 2: Florence Samkange-Zeeb, MPH, BIPS - Institute for Epidemiology and Prevention Research, Bremen, Germany

1. The introduction section could be improved by adding some background information on the theory of magnitude estimation RESPONSE: This has been added (last para p.4 through to p.5)
2. I would also suggest that the authors move the last two sentences of the introduction to the results or conclusion section. RESPONSE: These sentences were "We found an explanation for commonly

observed recall trends in the psychology literature on magnitude estimation. The results have implications for statistical techniques applied during data entry and in analysis of epidemiological studies, offering an approach to reduce misclassification." They have been removed from the introduction. The equivalent is now reported in text. The psychology literature on magnitude estimation is discussed on p.4 and in the 1st full paragraph of p.11, the last paragraph on p.11 through to p.12, and the last full paragraph on p. 12. Implications for statistical techniques are now discussed under the sub-heading Implications for epidemiology on pp.12-13

3. Lastly, the authors begin the first sentence of the 5th paragraph of the discussion "There are circumstances of our survey that may have contributed to the spike.....", but do not explain which circumstances these were. RESPONSE: We have removed this and substituted the following at the end of the results (pp.10-11): There was an additional rounding-effect to final digits of 5 and 50 in the upper 68.5% of the 2nd and 3rd orders, respectively; these are visible as bright blue columns in figure 1. Only three texting responses (5%) greater than 35 or 350 in the 2nd and 3rd orders, respectively, were not rounded thus, being 68, 525, and 839; for cordless phone calls, only 2 (15%) were not rounded (being 53 and 59).

We can only hypothesise about the spike in estimates starting with 5 and 7 (Figure 2b). An excess of leading fives is probably related to the rounding effect and is shown in fewer leading fours. (The same applies to almost no nines in preference for rounding to a final zero). However, the excess of leading sevens, may reflect a more linear approach from a quarter of those estimating 1, 10 or 100 texts daily, whose weekly estimates were 7 times greater. This explanation is supported by there being no excess of leading sevens for the estimated number of cordless phone calls daily (Figure 2c).