Reviewer’s report

Title: Estimating parameters for probabilistic linkage of privacy-preserved datasets

Version: 1 Date: 06 May 2017

Reviewer: Kirsten Yaffe

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(Document page numbers refer to version with tracked changes)

Page 8 (description of error introduced): 1% of fields: Presumably, error is being introduced to field values [or data elements] in 1% of records, not entire fields?

Page 9: "A de-duplication linkage was performed on the sample" should be "on each sample"

Page 10: Precision (also known as positive predictive value) measures the proportion of "false positive pairs (incorrect matches)". Not according to your equations: precision is shown as the proportion of positives that are true positives. The "proportion of false positive pairs/incorrect matches" isn't precision, but the false positive rate, synonymous with the u probability (i.e., the proportion of false matches incorrectly identified as positive) and is an integral part of the parameter estimations, even though it's not introduced until (the text) on p. 11.

Page 11: (The count of each) "successful 'exact' comparison"... this phrase is unclear (or at least, it seems oddly specific--it suggests there may have been unsuccessful comparisons? or other 'approximate' comparisons?)

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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