

PEER REVIEW HISTORY

BMJ Paediatrics Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Common Errors in Statistics and Methods
AUTHORS	Flom, Peter Harron, Katie Ballesteros, Javier Kalinda, Chester Koutoumanou, Eirini Miles, Jeremy Nevitt, Sarah Rohloff, Peter

VERSION 1 - REVIEW

REVIEWER NAME	Dr. David J Corliss
REVIEWER AFFILIATION	Grafham Analytics 11580 Parkview Plymouth Michigan 48170 United States
REVIEWER CONFLICT OF INTEREST	None
DATE REVIEW RETURNED	20-Jul-2024

GENERAL COMMENTS	<p>The paper does a good job at providing statistically sound alternatives, going beyond correcting poor practice to encourage best practices.</p> <p>On the use of tables: beyond a fairly small number of rows, tables become difficult to read and fewer people will read them. More than six of eight lines might be best in an appendix.</p> <p>P-values: Please mention the ASA's statement on p-values. Please consider: is it appropriate to mention the File Drawer Problem? We do not want BMJ Paediatrics Open authors contributing to it.</p> <p>Excellent comments on the use of exact p-values. Need to define "robust" for statistical contexts to specifically mean resistant to the influence of outliers, as this differs from the variable and often vague use of "robust" in medical literature in general.</p> <p>This comment might be going too far for a reviewer...it is appropriate to ask the authors include an admonition to develop an analytic plan in advance and then stick to it, as a guard against to imprtant considerations mentioned in the paper that "Post-hoc sensitivity analyses must be carefully justified".</p> <p>Good example of quantile regression instead of ordered logistic as a "new" method, as well as "new" used to mean</p>
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	<p>any computing system beyond punch cards. More could be done with missing data - so much more that it would make a excellent topic of a subsequent paper by the authors.</p> <p>Thanks to the authors for their discussion of the analysis of central tendency - an important but often overlooked topic in statistical analysis.</p> <p>The paper would benefit from adding a summary at the end, echoing the principles expressed in the Abstract.</p>
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REVIEWER NAME	Dr. Bob Phillips
REVIEWER AFFILIATION	University of York Centre for Reviews and Dissemination University of York Alcuin College York Leeds Yorkshire LS1 9TX United Kingdom of Great Britain and Northern Ireland
REVIEWER CONFLICT OF INTEREST	None
DATE REVIEW RETURNED	27-Jul-2024

GENERAL COMMENTS	<p>Informative, written with a light touch and concise. This paper should be a key read for any quantitative researcher about to write up their work.</p> <p>Two things might improve this - the expansion of ordinary least squares in OLS regression, and the recognition that in modelling it is often inappropriate to chose categorisation but acknowledge that when dealing with the outputs of models there is sometimes a need to categorise, for example to discharge the toddler with wheeze, extubate the post-op cardiac patient or stop antibiotics in the neonate.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Dr. David Corliss, Grafham Analytics

Comments to the Author

The paper does a good job at providing statistically sound alternatives, going beyond correcting poor practice to encourage best practices.

Thank you.

On the use of tables: beyond a fairly small number of rows, tables become difficult to read and fewer people will read them. More than six of eight lines might be best in an appendix.

This is a good point. We added these lines to the text:

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However, tables with many rows (more than about 8) can be hard to read and might be better in an appendix. This is especially true of tables that span multiple pages.

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P-values: Please mention the ASA's statement on p-values.

We have added a reference to this statement.

Please consider: is it appropriate to mention the File Drawer Problem? We do not want BMJ Paediatrics Open authors contributing to it.

We agree that the file drawer problem is a real one. We have added this statement:

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File drawer problem

A related issue is the "file drawer problem". This occurs when authors only submit significant findings. Although this does not affect the correctness of a particular paper, it does affect the overall literature by giving an overly strong impression of the evidence. For an extreme example, if researchers ran 20 tests of a hypothesis where the null was true, then, on average, one would be significant. If only this one was submitted and published, the effect might be regarded as backed by evidence.

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Excellent comments on the use of exact p-values.

Thank you

Need to define "robust" for statistical contexts to specifically mean resistant to the influence of outliers, as this differs from the variable and often vague use of "robust" in medical literature in general.

Another good point. We have added this footnote:

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Note that this is robustness in a statistical, rather than a medical sense. That is, resistance to outliers.

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This comment might be going too far for a reviewer...it is appropriate to ask the authors include an admonition to develop an analytic plan in advance and then stick to it, as a guard against to imprtant considerations mentioned in the paper that "Post-hoc sensitivity analyses must be carefully justified".

This is an excellent idea and at least one of the authors (PLF) has advocated for something like this in various forums. BMJ often does publish this sort of paper (that is "here's what we are going to do") and they are to be commended for it. But this might be better coming from the editors of the journal, rather than in this article.

Good example of quantile regression instead of ordered logistic as a "new" method, as well as "new" used to mean any computing system beyond punch cards.

Thank you.

More could be done with missing data - so much more that it would make a excellent topic of a subsequent paper by the authors.

Thank you. We agree.

Thanks to the authors for their discussion of the analysis of central tendency - an important but often overlooked topic in statistical analysis.

Thank you.

The paper would benefit from adding a summary at the end, echoing the principles expressed in the Abstract.

We added a brief summary:

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Summary

Adherence to some basic principles of statistics practice and presentation would result in more robust findings and clearer articles.

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Reviewer: 2

Dr. Bob Phillips, University of York, Leeds Childrens Hospital

Comments to the Author

Informative, written with a light touch and concise. This paper should be a key read for any quantitative researcher about to write up their work.

Thank you.

Two things might improve this - the expansion of ordinary least squares in OLS regression, and the recognition that in modelling it is often inappropriate to chose categorisation but acknowledge that when dealing with the outputs of models there is sometimes a need to categorise, for example to discharge the toddler with wheeze, extubate the post-op cardiac patient or stop antibiotics in the neonate.

We have added the following statement:

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These statements apply to *analysis*. It may be necessary to use categories in *presentation*. In medicine, dichotomous decisions often have to be made. However, these decisions are usually based on several strands of evidence, and that evidence is best gotten from analysis that does not categorize. For example, the decision to discharge a patient from the hospital may be based on evidence from multiple tests and several doctors.

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