

## Writing about Statistics

GRS Writing Group – WED 22 NOV 2017

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Increasingly, statistics is being seen as a scientific discipline rather than a technical tool, and statisticians are now found in many research teams. At UWA, there is support for statistical analysis in the Centre for Applied Statistics, but there may also be statistical advisors in your supervisory team, your research group, your school or faculty. You can ask for statistical support with regard to designing your research, analyzing your results and reporting your results.

Like many other aspects of academic writing, there is a range of disciplinary norms when reporting statistics so look at reporting advice provided in publications in your discipline. You can learn quite a lot from looking at a style guide or textbook in your discipline – just make sure they are recent because statistics is a fast-moving field and statistical reporting conventions are changing too

If you are writing a journal article, you should review the journal's instructions to authors. Journals often provide guidelines for reporting statistics in these instructions, although they can be very general. You can also model your statistical reporting on the reporting of statistics in journal papers in the journal you are aspiring to publish in.

Many journals also publish general articles on statistical approaches so you can look for specific articles about the particular type of statistic you are using in journals in your discipline. For example the Japanese Journal of Clinical Oncology has published a *Guideline for reporting results of statistical analysis* ( <https://academic.oup.com/jjco/article/27/3/121/793829> ) and the British Medical Journal regularly prints papers like *Uncertainty and sampling error* (<http://www.bmj.com/content/349/bmj.g7064> )

Below are some very general tips for reporting statistics that apply to most (but not all) disciplines:

1. Identify your statistical method (some journals don't require this for standard tests like t-test) by citing text book or review paper not original paper.
2. Identify the commercial software you used for statistical analysis (name and version).
3. Report statistics at end of the sentence.
4. When reporting a significant difference between two groups, where possible report the direction and magnitude of this difference.
5. If you have lots of statistics to report, consider using a table or figure.
6. Round test statistics to 2 decimal places.
7. Italicise all statistical symbols, with the exception of Greek letters.
8. Report percentages as a summary following the actual numbers and only to 1 decimal point.
9. Only use statistical terms (such as 'random', 'significant', and 'correlation') for their correct technical usage.
10. Report numbers so that significant figures align with scientific relevance (but don't round numbers before analysis).
11. Report actual p values (this is becoming increasingly common requirement for journals) and state the significance threshold used in the Methods section of your paper.
12. Consider presenting standard deviations and standard errors as a single positive number ( $\pm$ removed).



UWA Centre for Applied Statistics Postgrad Clinic  
<http://www.cas.maths.uwa.edu.au/consulting/postgrads>

Stata List of Statistics journals <https://www.stata.com/links/statistical-journals/>

Guidelines for reporting statistics in journals published by the American Physiological Society  
<http://www.sportsci.org/2006/APS%20stats%20guidelines%20Aug%202004.pdf>

Altman. 2000. Statistics in Medicine. 19:3275. [http://onlinelibrary.wiley.com/doi/10.1002/1097-0258\(20001215\)19:23%3C3275::AID-SIM626%3E3.0.CO;2-M/abstract](http://onlinelibrary.wiley.com/doi/10.1002/1097-0258(20001215)19:23%3C3275::AID-SIM626%3E3.0.CO;2-M/abstract)

Wikipedia's list of academic writing style guides  
[https://en.wikipedia.org/wiki/List\\_of\\_style\\_guides#Academic](https://en.wikipedia.org/wiki/List_of_style_guides#Academic)

Purdue OWL Writing with Statistics  
<https://owl.english.purdue.edu/owl/resource/672/1/>

Seaman & Allen. 2011. Not Significant, But Important? Know the pitfalls of p-values and formal hypothesis tests  
<http://asq.org/quality-progress/2011/08/statistics-roundtable/not-significant-but-important.html>

Gibbs & Gibbs. Misuse of 'trend' to describe 'almost significant' differences in anaesthesia research. BJA: British Journal of Anaesthesia 115(3): 337  
<https://academic.oup.com/bja/article/115/3/337/312358>

Use of a statistical editor as part of the peer review process for British Medical Journal  
<http://www.bmj.com/about-bmj/resources-authors/peer-review-process>



Just for fun

Extremely funny graphs <https://www.boredpanda.com/35-extremely-funny-graphs-and-charts/>  
Fun Facts <https://www.statisticbrain.com/fun-facts/>

Next session: WED DEC 6 Editing

Further details of the UWA GRS Writing Group, including advice sheets to download, here:  
[www.postgraduate.uwa.edu.au/students/resources/communities#writinggroup](http://www.postgraduate.uwa.edu.au/students/resources/communities#writinggroup)