

Web: www.statreviewer.com

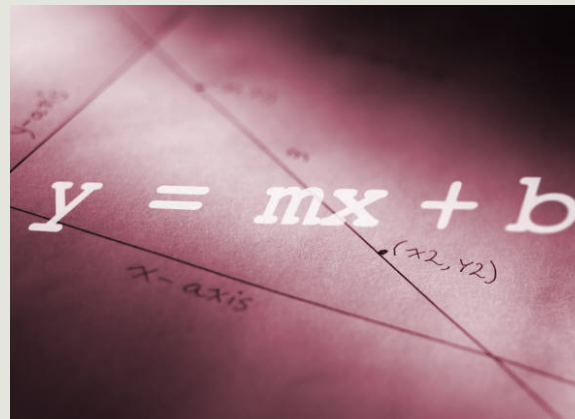
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An Introduction to StatReviewer

Improving Statistical
Reporting in Journals

Tim Houle, PhD



Conflicts of Interest

- I am one of the developers of the StatReviewer system
 - Although it is not currently a commercial product, we intend it to be commercialized.
- I am affiliated with several journals and an academic institution, but they are in no way involved in this project.

The Problem with Statistical Reporting in Journals

Incorrect choice of statistical techniques

Flawed application of statistical methods

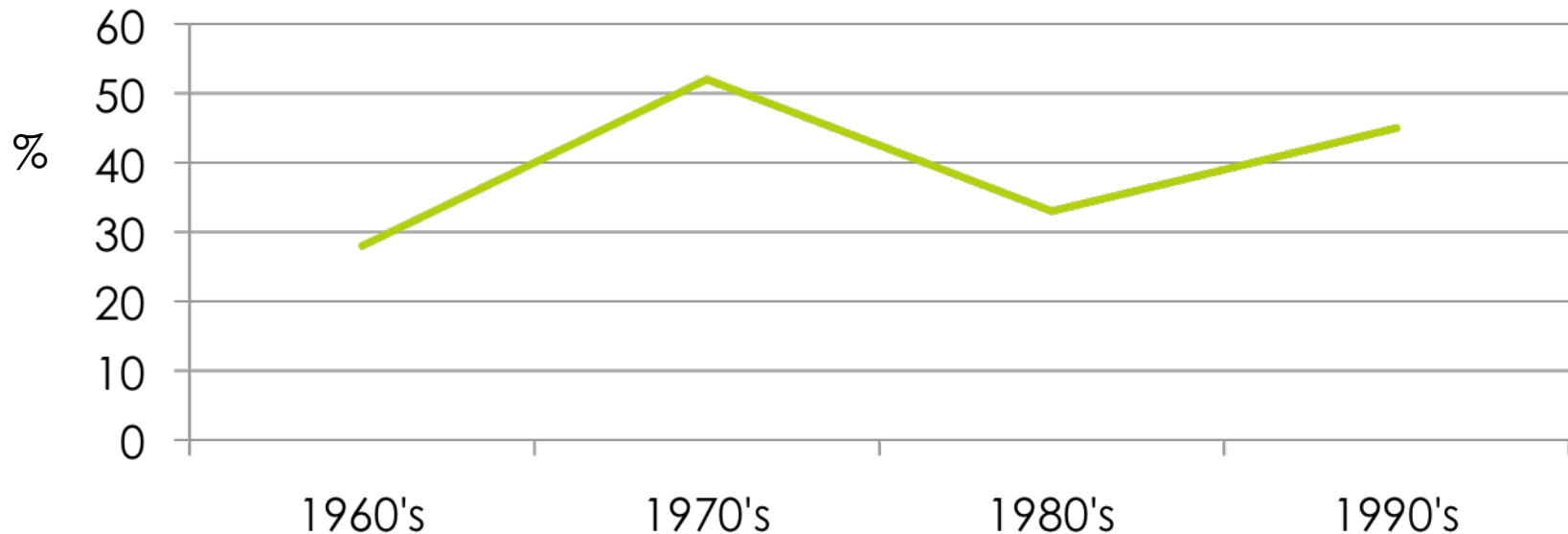
Omission of crucial information to replicate study

Erroneous conclusions

Choice of statistical methods susceptible to bias or exaggerated claims that will fail to be replicated

How big of a problem is poor statistical analyses in medical journals?

Average proportion of “acceptable” papers by decade



Adapted from: Altman D. Statistical reviewing for medical journals. *Statistics in Medicine*, 1998; 17:2661 - 2674

Statistics and Peer Review

“...the majority of statistical analyses are performed by people with an inadequate understanding of statistical methods. They are then peer reviewed by people who are generally no more knowledgeable”

-Douglas Altman

Lack of experts with requisite skills

Reliance on subject experts – prone to reinforce common errors and misconceptions

Statistical consultants can be costly (\$75-\$200 per review)

Consultants often overstretched

Rushed reviews

Inconsistent application of standards

Our Solution:

Add Another Reviewer

Always Available. Lightning Fast Response.



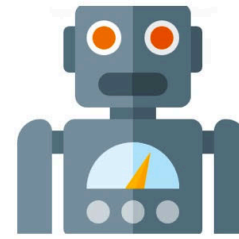
Reviewer 1



Reviewer 2



Reviewer 3



Reviewer 4

↑ Hint: This is
StatReviewer

Automated statistical *support* for journals

Quality threshold can be raised – poor/biased studies less likely to reach publication

Enhanced prospects of study being replicated

Higher quality papers that can be replicated potentially could drive up readership and citations

Automated system enables vetting of more manuscripts

StatReviewer functions as an additional reviewer

Key Features of StatReviewer

Submit and receive within minutes, not weeks

Customizable by journals

Consistent ad-hoc or automatic review for all manuscripts

Can be used in several ways:

- To form the basis, or supplement, a consultant's review

- Act as an additional 'stand-alone' review handled by the editorial office

StatReviewer Content

- *Thousands* of algorithms are run on every manuscript. We check for many different kinds of reporting elements including:
 - obvious numerical errors
 - quality of reporting (e.g., defined descriptive statistics)
 - appropriate statistical tests (e.g., t-test for skewed data)
 - style (e.g., precision of decimal places)
 - Methodological reporting

Methodological Reporting

- CONSORT 2010
- STROBE
- STARD
- ARRIVE
- Uniform Requirements for Medical Journals
- More Coming!

Using StatReviewer



Email

Email Manuscript
and Receive Report
as Email Reply



Web

Paste Manuscript into
our web interface and
download results



API

Using a connection to
EM, StatReviewer can
be available in the
document workflow

Output Example

Manuscript: Sample Manuscript Title

Publication: Sample Journal

Guideline: Consort (<http://www.consort-statement.org>)

1a. Title

✔ Complete

1b. Abstract

⊗ Please ensure that the following is reported:

- the primary outcome of the study (e.g., The primary outcome was 30-day mortality)
- the number of patients who were included in the analysis (e.g., 42 patients were included in the analysis...)
- any harms observed in the study (e.g., adverse events)

2a. Background

✔ Complete

2b. Objectives

⊗ Please report the actual hypothesis of the trial (e.g., "We hypothesized that..."), or the objectives or aims of the trial.

3a. Trial Design

⊗ It is important to report the specifics of the trial design, specifically:

- The type of trial (e.g., parallel groups, multi-arm, crossover, cluster, factorial)
- The nature of the hypotheses (e.g., superiority, equivalence, non-inferiority)

Future Directions

Work with EM to integrate StatReviewer as an automated reviewer

Reviewer Search

Search My Publication Search for Reviewers ▼ All Reviewers ▼

Add **stat**reviewer

Integrate directly into the existing work flow of EM to provide an additional review

Manuscript #6353

“A Very Important Manuscript That Will Certainly Be Considered the Best Science in History - A Randomized Controlled Trial”

Mary Smith, M.D. (Reviewer 1)	Revise and Reconsider
Larry Doe, M.D. (Reviewer 2)	Revise and Reconsider
Barry Jones, M.D. (Reviewer 3)	Revise and Reconsider
 StatReviewer (Reviewer 4)	Scan Complete
Shirley Wu, Ph.D. (Managing Editor)	Revise
Dr. Lucy Johnson (Editor-in-Chief)	

Thank You!

■ Questions?