Research integrity and ethics

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A disclaimer

The following material was used during a live lecture. Without the accompanying oral comments and discussion, the text is incomplete as a record of the presentation. A full recording may be found via Zoom on the course Sakai site.

Academic and research integrity

How do you define academic and research integrity? How do you define academic and research misconduct?

Academic and research integrity

From the National Institutes of Health:

Research integrity includes:

- *the use of honest and verifiable methods in proposing, performing, and evaluating research*
- *reporting research results with particular attention to adherence to rules, regulations, guidelines, and*
- *following commonly accepted professional codes or norms.*

"Let the facts speak for themselves and avoid improper bias."

Academic and research integrity

According to the U.S. Department of Health and Human Services Office of Research Integrity, the following activities are examples of research misconduct:

- Fabrication: *"making up data or results and recording or reporting them."*
- Falsification: *"manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record."*
- Plagiarism: *"the appropriation of another person's ideas, processes, results, or words without giving appropriate credit."*

Academic and research integrity

Read about how to uphold the Duke Community Standard in practice.

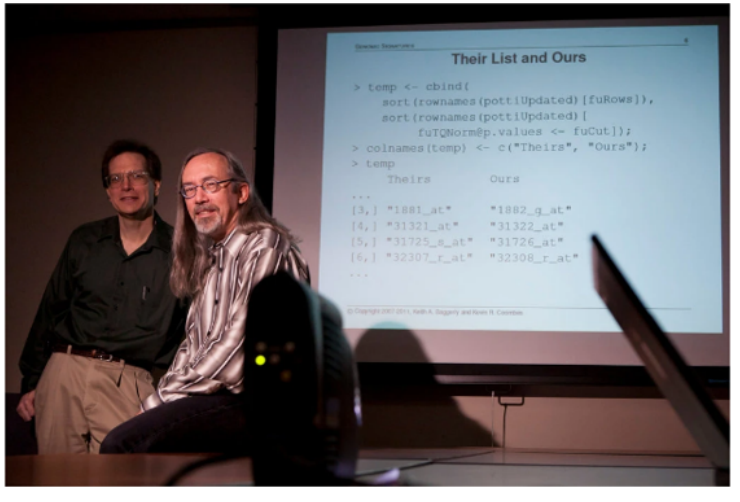
Why does integrity matter?

What are potential consequences if academic or research misconduct is found to have occurred?

Why does integrity matter?

The New York Times

How Bright Promise in Cancer Testing Fell Apart



Keith Baggerly, left, and Kevin Coombes, statisticians at M. D. Anderson Cancer Center, found flaws in research on tumors. Michael Stravato for The New York Times

Why does integrity matter?

The New York Times

Duke University to Pay $112.5 Million to Settle Claims of Research Misconduct

Duke University's medical school. A dozen papers by a former researcher in the pulmonary, allergy and critical care department have been retracted since reports of falsified data surfaced. Madeline Gray for The New York Times

Why does integrity matter?

Choose one example of research misconduct as detailed by the case summaries on this webpage. How did the researcher engage in misconduct? What were the consequences for them? What were the consequences for others?

Reproducibility and replicability

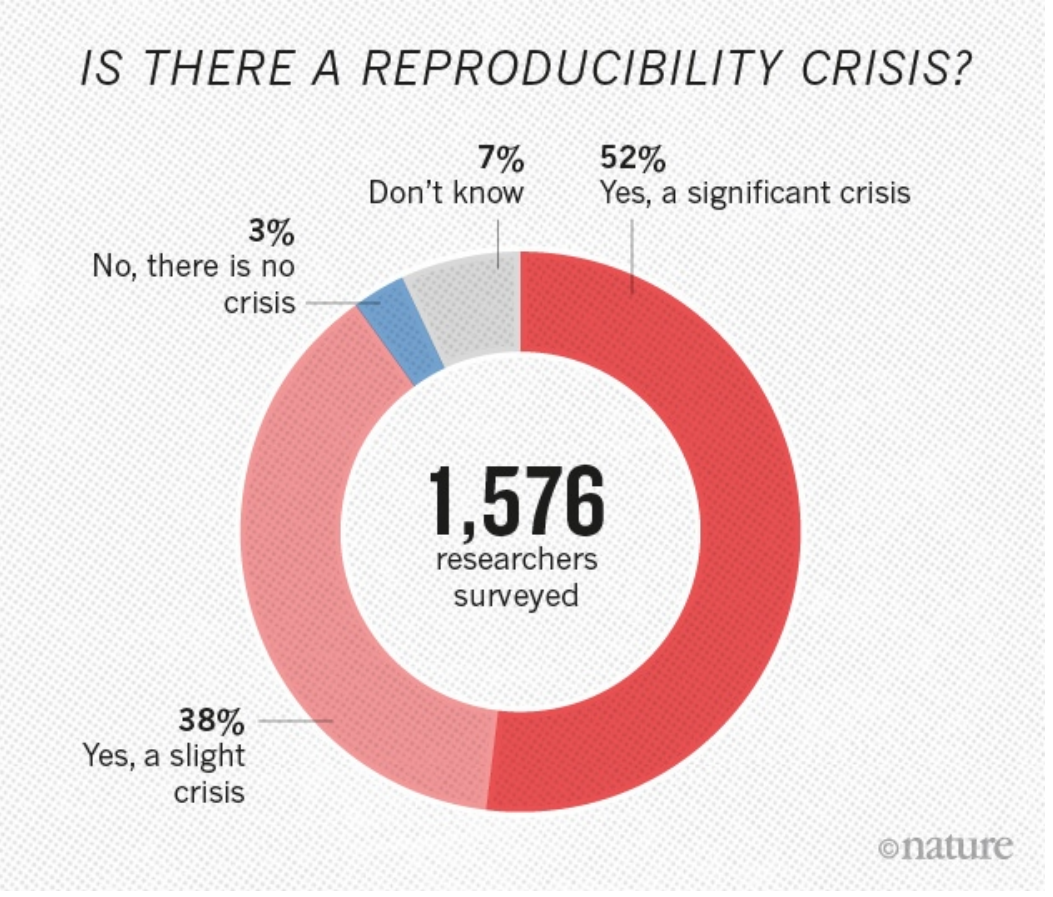
Reproducibility: being able to take the original data and code to reproduce all numerical findings

Replicability: being able to independently repeat an entire study without use of the original data (generally with the same methods)

Some best practices from the ASA:

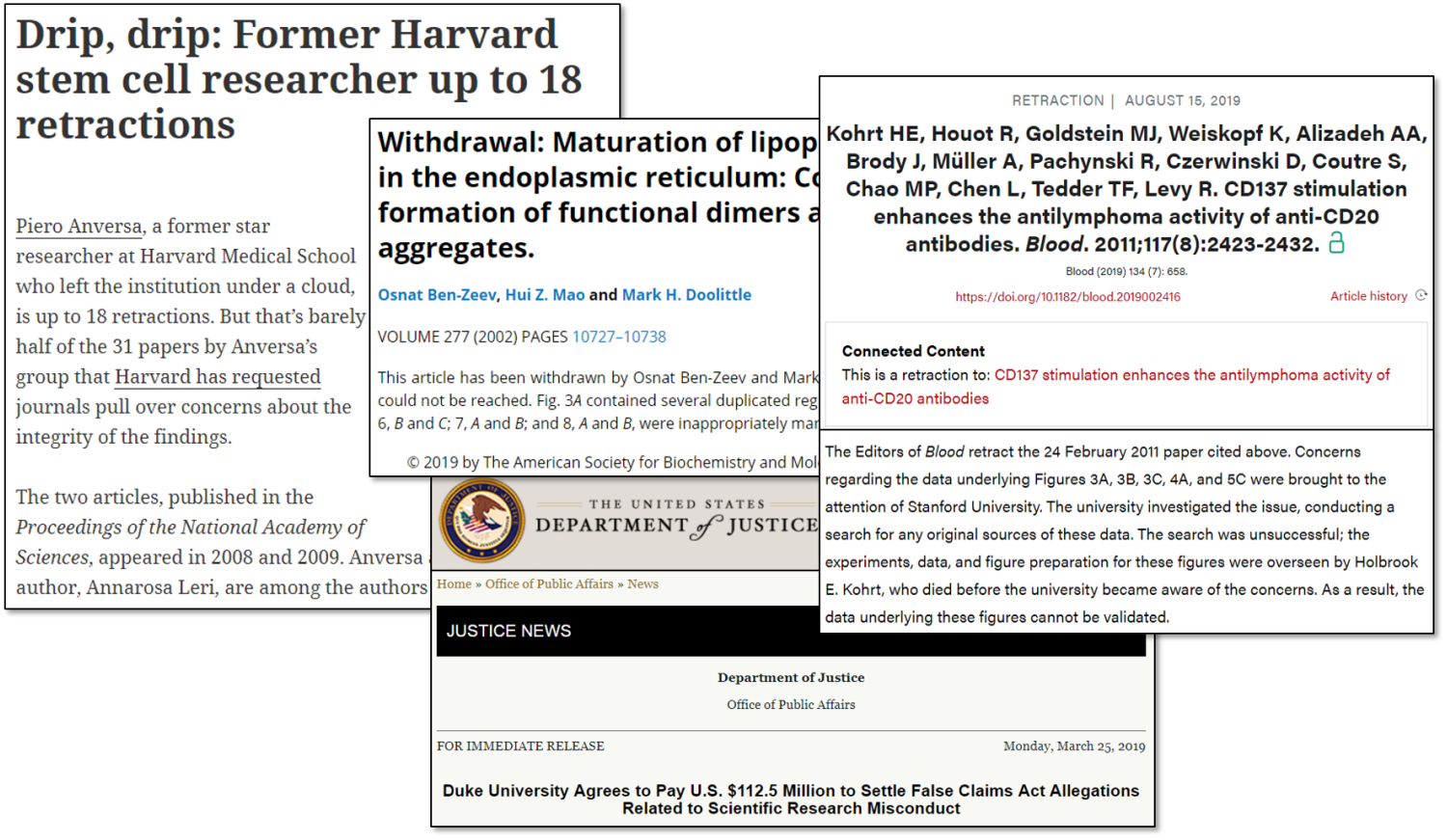
- End-to-end scripting of research
- Use of version control and documentation
- Publication of code and data

Reproducibility and replicability



"1,500 scientists lift the lid on reproducibility" - Nature

Reproducibility and replicability



Drip, drip: Former Harvard stem cell researcher up to 18 retractions

Piero Anversa, a former star researcher at Harvard Medical School who left the institution under a cloud, is up to 18 retractions. But that's barely half of the 31 papers by Anversa's group that Harvard has requested journals pull over concerns about the integrity of the findings.

The two articles, published in the *Proceedings of the National Academy of Sciences*, appeared in 2008 and 2009. Anversa author, Annarosa Leri, are among the authors

Withdrawal: Maturation of lipop in the endoplasmic reticulum: C formation of functional dimers a aggregates.

Osnat Ben-Zeev, Hui Z. Mao and Mark H. Doolittle

VOLUME 277 (2002) PAGES 10727–10738

This article has been withdrawn by Osnat Ben-Zeev and Mark could not be reached. Fig. 3*A* contained several duplicated reg 6, *B* and *C*; 7, *A* and *B*; and 8, *A* and *B*, were inappropriately ma

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THE UNITED STATES DEPARTMENT of JUSTICE

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FOR IMMEDIATE RELEASE Monday, March 25, 2019

Duke University Agrees to Pay U.S. $112.5 Million to Settle False Claims Act Allegations Related to Scientific Research Misconduct

RETRACTION | AUGUST 15, 2019

Kohrt HE, Houot R, Goldstein MJ, Weiskopf K, Alizadeh AA, Brody J, Müller A, Pachynski R, Czerwinski D, Coutre S, Chao MP, Chen L, Tedder TF, Levy R. CD137 stimulation enhances the antilymphoma activity of anti-CD20 antibodies. *Blood*. 2011;117(8):2423-2432.

Blood (2019) 134 (7): 658.

https://doi.org/10.1182/blood.2019002416 Article history

Connected Content

This is a retraction to: CD137 stimulation enhances the antilymphoma activity of anti-CD20 antibodies

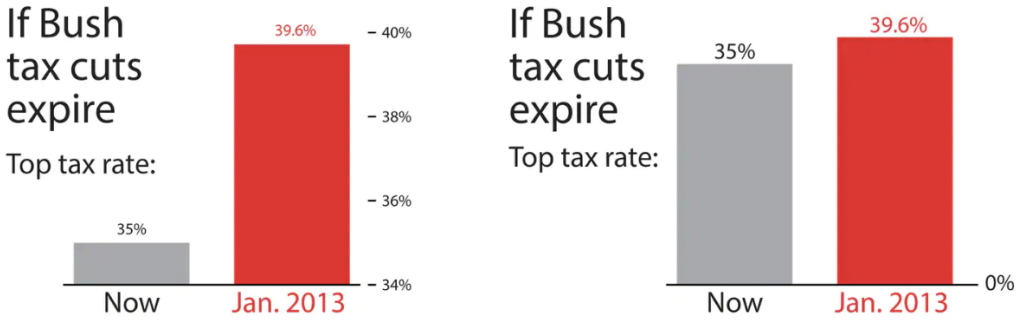
The Editors of *Blood* retract the 24 February 2011 paper cited above. Concerns regarding the data underlying Figures 3A, 3B, 3C, 4A, and 5C were brought to the attention of Stanford University. The university investigated the issue, conducting a search for any original sources of these data. The search was unsuccessful; the experiments, data, and figure preparation for these figures were overseen by Holbrook E. Kohrt, who died before the university became aware of the concerns. As a result, the data underlying these figures cannot be validated.

What else can go wrong?

Selection bias, reporting bias, non-response bias, attrition bias, spin bias, confounding, and so much more

What else can go wrong?

The left chart is adapted from a 2011 Fox Business graphic. What is misleading about it, and how does it compare to the graphic on the right?

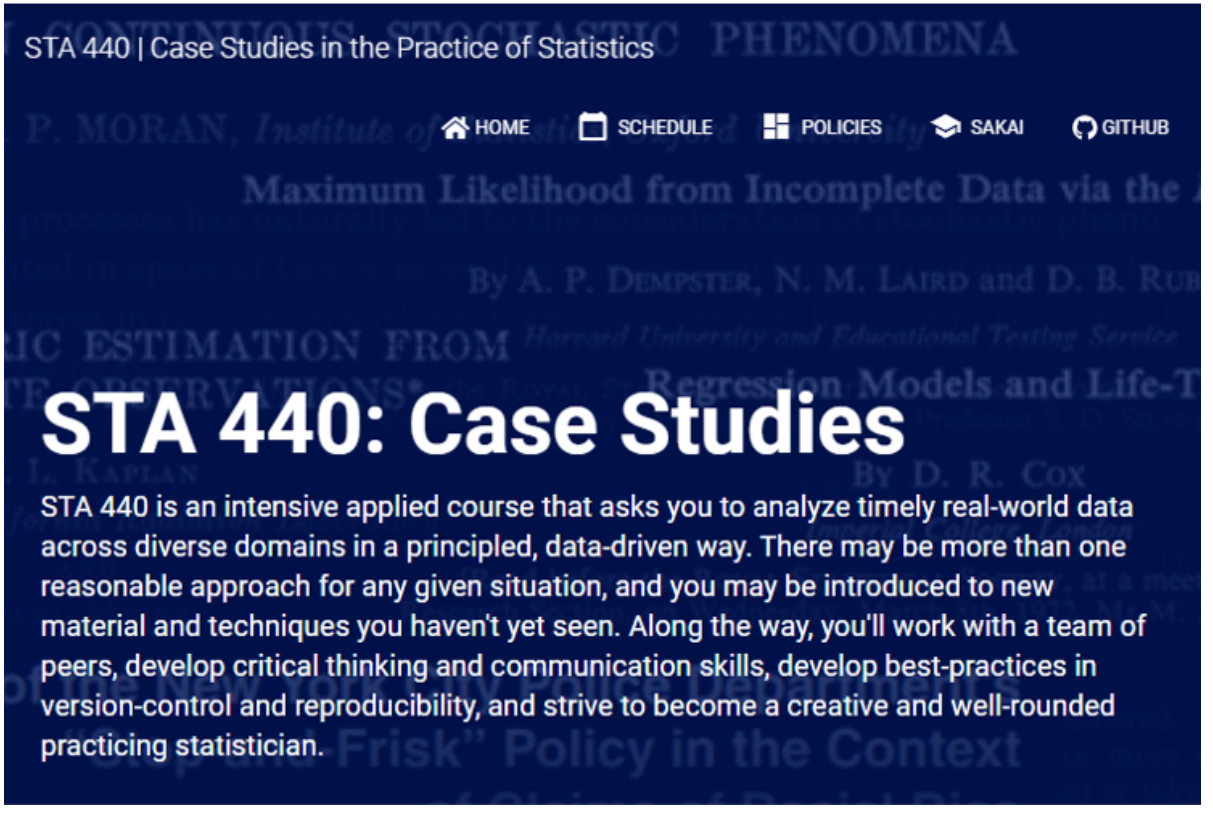


How charts lie - Alberto Cairo

Data privacy and provenance

How important is protecting the privacy of individuals? How important is "where the data come from"? If data are available to the public, does that automatically mean it doesn't violate reasonable expectations of privacy?

What have I gotten myself into?



Read the course website, syllabus, and schedule here