



BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in Research Transparency

Christensen

BITS Activities

Manual of Best
Practices

Ethical Research

Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting
Standards

Workflow

Data Sharing

Meta-Research
Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITS Research

BITS Education

Next Steps in Research Transparency

Where do we go from here?

Garret Christensen¹

¹Berkeley Initiative for Transparency in the Social Sciences
UC Berkeley

BITSS Summer Institute 2015



BITSS

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Outline

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best
Practices

Ethical Research
Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting
Standards

Workflow

Data Sharing

Meta-Research
Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

1 BITSS Activities

- Manual of Best Practices
- Meta-Research Grant Initiative
- Leamer-Rosenthal Prizes
- Developing Country Researcher Transparency
- Help Desk
- BITSS Research
- BITSS Education

2 Partner Activities

- Center for Open Science
- Other Orgs
- Badges
- Design-Based Publication
- Transparency & Openness Promotion Guidelines

3 You



Manual of Best Practices

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in
Research
Transparency

Christensen

BITSS
Activities

Manual of Best
Practices

Ethical Research
Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting
Standards

Workflow

Data Sharing

Meta-Research

Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

Our goal:

- Detailed hands-on how-to manual for transparent social science research.
- Cover all aspects of a transparent research project, from beginning (study design, hypothesis registration) to end (publication, data sharing).
- Keep the manual updated.
- Encourage participation from the community.
<http://github.com/garretchristensen>
- Extend into short textbook.



Ethical Research

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best
Practices

Ethical Research

Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting
Standards

Workflow

Data Sharing

Meta-Research

Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

- Transparency is part of being an ethical researcher.
- Fraud exists (Simonsohn 2013), but mostly we should admit that we're human, subject to bias and motivated reasoning, transparency can help with this (Nosek, Spies, Motyl 2012).
- Since a lot of us run experiments, we should take IRBs seriously as part of transparency (Ch. 11–13 Morton & Williams 2010, Desposato 2014).



BITSS

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Study Design and Power

Next Steps in
Research
Transparency

Christensen

BITSS
Activities

Manual of Best
Practices

Ethical Research

**Study Design and
Power**

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting

Standards

Workflow

Data Sharing

Meta-Research

Grant Initiative

Leamer-Rosenthal

Prizes

Developing Country

Researcher

Transparency

Help Desk

BITSS Research

BITSS Education

- Adequately power trials to help prevent spurious significant results.
- Practical suggestions:
 - Collaborate with other labs to mutually run each others' experiments (Open Science Collaboration 2014).
 - Maximize power subject to budget constraint by adjusting expensive treatment arm (relative) size (Duflo, Glennerster, Kremer 2007).

Existence of the problem:

- Effect sizes diminish with sample size (Gerber, Green, Nickerson 2001)
- There is a higher fraction of rejected hypothesis tests in social compared to hard sciences (Fanelli 2010).
- Published null results are disappearing over time, in all disciplines (Fanelli 2011).
- Data on the complete set of experiments run shows strong results are 40pp more likely to be published, and 60pp more likely to be written up. The file drawer problem is large. (Franco, Malhotra, Simonovits 2014)
- If we only write up/publish significant results, and we have no record of all the insignificant results, we have no way to tell if our 'significant' results are real, or if they're the 5% we should expect due to noise.

Registration as Solution to Publication Bias:

- Publicly stating all research you will do, what hypotheses you will test, prospectively.
- Near universal adoption in medical RCTs. Top journals (ICMJE) won't publish if it's not registered.

<http://clinicaltrials.gov>

- Even better if registry requires outcomes from after study. Currently limited, but NIH is moving on this.
- Newer to social sciences, but:

- AEA registry, currently only for RCTs.

<http://socialscienceregistry.org>

- EGAP registry

<http://egap.org/design-registration>

- 3ie registry, for developing country evaluations.

<http://ridie.3ieimpact.org>

- Open Science Framework

<http://osf.io>



Meta-Analysis

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best Practices
Ethical Research
Study Design and Power
Publication Bias
Registrations
P-Hacking
Pre-Analysis Plan
Replication
Project Protocol, Reporting Standards
Workflow
Data Sharing
Meta-Research Grant Initiative
Leamer-Rosenthal Prizes
Developing Country Researcher Transparency
Help Desk
BITSS Research
BITSS Education

- Synthesize results systematically
- Cochrane Collaboration (medicine), Campbell Collaboration (policy), What Works Clearinghouse
- Funnel plots (Card & Krueger 1995)
- P-curve (Simonsohn et al. 2014)

Define the problem:

- Also called fishing, researcher degrees of freedom, or data-mining.
- Definition: flexibility in data analysis allows portrayal of *anything* as below an arbitrary p-value threshold; significance loses its meaning.
- Not something only evil people do. It's subconscious, or simply built into statistics (Gelman, Loken 2013).

Explain the solution:

- From 3ie: “A pre-analysis plan is a detailed description of the analysis to be conducted that is written in advance of seeing the data on impacts of the program being evaluated. It may specify hypotheses to be tested, variable construction, equations to be estimated, controls to be used, and other aspects of the analysis. A key function of the pre-analysis plan is to increase transparency in the research. By setting out the details in advance of what will be done and before knowing the results, the plan guards against data mining and specification searching. Researchers are encouraged to develop and upload such a plan with their study registration, but it is not required for registration.”



Christensen

Replication

- 1 The Problem (JMCB Project)
- 2 Project Protocol, Reporting Standards
- 3 Organizing Workflow
- 4 Code & Data Sharing



BITSS

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Project Protocol, Reporting Standards

Next Steps in
Research
Transparency

Christensen

BITSS
Activities

Manual of Best
Practices

Ethical Research
Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

**Project Protocol,
Reporting
Standards**

Workflow

Data Sharing

Meta-Research

Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

Make sure you report everything another researcher would need to replicate your research.

- Find the appropriate reporting standard for your field and follow it: <http://www.equator-network.org/>
- Report the nuts and bolts of the project implementation in a detailed protocol:
<http://www.spirit-statement.org>



“Reproducibility is just collaboration with people you don’t know, including yourself next week”
—Philip Stark, UC Berkeley Statistics

Practical coding and organizational suggestions

- Long (2008) *The Workflow of Data Analysis Using Stata*
 - Making any changes to a file that has been posted/shared means it gets a new name.
 - Use version commands to ensure others get same results.
- Literate programming (extensive commenting, making the aim of code reading by a human)
- Dynamic Documents (R Markdown): integration of analysis and output.



Data Sharing

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in
Research
Transparency

Christensen

BITSS
Activities

Manual of Best
Practices

Ethical Research
Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting
Standards

Workflow

Data Sharing

Meta-Research
Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

Post your code and your data in a trusted public repository.

- Find the appropriate repository:
<http://www.re3data.org/>
- Repositories will last longer than your own website.
- Repositories are more easily searchable by other researchers.
- Repositories will store your data in a non-proprietary format that won't become obsolete.



Meta-Research Grant Initiative

Next Steps in
Research
Transparency

Christensen

BITSS
Activities

Manual of Best
Practices

Ethical Research
Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting

Standards

Workflow

Data Sharing

Meta-Research
Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

Funding will be primarily directed to methodological research projects that advance understanding and design of new approaches for reproducibility and reliability.
(\$15K-\$30K)

- Laura and John Arnold Foundation
- RFP this summer!
- Analysis of various pre-specification practices, including impacts on reported research findings;
- Application of specification curves to existing influential studies in economics;
- Experiments involving the research community to reveal the effects of a researchers' degrees of freedom on study outcomes;
- Cumulative meta-analyses, to track the evolution of a body of evidence over time;

Also, recent small grants from Sloan Foundation for data



BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Leamer-Rosenthal Prizes

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best
Practices

Ethical Research
Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting
Standards

Workflow

Data Sharing

Meta-Research
Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

- Emerging Leaders in Open Social Science Research – up to \$15,000 [Link](#)
- Focusing on young scholars, this prize will reward graduate students, postdoctoral researchers, and junior faculty who have (i) authored papers demonstrating exceptionally transparent and reproducible research practices, or (ii) engaged in projects advancing our understanding of research transparency and/or methodological tools to achieve this objective.
- Leaders in Open Social Science Education – up to \$10,000
- This prize will reward university instructors at top-tier research institutions who have developed a curriculum on research transparency, or incorporated at least three lectures on the topic into a relevant course.
- Templeton Foundation



Open Research from Developing Countries

Next Steps in Research Transparency

Christensen

BITSS Activities

Developing Country
Researcher
Transparency

Potential new initiative

- Incorporate transparency with CEGA, train African researchers
- EASST Scholars
- Hewlett Foundation
- More developing country students here.



Help Desk

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best
Practices

Ethical Research

Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting

Standards

Workflow

Data Sharing

Meta-Research

Grant Initiative

Leamer-Rosenthal

Prizes

Developing Country

Researcher

Transparency

Help Desk

BITSS Research

BITSS Education

BITSS collaborates with Center for Open Science to provide free statistical/reproducibility consulting. [Link](#)

- Free one-one-one consulting
- Workshops



BITSS Research

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best Practices
Ethical Research
Study Design and Power
Publication Bias
Registrations
P-Hacking
Pre-Analysis Plan
Replication
Project Protocol, Reporting Standards
Workflow
Data Sharing
Meta-Research Grant Initiative
Leamer-Rosenthal Prizes
Developing Country Researcher Transparency
Help Desk
BITSS Research
BITSS Education

- Christensen, Dafoe, Miguel: Data Sharing and Citations
- BITSS Annual Meeting (December, open call)
- BITSS-organized session at AEA/ASSA meeting
- APPAM, APSA, OpenCon?



BITSS Education

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best
Practices

Ethical Research
Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting
Standards

Workflow

Data Sharing

Meta-Research
Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

- Econ 270D
- Available as Youtube Playlist [Link](#)
- EdX MOOC under construction (BITSS/J-PAL)

3 Badges [Link](http://openbadges.org/)

- Tech based on <http://openbadges.org/>
- 9+ journals
 - Open Data
 - Open Materials
 - Preregistered





Design-Based Publication

Next Steps in
Research
Transparency

Christensen

BITSS
Activities

Manual of Best
Practices

Ethical Research

Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting

Standards

Workflow

Data Sharing

Meta-Research

Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

AKA Registered Reports, moves peer review before data gathering, results, and analysis.

- 1 Design a project
- 2 Submit
- 3 Reviewed based on importance of question and quality of design
- 4 Get in-principle acceptance
- 5 Follow through, and nulls get published

14 Journals, 4 more with Special Issues [▶ Link](#)



Transparency & Openness Promotion Guidelines

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best
Practices

Ethical Research

Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting

Standards

Workflow

Data Sharing

Meta-Research

Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher

Transparency

Help Desk

BITSS Research

BITSS Education

- November 2014 COS, AAAS, BITSS Meeting
- Guidelines for journals on citation standards, data & code & materials sharing, design, registration of study, pre-analysis plan, replication.
- Forthcoming in *Science* at the end of the month.
- 50+ journals endorsed already, more coming.



Your Research

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best
Practices

Ethical Research
Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting
Standards

Workflow

Data Sharing

Meta-Research
Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

- Register your trial.
- Write a PAP.
- Write code (not Excel).
- Literate Programming (i.e. comment the hell out of your code).
- Use version control.
- Write reproducible dynamic documents.
- Share your data.
- Submit reproducible code when you submit your paper?
- Include meta-analysis/replication in your work.



Your Participation

BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Next Steps in Research Transparency

Christensen

BITSS Activities

Manual of Best
Practices

Ethical Research
Study Design and
Power

Publication Bias

Registrations

P-Hacking

Pre-Analysis Plan

Replication

Project Protocol,
Reporting
Standards

Workflow

Data Sharing

Meta-Research

Grant Initiative

Leamer-Rosenthal
Prizes

Developing Country
Researcher
Transparency

Help Desk

BITSS Research

BITSS Education

■ Last year's Summer Institute Participants

- Brazil: opinion piece in *Revista Política Hoje*. [Link](#)
- Sweden: transparency training [Link](#)
- Berkeley: P-curve the What Works Clearinghouse, Clearinghouse for Labor Evaluation and Research, published observational PAP. [Link](#)
- Spain: Barcelona Graduate School of Economics presentation on PAP

■ Organize a conference session?

■ Stay in touch (awais@berkeley.edu, garret@berkeley.edu). New: Jenn, Shyan.

■ Blog for us!

■ Tweet @UCBITSS!