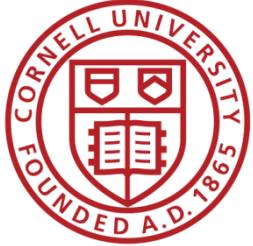


Implementing Increased Transparency and Reproducibility in Economics: Lessons learned

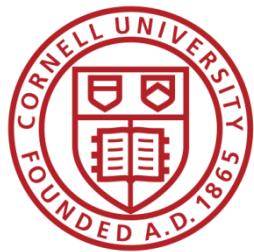
Lars Vilhuber
Cornell University

The opinions expressed in this talk are solely the authors, and do not represent the views of the U.S. Census Bureau, the American Economic Association, or any of the funding agencies.



Efficiency of scholarly discourse?

- Early publications (20th century) contained **tables of data**, and the **math** was simple (maybe)
 - **Data** became electronic, was no longer **included** or **cited**
 - **Math** was transcribed to **code**, and was no longer **included**

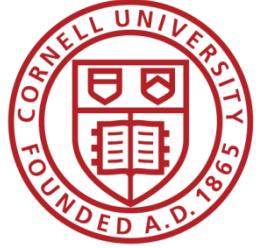


SEASONAL VARIATIONS IN THE NEW YORK MONEY MARKET, 1890-1908																					
CALL INTEREST RATES ON STOCK EXCHANGE ^b				INTEREST RATES ON 60-90 DAY, 2 NAME COMMERCIAL PAPER ^b				PERCENTAGE OF RESERVES TO DEPOSITS, N. Y. ASSOCIATED BANKS ^b				CIRCULATION OF DEPOSIT CURRENCY ^b		EXCHANGE RATES IN CHICAGO ON NEW YORK, ^c 1899-1908		NET INTERIOR MOVEMENT OF CASHS OUT OF AND INTO N. Y. CITY BANKS, ^c 1899-1908		STERLING EXCHANGE, DEMAND DRAFFTS ^f		EXPORTATION AND IMPORTATION OF GOLD, U. S., 1890-1908 (IN FIGURES) ^e	
AVERAGE RATE	SEASONAL INDEX NUMBER	AVERAGE RATE	SEASONAL INDEX NUMBER	AVERAGE PERCENTAGE	SEASONAL INDEX NUMBER	AVERAGE CLEARINGS (\$000,000)	SEASONAL INDEX NUMBER	AVERAGE RATE (PREMIUM OR DISCOUNT)	SEASONAL INDEX NUMBER	AVERAGE AMOUNT OUT OF 000	INTO 000	SEASONAL INDEX NUMBER	AVERAGE RATE	SEASONAL INDEX NUMBER	TOTAL EXPORTS 000	TOTAL IMPORTS 000					
6.4	43.4	5.0	53.1	28.6	44.3	\$1,937.5	60.8	2.5 P	64.7	86,684	87.2	48,8606	49.7	Jan.	832,747						
3.6	23.8	4.7	41.5	29.1	78.8	1,233.6	59.6	5 P	67.4	6,621	84.9	4,8657	54.7								
2.8	14.9	4.5	31.2	29.9	96.9	1,234.7	54.4	5 P	67.7	7,773	90.7	4,8679	59.4								
2.5	11.9	4.3	22.7	30.3	77.8	1,140.0	44.0	10 P	72.1	6,895	87.6	4,8697	64.1								
2.5	11.1	4.3	22.9	29.9	65.4	1,190.5	52.5	2 P	63.0	4,749	49.8	4,8695	64.1	Feb.	13,408						
2.4	10.1	4.3	22.1	29.2	58.1	1,084.1	38.4	6 D	54.8	2,376	77.0	4,8696	64.8								
2.5	9.8	4.3	22.2	28.8	53.6	1,004.8	32.1	9 D	50.7	1,436	63.7	4,8708	66.9								
2.7	13.4	4.4	26.5	28.5	53.6	944.0	22.6	20 D	38.8	1,157	52.5	4,8697	65.4								
3.0	15.1	4.6	32.6	28.1	45.5	1,165.7	51.5	29.5 D	28.1	1,679	58.5	4,8692	65.7	March	\$ 43,233						
3.6	19.7	4.6	34.3	27.9	43.1	1,067.9	38.2	23 D	35.0	604	30.5	4,8676	62.0								
3.9	22.4	4.8	40.0	27.7	37.0	1,119.7	42.7	13 D	45.9	716	49.8	4,8665	59.1								
3.2	19.2	4.8	39.6	27.9	39.9	1,042.3	33.1	14.5 D	43.5	1,533	54.4	4,8681	61.6								
3.6	22.0	4.8	38.1	28.0	40.5	1,051.4	35.5	5 D	53.9	999	53.5	4,8704	65.9	April	25,888						
4.0	23.8	4.7	36.7	27.8	35.7	1,135.4	48.0	14 D	44.5	868	53.9	4,8711	67.4								
3.8	23.1	4.6	33.4	27.9	39.9	1,119.0	42.9	7.5 D	52.9	1,903	59.0	4,8714	68.2								
3.0	17.5	4.5	31.9	28.4	50.9	1,123.5	46.7	4 P	66.3	2,085	62.1	4,8734	73.6								
2.9	15.4	4.4	27.5	28.6	54.4	1,107.6	43.3	9 D	48.4	1,379	61.6	4,8743	78.1	May							
3.4	19.3	4.4	26.9	28.3	48.3	1,283.3	67.3	3.5 D	55.9	594	56.5	4,8739	76.3								
3.5	19.5	4.4	24.5	28.4	49.0	1,175.4	52.7	2.5 P	62.0	9,952	63.0	4,8734	74.2								
2.6	13.9	4.3	22.7	28.6	51.6	1,123.4	48.0	16 P	76.7	4,306	74.5	4,8739	75.5								
2.4	11.2	4.2	19.9	29.0	60.3	1,011.8	34.1	16 P	77.3	4,329	74.7	4,8752	79.1	June							
2.3	9.6	4.1	17.1	28.8	57.2	908.1	21.4	10 P	71.1	3,862	60.9	4,8760	80.9								
2.3	8.0	4.1	15.8	28.7	56.1	1,039.4	37.9	5 P	64.6	3,229	68.6	4,8757	81.1								
2.4	7.7	4.1	15.3	28.7	56.7	967.8	31.1	4 P	63.6	3,354	66.7	4,8756	81.0								
2.5	8.0	4.3	18.4	28.7	57.5	938.7	25.8	10.5 P	72.8	3,897	68.5	4,8742	79.0	July							
3.6	16.4	4.5	22.0	28.4	53.5	1,013.9	35.4	11.5 P	73.6	2,158	58.3	4,8721	74.6								
3.4	13.6	4.5	25.0	27.9	45.0	991.5	33.1	16.5 D	40.3	1,441	53.1	4,8715	72.9								
2.9	9.6	4.6	26.9	28.4	56.3	1,034.6	35.6	7.5 D	50.6	3,456	68.0	4,8717	72.6								
2.3	5.3	4.6	31.1	28.7	63.3	970.2	26.6	8 D	52.6	3,692	69.3	4,8717	72.6								
2.4	5.6	4.6	33.5	28.7	65.4	924.6	21.1	10.5 D	50.0	4,735	73.1	4,8720	73.2								
2.5	6.0	4.6	35.2	28.3	60.8	969.7	27.9	11 D	48.7	2,955	63.4	4,8702	69.6	August	44,300						
2.5	6.3	4.8	40.5	28.0	54.3	910.6	20.8	17.5 D	41.8	1,395	57.3	4,8693	68.0								
2.6	7.4	4.9	43.7	27.8	49.3	948.0	25.9	19 D	40.1	9,517	49.4	4,8669	61.3								
3.7	13.6	5.3	49.5	27.7	47.7	931.1	23.9	34.5 D	92.7	8249	45.5	4,8651	56.9								
3.0	12.3	5.3	51.8	27.6	42.6	956.8	29.0	37.5 D	18.8	1,477	33.7	4,8626	50.4								
4.1	20.7	5.3	55.4	27.2	32.8	880.7	19.2	36.5 D	19.1	2,690	29.9	4,8601	43.7								
4.2	23.4	5.1	57.5	27.0	29.8	1,033.6	38.6	25 D	34.7	2,589	30.3	4,8584	35.2								
4.3	30.6	5.3	64.7	27.1	31.9	1,058.7	44.3	26 D	33.5	3,434	34.8	4,8552	32.0								
4.2	29.6	5.3	63.2	27.5	37.4	1,066.1	36.9	33 D	26.1	3,489	37.0	4,8557	31.9	Oct.							
4.5	27.9	5.2	61.7	27.3	33.0	1,135.2	59.0	32 D	27.2	3,883	32.5	4,8538	27.3								
4.0	24.4	5.1	61.5	27.3	33.0	1,094.1	46.4	29.5 D	29.0	3,014	30.3	4,8540	29.7								
3.6	19.4	4.9	53.2	27.5	34.1	1,132.3	49.6	27.5 D	30.8	3,685	29.6	4,8549	33.9								
6.5	29.3	4.9	51.4	27.6	36.4	1,144.0	50.1	31 D	24.2	2,700	34.7	4,8576	41.5								
7.1	32.9	4.9	48.9	27.2	27.5	1,140.7	54.3	29 D	27.5	2,666	37.1	4,8567	39.7								
5.4	30.3	4.9	51.3	27.1	29.7	1,077.6	45.3	20 D	36.9	1,530	43.6	4,8554	38.8								
4.8	26.1	5.0	53.5	27.4	29.4	1,983.9	65.7	4.5 D	33.4	563	48.6	4,8594	44.1								
4.2	26.1	4.7	46.0	27.8	36.1	1,177.0	55.6	13 P	71.2	213	49.0	4,8623	49.5								
4.0	26.8	4.8	48.6	27.6	32.3	1,107.7	48.1	2.5 D	53.9	44.3	4,8615	49.3									
4.9	30.3	4.7	47.8	27.2	24.9	1,191.3	65.2	11.5 D	47.3	836	45.6	4,8596	45.6								
5.5	39.2	4.8	51.6	27.4	29.4	1,922.4	63.5	5 P	64.7	615	52.4	4,8604	47.0								
6.6	46.1	4.8	49.3	27.5	32.8	1,202.1	60.8	3.5 P	65.1	60	47.8	4,8611	49.0								
7.4	49.3	4.9	52.9	27.7	35.3	1,015.3	35.9	3.5 P	65.1	9,188	61.7	4,8592	45.0								

Via @sdellavi

E. W. Kemmerer. 2011. "Seasonal Variations in the New York Money Market."

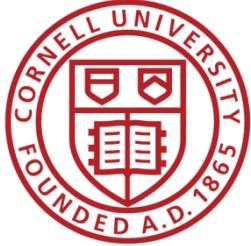
The American Economic Review, Vol. 1, No. 1 (March 1911), pp. 33-49



Efficiency of scholarly discourse!

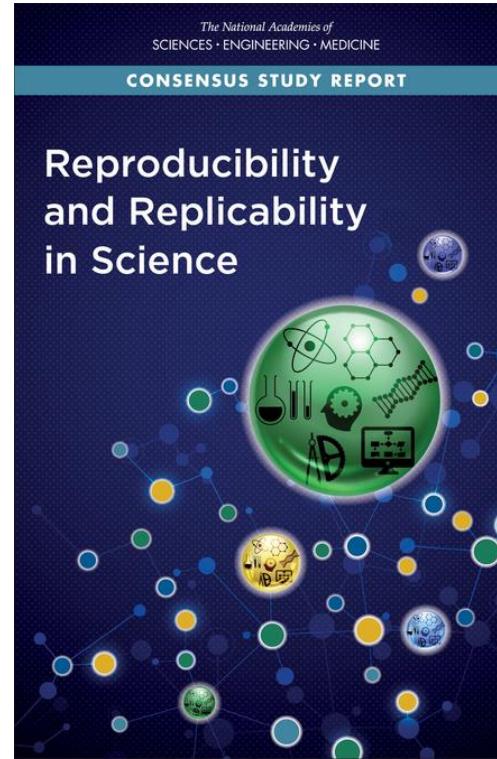
**Modern publications need
the same transparency and completeness
as in the old days
to facilitate replicability**

Replicability?



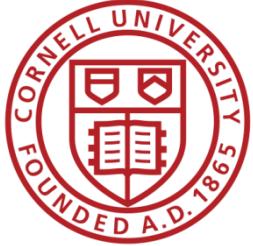
Replication continuum

<https://doi.org/10.17226/25303>

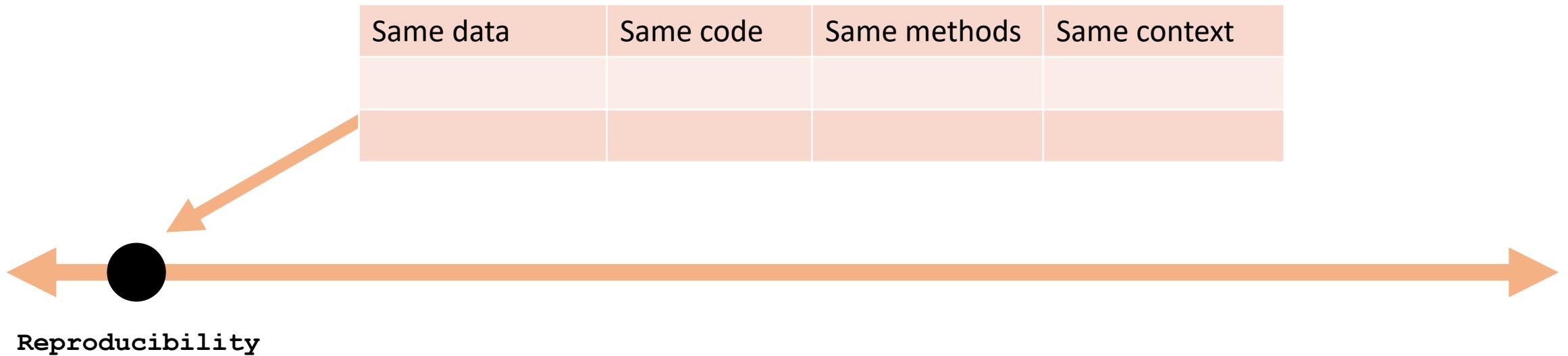


Reproducibility

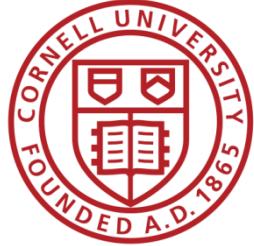
- Narrow Replication (Pesaran 2003)
- Pure Replication (Hamermesh 2007)
- Verification (Clemens 2015)



Replication continuum



- Narrow Replication (Pesaran 2003)
- Pure Replication (Hamermesh 2007)
- Verification (Clemens 2015)



Replication continuum

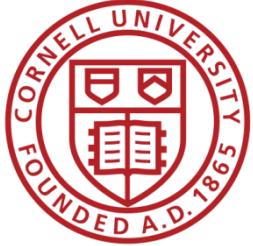


Reproducibility

- Narrow Replication (Pesaran 2003)
- Pure Replication (Hamermesh 2007)
- Verification (Clemens 2015)

Replicability

- Wide Replication (Pesaran 2003)
- Statistical Replication (Hamermesh 2007)
- Reproduction/Reanalysis (Clemens 2015)



Replication continuum

Same data	Different code or software	Same methods	Same context

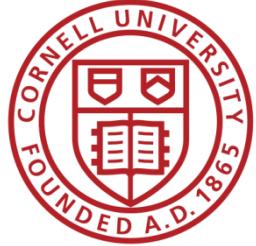


Reproducibility

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Replicability

- Wide Replication (Pesaran 2003)
- Statistical Replication (Hamermesh 2007)
- Reproduction/Reanalysis (Clemens 2015)



Replication continuum

New data collection	Same code	Same methods	Same context

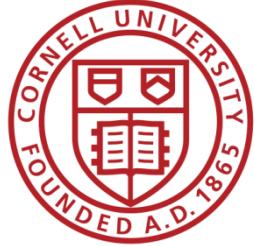


Reproducibility

- Narrow Replication (Pesaran 2003)
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Replicability

- Wide Replication (Pesaran 2003)
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Replication continuum



Reproducibility

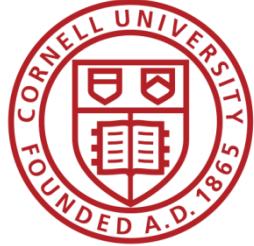
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Replicability

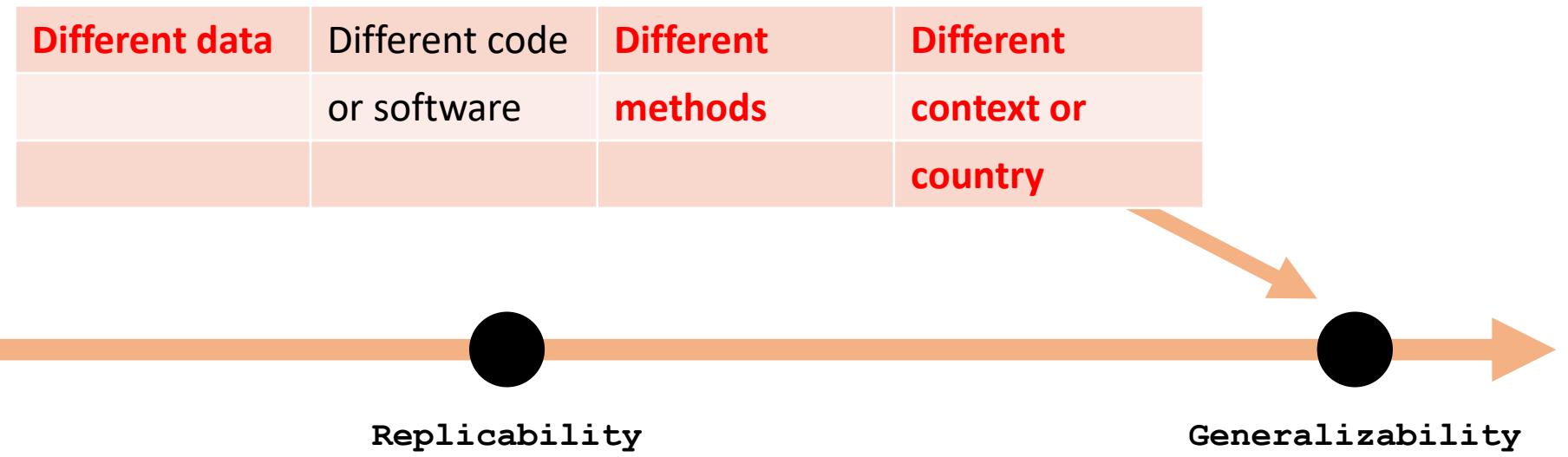
- Wide Replication (Pesaran 2003)
- Statistical Replication (Hamermesh 2007)
- Reproduction/Reanalysis (Clemens 2015)

Generalizability

- Wider Replication (Pesaran 2003)
- Scientific Replication (Hamermesh 2007)
- Reanalysis/Robustness (Clemens 2015)



Replication continuum

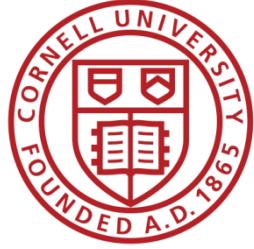


- Narrow Replication (Pesaran 2003)
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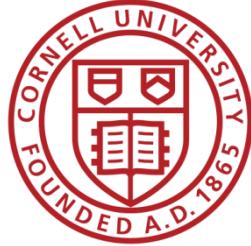
Progress



Progress

- Replication archives and Data (Code) Availability policies





Progress

- Replication archives and Data (Code) Availability policies
- Shared open source software



Statistical Software Components

From [Boston College Department of Economics](#)
Boston College, 140 Commonwealth Avenue, Chestnut Hill MA 02467 U:
Contact information at [EDIRC](#).
Bibliographic data for series maintained by Christopher F Baum (baum@bc.edu)

[Access Statistics](#) for this software series.

Track citations for all items by [RSS feed](#)

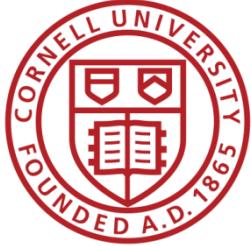
Is something missing from the series or not right? See the RePEc data [series](#).

[GAPPORT: Stata module to calculates seats in party-list representation](#) [downloads](#)

Ulrich Kohler

[GCLSORT: Stata module to sort a single variable via ege](#)
Philippe Van Kerm

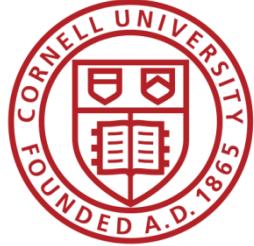
[GPROD: Stata module to extend egen for product of obs](#)
Philip Ryan



Progress

- Replication archives and Data (Code) Availability policies
- Shared open source software
- Better public-use and shared confidential data





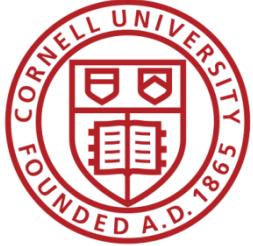
Progress

- Replication archives and Data (Code) Availability policies
- Shared open source software
- Better public-use and shared confidential data
- Better ways of accessing preprints/ grey literature

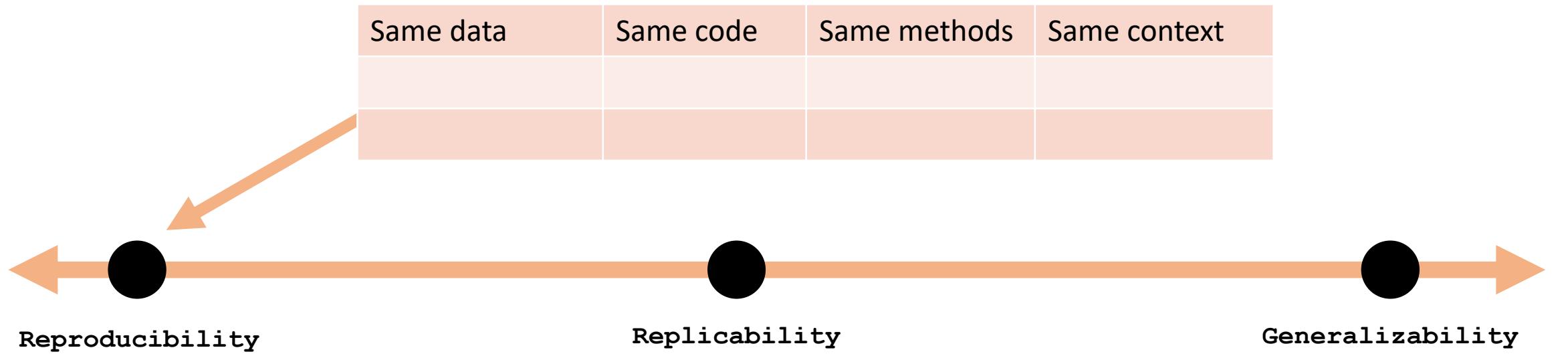
RePEc



Issues



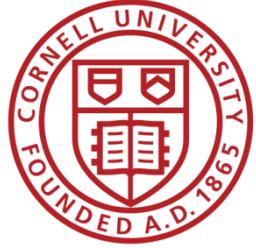
Replication continuum



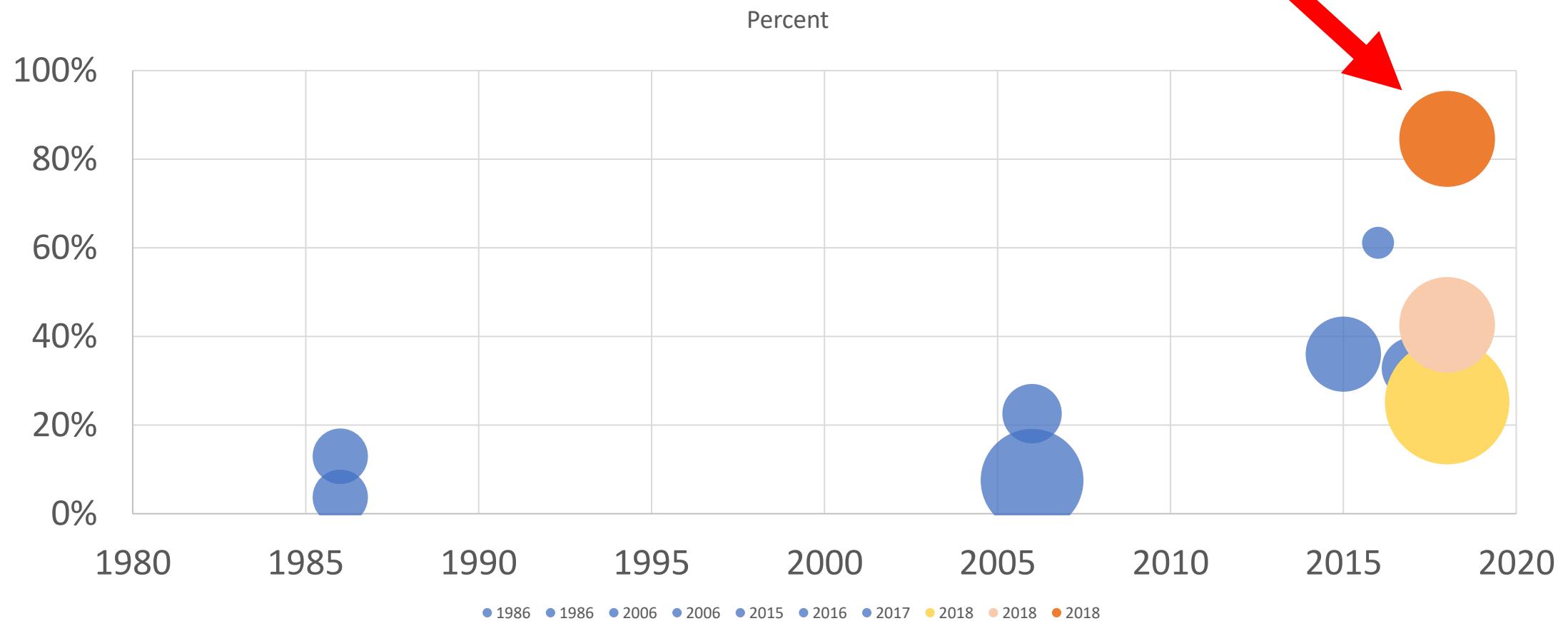
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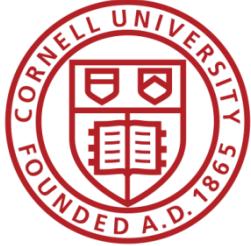
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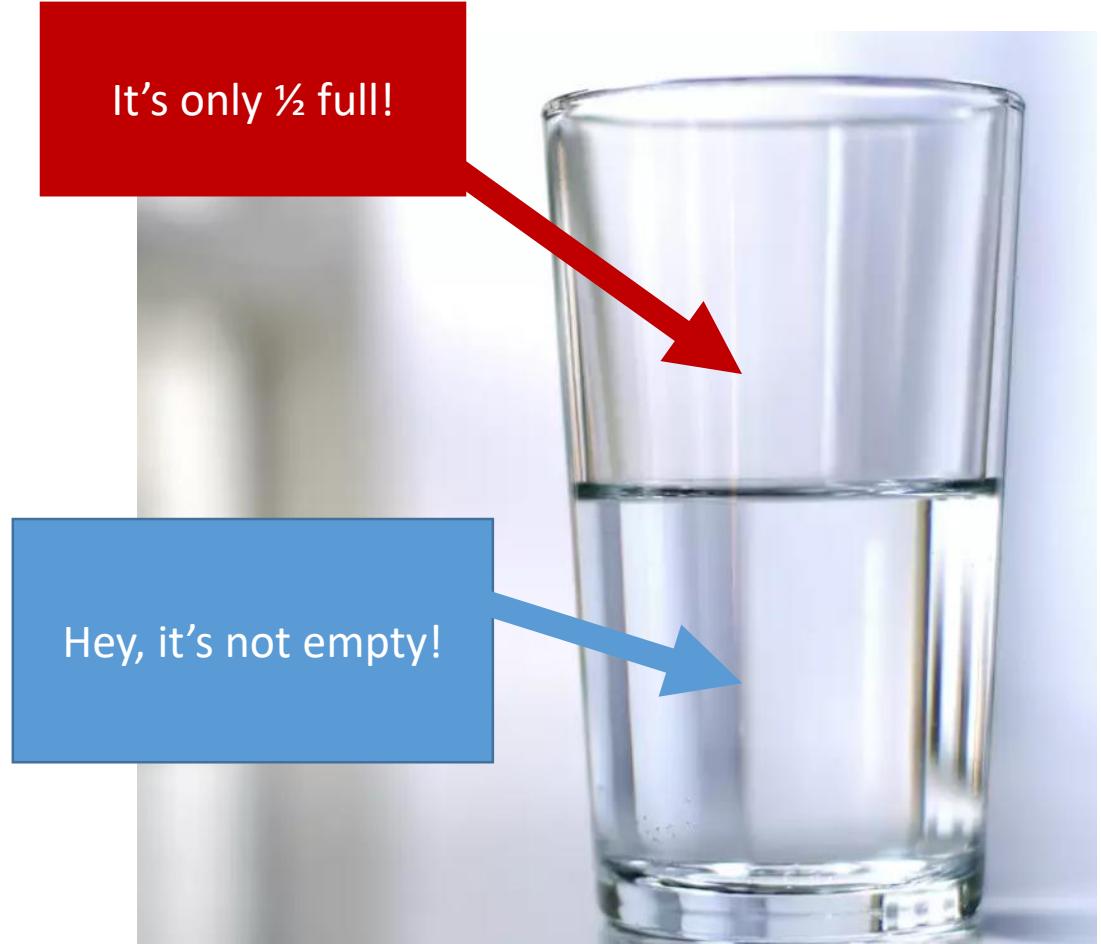
Results?



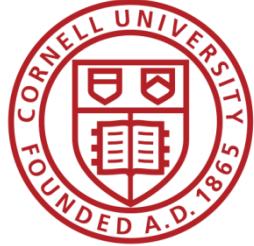


In a nutshell

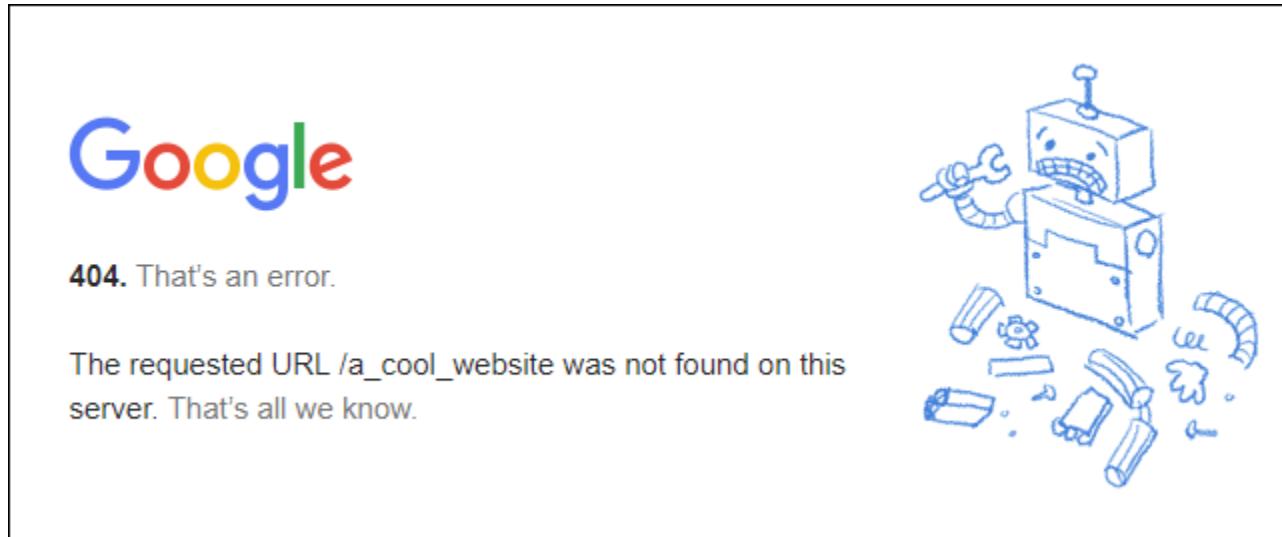
- **40%** use restricted-access data
- **25%** use public-use data and are mostly or completely reproducible
- **25%** use public-use data and are only partially reproducible
- **10%** fail to yield useful results

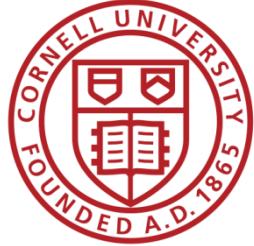


Why?



Failure to curate





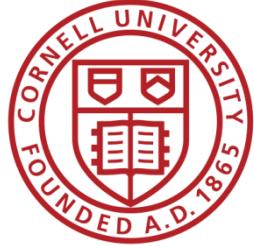
Poor coding practices

- **Manual/non-automation**

Code produces no meaningful output

- **Lack of robustness:**

Bugs in the code



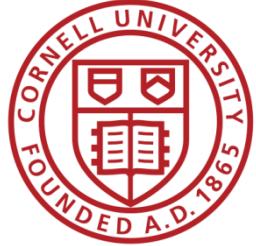
Poor citation practices

- **Macrodata:**

“We use data downloaded from
the Bureau of Economic Analysis...”

- **Microdata:**

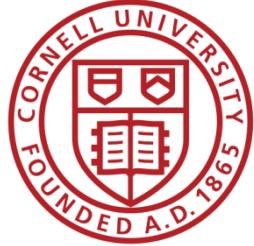
“... this paper uses data from
the Current Population Survey...”



Problems describing RELIABLE archives

Many datasets

- Are imperfectly described
 - Very few data citations
- Are badly documented
- Have no (permanent) location defined
 - Even for data from high-profile organizations!
- All of the above



Action: Data citations and metadata

What is FAIR?

- Findable,
- Accessible,
- Interoperable, and
- Re-usable

The FORCE11 logo features a blue circular icon with a white target-like pattern next to the word "FORCE11". Below it is the tagline "The Future of Research Communications and e-Scholarship". A navigation bar below the logo includes "ABOUT", "COMMUNITY", and "CODE OF CON".

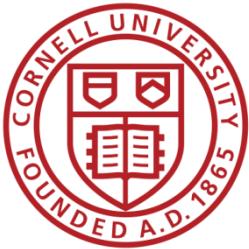
FORCE11 » Groups » The FAIR Data Principles

THE FAIR DATA PRINCIPLES

JOIN IN THE DISCUSSION - LEARN
FAIR Data Principles

Preamble

One of the grand challenges of data-intensiv



perceived criteria of importance.

1. Importance

Data should be considered legitimate, citable products of research. Data should be accorded the same importance in the scholarly record as citat research objects, such as publications[1].



Data Citation Principles

2. Credit and Attribution

Data citations should facilitate giving scholarly credit and normative and le attribution to all contributors to the data, recognizing that a single style or of attribution may not be applicable to all data[2].

3. Evidence

In scholarly literature, whenever and wherever a claim relies upon data, the corresponding data should be cited[3].

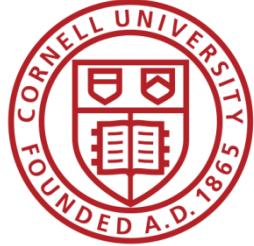
4. Unique Identification

A data citation should include a persistent method for identification that i actionable, globally unique, and widely used by a community[4].

5. Access

Data citations should facilitate access to the data themselves and to such metadata, documentation, code, and other materials as are necessary for

What to do?



Second round (2012-)

- Greater enforcement of data (and code) availability
 - 2015, AJ Political Science
 - 2016, Data Editor for ASA Software Section
 - 2016, Statistical review added Science
 - 2017: AEA appoints Data Editor, with mandate to do similar activities (also EJ, Restud)



American Economic Review



The *American Economic Review* is a general-interest economics journal. Established in 1911, the AER is among the nation's oldest and most respected scholarly journals in economics.

Journal of Economic Literature



The *Journal of Economic Literature* (JEL), first published in 1969, is designed to help economists keep abreast of and synthesize the vast flow of literature.

American Economic Journal: Applied Economics



American Economic Journal: Applied Economics publishes papers covering a range of topics in applied economics, with a focus on empirical microeconomic issues.

American Economic Journal: Macroeconomics



American Economic Journal: Macroeconomics focuses on studies of aggregate fluctuations and growth, and the role of policy in that context.

AMERICAN ECONOMIC ASSOCIATION

American Economic Review: Insights



AER: Insights is designed to be a top-tier, general-interest economics journal publishing papers of the same quality and importance as those in the *AER*, but devoted to publishing papers with important insights that can be conveyed succinctly.

Journal of Economic Perspectives



The *Journal of Economic Perspectives* (JEP) fills the gap between the general interest press and academic economics journals.

American Economic Journal: Economic Policy

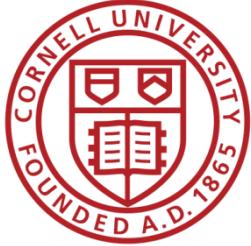


American Economic Journal: Economic Policy publishes papers covering a range of topics, the common theme being the role of economic policy in economic outcomes.

American Economic Journal: Microeconomics



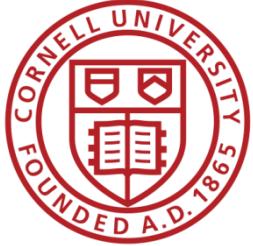
American Economic Journal: Microeconomics publishes papers focusing on microeconomic theory; industrial organization; and the microeconomic aspects of international trade, political economy, and finance.



Current efforts at the AEA

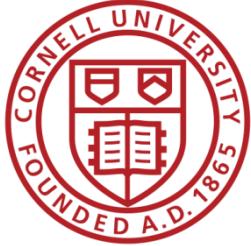
- **Pre-emptively improve code archives**
 - By conducting reproducibility checks when we can
 - By working with groups that conduct reproducibility checks when we cannot
- **Better archives**
 - Greater transparency of the code and data archives
- **Better provenance tracking**
 - Leave code where it is when appropriate
 - Leave data where it is almost always
 - Display that information

July 16, 2019



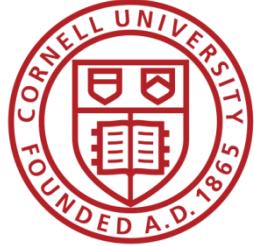
AEA Data & Code Availability Policy (2019)

- It is the policy of the American Economic Association to publish papers only if the data used in the analysis are **clearly and precisely documented** and **access to the data and code is clearly and precisely documented and is non-exclusive to the authors.**
- Authors of accepted papers that contain empirical work, simulations, or experimental work must **provide, prior to acceptance**, the data, programs, and other details of the computations **sufficient to permit replication**, as well as **information about access to data and programs**.



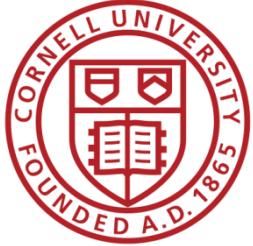
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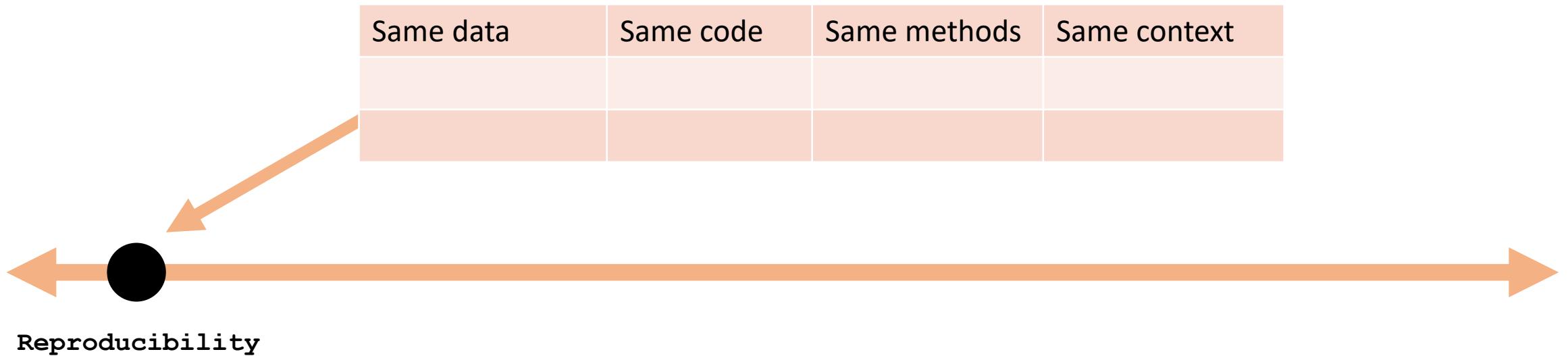


AEA Pre-Publication Verification

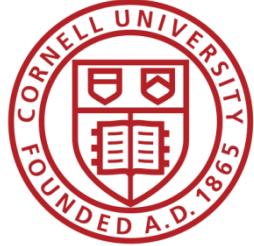
- Every paper that receives a “conditional acceptance” is verified
 - *Data citations*
 - *Quality of README*
 - *Quality of code*
 - *Reproducibility of code*
 - *Quality of metadata in the repository*



Replication continuum



- Narrow Replication (Pesaran 2003)
- Pure Replication (Hamermesh 2007)
- Verification (Clemens 2015)



Action: Reproducibility Check



Data and Code Guidance by Data Editors

Guidance for authors wishing to create data and code supplements, and for replicators.

Verification guidance

On this page:

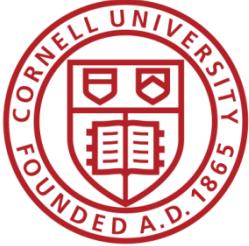
- Overview
- Review the README file
- For each listed data source
- For each listed table, figure, in-text number
- Conduct a code verification, if data is available
- Examples

Overview

This document describes

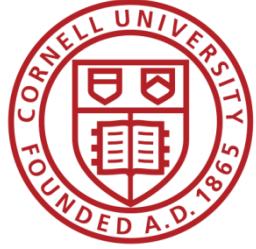
- what authors should check before providing data and code to journals
- what verifier teams should check for in the data and code provided to them for the purpose of verification



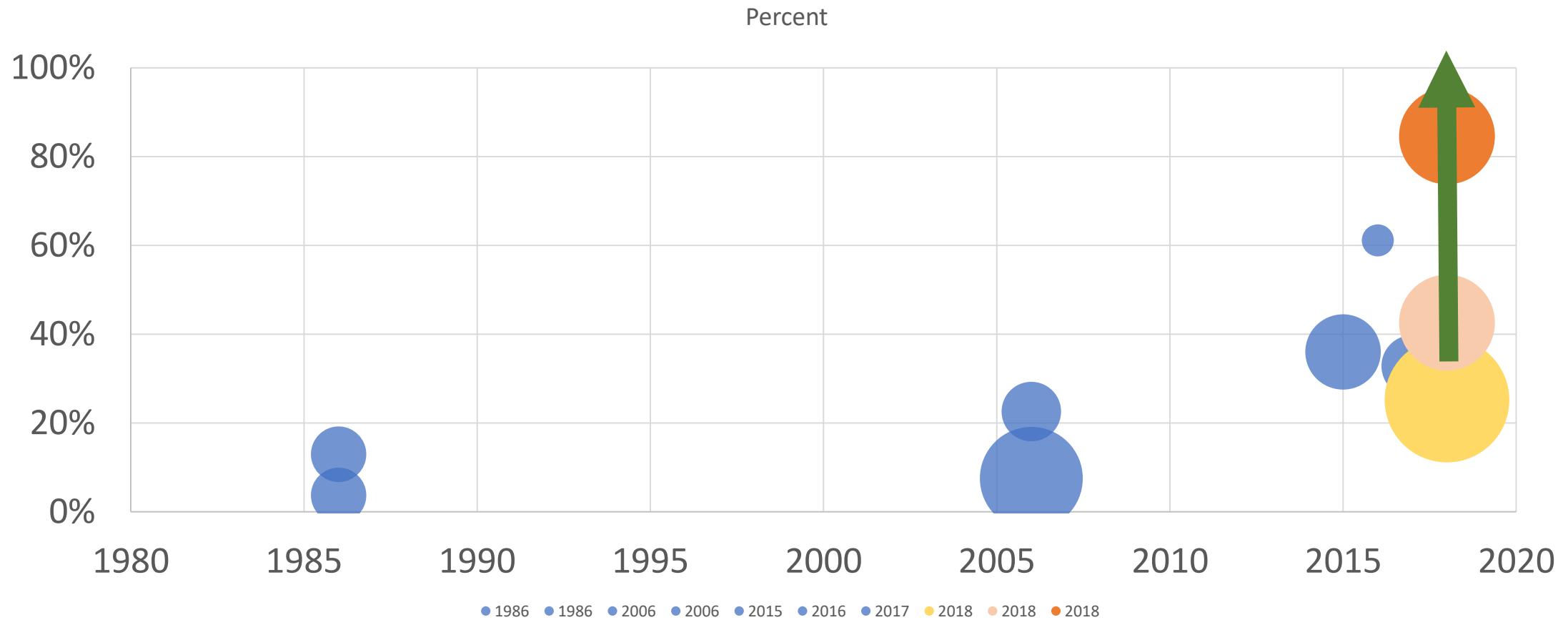


Who is doing that?

- Earlier reproducibility work: **Flavio Stanchi** (now at Airbnb), **Sylverie Herbert** (on the market), **Hautahi Kingi** (Impaq)
- Current lead graduate students: **David Wasser** (until Dec 2019), **Meredith Welch** (since Jan 2020)
- Current and past undergraduate students: Alexia Ge, Anthony Peraza, Craig Schulman, Elijah B. Ruiz, Gabriel Bond, Jason S. Katz, Jeong Hyun Lee, Jiayin Song, John Park, **Joshua Passel**, Kirubeal T. Wondimu, Linchen Zhang, **Louis Liu**, **Luis Lopez Cabrera**, Luke O'Leary, **Mary-Jo Ajiduah**, **Naomi Li**, Nicholas Swan, Nishat Peuly, Ryan Ali, Samuel Frey, Siyang (Elaine) Yu, **Steve Yeh**, **Weilun Shi**, William Hernandez, Yanyun (Iris) Chen, Yuan-Hsuan (Sharon) Lin, **Zebang Xu**, Xing Su, Jiazen Tan , Xueshi Su, Vendela Norman, Anderson Park, Nehedin Juarez, Rubal Mistry, **Syon Verma**, William Silverman, **Zechariah Karsana**, **Franklin Omullo**, **Liam P. Cushen**, **Ololade Omotoba**, **Lydia Reiner**, **Xiangru Li**, **Melanie Chen**, **Peter Rafael Sanchez**, **Jill Crosby**, **Matthew H. Wang**
- Other graduate students: Aviv Caspi, Leah Kim



Goal: Improve reproducibility



AEA Data and Code Guidance



**AMERICAN
ECONOMIC
ASSOCIATION**

Guidance for authors wishing to create data and code supplements, and for replicators.

Unofficial guidance on various topics by the AEA Data Editor

These web pages provide unofficial and developing guidance on the implementation of the American Economic Association (AEA)'s Data and Code Availability Policy. We also provide links to [generic guidance](#) being developed by a loose collective ("guild") of data editors and people in a similar role at various social science journals.

Follow @aeadata

Order in which AEA authors should read these resources:

1. Start with the [official Data and Code Availability Policy](#)
2. Look for general guidance at the [Social Science Data Editors](#) pages
3. Read the [AEA's FAQ](#)
4. Look for any guidance specific to the AEA at the [Unofficial AEA Data and Code Guidance](#)
5. Last but not least, have a look at the [draft FAQ on this site](#)

Comments are welcome, please file them as [issues](#) in our Github repo.

Guidance on creating replicable data and program archives

How should researchers create replicable data and program archives? How

Code

Issues 1

Pull requests 0

Actions

Wiki

Security

Insights

Settings

Branch: master ▾

replication-template / REPLICATION.md

[Find file](#) [Copy path](#)

larsvilhuber Minor edits to the report - clarifications about data preparation pro...

e9ad1f8 10 days ago

1 contributor

195 lines (135 sloc) | 10.3 KB

[Raw](#)[Blame](#)[History](#)

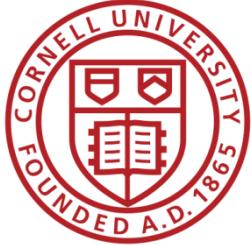
[MC number] [Manuscript Title] Validation and Replication results

INSTRUCTIONS: Once you've read these instructions, DELETE THESE AND SIMILAR LINES. In the above title, replace [Manuscript Title] with the actual title of the paper, and [MC number] with the Manuscript Central number (e.g., AEJPol-2017-0097) Go through the steps to download and attempt a replication. Document your steps here, the errors generated, and the steps you took to alleviate those errors.

You may want to consult [Unofficial Verification Guidance](#) for additional tips and criteria.

SUMMARY

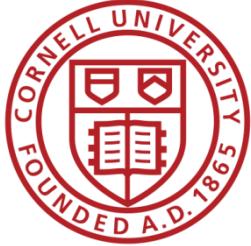
INSTRUCTION: The Data Editor will fill this part out. It will be based on any [REQUIRED] and [SUGGESTED] action



Stats on reproduced articles

Between July 16, 2019, and June 26, 2020 (11 mths), the AEA Data Editor team conducted

- **636 assessments**
- Of which **233 manuscripts** have been “accepted”



Also work with 3rd parties

- cascad – Using confidential data!
- CISER (R-Squared)
- Various contributors with access to confidential data



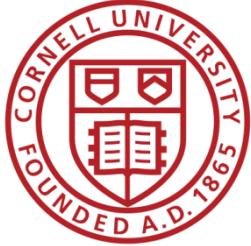
A cascad certification allows researchers to signal the reproducibility nature of their research to their peers

CISER CORNELL INSTITUTE for
Social and Economic Research



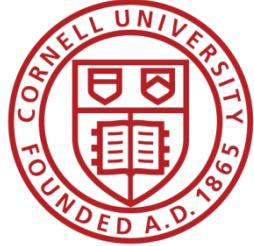
RESULTS REPRODUCTION (R-SQUARED)

Results Reproduction (R-Squared) is a service that computationally reproduces the results of your research to ensure Reproducibility and Transparency – think of it as *enhanced proofreading for your Data and Code*.



Current efforts at the AEA

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Full-featured repository

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[AEA Deposit Instructions](#) [Browse AEA Deposits](#) [Contact](#)

Depositing Data in the AEA Data and Code Repository

The *American Economic Association journals* require authors to deposit data and materials with a community-recognized or general repositories. The *AEA Data and Code Repository at ICPSR* serves that purpose. Please see the AEA's [Data and Code Availability Policy](#) and data citation guidance at the [Sample References](#) page for more details. **Authors are required to include a citation pointing to the deposit in the reference section of the final version of the article sent to the AEA.** The *openICPSR* repository automatically generates a citation when the data are "published."

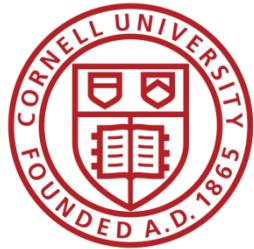
Deposits should include all data, annotated program code, command files, and documentation that is needed to replicate the findings from the authors' submitted article.

- **Data** should be comprehensively documented (see ICPSR's [Guide to Social Science Data Preparation and Archiving, 5th Edition](#) for guidance). The **author** is responsible for removing identifying information from the data to protect [confidentiality](#). Neither the AEA nor ICPSR review submissions for disclosure risk.
- **Program** code and command files should be annotated to facilitate replication and ensure clear correspondence between code and figures, tables, and analyses in the published article.
- Authors retain ownership and copyright to the data and code. Authors are required to affirm that they have the right to publish and redistribute the material. However,
 - ICPSR requires a license for distribution of data.
 - An **open license** is required by the AEA, in order to allow others to re-use the data and code, in particular for replication. Authors can select from several license options, including CC-BY 4.0 for data and Modified BSD for software and code. If an author would like to use multiple licenses or create a customized license, she should select the "Other" license option and upload a LICENSE file alongside the data and documentation.

By depositing in the AEA Data and Code Repository, the depositors allow the AEA staff to add keywords and other metadata which are important for proper indexing in linking. Any other changes are subject to the license chosen for the materials.

[View more extensive \(unofficial\) guidance.](#)

[Start Your Deposit](#)



FAIR data principles rely on metadata

— Scope of Project

Subject Terms ?

Do not copy/paste multiple terms into this field. Terms must be entered individually.

[✖ Russia](#) [✖ Industry](#) [✖ Factories](#) [✖ Russian Empire](#) [✖ Corporations](#)

JEL Classification ?

[✖ L20 General](#) [✖ N63 Europe: Pre-1913](#) [✖ O43 Institutions and Growth](#)

Manuscript Number ?

AER-2015-1656.R3 [edit](#) [remove](#)

Geographic Coverage ? [+ add value](#)

European Russia (Russian Empire) [edit](#) [remove](#)

Time Period(s) ? [+ add value](#)

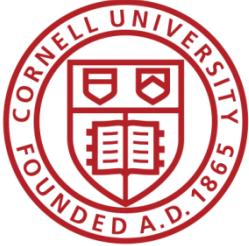
1894 – 1908 (Three years: 1894, 1900, and 1908) [edit](#) [remove](#)

Collection Date(s) ? [+ add value](#)

Universe ?

Manufacturing establishments in the European part of the Russian Empire. [edit](#) [remove](#)

Data Type(s) ?

[Find Data](#) / [Imperial Russian Factory Database, 1894-1908](#)

Imperial Russian Factory Database, 1894-1908

Principal Investigator(s): Amanda Gregg, Middlebury College

Version: V1



Name	File Type	Last Modified
1894MicroData.xlsx	application/vnd.openxmlformats-officedocument.spreadsheetml.sheet	4.5 MB 08/08/2019 11:01:AM

Project Citation:

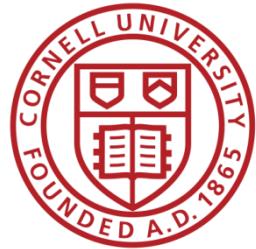
Gregg, Amanda. Imperial Russian Factory Database, 1894-1908. Nashville, TN: American Economic Association [publisher], 2020. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2020-01-29. <https://doi.org/10.3886/E110681V1>

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Related Publications

The following publications are supplemented by the data in this project.

- Gregg, Amanda. "Factory Productivity and the Concession System of Incorporation in Late Imperial Russia, 1894-1908." *American Economic Review* 110, no. 2 (February 2020): 401-27. <https://doi.org/10.1257/aer.20151656>.

[Find Data](#) / [Imperial Russian Factory Database, 1894-1908](#)

Imperial Russian Factory Database, 1894-1908

Principal Investigator(s): Amanda Gregg, Middlebury College

Version: V1

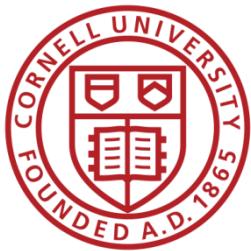


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<meta name="DC.creator" content="Amanda Gregg, Middlebury College" />

<meta name="DC.publisher" content="Inter-university Consortium for Political and Social Research (ICPSR)" />
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	AG_Corp_Prod_AppendixCode.do	text/x-stata-syntax	42.2 KB	12/09/2019 09:19:AM
	AG_Corp_Prod_Code.do	text/x-stata-syntax	26.6 KB	12/12/2019 03:01:AM
	AG_Corp_Prod_Database.dta	application/x-stata	11 MB	08/07/2019 08:55:AM
		application/x-stata	11.9	10/08/2014

[Find Data](#) / [Imperial Russian Factory Database, 1894-1908](#)

Imperial Russian Factory Database, 1894-1908

Principal Investigator(s): Amanda Gregg, Middlebury College



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09:19:AM [AG_Corp_Prod_Code.do](#)

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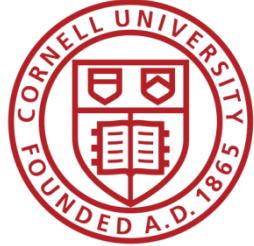
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application/x-stata

11 MB 08/07/2019
08:55:AM [AG_Corp_Prod_Database.dta](#)

application/x-stata

11.9 KB 10/08/2014



... and findability relies on metadata

Google



imperial russian factory



1 dataset found



Imperial Russian Factory
Database, 1894-1908

www.openicpsr.org
search.datacite.org
+1more



Updated Jan 29, 2020



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Imperial Russian Factory Database, 1894-1908

[Explore at openICPSR](#)

[Explore at search.datacite.org](#)

[Explore at www.da-ra.de](#)

2 scholarly articles cite this dataset ([View in Google Scholar](#))



Unique identifier

<https://doi.org/10.3886/E110681V1>

Dataset updated Jan 29, 2020

Dataset provided by

[American Economic Association](#)

Authors

Amanda Gregg

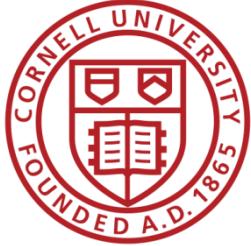
License

[Attribution 4.0 \(CC BY 4.0\)](#)

License information was derived automatically

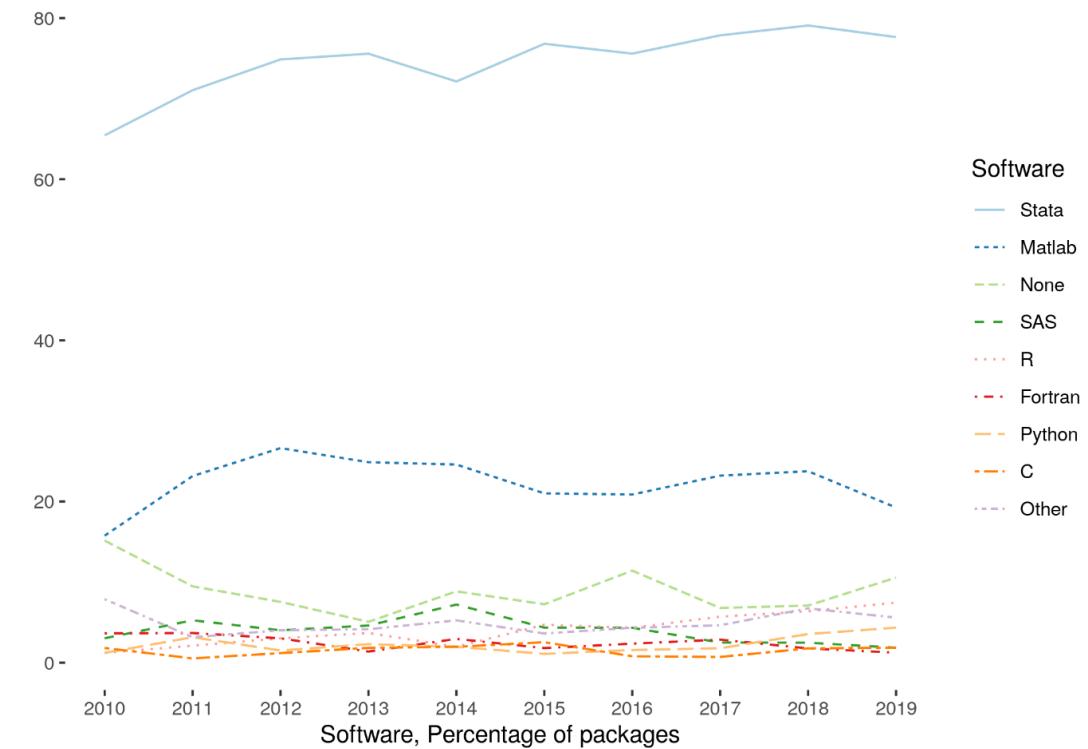
Area covered

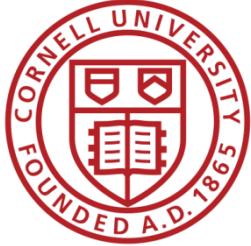
European Russia (Russian Empire)



Very little diversity in software

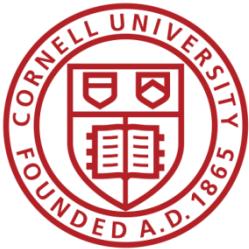
- **Stata** is the most popular statistical software in the journals of the AEA
(72.96% of all supplements)
- followed by **Matlab** (**22.45%**)





Current efforts at the AEA

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perceived criteria of importance.

1. Importance

Data should be considered legitimate, citable products of research. Data should be accorded the same importance in the scholarly record as citation research objects, such as publications[1].



Data Citation Principles

2. Credit and Attribution

1 | **Bureau of Labor Statistics.** 2000–2010. “Current Employment Statistics: Colorado, Total Nonfarm, Seasonally adjusted - SMS080000000000000001.” United States Department of Labor. <http://data.bls.gov/cgi-bin/surveymost?sm+08> (accessed February 9, 2011).

corresponding data should be cited[3].

4. Unique Identification

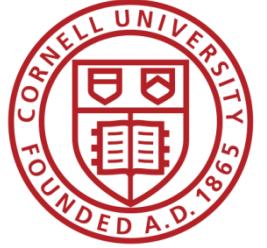
A data citation should include a persistent method for identification that is actionable, globally unique, and widely used by a community[4].

5. Access

Data citations should facilitate access to the data themselves and to such metadata, documentation, code, and other materials as are necessary for

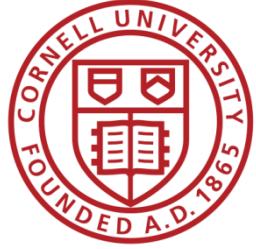
Data Citation Synthesis Group: Joint Declaration of Data Citation Principles. Martone M. (ed.) San Diego CA: FORCE11; 2014 [<https://www.force11.org/group/joint-declaration-data-citation-principles-final>].

Some practical
tips



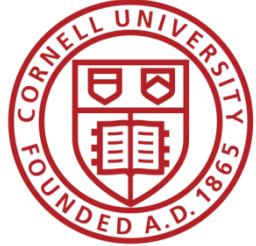
Would you buy a car from this guy?





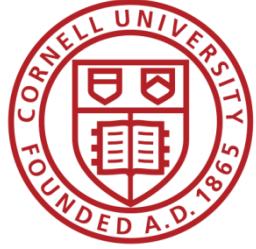
Provenance!

- Does the sales person have a good record?
- Where does the car come from?
- What do we know about the car?



Would you use this data?

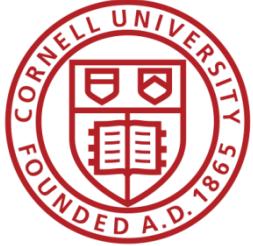
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*  
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0000220 00e2 0000 005c 0070 0001 4c00 2020 2020  
0000230 2020 2020 2020 2020 2020 2020 2020 2020  
*  
0000290 2020 2020 2020 2020 0042 0002 04b0 0161  
00002a0 0002 0000 013d 0002 0001 009c 0002 000e  
00002b0 0019 0002 0000 0012 0002 0000 0013 0002  
00002c0 0000 01af 0002 0000 01bc 0002 0000 003d  
00002d0 0012 0000 000f 3f1b 27f6 0038 0000 0000  
00002e0 0001 0258 0040 0002 0000 008d 0002 0000  
00002f0 0022 0002 0000 000e 0002 0001 01b7 0002
```



Provenance!

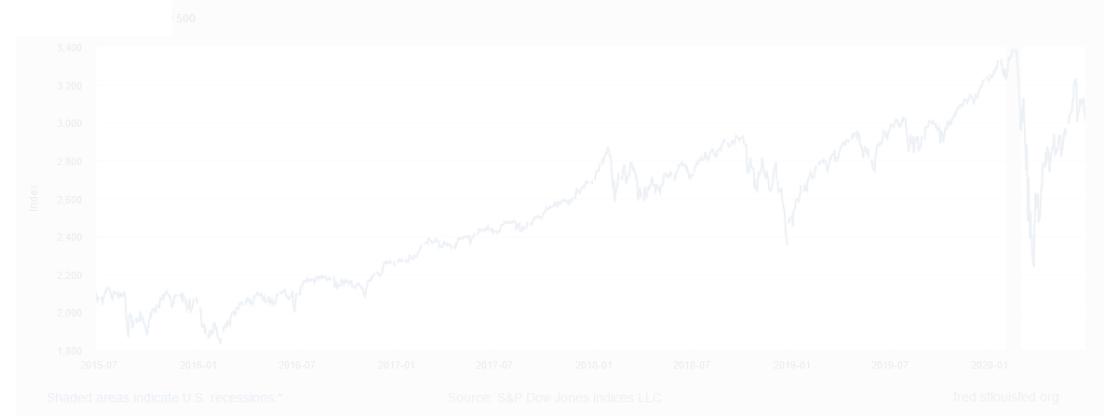
- Does the provider have a good record?
- Where do the data come from?
- What do we know about the data?

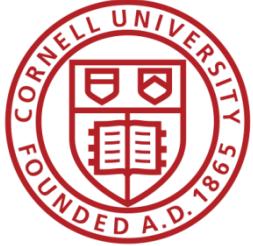
Metadata!



“It’s a file called stockmarket.xlsx”

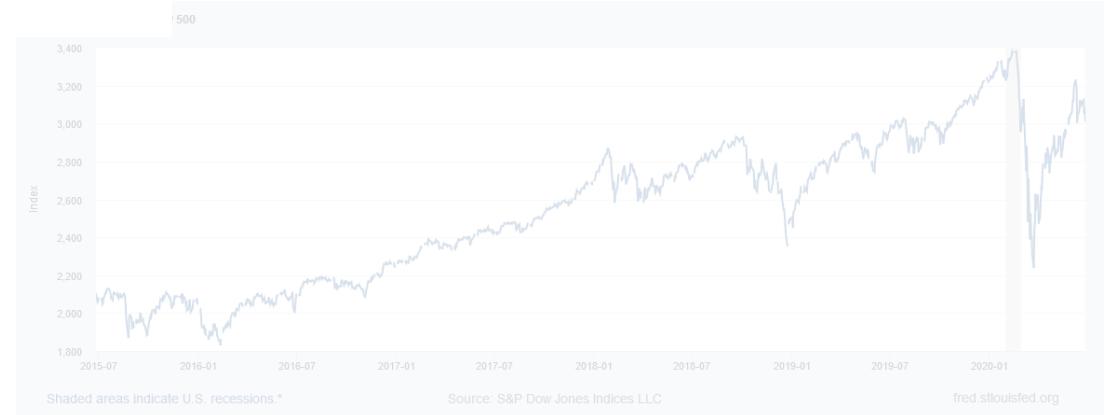
2101.49
2057.64
2063.11
2077.42
2076.78
0
2068.76
2081.34
2046.68
2051.31
2076.62
2099.60
2108.95
2107.40
2124.29
2126.64
2128.28
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2114.15
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2108.63
2103.84

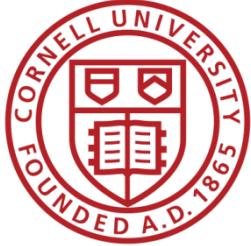




“It’s a file called SP500.xlsx”

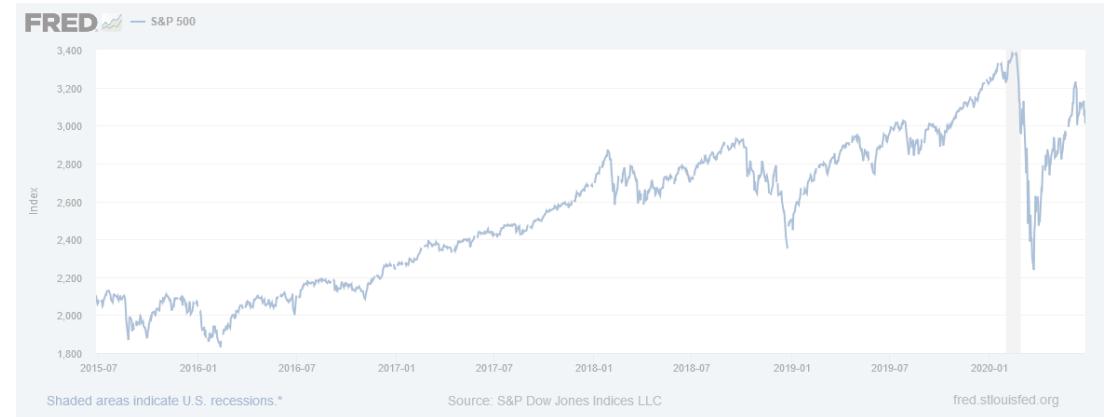
SP500	S&P 500, Index, Daily, Not Seasonally Adjusted
Frequency: Daily, Close	
observation_date	SP500
2015-06-26	2101.49
2015-06-29	2057.64
2015-06-30	2063.11
2015-07-01	2077.42
2015-07-02	2076.78
2015-07-03	0
2015-07-06	2068.76
2015-07-07	2081.34
2015-07-08	2046.68
2015-07-09	2051.31
2015-07-10	2076.62
2015-07-13	2099.60
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2015-07-16	2124.29
2015-07-17	2126.64
2015-07-20	2128.28

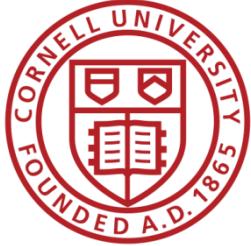




“It’s a file called SP500.xlsx, downloaded from FRED.”

SP500	S&P 500, Index, Daily, Not Seasonally Adjusted
Frequency: Daily, Close	
observation_date	SP500
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2015-06-29	2057.64
2015-06-30	2063.11
2015-07-01	2077.42
2015-07-02	2076.78
2015-07-03	0
2015-07-06	2068.76
2015-07-07	2081.34
2015-07-08	2046.68
2015-07-09	2051.31
2015-07-10	2076.62
2015-07-13	2099.60
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2015-07-16	2124.29
2015-07-17	2126.64
2015-07-20	2128.28



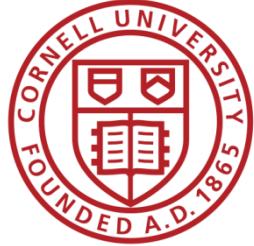


“It’s a file called SP500.xlsx, downloaded from FRED.”

SP500	S&P 500, Index, Daily, Not Seasonally Adjusted
Frequency: Daily, Close	
observation_date	SP500
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2015-06-29	2057.64
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2015-07-01	2077.42
2015-07-02	2076.78
2015-07-03	0
2015-07-06	2068.76
2015-07-07	2081.34
2015-07-08	2046.68
2015-07-09	2051.31
2015-07-10	2076.62
2015-07-13	2099.60
2015-07-14	2108.95
2015-07-15	2107.40
2015-07-16	2124.29
2015-07-17	2126.64
2015-07-20	2128.28

S&P Dow Jones Indices LLC. 2020. “*S&P 500 [SP500] [dataset]*”, retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/SP500>, June 26, 2020.



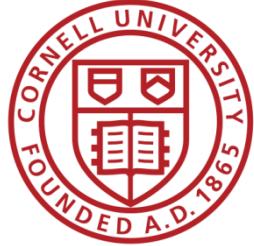


“SP500.xlsx, from S&P (2020). Not provided as part of replication package because © S&P.”

SP500	S&P 500, Index, Daily, Not Seasonally Adjusted
Frequency: Daily, Close	
observation_date	SP500
2015-06-26	2101.49
2015-06-29	2057.64
2015-06-30	2063.11
2015-07-01	2077.42
2015-07-02	2076.78
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2015-07-06	2068.76
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2015-07-13	2099.60
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2015-07-15	2107.40
2015-07-16	2124.29
2015-07-17	2126.64
2015-07-20	2128.28

S&P Dow Jones Indices LLC. 2020. “*S&P 500 [SP500] [dataset]*”, retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/SP500>, June 26, 2020.





Data Availability Statements

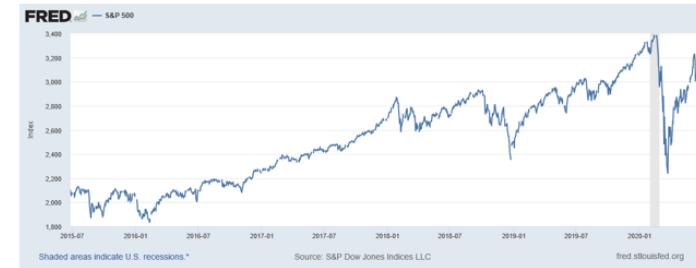
Describes data file, where to get it, how to get it, and any conditions of obtaining it

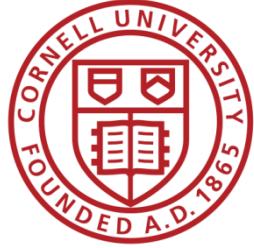
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2015-07-20	2128.28

“SP500.xlsx, from S&P (2020). Not provided as part of replication package because © S&P.”

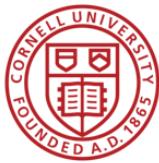
S&P 500
S&P 500, Index, Daily,
Not Seasonally Adjusted

S&P Dow Jones Indices LLC. 2020. “S&P 500 [SP500] [dataset]”, retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/SP500>, June 26, 2020.





Data Citation



“SP500.xlsx, from S&P (2020). Not provided as part of replication package because © S&P.”

Attributes the file to
the proper source

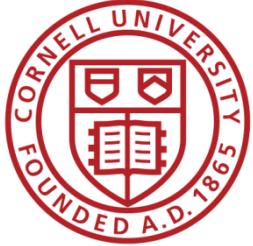
SP500

S&P 500, Index, Daily,
Not Seasonally
adjusted

Date	Value
2015-07-08	2101.49
2015-07-09	2057.64
2015-07-10	2063.11
2015-07-13	2074.42
2015-07-14	2076.78
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2015-07-16	2068.76
2015-07-17	2081.34
2015-07-20	2046.68
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	2126.64
	2128.28

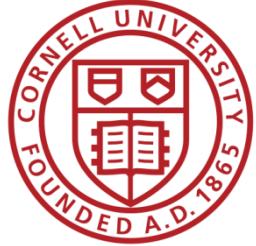
S&P Dow Jones Indices LLC. 2020. “S&P 500 [SP500] [dataset]”, retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/SP500>, June 26, 2020.





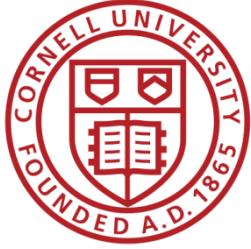
AEA “Data Availability Policy” (2019)

- It is the policy of the American Economic Association to publish papers only if the data used in the analysis are **clearly and precisely documented and access to the data and code is clearly and precisely documented and is non-exclusive to the authors.**
- Authors of accepted papers that contain empirical work, simulations, or experimental work must **provide, prior to acceptance,** the data, programs, and other details of the computations **sufficient to permit replication**, as well as **information about access to data and programs.**



Every manuscript is checked

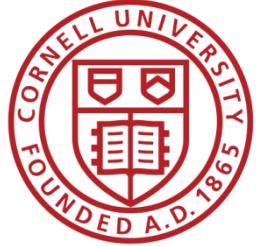
- What datasets are used
- Are they cited?
 - → in Article?
 - → in Online Appendix?
 - → in README?



Every manuscript is checked

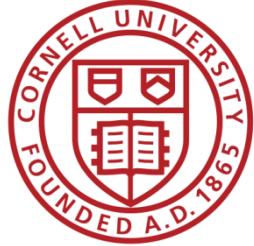
- What datasets are used
- Are they cited?
- Is there additional information access?
 - → URL leads to exact data?
 - → URL leads to application procedure?
 - → other access procedure is described?





Every manuscript is checked

- What datasets are used
- Are they cited?
- Is there additional information on access?
- Is there license/ data use information?
 - → Should the author provide the data?
 - → Is the author allowed to provide data?



Example 2: Academic data publisher

 **ECONOMIC POLICY UNCERTAINTY**

Home Methodology Media Research & Applications About Us

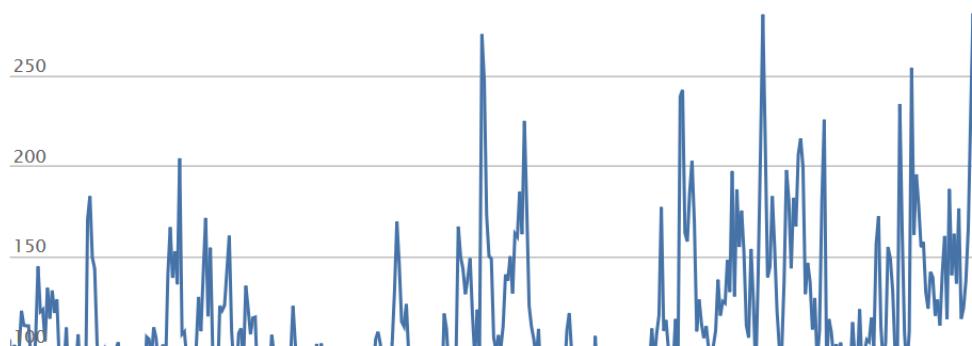
EPU Indices	
All Country-Level Data	
Global	USA
Australia	Brazil
Canada	Chile
China	Colombia
Croatia New	France
Germany	Greece
Hong Kong	India
Ireland	Italy
Japan	South Korea

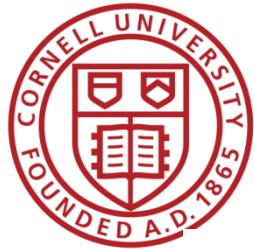
Economic Policy Uncertainty Index

We develop indices of economic policy uncertainty for countries around the world.

Monthly US Economic Policy Uncertainty Index

Zoom [1m](#) [3m](#) [6m](#) [1y](#) [7y](#) [All](#)





Example 2: Academic data publisher

https://www.policyuncertainty.com/index.html SEP DEC JAN
103 captures 14 2018 2019 2020
18 Aug 2012 - 14 Dec 2019

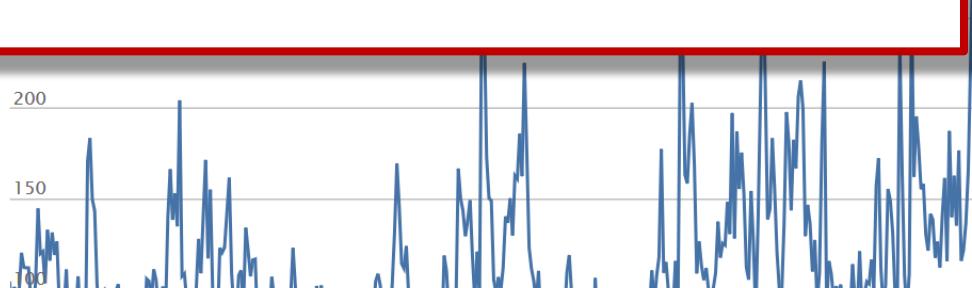
ECONOMIC POLICY UNCERTAINTY [Home](#) [Methodology](#) [Media](#) [Research & Applications](#) [About Us](#)

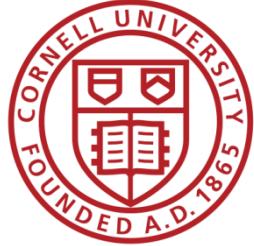
EPU Indices **Economic Policy Uncertainty Index**

All Country-Level Data We develop indices of economic policy uncertainty for countries around the world.

Globe Australia Canada China Croatia France Germany Greece Hong Kong India Ireland Italy Japan South Korea

© 2012-2018 by Economic Policy Uncertainty





Example 2: Academic data publisher-new!

 **ECONOMIC POLICY UNCERTAINTY**

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[EPU Indices](#)

All Country-Level Data [Global](#) [USA](#)

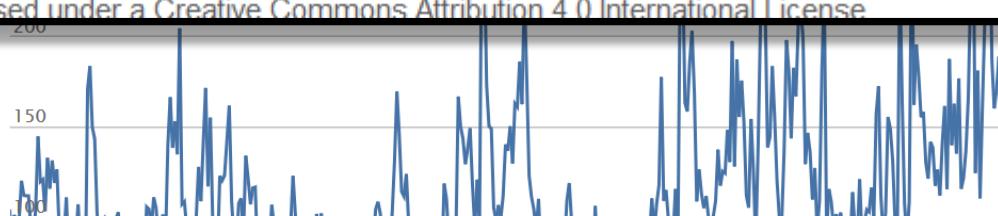
Economic Policy Uncertainty Index

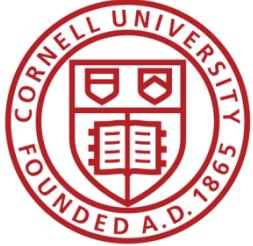
We develop indices of economic policy uncertainty for countries around the world.

Monthly US Economic Policy Uncertainty Index

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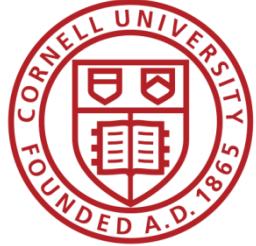
Germany Greece
Hong Kong India
Ireland Italy
Japan South Korea





Rights to use data

- You browsed a website
- You purchased the data
- You signed a data use agreement
- You created the data (lab experiment)
- You had survey respondents consent to use (IRB approval!)



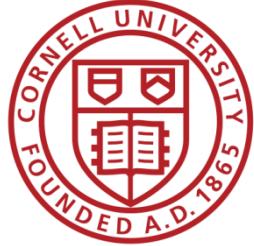
Rights to distribute the data

- If you created the data, you decide.
- If you got it from somewhere else:

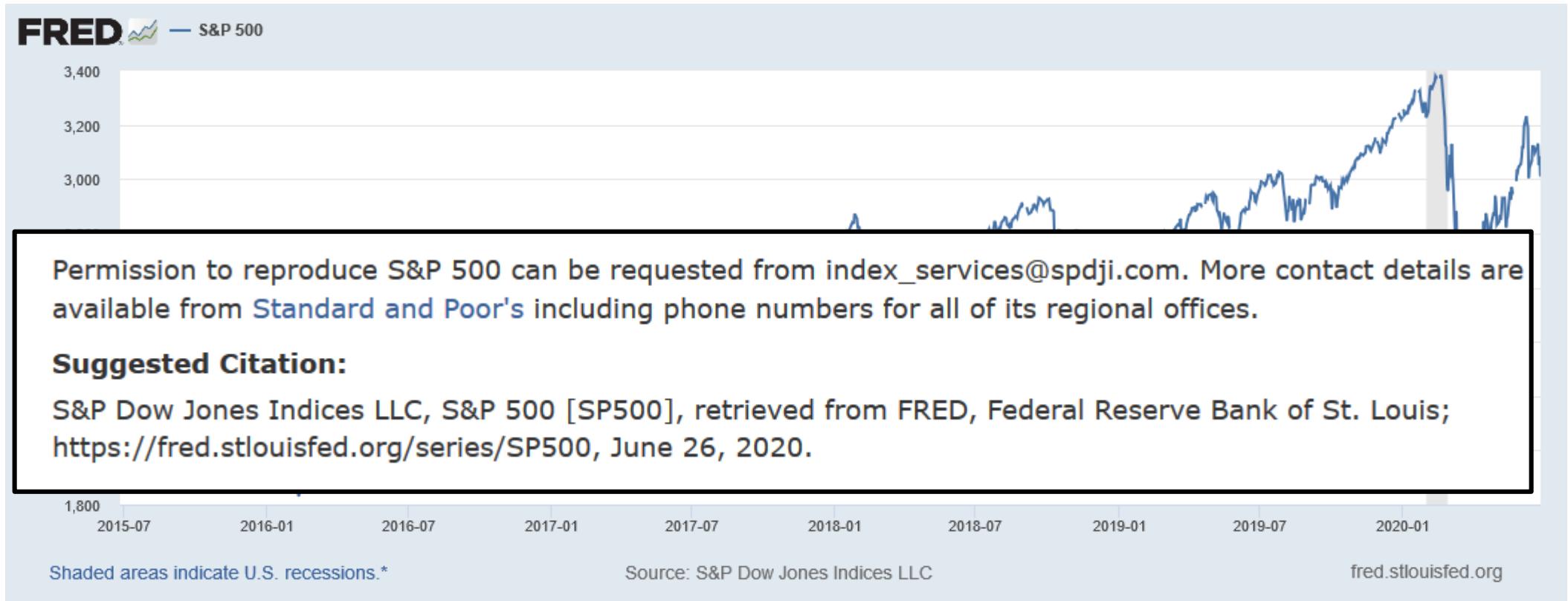
READ THE TERMS OF USE / DATA USE
AGREEMENT / CLICK-THROUGH / ETC.

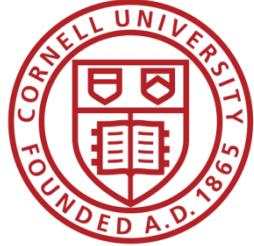
Response

Thanks, but I'll stick with what I've been doing for at least 20 years. At some point I might figure out the right license, but it's been working so far. And your inference is correct, the authors can use the data but not redistribute it. In this specific case, there is no reason for them to do so because the data are freely available to everyone.



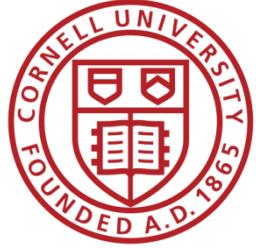
Example 3: FRED (St. Louis Fed) and SP500





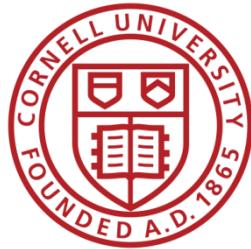
Restricted-access data

- Often, you do not have the data on your laptop
- Examples: FSRDC, German, Swedish, French, Canadian, etc. administrative data
- Examples: Uber, Ebay data



Citing restricted-access data

“Well, I can’t download the data, so I can’t cite it.”



Example 4: German Restricted-access



RESEARCH DATA CENTRE (FDZ)
of the German Federal Employment Agency (BA)
at the Institute for Employment Research (IAB)

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Data Version	DOI (Link to Description of Data Version)	Availability (yyyy-mm-dd)
BHP 7518 v1 (current)	10.5164/IAB.BHP7518.de.en.v1	2020-01-13
BHP 7517 v1	10.5164/IAB.BHP7517.de.en.v1	2018-12-12
BHP 7516 v1	10.5164/IAB.BHP7516.de.en.v1	2018-04-11

External data

Data Archive

Data Access

Campus Files

Publications

Events

Projects of FDZ users

FDZ Projects

Complaint point of the
RatSWD

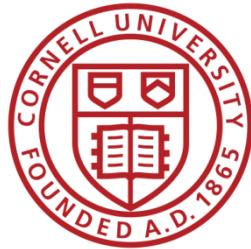
Figures of the FDZ

employees, both in total and broken down by gender, age, occupational status, qualification and nationality. Means and medians of wages for full-time employees are given, too. Additional datasets providing information about (gross) worker flows and about foundations and closures of establishments are available on request.

Data Versions

Old versions are only available for replication studies and only in justified exceptional cases for new Projects.

Data Version	DOI (Link to Description of Data Version)	Availability (yyyy-mm-dd)
BHP 7518 v1 (current)	10.5164/IAB.BHP7518.de.en.v1	2020-01-13



Example 4: German Restricted-access



RESEARCH DATA CENTRE (FDZ)
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Data Version	DOI (Link to Description of Data Version)	Availability (yyyy-mm-dd)
BHP 7518 v1 (current)	10.5164/IAB.BHP7518.de.en.v1	2020-01-13
BHP 7517 v1	10.5164/IAB.BHP7517.de.en.v1	2018-12-12
BHP 7516 v1	10.5164/IAB.BHP7516.de.en.v1	2018-04-11

External data

Data Archive

Data Access

Campus Files

Publications

Events

Projects of FDZ users

FDZ Projects

Complaint point of the
RatSWD

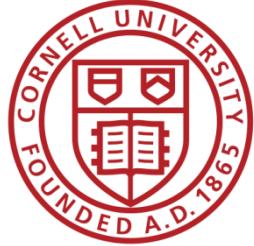
Figures of the FDZ

employees, both in total and broken down by gender, age, occupational status, qualification and nationality. Means and medians of wages for full-time employees are given, too. Additional datasets providing information about (gross) worker flows and about foundations and closures of establishments are available on request.

Data Versions

Old versions are only available for replication studies and only in justified exceptional cases for new Projects.

Data Version	DOI (Link to Description of Data Version)	Availability (yyyy-mm-dd)
BHP 7518 v1 (current)	10.5164/IAB.BHP7518.de.en.v1	2020-01-13



Example 4: German Restricted-access

Establishment History Panel (BHP) – Version 7518 v1

DOI: 10.5164/IAB.BHP7518.de.en.v1

Summary

Data source:

Data Access

The IAB Establishment Panel is available via the following ways of access:

- On-site use at the FDZ. Further information on Applying for [on-site use](#).
- Remote data Access. Further information on Applying for [remote data access](#).

nationality. Means and medians of wages for full-time employees are given, too. Additional datasets providing information about (gross) worker flows and about foundations and closures of establishments are available on request.

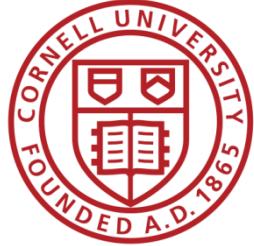
Dataset Descriptions and Frequencies

German

- DOI: [10.5164/IAB.FDZD.2001.de.v1](https://doi.org/10.5164/IAB.FDZD.2001.de.v1)
- [FDZ-Datenreport 01/2020](#)
- [Fallzahlen und Labels](#)

English

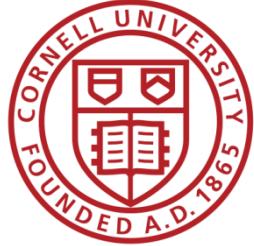
- DOI: [10.5164/IAB.FDZD.2001.en.v1](https://doi.org/10.5164/IAB.FDZD.2001.en.v1)



But this is not always so easy

Restricted-Use Economic Census* Microdata

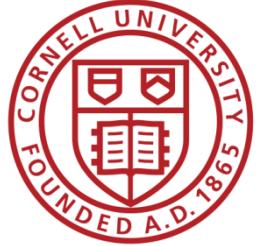
Data Set	Frequency	Unit of Enumeration	Availability
Census of Auxiliary Establishments (AUX)	Every 5 Years	Establishment	1977–2012
Census of Construction Industries (CCN)	Every 5 Years	Establishment	1972–2012
Census of Finance, Insurance, and Real Estate (CFI)	Every 5 Years	Establishment	1992–2012
Census of Island Areas – Puerto Rico (CIAPR)	Every 5 Years	Establishment	1992–2007
Census of Manufactures (CMF)	Every 5 Years	Establishment	1963, 1967–2012
Census of Mining (CMI)	Every 5 Years	Establishment	1987–2012
Census of Retail Trade (CRT)	Every 5 Years	Establishment	1977–2012



Element of a (data) citation

ICPSR notes that a citation should include the following items:

- Author
- Title
- Distributor
- Date
- Version
- Persistent identifier



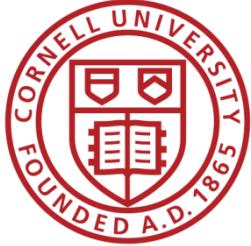
Element of a (data) citation

ICPSR notes that a citation should include the following items:

- Author
- Title
- Distributor
- Date
- Version
- Persistent identifier

Suggested Citation:

S&P Dow Jones Indices LLC, *S&P 500 [SP500]*, retrieved from FRED, Federal Reserve Bank of St. Louis;
<https://fred.stlouisfed.org/series/SP500>, June 26, 2020.



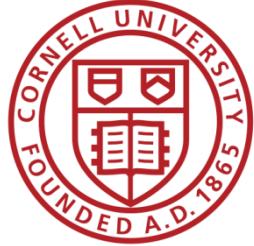
Element of a (data) citation

ICPSR notes that a citation should include the following items:

- Author
- Title
- Distributor
- Date
- Version
- Persistent identifier

Constructed Citation:

Institute for Employment Research (IAB), Establishment History Panel 1975-2018. Accessed via the Research Data Centre (FDZ) of the German Federal Employment Agency DOI: 10.5164/IAB.BHP7518.de.en. v1 June 26, 2020.

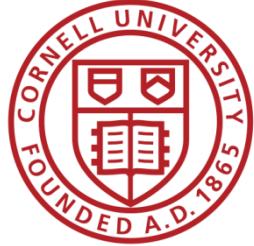


Element of a (data) citation

ICPSR notes that a citation should include the following items:

- Author
- Title
- Distributor
- Date
- Version
- Persistent identifier

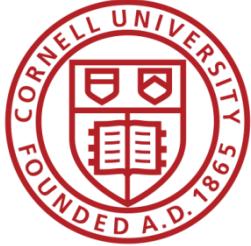
Constructed Citation:
US Census Bureau,
Longitudinal Business
Database (LBD) 1975-
2018. Last accessed via
the Federal Statistical
Research Data Centre
(FSRDC) June 26, 2020.



Data Availability Statement

- FRED data: URL is sufficient
- IPUMS data: Registration is required, query system requires users to provide details about variables, samples.
- IAB:

“This study uses the weakly anonymous Establishment History Panel 1975-2018. Data access was provided via on-site use at the Research Data Centre (FDZ) of the German Federal Employment Agency (BA) at the Institute for Employment Research (IAB) and/or remote data access. DOI: 10.5164/IAB.BHP7518.de.en.v1”



And we check them!

- If the URL does not work, we make a note.
- If the site requires registration, we try it out.
 - How long?
 - Any requirements?

- What does the site say?

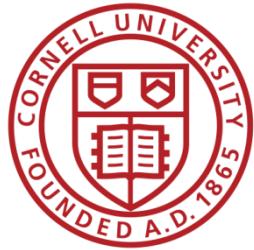
Please use the following citation when referring to this file in the different versions:

Inglehart, R., C. Haerpfer, A. Moreno, C. Welzel, K. Kizilova, J. Diez-Medrano, M. Lagos, P. Norris, E. Ponarin & B. Puranen et al. (eds.). 2014. World Values Survey: Round Six - Country-Pooled Datafile Version:

www.worldvaluessurvey.org/WVSDocumentationWV6.jsp.

Madrid: JD Systems Institute.

- Is that in the README / Paper/ Appendix?



And we check them!

In order to download the file you are asked to fill the following registration form and agree on the "Conditions of Use". Please read it carefully before proceeding to the download.

PERSONAL DATA

Title (position):

Full name:

Company/Institution:

E-mail:

FILE USAGE

Project title:

Intended use:

Brief description of the purpose of application:

CONDITIONS OF USE

1. Restrictions

These data files are available without restrictions, provided

a) that they are used for non-profit purposes; and

b) correct citations are provided and sent to the World Values Survey Association for each publication or results based in part entirely on these data files. This citation will be made freely available; and

c) [the data files themselves are not redistributed.](#)

2. Correct citation

- What does the site say?

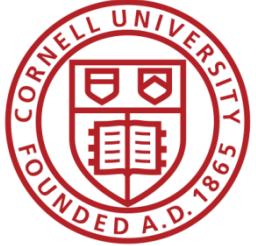
Please use the following citation when referring to this file in the different versions:

Inglehart, R., C. Haerpfer, A. Moreno, C. Welzel, K. Kizilova, J. Diez-Medrano, M. Lagos, P. Norris, E. Ponarin & B. Puranen et al. (eds.). 2014. World Values Survey: Round Six - Country-Pooled Datafile Version:

www.worldvaluessurvey.org/WVSDocumentationWV6.jsp.

Madrid: JD Systems Institute.

- Is that in the README / Paper/ Appendix?
- Are all the conditions met/described?



Data Availability

- A statement about **data availability**
 - DOI assigned
 - But longer
- A statement about **usage rights**
 - Not every dataset is in the public domain
 - Not everybody knows that U.S. Government data are usually in the public domain



Data Availability Statements (DAS)

- A statement about **where data** supporting the results reported in a published article can be

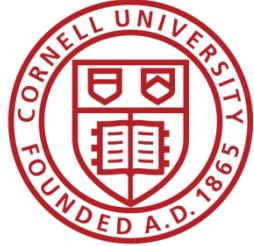
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Provide data citations (in manuscript) and data availability statements (in README or appendix)

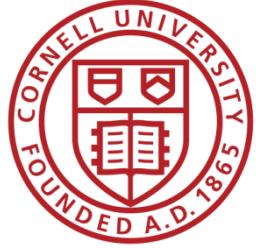
Take-away



Data: Citations, Access, Rights

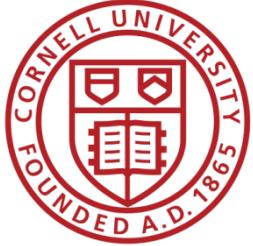
- Any data can be cited – even if you can't download it
- Any data that you accessed ... can have that access be described
 - But caution: It should be such that others can also repeat the access!
- Just because you “have” the data does not mean you can give it to others
 - Also: distinguish between “sharing” and “publishing”
 - Know your terms of use!

Coding for Reproducibility



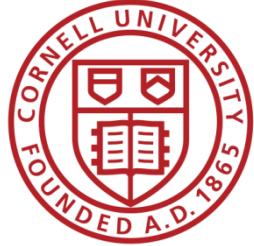
Follow Best Practices

- **Follow robust coding**
 - Ensure that code reliably produces results
(possibly automated)
 - Before you finish the manuscript, run all analysis code again
(if not too onerous)



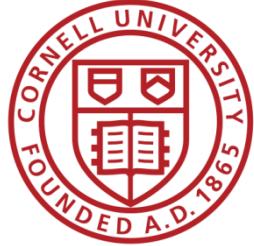
Mindset

- **Assume nothing*** (fresh laptop, new software install, etc.)
- **Assume your new RA will run the analysis** (she knows Stata/Matlab, but doesn't know your directory setup, secret command-line-fu, which line to find the contents of Table 15, ...)



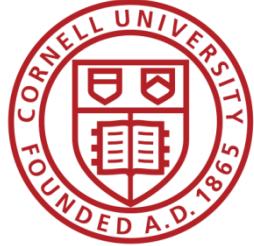
Streamlining replication packages

- Master script preferred
 - Least amount of manual effort
- No manual manipulation
 - “Change the parameter to 0.2,
then run the code again” 
- No manual copying of results
 - Write out/save tables and figures
using packages
 - Compute all numbers in package
- No manual install of packages
 - Use a script to create all
directories, install all necessary
packages/requirements/etc.
- Clear instructions!



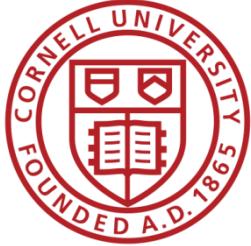
Extreme examples

- Matlab-based simulation
- Real example, 10 figures, 4 panels each
- For Figure 5a, comment line 52, uncomment line 151, run the code, then copy the figure into your document.
- For Figure 5b, comment line 151 again, leave line 52 commented, and change the parameter on line 75 to “3”
-



Extreme examples

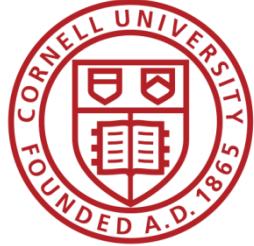
- Stata-based estimation
- 4 variants
- Run the data creation programs, then copy the data to Folder A
- Copy programs “b.do” and “c.do” from Folder A to Folder B, but modify “c.do” on line 20
- Once done, convert the output from “d.do” to a Matlab file, and run the simulation in Folder B/C
-



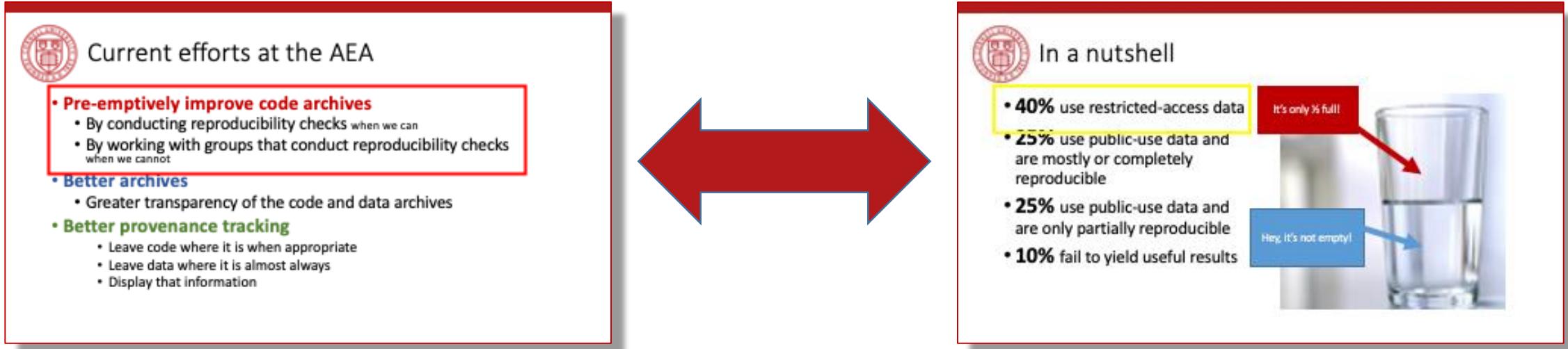
Ideal setup

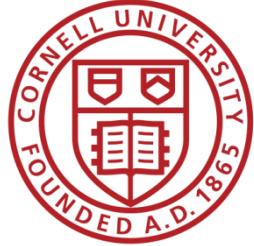
- 1 program to prepare the setup
 - Installs all packages
 - Creates all directories
 - 1 program (or a very small number) that creates the rest
 - Possibly with macros/ ado files/ subroutines
 - Possibly with parameter files that might differ per directory
 - All tables and figures are output programmatically
-
- Setting up can be done in all languages
 - Matlab, Stata, R, Python, Fortran
 - Subroutines exist in all languages
 - You might need to learn how!
 - Ability to output figures and tables (Excel, LaTeX) exist in all languages

But... you just said I can't
give you the data – so ...
you can't check my code..



Tension between access and reproducibility





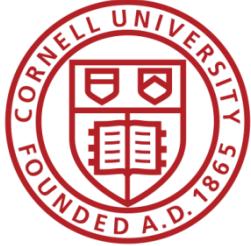
Verification services

 **cascad**
*the first certification
agency for scientific
code & data*

A cascad certification allows researchers to signal the reproducibility nature of their research to their peers



The screenshot shows the homepage of the CASD (Secure Data Hub) website. At the top, there is a dark header bar with the CASD logo on the left, a menu icon (three horizontal lines), and two navigation links: "PROJETS" and "DONNÉES" on the right. Below the header, the page has a dark purple background with white text. It features the title "Secure Data Hub" next to a network icon. Below this, there are four main categories: "Travail, Emploi / 189 projets", "Société, Justice, Éducation / 113 projets", "Économie, Entreprises, Finance / 267 projets", and "Environnement, Agriculture / 187 projets". At the bottom, it says "Santé / 244 projets". On the right side of the page, there is a decorative graphic of a network or data flow.



Assume we can access the data

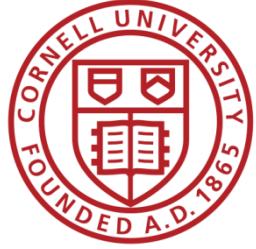
Sometimes we cannot

- We will still check if the code seems complete
- We will still verify that all data that *can* be provided have been provided

Sometimes we can:

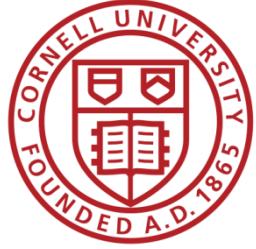
- In the past 6 months, we have worked ourselves or with 3rd parties on
 - French, Brazilian, and US confidential admin data
 - Purchased commercial data
 - Proprietary data under NDA/DUA
 - Remotely or locally

The role for
journals



Goal: Transportability

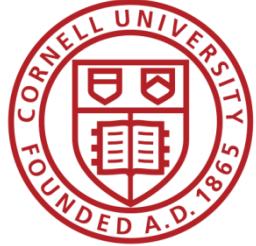
Any standards, tools, methods: must be transportable across journals (no custom solutions)



Social science “guild”



[https://
social-science
-data-editors.
github.io/
guidance/](https://social-science-data-editors.github.io/guidance/)



Predation, Protection, and Productivity: A Firm-Level Perspective.



Abstract



References



Online appendix



Supplementary
materials



Notes

Supplementary materials

- Code and Data

Besley, Timothy, and Hannes Mueller. 2018. "Replication data for: Predation, Protection, and Productivity: A Firm-Level Perspective." American Economic Association [publisher] DOI: 10.1257/mac.20160120.data

cite!

- Data is freely accessible under CC BY-NC 4.0 at [10.1257/mac.20160120.data](https://doi.org/10.1257/mac.20160120.data).

- Data

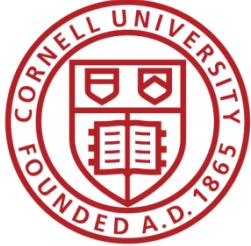
Statistics Norway. 2015. "Firm-level statistics 1975-2013 [dataset]" Norwegian Data Archive [curator], v2. DOI: 10.7654/nda::7643A::34

cite!

- Data restricted-access, under Norwegian Data Access license (has residency requirement, has citizenship requirement), accessible at [Norwegian Data Archive in Oslo, Norway](#)

Thank you!

<https://doi.org/10.5281/zenodo.3735536>



Some resources

- <https://social-science-data-editors.github.io/guidance/>
- <https://aeadataeditor.github.io/aea-de-guidance/>
 - template README
 - discussion of licensing
 - data citation guidance
- German example:
 - Establishment History Panel (BHP) DOI: [10.5164/IAB.BHP7516.de.en.v1](https://doi.org/10.5164/IAB.BHP7516.de.en.v1)
- French verification service “cascad” within French RDC CASD
 - <https://www.casd.eu/en/le-centre-dacces-securise-aux-donnees-casd/certification-de-resultats-casad-casd/>

