Practices for Data Transparency and Reproducibility

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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.

On the menu today

- Data provenance: what you want is what you should get
- README when you can
- The Archive at the End of the Universe: better than your average website
  - Subplot: When its confidential?

AMERICAN ECONOMIC ASSOCIATION

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.

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 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.

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: 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: 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: Macroeconomics

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

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.

AEA Data & Code Availability Policy (2019)

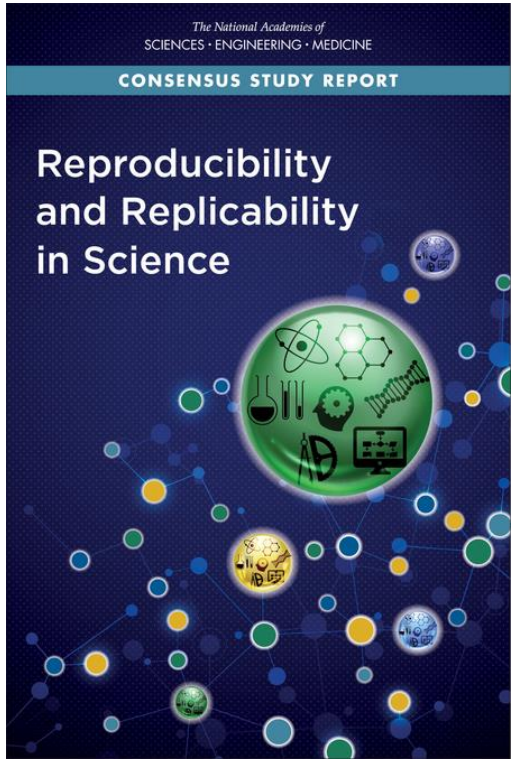
- It is the policy of the American Economic Association to publish papers only if the data used in the analysis are **clearly and precisely** documented and **access to the data and code is clearly and precisely documented and is non-exclusive to the authors.**
- Authors of accepted papers that contain 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.**

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

Replication continuum

https://doi.org/10.17226/25303



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)

Generalizability

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

Replication continuum

Same data	Same code	Same methods	Same context

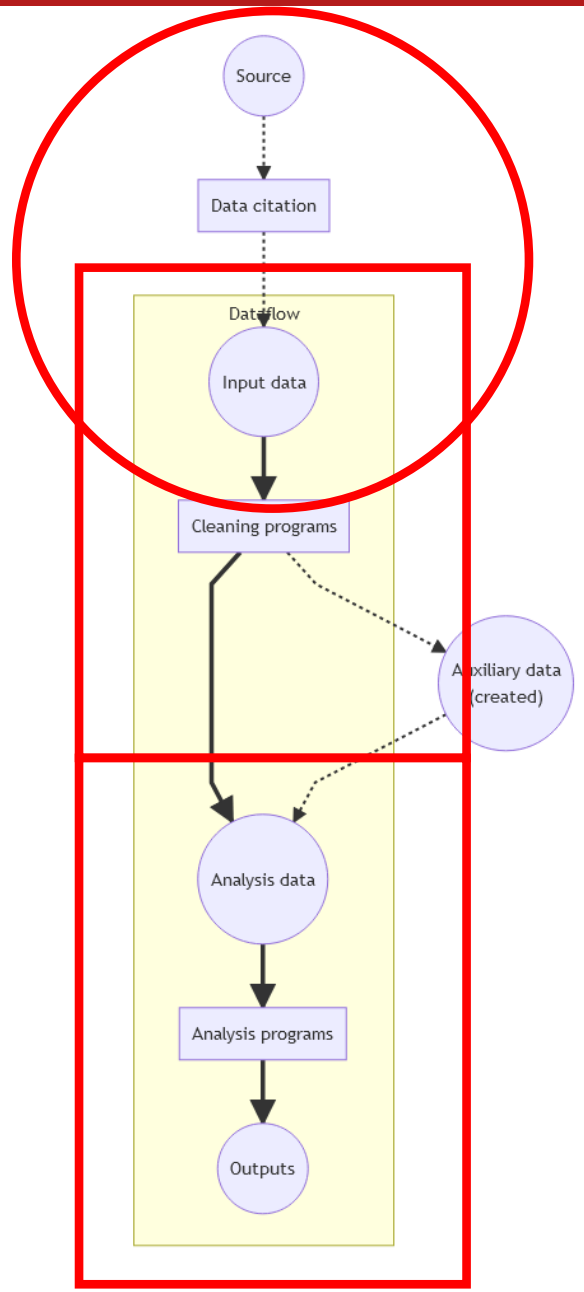
Reproducibility

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

Data provenance

Simplified model

- Basic data-oriented flow
- Historically: analysis data
- More recently: input data, too
- But where does it come from? ("provenance")



Poor citation practices

- **Macrodata:**

"We use data downloaded from the Bureau of Economic Analysis…"

- **Microdata**:

"… this paper uses data from the Current Population Survey…"

An analogy…

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?

```
0000000 cfd0 e011 b1a1 e11a 0000 0000 0000 0000
0000010 0000 0000 0000 0000 003e 0003 fffe 0009
0000020 0006 0000 0000 0000 0000 0000 0004 0000
0000030 008f 0000 0000 0000 1000 0000 fffe ffff
0000040 0000 0000 fffe ffff 0000 0000 008b 0000
0000050 008c 0000 008d 0000 008e 0000 ffff ffff
0000060 ffff ffff ffff ffff ffff ffff ffff ffff
*
0000200 0809 0010 0600 0005 209a 07cd c0c9 0000
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0000230 2020 2020 2020 2020 2020 2020 2020 2020
*
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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
```
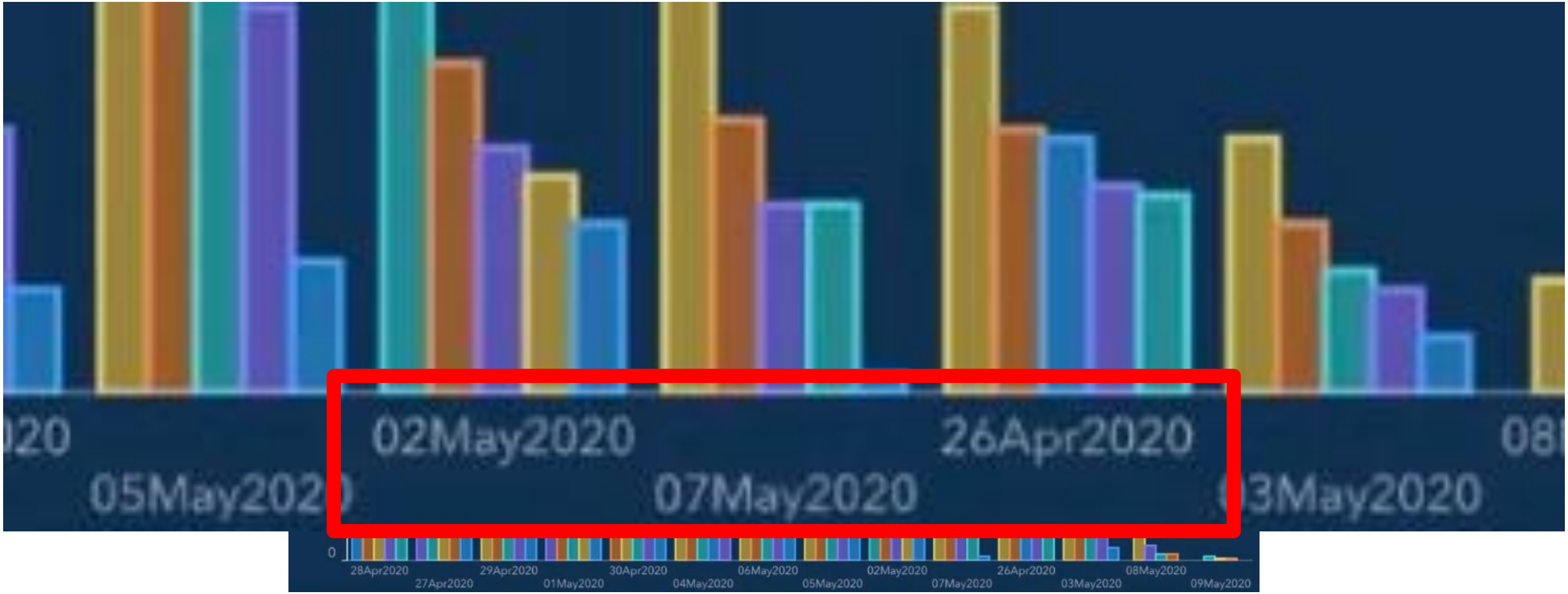

Or would you trust this data?



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”

```
0000000 cfd0 e011 b1a1 e11a 0000 0000 0000 0000
0000010 0000 0000 0000 0000 003e 0003 fffe 0009
0000020 0006 0000 0000 0000 0000 0000 0004 0000
0000030 008f 0000 0000 0000 1000 0000 fffe ffff
0000040 0000 0000 fffe ffff 0000 0000 008b 0000
0000050 008c 0000 008d 0000 008e 0000 ffff ffff
0000060 ffff ffff ffff ffff ffff ffff ffff ffff
*
0000200 0809 0010 0600 0005 209a 07cd c0c9 0000
0000210 0306 0000 00e1 0002 04b0 00c1 0002 0000
0000220 00e2 0000 005c 0070 0001 4c00 2020 2020
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00002a0 0002 0000 013d 0002 0001 009c 0002 000e
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00002c0 0000 01af 0002 0000 01bc 0002 0000 003d
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00002e0 0001 0258 0040 0002 0000 008d 0002 0000
00002f0 0022 0002 0000 000e 0002 0001 01b7 0002
```

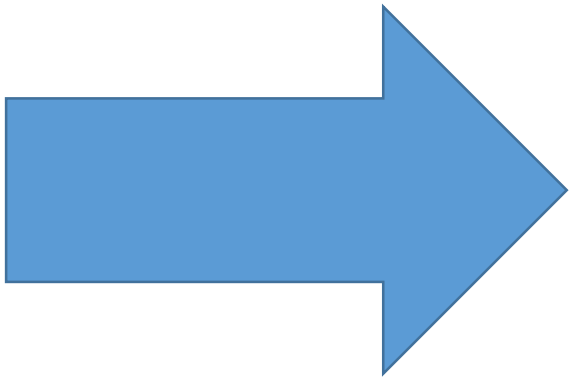

2101.49
2057.64
2063.11
2077.42
2076.78
0
2068.76
2081.34
2046.68
2051.31
2076.62
2099.60
2108.95
2107.40
2124.29
2126.64
2128.28
2119.21
2114.15
2102.15
2079.65
2067.64
2093.25
2108.57
2108.63
2103.84

“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
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

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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.

We’re all set then.

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

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Data Availability Statements

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

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

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

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 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
	2101.49
	2057.64
	2063.11
	2076.78
	0
	2068.76
	2081.34
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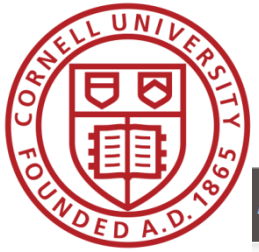
S&P Dow Jones Indices LLC. 2020. "*S&P 500 [SP500] [dataset]*", retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/SP500, June 26, 2020.



FORCE11
The Future of Research Communications and e-Scholarship

Search

English

ABOUT | COMMUNITY | CODE OF CONDUCT | GROUPS | RESOURCES | NEWS + BLOGS | EVENTS | PUBLIC

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].

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

DC1
Data Citation Principles

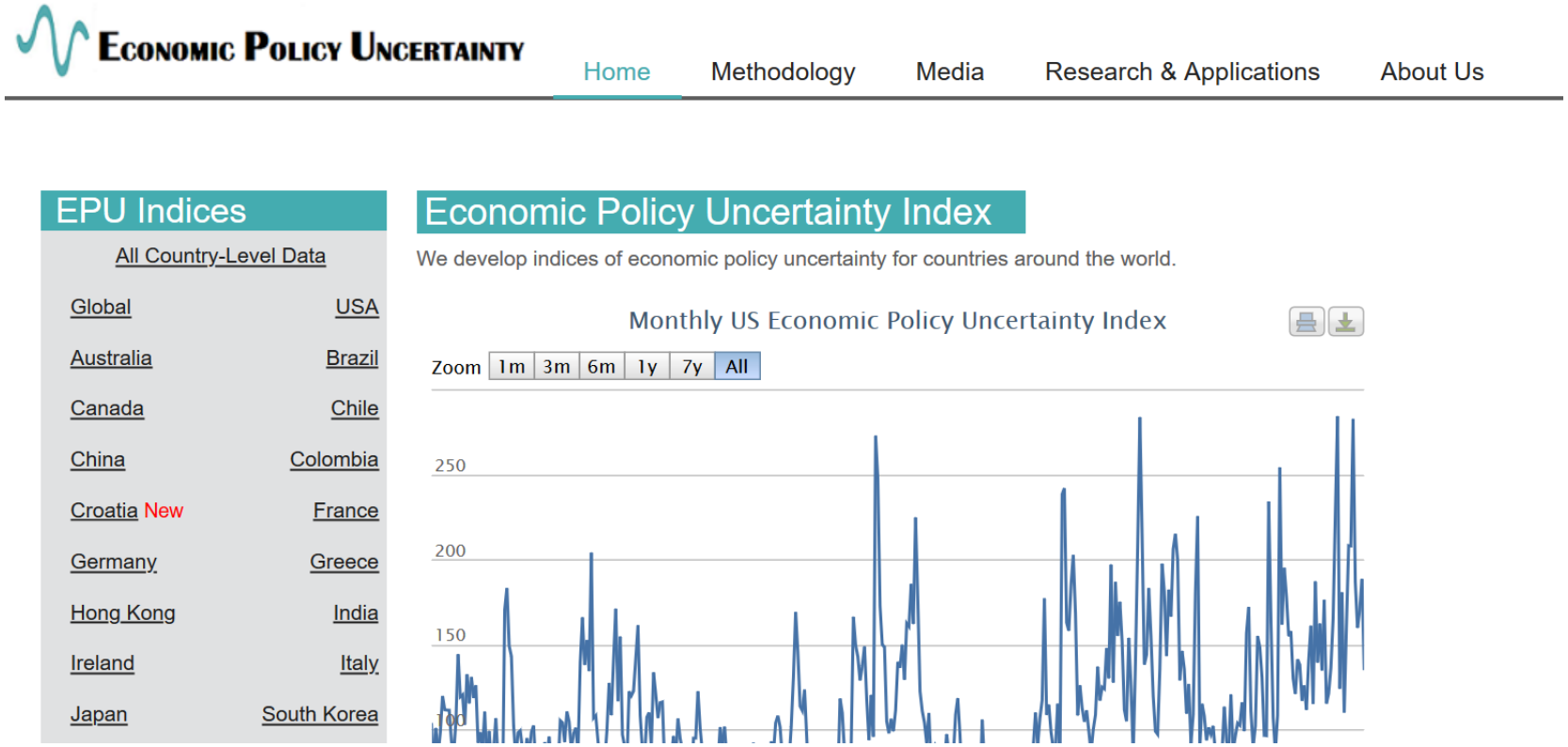
Data Citation Synthesis Group: Joint Declaration of Data Citation Principles. Martone M. (ed.) San Diego CA: FORCE11; 2014 [https://www.force11.org/group/joint-declaration-data-citation-principles-final].

Data Citations are Hard!

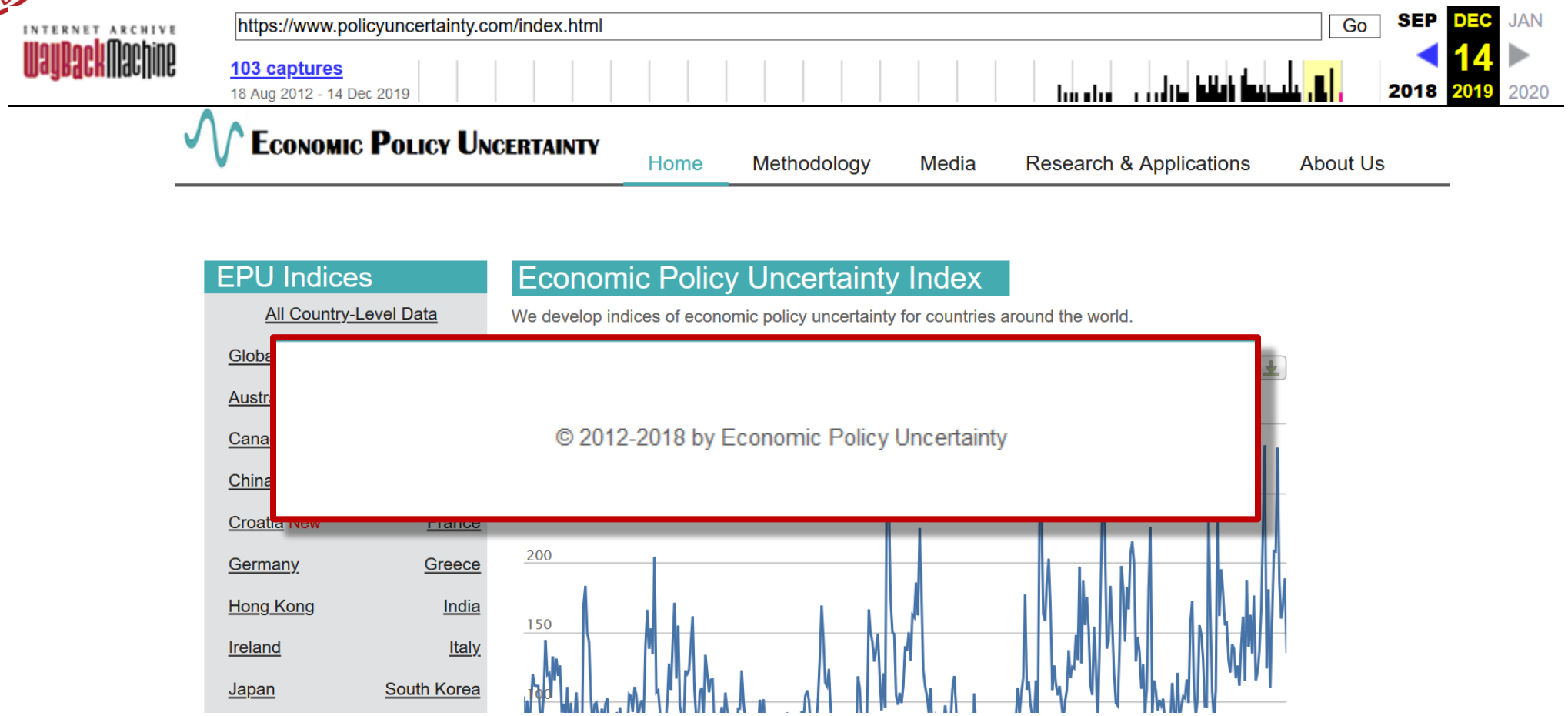
At the AEA, every manuscript is checked

- 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?

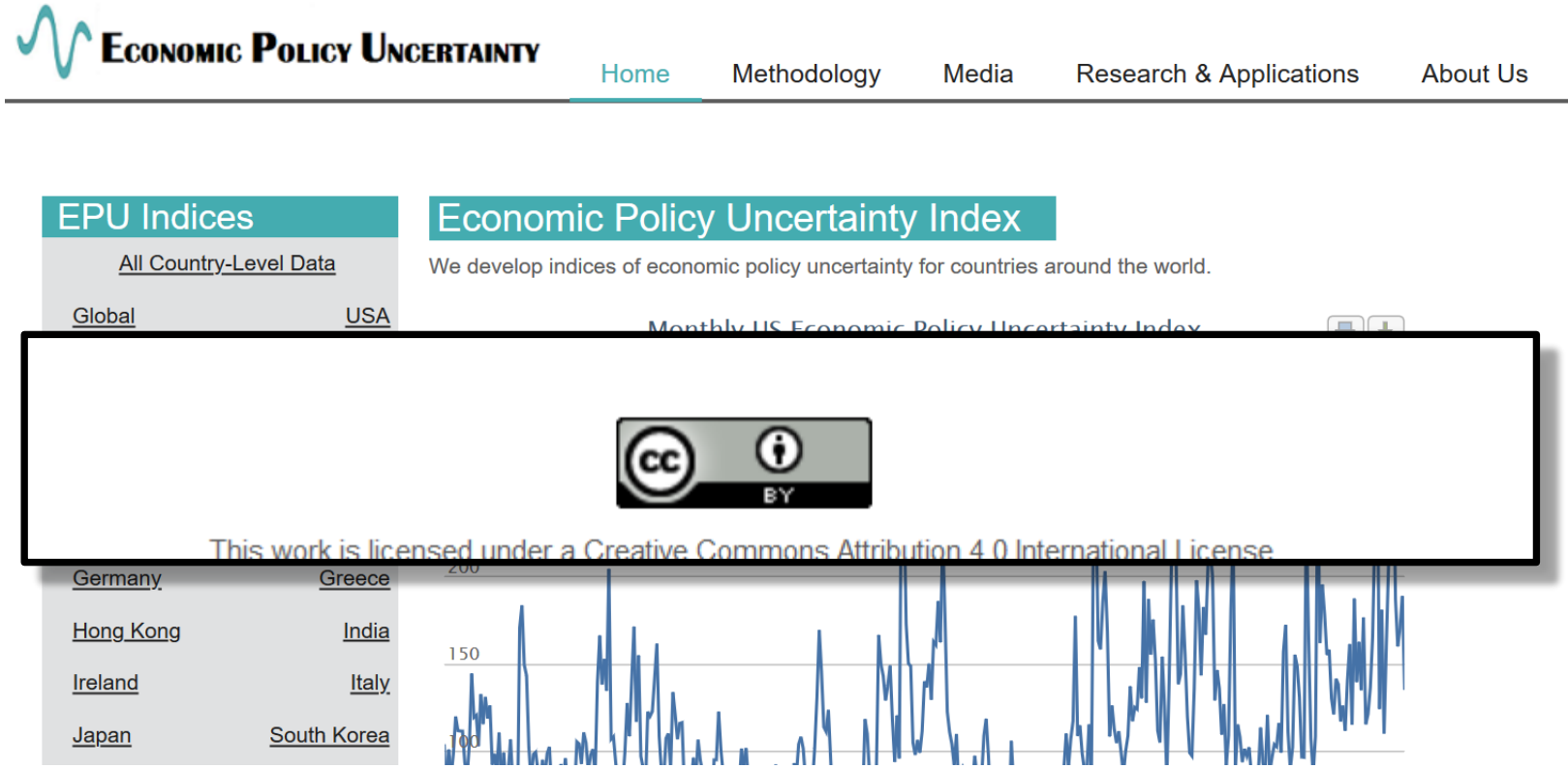
Example 2: Academic data publisher



Example 2: Academic data publisher



Example 2: Academic data publisher-new!



Data Rights

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.

Citing restricted-access data

"Well, I can't download the data, so I can't cite it."

Wrong

Example 4: German Restricted-access

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

Home | Newsletter | Jobs | Contact | Data Privacy | Imprint

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.

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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
- FDZ-Datenreport 01/2020
- Fallzahlen und Labels

English

- DOI: 10.5164/IAB.FDZD.2001.en.v1

Element of a (data) citation

- CMOS notes (16th ed., 14.1)

"Regardless of the convention being followed, **source citations** must always provide sufficient information either to **lead readers directly to the sources** consulted or, for materials that may ***not be readily available***, to enable readers to ***positively identify them, regardless of whether the sources are published or unpublished or in printed or electronic form***."

ICPSR notes that a citation should include the following items:

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

These are archives

Source: https://chiddicksfamilytree.com/2017/11/08/use-it-or-lose-it/

Source: https://www.archives.gov/publications/prologue/2008/spring/frc.html

They are citable

- Typescript of short story Brothers and Sisters by Budge Wilson, 2000, MS-2-650.2013-070, Box 3, Folder 9, Budge Wilson fonds, Dalhousie University Archives, Halifax, Nova Scotia, Canada.

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.

And we check them!

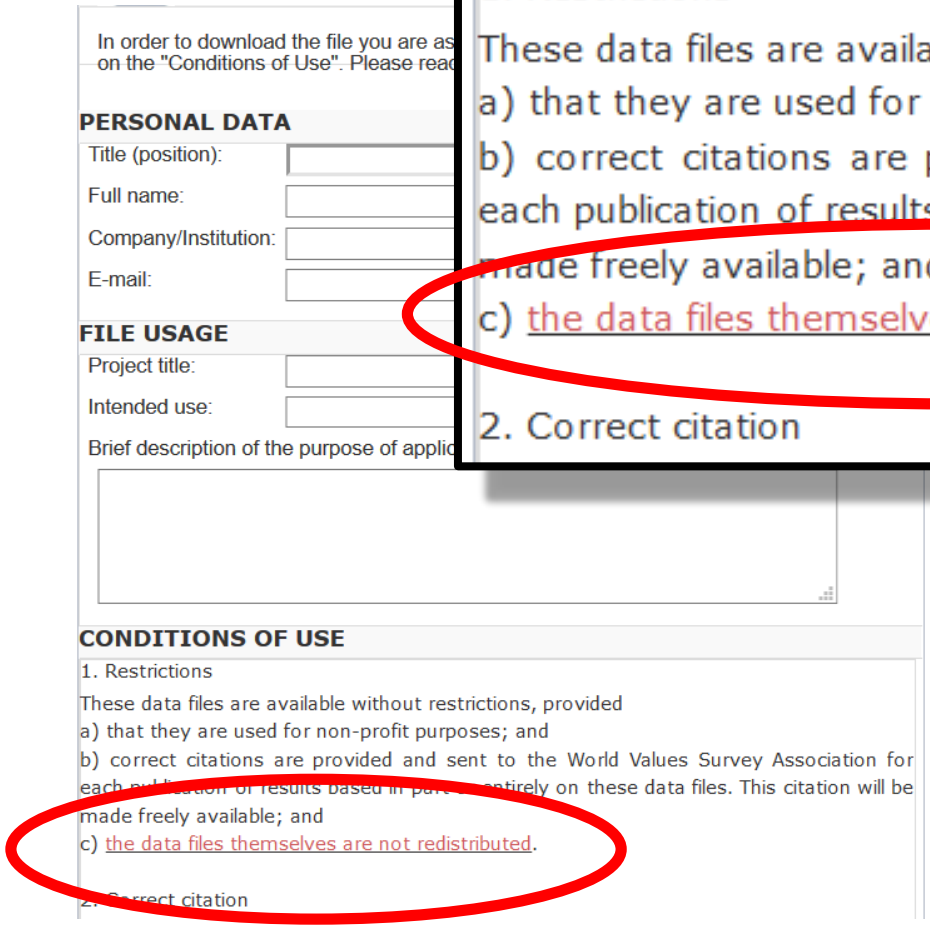
- If the URL does not work, we make a note.
- If the site requires registration, we try it out.
  - How long?
  - Any requirements?

- 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


In order to download the file you are as
on the "Conditions of Use". Please read

PERSONAL DATA

Title (position):
Full name:
Company/Institution:
E-mail:

FILE USAGE

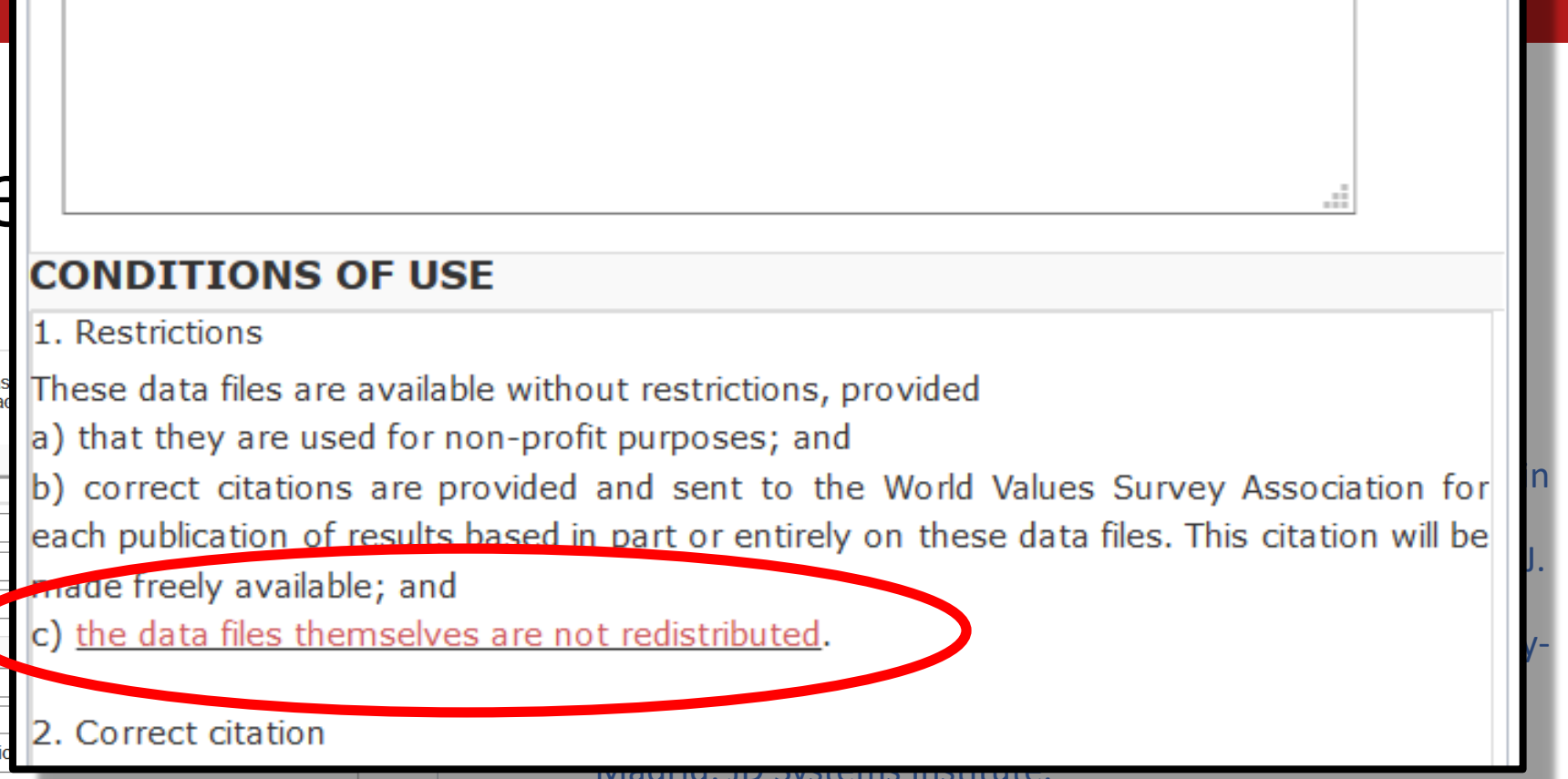
Project title:
Intended use:
Brief description of the purpose of applic

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 of 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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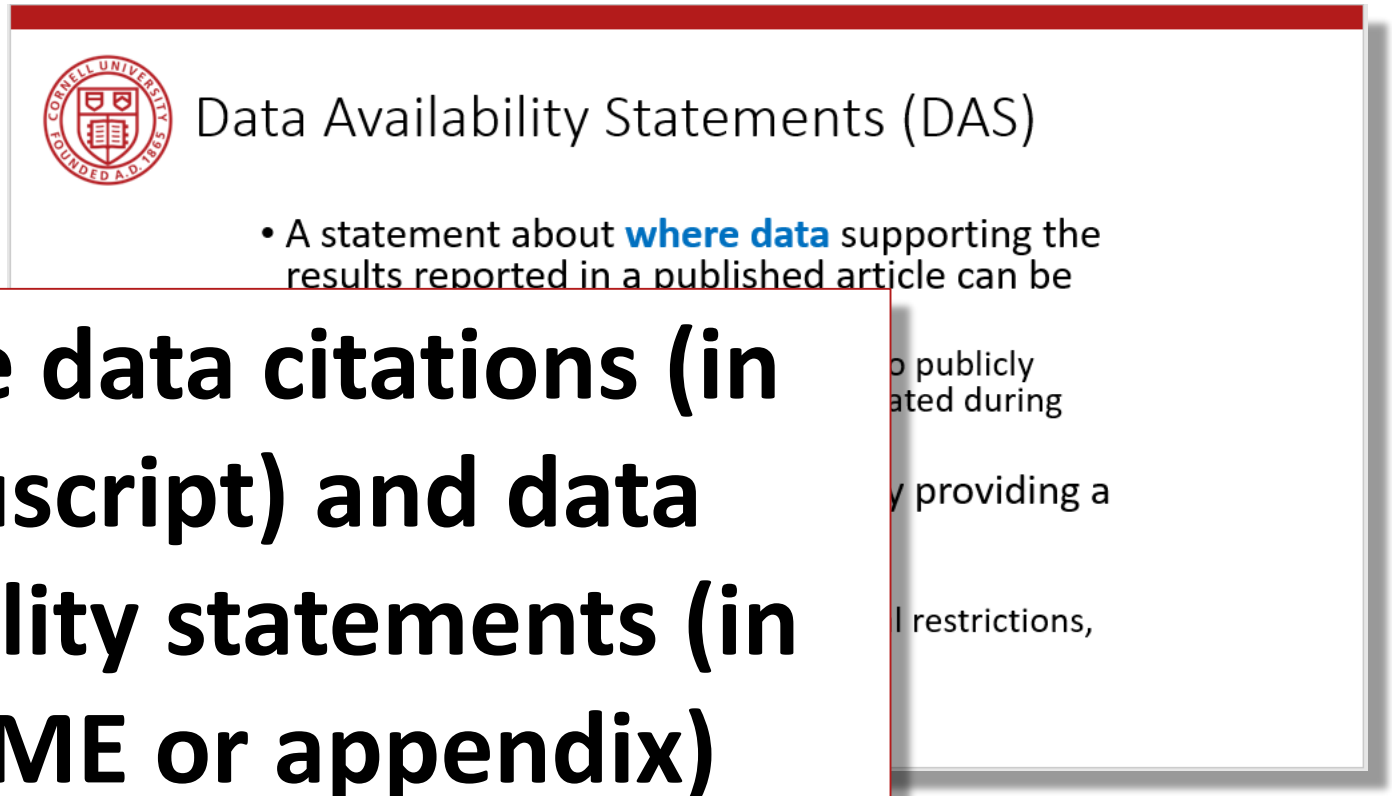
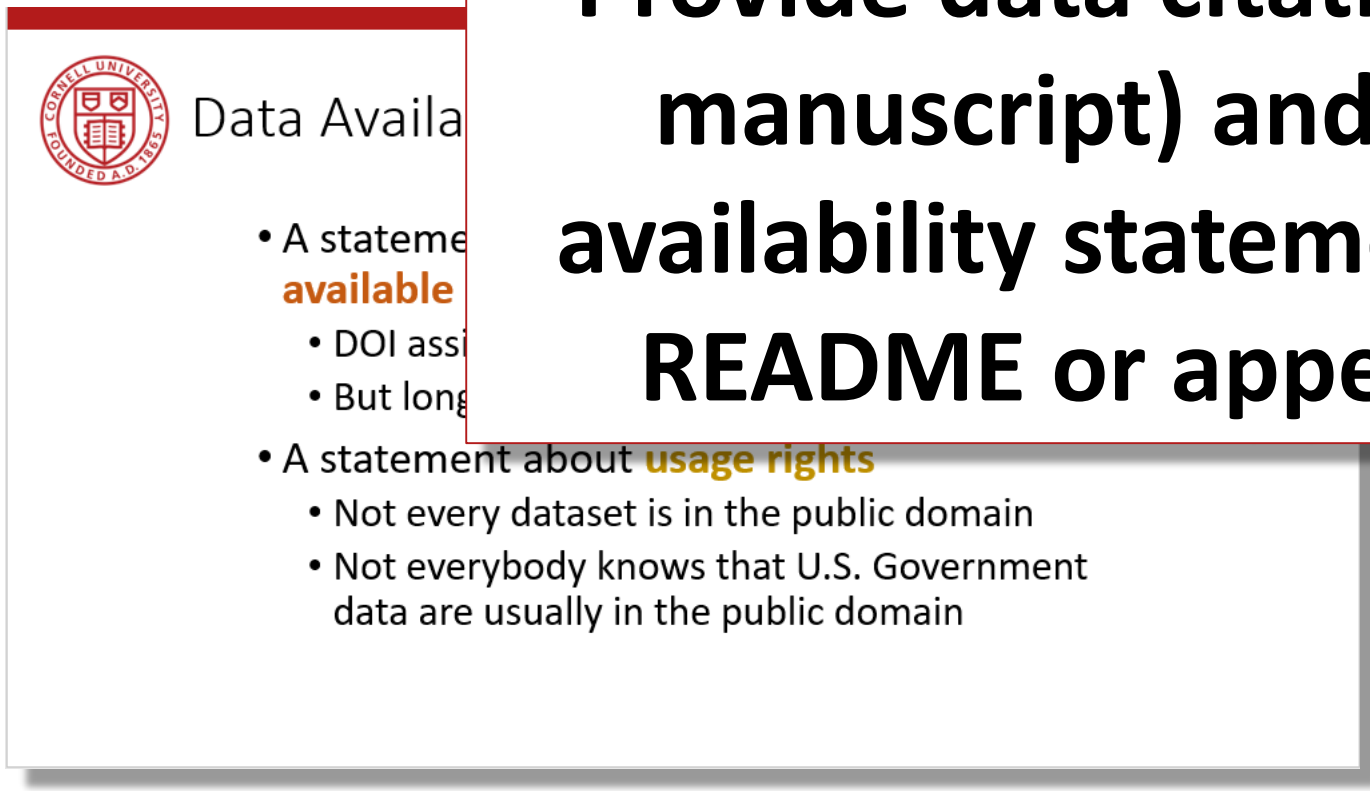
c) the data files themselves are not redistributed.

2. Correct citation

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





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!

Documenting

What about your code?

How is your code documented?

For yourself:

- What are you doing on lines 30-45?
- Will you still remember that in 3 years?
- Does it require any instructions outside of the code?

For your audience:

- Your thesis advisor
- Your boss
- Your co-worker, to whom you've been trying to hand off this project for two weeks and you've finally convinced your boss…

Poor coding practices

- **Manual/non-automation**

Code produces no meaningful output

- **Lack of robustness**:

Bugs in the code

Basic coding hints

Listing 1: mystuff.sas

```
1   data "C:\Users\Me\CensusChina.sas7bdat";
2        set "C:\Users\Me\CensusChina.sas7bdat";
3        earn=log(earn);
4   run;
5   proc reg data="C:\Users\Me\CensusChina.sas7bdat";
6   model earn = sex education experience;
7   run;
```

What can possibly be wrong about that?

What's wrong with that?

Everything!

- *Name of program*: uninformative
- *Destruction of original data:* program cannot be re-run for same results
- *No portability*: cannot be run anywhere else
- *No explanation*: why are we doing this?

Listing 1: mystuff.sas

```
1  data "C:\Users\Me\CensusChina.sas7bdat";
2       set "C:\Users\Me\CensusChina.sas7bdat";
3       earn=log(earn);
4  run;
5  proc reg data="C:\Users\Me\CensusChina.sas7bdat";
6  model earn = sex education experience;
7  run;
```

What can possibly be wrong about that?

Structuring programs

- **Portability**: should be easy to adjust to a new location
  - Your new laptop
  - A replicator 10 years down the road
- **Clarity**: don't assume that you will remember what seems so obvious now
  - Describe **what** you are doing, and **why**

File structure

```
mystuff.R                    readCensus.R
read.R                       readBLS.R
version2.R                   prepareCensus.R
ols.sas                      runols.sas
```

Better

```
01_01_readBLS.R
02_01_readCensus.R
02_02_prepareCensus.R
03_01_createanalysisdata.R
04_01_runOLS.sas
README.txt
```

Functions

- Create re-usable code
  - … for other projects
  - … within the same project (robustness checks, variation on regressions, etc.)
- Feasible in any programming language
  - Stata: “program” or ado files
  - SAS: macros
  - R: functions or packages

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!

Two magic Stata lines

```
global basepath "/my/path/here"
adopath + "$basepath/ado"
```

In addition to "**graph export**", "**outtab**", etc.

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

How to prepare the replication package

- README
- Now ask an RA/ colleague/

AEA Data and Code Guidance

AMERICAN ECONOMIC ASSOCIATION

Guidance for autho
data and code sup
replicators.

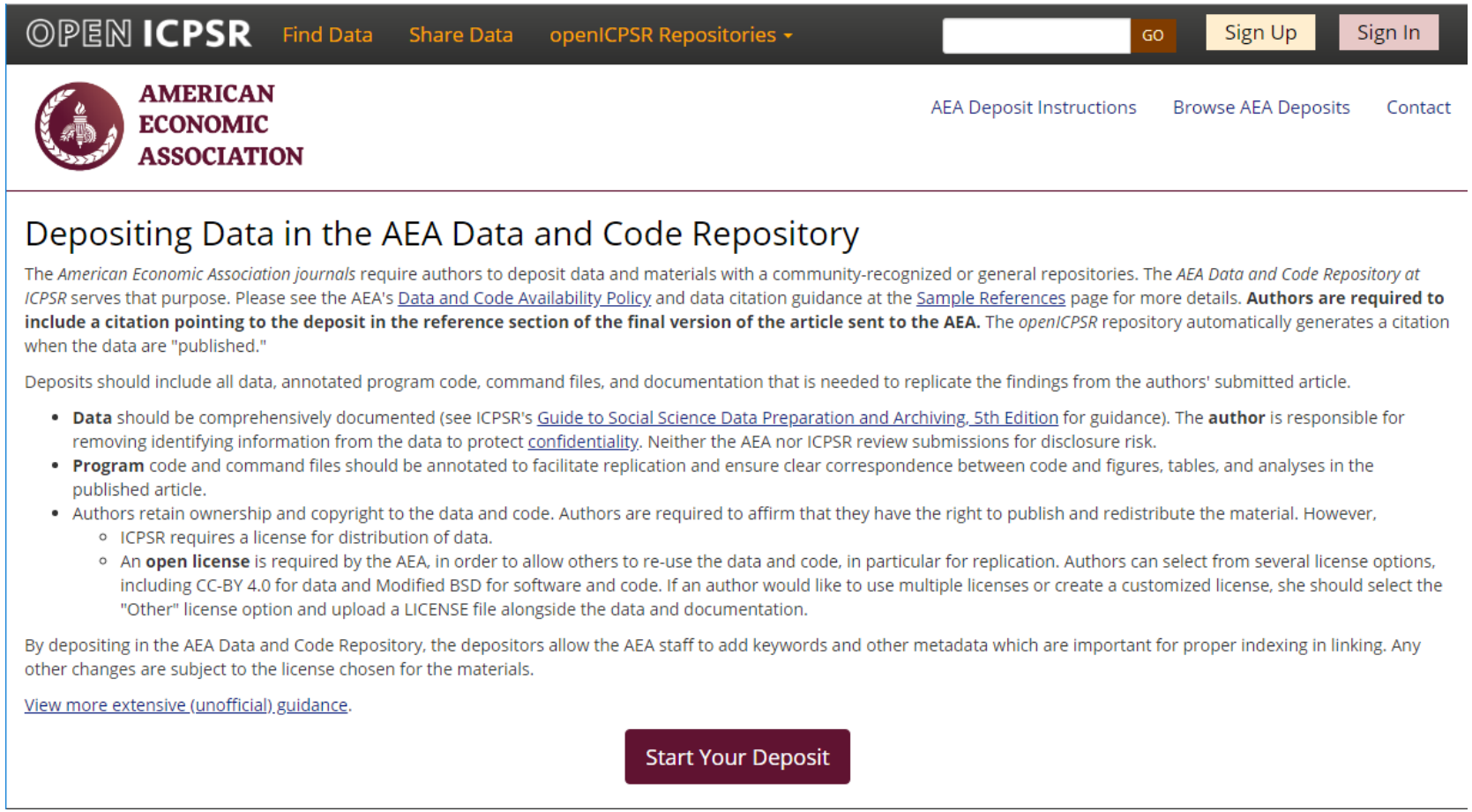
Steps for the Third-party Replicator

- Download the author's replication archive(s) from the designated URL (public, or privately shared)
- Ensure access to any confidential files that are described in the replication archive's README
  - The replicator should consider whether a third-party person not
    ironment could reasonably
    olely on the instructions in the
- Follow the checklist to conduct the reproducibility exercise, relying exclusively on the README for instructions and guidance.
- Write a report
- Send the report to the AEA Data Editor
- Report any interactions with the author in the course of conducting the reproducibility exercise (help, assistance, clarifications)

That's our Protocol!

Archiving

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."

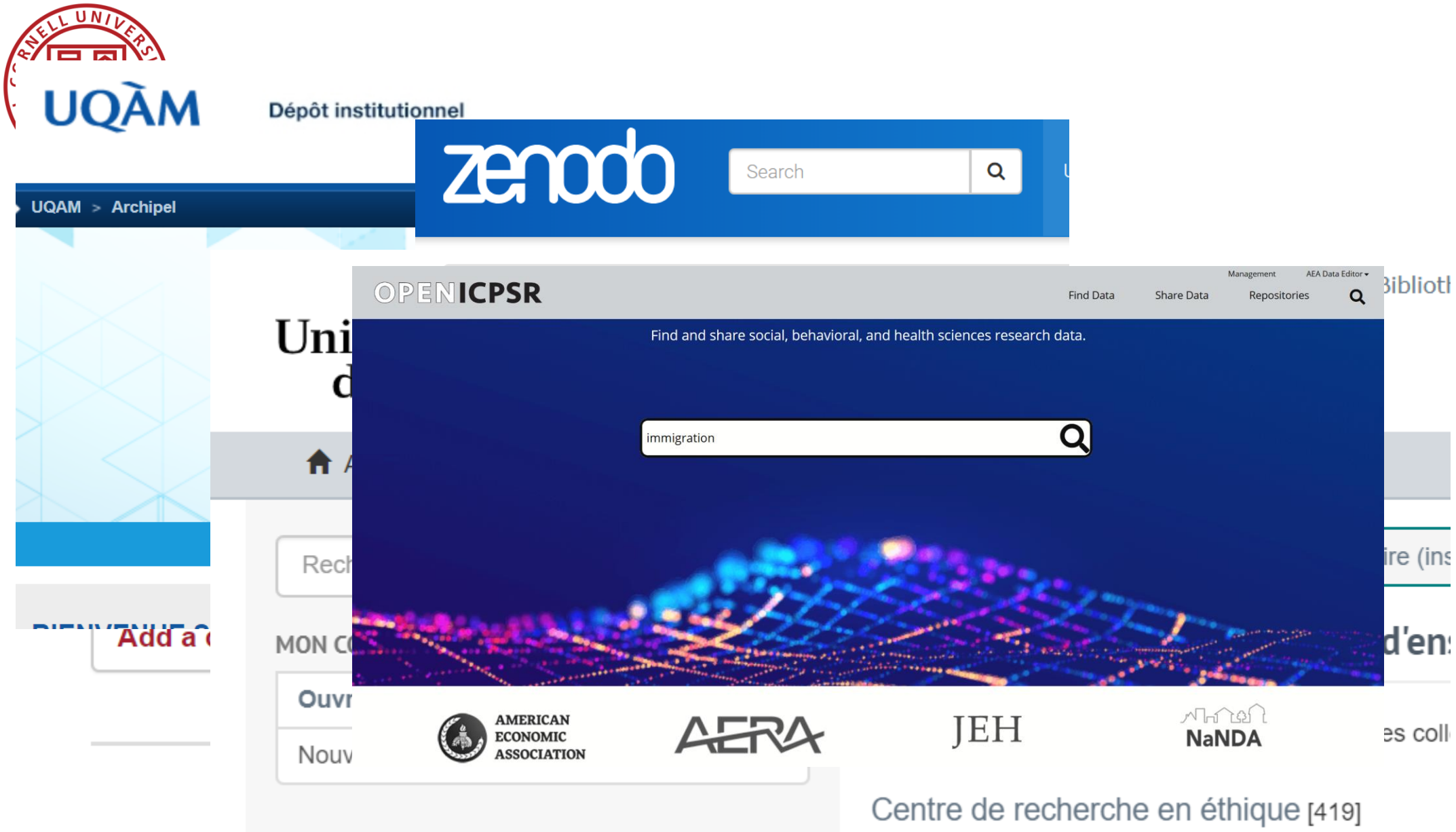
Deposits should include all data, annotated program code, command files, and documentation that is needed to replicate the findings from the authors' submitted article.

- **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.

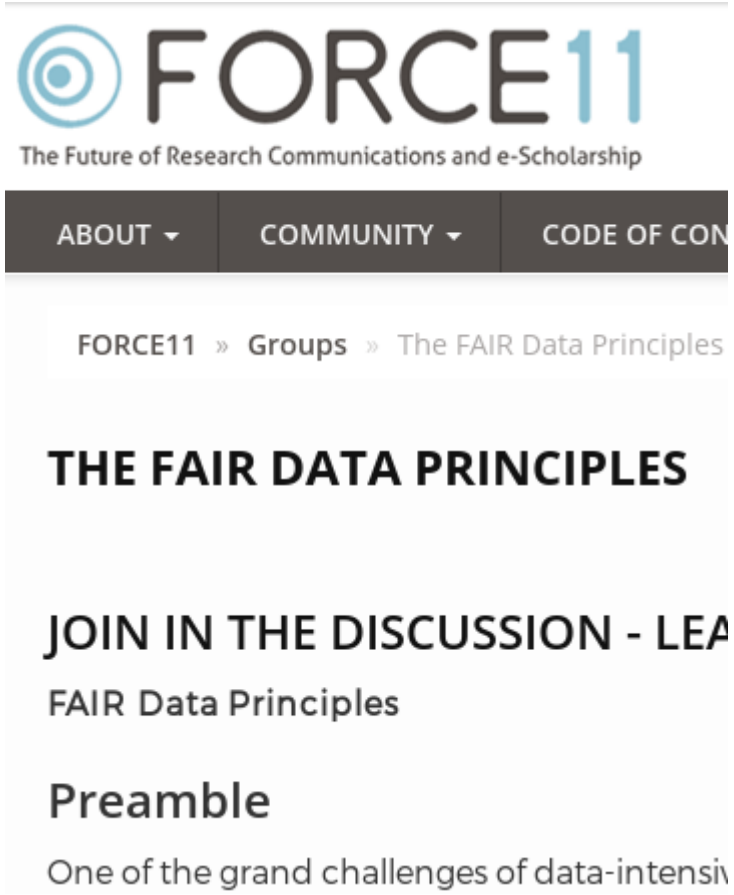
Start Your Deposit


UQÀM
Dépôt institutionnel
zenodo
Search
UQAM > Archipel
OPENICPSR
Management
AEA Data Editor
Find Data
Share Data
Repositories
Find and share social, behavioral, and health sciences research data.
immigration
AMERICAN ECONOMIC ASSOCIATION
AERA
JEH
NaNDA
Centre de recherche en éthique [419]

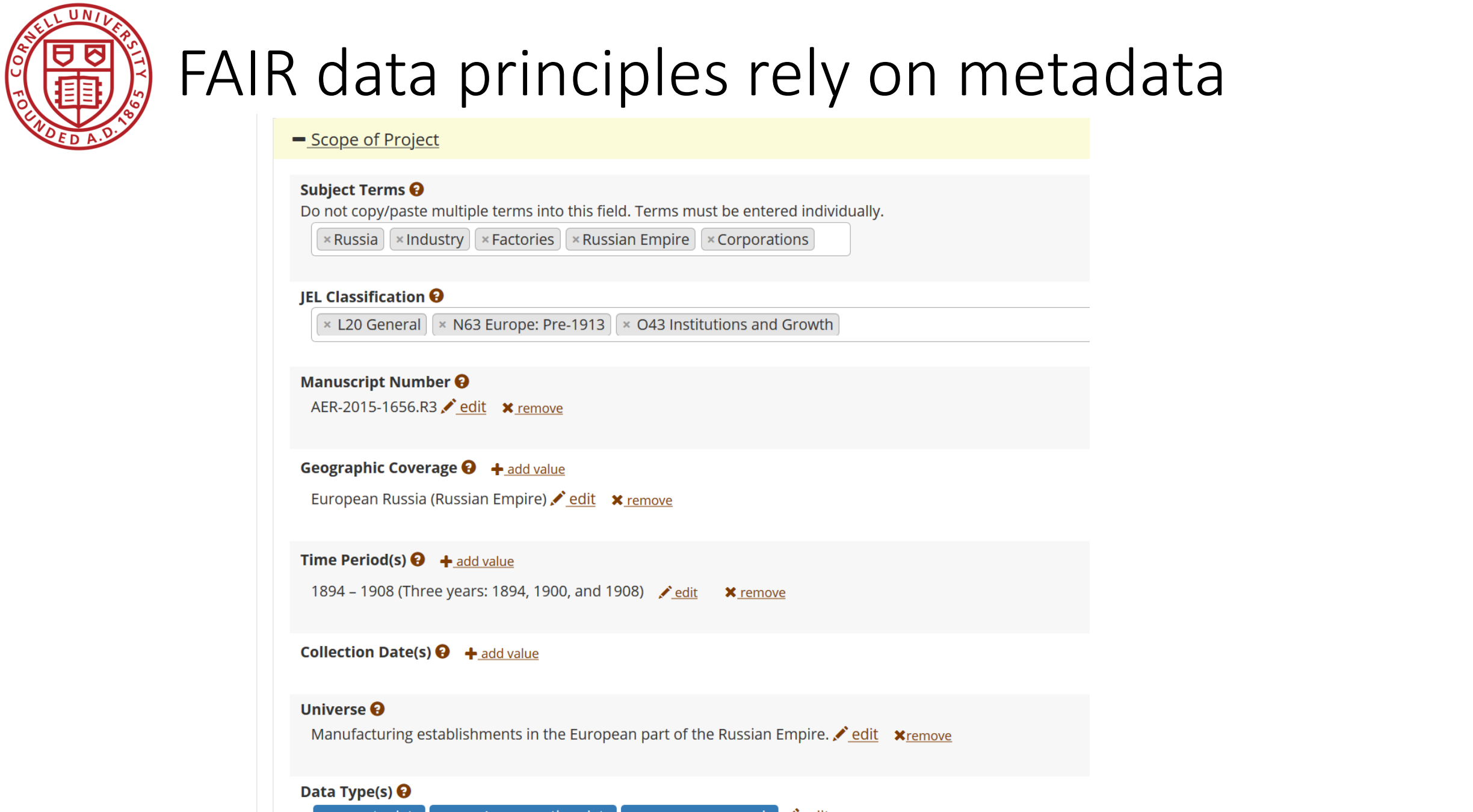
Action: Data citations and metadata

What is **FAIR**?

- **F**indable,
- **A**ccessible,
- **I**nteroperable, and
- **R**e-usable



FAIR data principles rely on metadata



OPEN ICPSR Find Data Share Data openICPSR Repositories Management

dataeditor@aeapubs.org

Find Data / Imperial Russian Factory Database, 1894-1908

Imperial Russian Factory Database, 1894-1908

Principal Investigator(s): Amanda Gregg, Middlebury College

Version: V1

AMERICAN ECONOMIC ASSOCIATION

Name	File Type		Last Modified
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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

AG_Corp_CleaningandDatabaseCompiler.do	text/x-stata-syntax	23.4 KB	08/08/2019 11:02:AM

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.

08:55:AM

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Find Data / Imperial Russian Factory Database, 1894-1908

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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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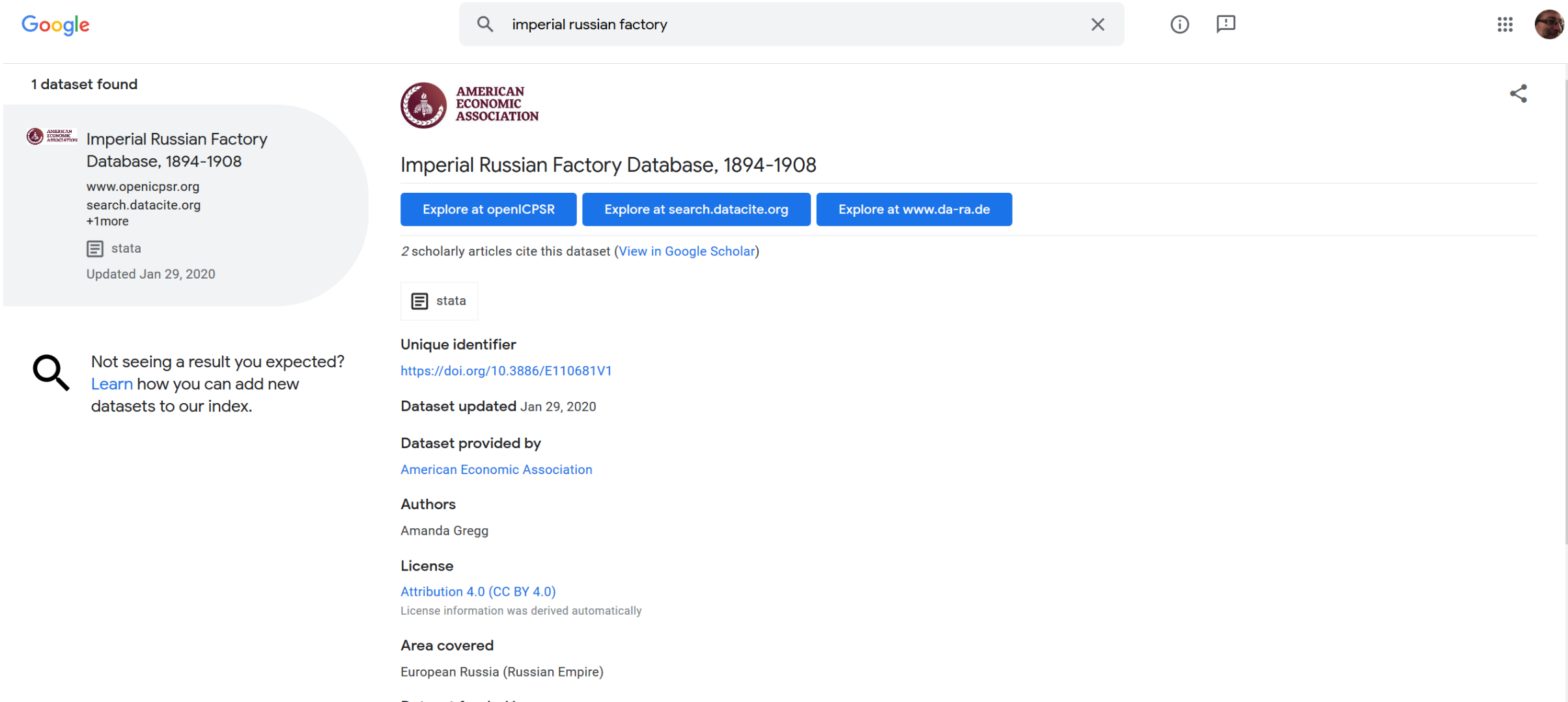
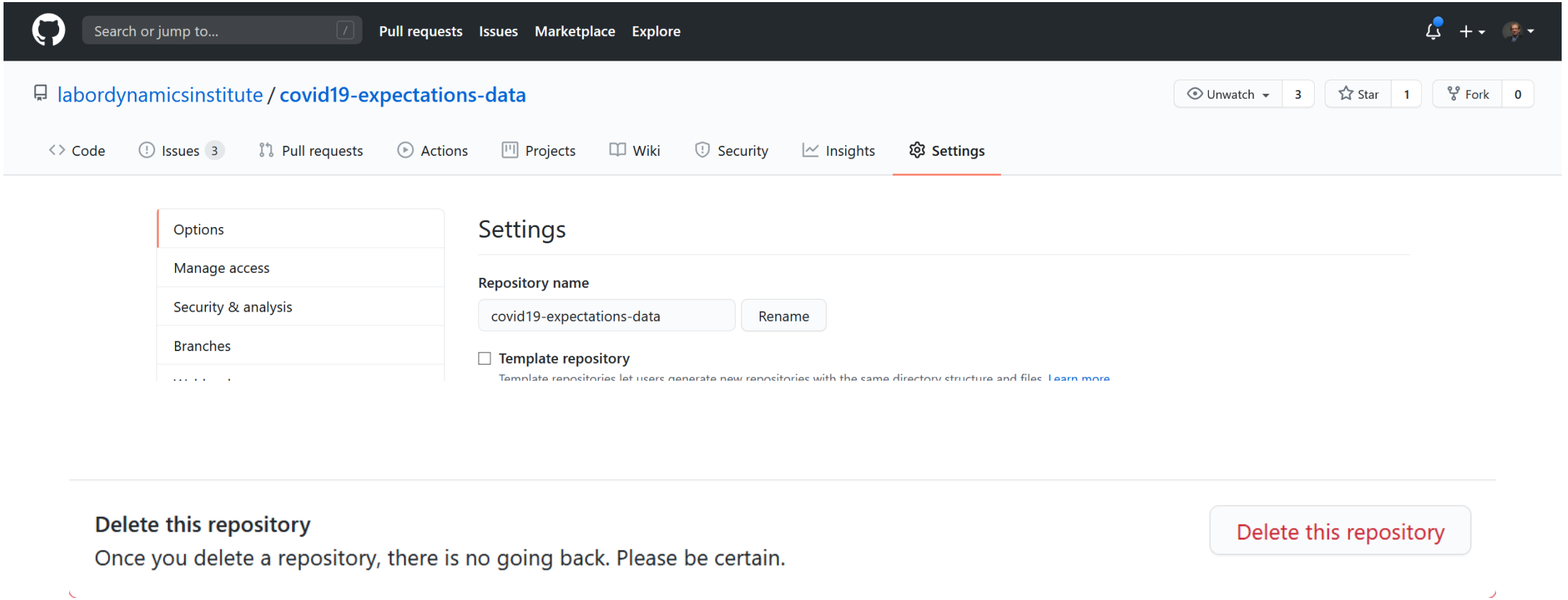
AG_Corp_Prod_Code.do	text/x-stata-syntax	26.6 KB	12/12/2019 03:01:AM
AG_Corp_Prod_Database.dta	application/x-stata	11 MB	08/07/2019 08:55:AM

… and findability relies on metadata



But I've already got it on Github!

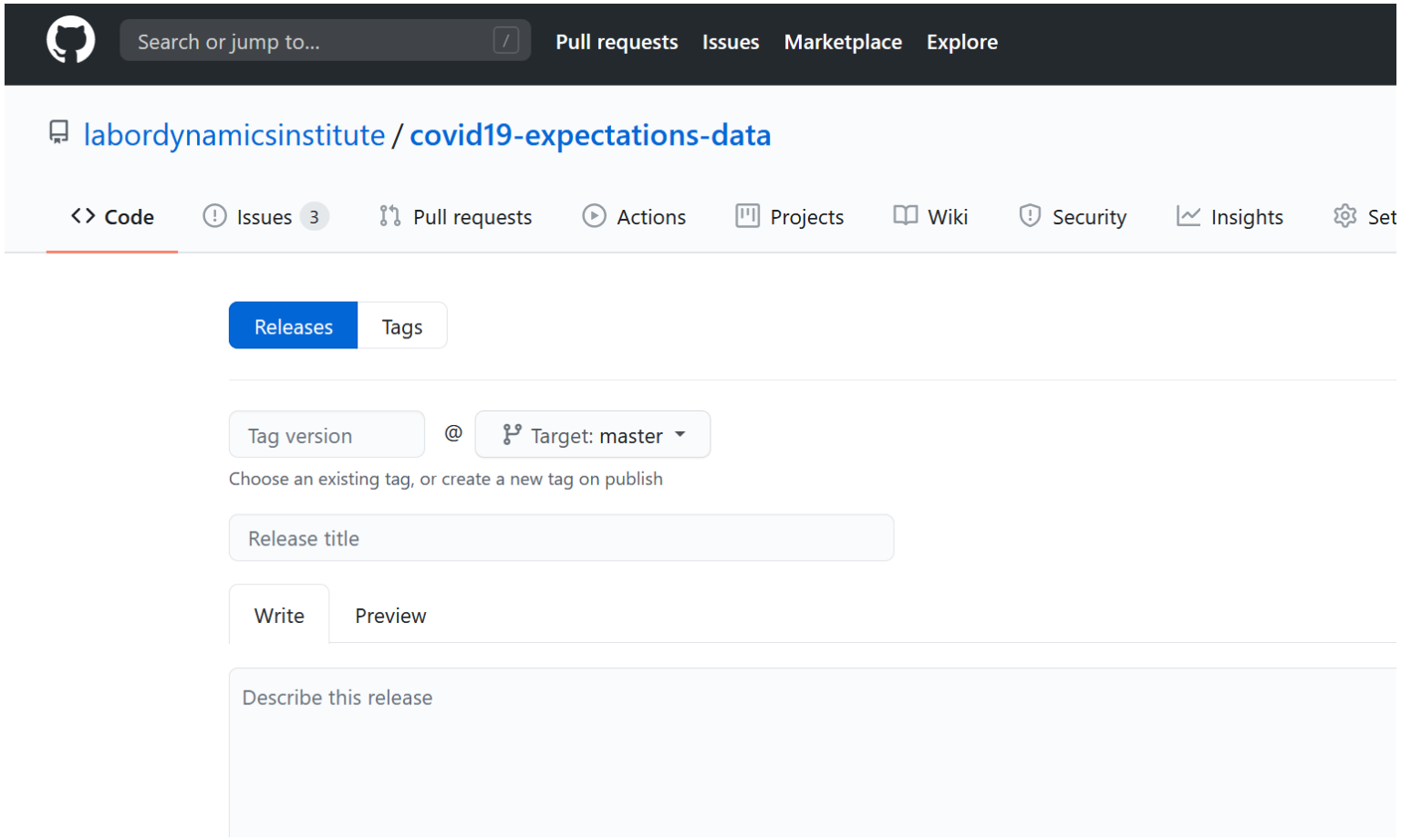
Scroll down a bit



What is not an archive

- Github
- Dropbox
- Your university website
- Your personal website on Google Pages
- …

And: releases!



Suggestions

Use releases as part of your development process

- Define critical moments
  - Showing it to your thesis advisor
  - Submitting to a journal
  - Submitting the R&R
  - Submitting the 5th R&R
  - Responding to the Data Editor
- Hit that "Create release" button
  - Or "`git tag -m "my msg" v20200924`"

Learn how to archive

- openICPSR sandbox
- Zenodo sandbox
- Github-to-Zenodo API

Archive key (public) moments

- Submitting to a journal (may be required!)
- Presenting at RT2!

Special Cases

You run your own survey

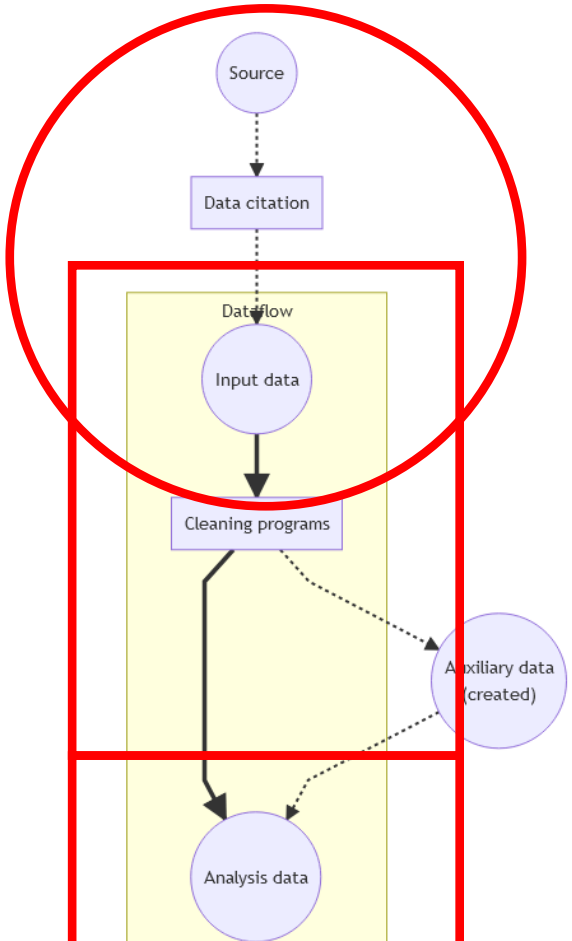
Welcome, you are a data producer, = Census Bureau!

- Your ***questionnaires***, your *instructions* (to self, to survey takers), your *sampling scheme*: **metadata**, part of the replication package
- Your ***raw survey data***: **untouched**, archived (but internally: PII!)
- Your ***survey prep code***: stripping identifiers, quasi-identifiers: archived, (mostly) public

You run your own survey

Welcome, you are a data provider, even for yourself!

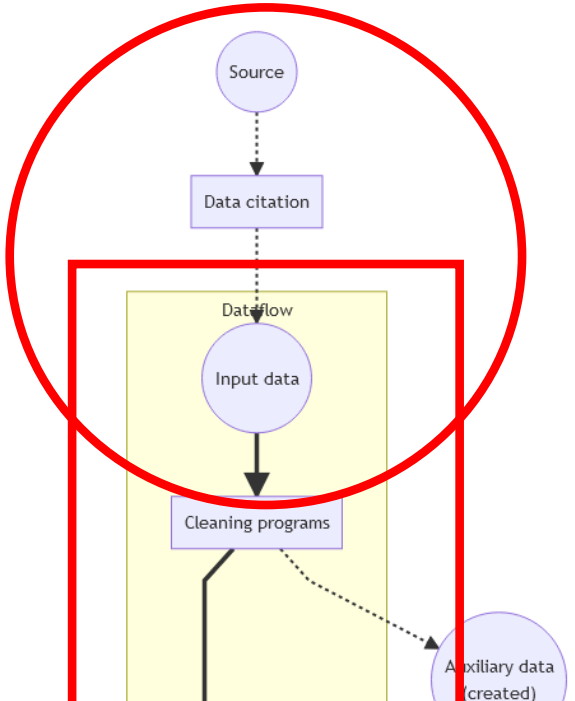
- Your (protected, shareable) **survey data**:
  - Archived, public (subject to consent)
  - Provided with **license**
  - **Immutable**! Dirty! As-Is!
- You, as anybody else, treats it as "**Source**"
  - Cited!
  - All cleaning happens as part of your replication package!



You run an lab experiment

Welcome, you are a data producer, = Census Bureau!

- Etc. etc. etc….
- You provide the "**programming for the experiment**" (zTree, etc.) == survey instrument



You work in an RDC

- RDC in the sense: restricted-access data environment
- You do not control the environment (storage, backups, etc.)
- You cannot just remove artifacts (data, programs)

You work in an RDC

- Make your own “github”!
  - Set aside an area of your workspace for “immutable” copies
  - Create “releases” as you request removal of data and code
  - Mirror those “releases” on the outside (at Github, ec.)

You work in an RDC

- Document access process
  - How you got access in the first place
  - How somebody else could get access today
    - That might not be the same!
    - You might not know about it – inform yourself!
  - How somebody can get access to the ***files that you cannot remove***

Social science “guild”

Social Science Data Editors

https://social-science-data-editors.github.io/guidance/

Thank you!

https://doi.org/10.5281/zenodo.4048572

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

Addendum – just in…

Robust Science and Open Data

Pinned Tweet

Lars Vilhuber @larsvil · 1h

The @EPA hides behind a fake excuse allowing it to reject scientific findings in an unscientific way. Let me state it clearly: it is possible to do robust, #reproducible, #replicable, open, ethical science with restricted-access data

E.P.A. Rejects Its Own Findings That a Pesticide Harms Children's Brains

The agency's new assessment directly contradicts federal scientists' conclusions five years ago that chlorpyrifos can stunt brain developmen...

nytimes.com

https://twitter.com/larsvil/status/1309141822518812676

What is at issue?

- EPA wants to limit what scientific studies can be taken into consideration when determining rules/policy/etc.

Only Open Access data would count

But: that's not the criterion for robust science

- A prime example is the government's own **Federal Statistical Research Data Center** (FSRDC) system, where confidential data from **five agencies** (health, taxes, wages, etc.), is used at any time by **several hundred researchers**, on hundreds of approved projects

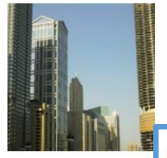
Federal Statistical Research Data Centers

Some FSRDC locations are temporarily closed.

Please select "Read More" below for additional information.

Read More

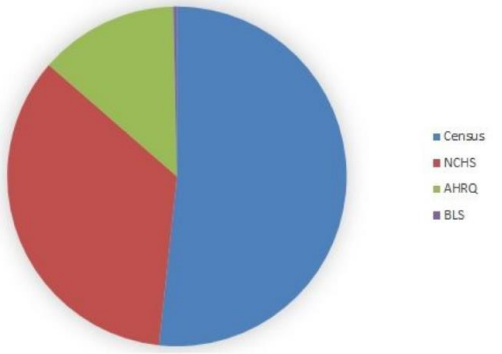
Federal Partners



RDC Locations

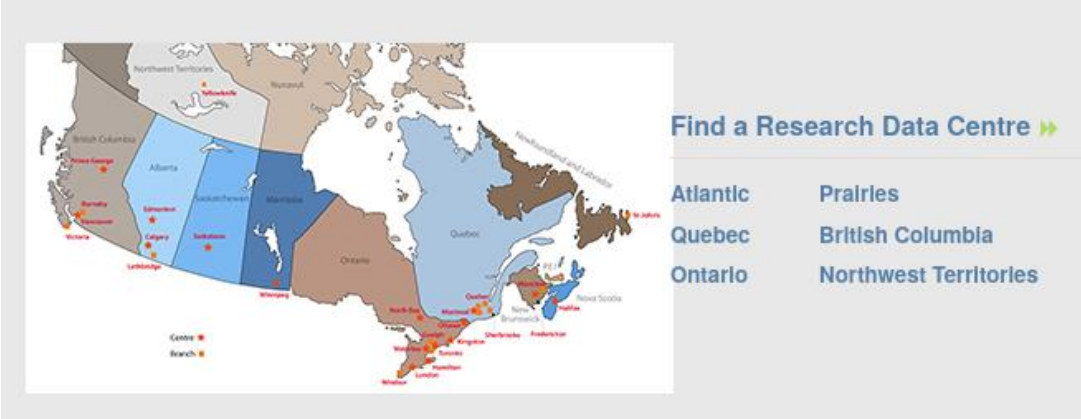
Active Projects by Federal Partner Agency

As of January 2018, there are 294 approved active research projects in the RDCs. Projects using data provided by the Census Bureau account for 52 percent of total projects. Projects using data provided by the National Center for Health Statistics (NCHS) and the Agency for Healthcare Research and Quality (AHRQ) account for 48 percent of total projects. There is one active BLS project, with several more expected to start in 2018.



True worldwide

- Canada
- France
- UK
- Scandinavia
- Germany
- ….



It is possible to do robust, reproducible, replicable, open, ethical science with restricted-access data

https://twitter.com/larsvil/status/1309141822518812676