Increase the Relevance, Impact, and Efficiency of Your Research

BEN HICKSON
UA LIBRARIES
JULY 19° , 2019

A bit about me

- Geospatial Specialist at here the UA Libraries
  - Office of Digital Innovation and Stewardship
- Support student, staff, faculty, and the public with questions related to geospatial data, software, and analysis
- Responsible for the libraries geospatial archive and portal platform

UA Libraries

Consulting

- Data management
  - Best practices
  - DMP review
  - Metadata services
  - Strategy development
- Geospatial data
  - Find, build, and share geospatial data
- 1:1, groups
- Referrals
  - Research computing
  - Sensitive data
  - CyVerse

Support

- DMPTool
- Open Science Framework
  - Training
  - Strategies
  - Support
- Geospatial
  - ArcGIS
  - QGIS & GRASS
- Data Analysis
  - R
  - Python
- Geospatial Data archiving and curation
  - Spatial Data Explorer

Training

- Workshops
  - Grad students
  - Postdocs
  - Faculty
- Department talks
- Lab/research group training
- Responsible Conduct of Research
- DM training in classroom teaching
- GIS open hours and workshops

Increased Research Support

- 2010 - 37% of ARL libraries reported providing infrastructure or support services for e-science (Soehner et al. 2010)
- 2012 - 44% provide reference support for finding data, 20% or less provide other types of data related services (Tenopir et al., 2012)
- 2013 - 74% of ARL respondents offer RDS providing guidance and assistance with DMPs (Fearon et al., 2013)

- Increase impact through access to data and publications
  - Marketability to funding organization
- Add relevance by demonstrating applicability to other disciplines
  - Discovering relationship to other spatial data
- Efficiency through platforms designed to facilitate organization and reproducibility
  - OSF
- Looking for partnerships across domains

Access

Impact through access (open)

- Allow work to be easily shared, cited, and reused (not only the final paper)
  - *Open access publishing increases impact as measured by citation percentage*
  - *Get Cited in Wikipedia!*
  - Funding agency are requiring it
    - SPARC's list of data sharing requirments by agency

Open access

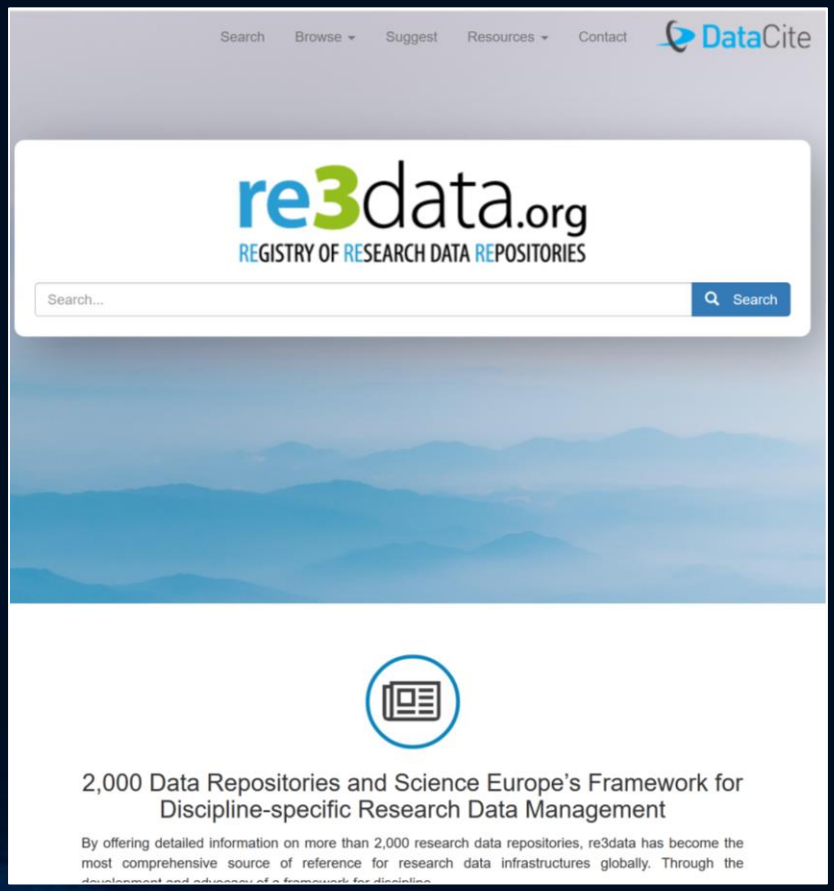
- *University of Arizona OA (2016)*
  - *"The Faculty of the University of Arizona is committed to disseminating its research and scholarship as widely as possible. As part of a public, land grant university, the Faculty is dedicated to making its scholarship available to the people of Arizona and the world to maximize its impact. "*

- Bill and Melinda Gates Foundation OA (2017)
  - *"The free, immediate, and unrestricted access to research will accelerate innovation, helping to reduce global inequity and empower the world's poorest people to transform their own lives."*

- Harvard, MIT, Duke, UNC at Chapel Hill, UI at Urbana-Champaign, Penn State, Oregon State University, University of California system

Get your data out there

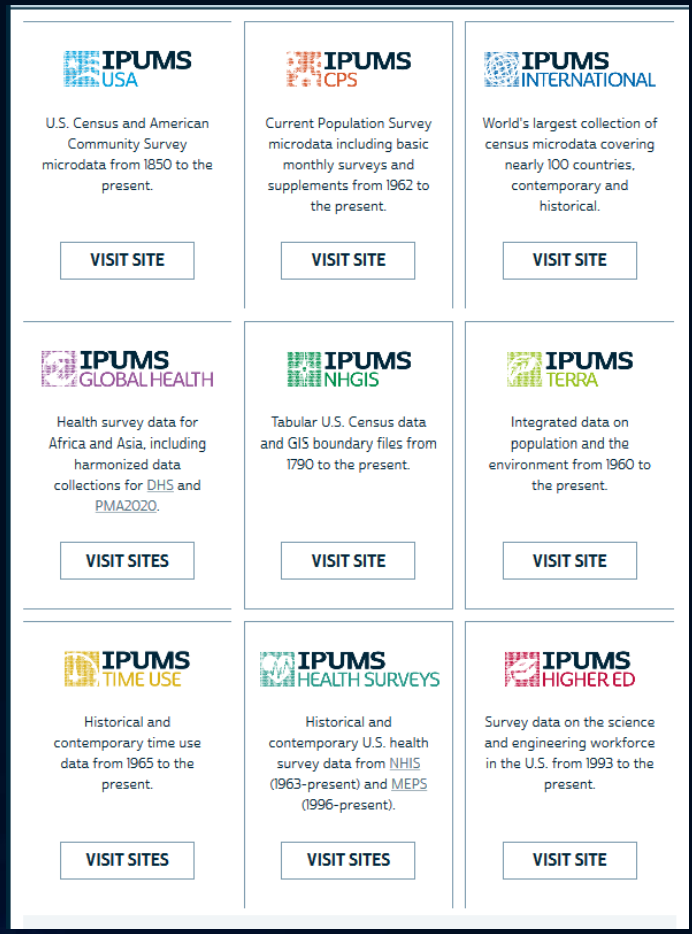
- Registry of Research Data Repositories
  - https://www.re3data.org/
- Disciplinary Repositories
  - ICPSR
  - DRYAD
- Campus Repositories
  - Harvard Dataverse
  - UNC Dataverse
- Computing facilities
  - Cyverse



Make research relatable

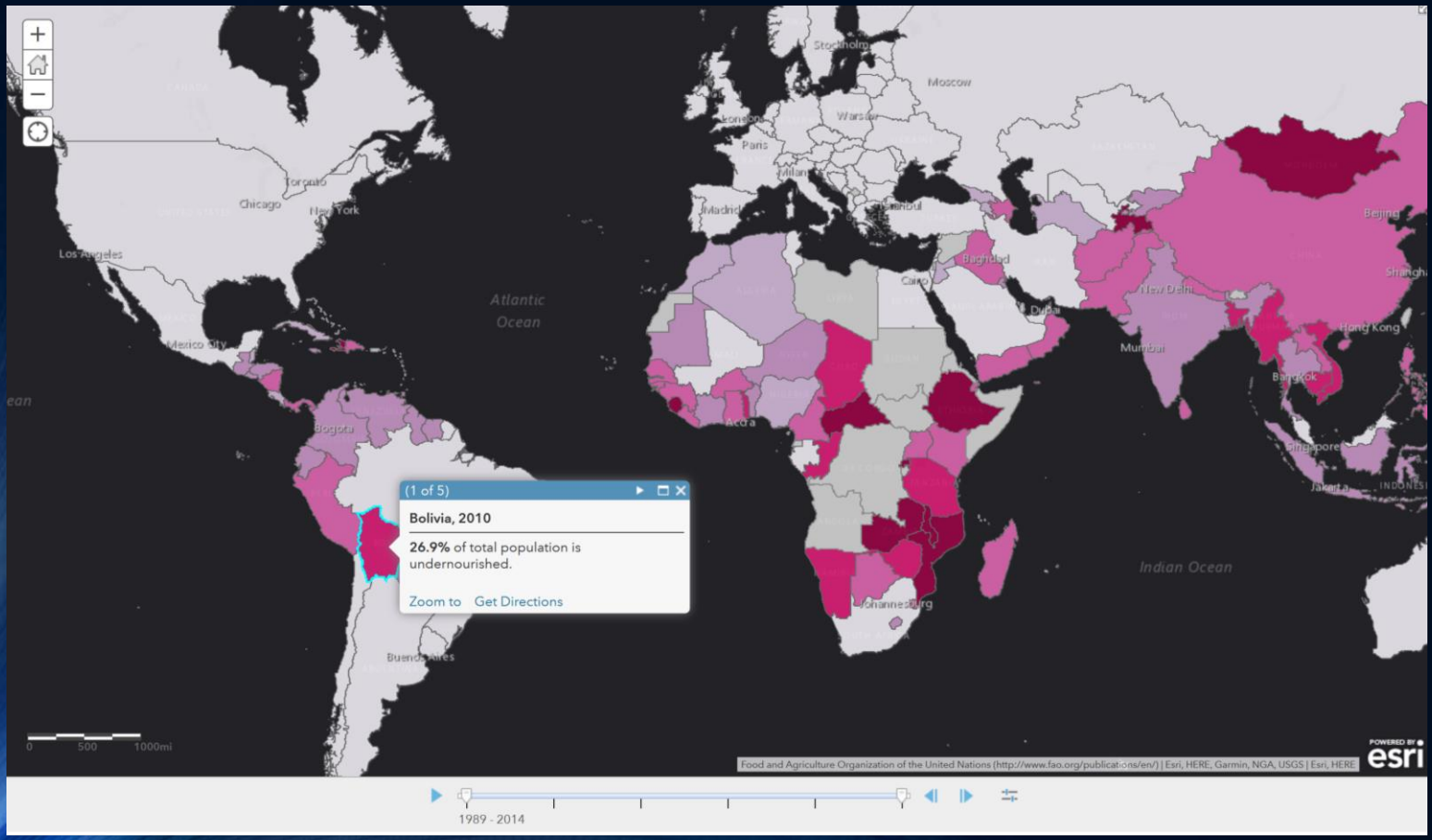
Finding Relationships

- Living Atlas & Open-Data (Esri)
- IPUMS
- RefUSA – via InfoGroup
  - Businesses data
- FAO
- GABBs – Via MyGeoHub.org
- OpenStreetMap



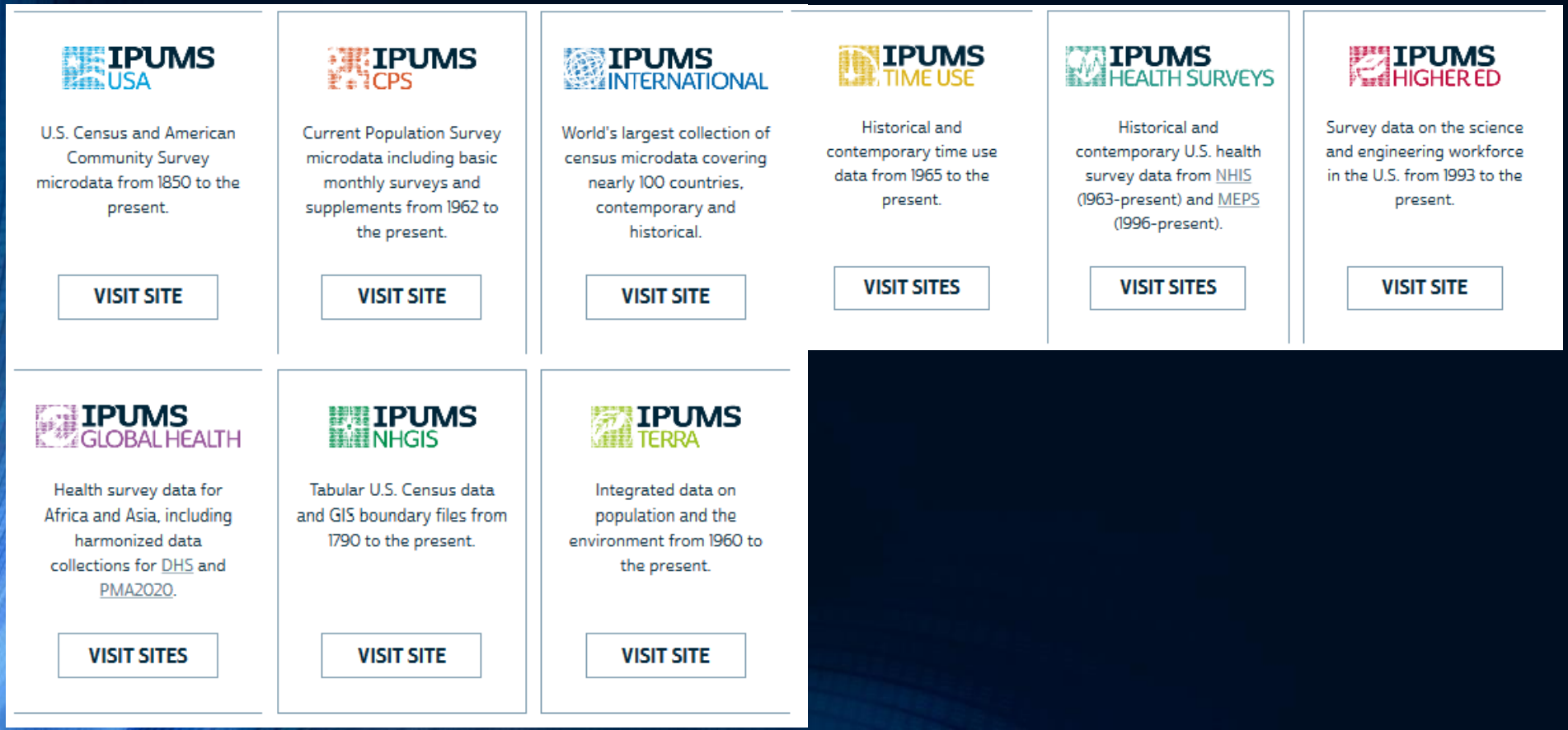
Finding Relationships

- Living Atlas & Open-Data (Esri)



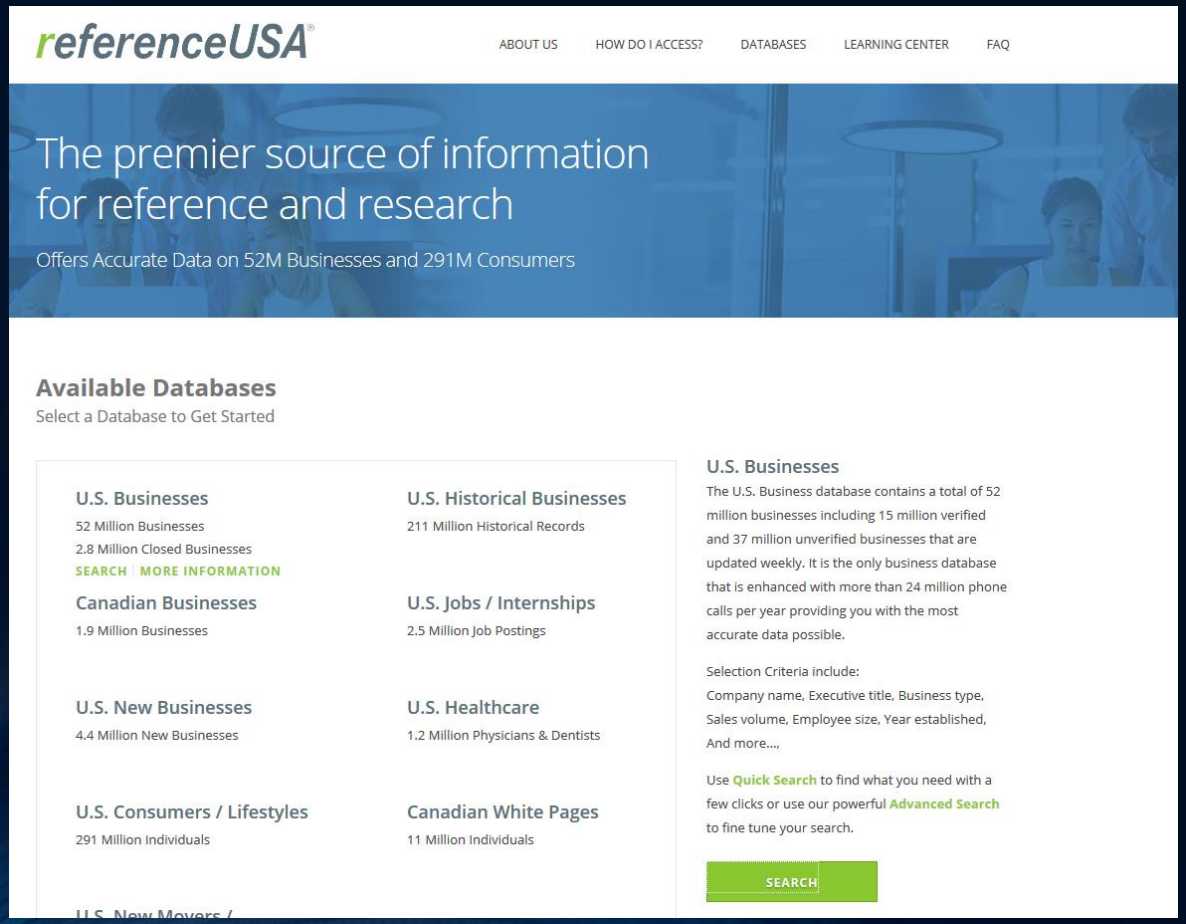
Finding Relationships

- IPUMS



Finding Relationships

- RefUSA – via InfoGroup



Finding Relationships

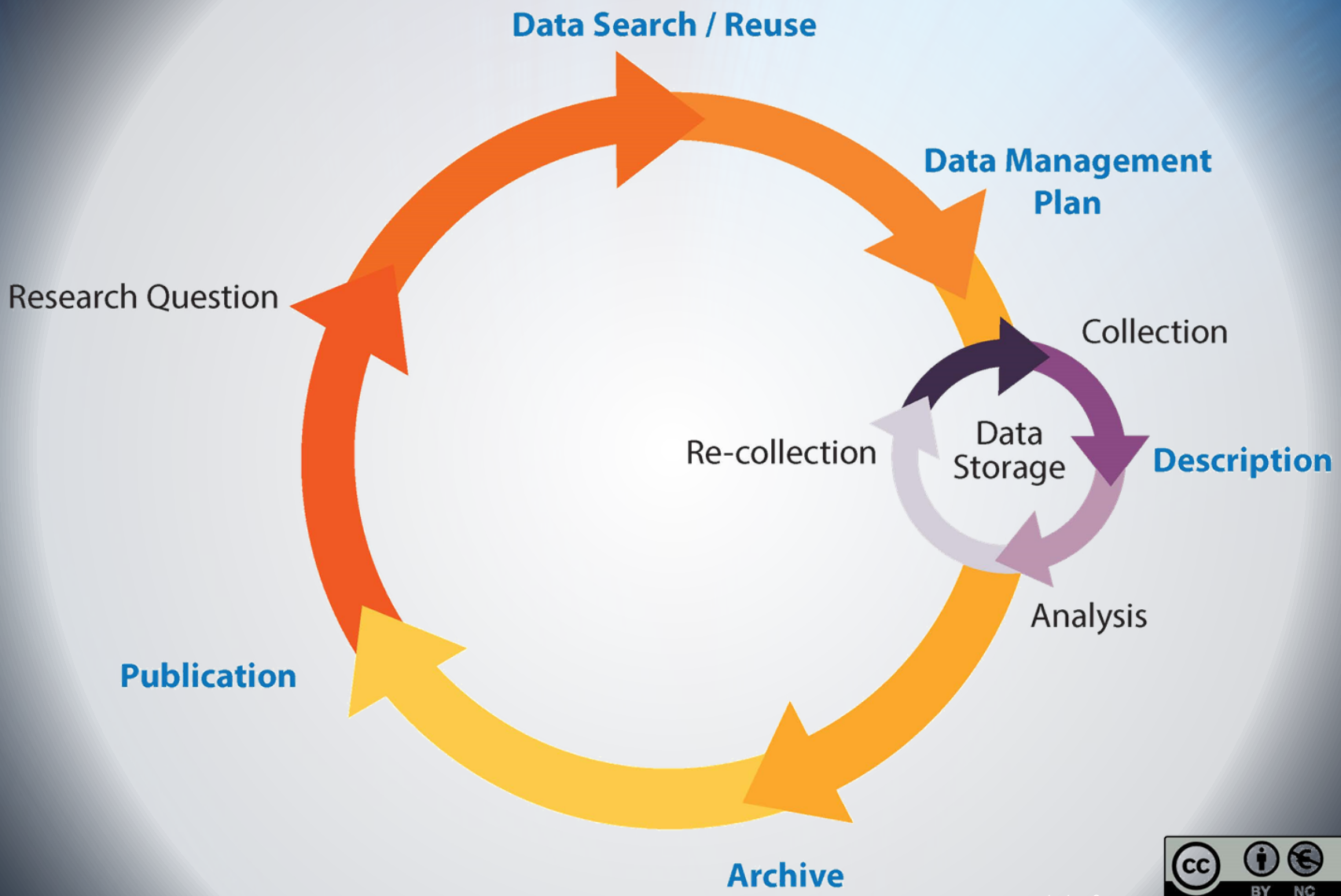
- Disciplinary Research Repositories
  - FigShare
  - DataONE
  - ICPSR
  - DRYAD
- Campus Repositories
  - Harvard Dataverse
  - UNC Dataverse
- Computing facilities
  - Cyverse
- Government Databases
  - US Census Bureau (American FactFinder)
  - EPA Enforcement & Compliance History
  - World bank
  - United Nation UN Data

Data Management
(Research Efficiency)

Open Science Framework

- Project Management Tool
- Collaboration Tool
- Research Hub
- Archive
  - Versioning
- Notifier
- Discovery Platform
- Registry
- Project wiki

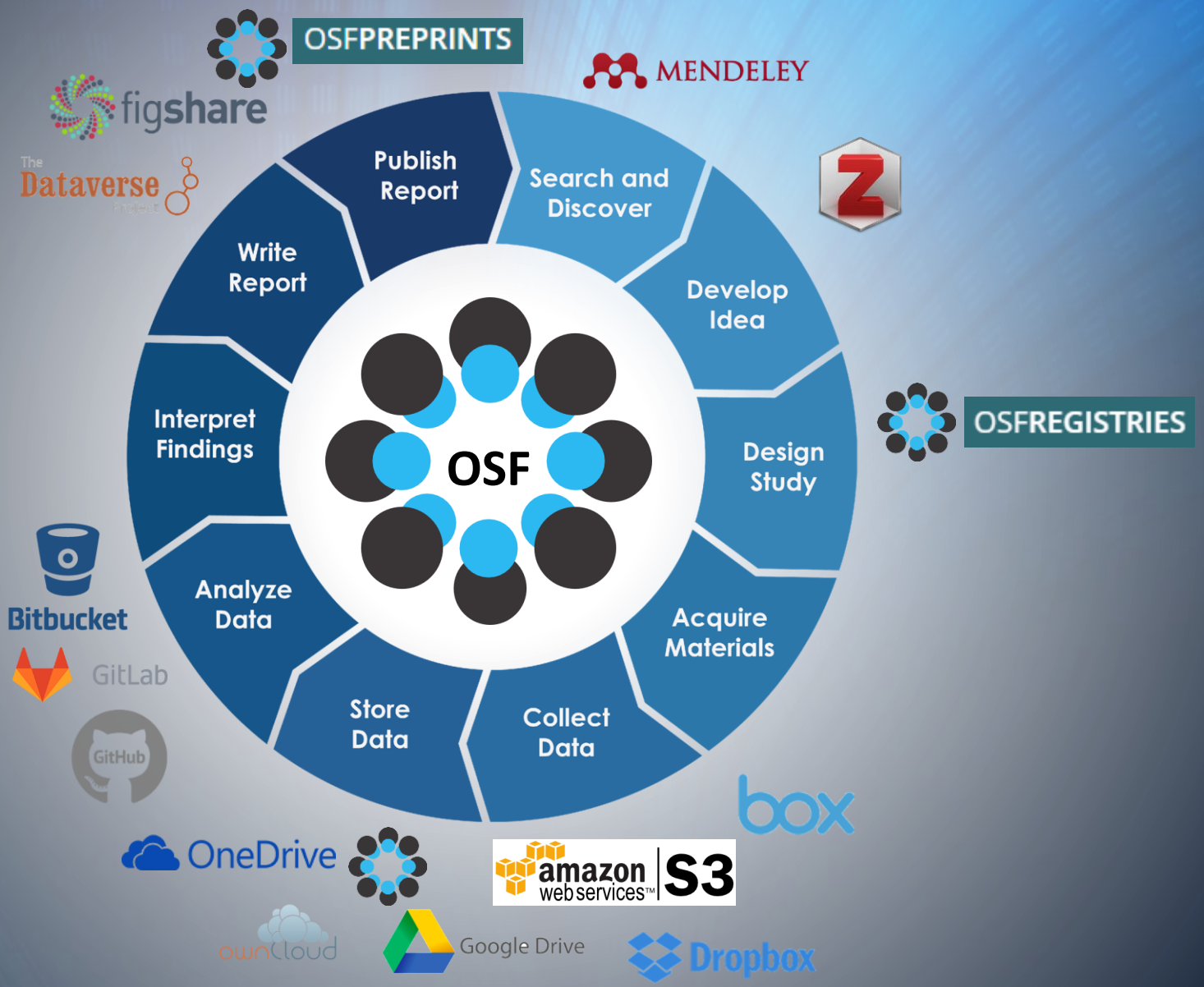
The Research Data Management Lifecycle



CC BY NC

https://guides.library.ucsc.edu/datamanagement

Support Your Data Project 10.3897/rio.4.e26439	Ad Hoc	One-Time	Active and Informative	Optimized for Re-Use
Planning your project	When it comes to my data, I have a "way of doing things" but no standard or documented plans.	I create some formal plans about how I will manage my data at the start of a project, but I generally don't refer back to them.	I develop detailed plans about how I will manage my data that I actively revisit and revise over the course of a project.	I have created plans for managing my data that are designed to streamline its future use by myself or others.
Organizing your data	I don't follow a consistent approach for keeping my data organized, so it often takes time to find things.	I have an approach for organizing my data, but I only put it into action after my project is complete.	I have an approach for organizing my data that I implement prospectively, but it not necessarily standardized.	I organize my data so that others can navigate, understand, and use it without me being present.
Saving and backing up your data	I decide what data is important while I am working on it and typically save it in a single location.	I know what data needs to be saved and I back it up after I'm done working on it to reduce the risk of loss.	I have a system for regularly saving important data while I am working on it. I have multiple backups.	I save my data in a manner and location designed maximize opportunities for re-use by myself and others.
Getting your data ready for analysis	I don't have a standardized or well documented process for preparing my data for analysis.	I have thought about how I will need to prepare my data, but I handle each case in a different manner.	My process for preparing data is standardized and well documented.	I prepare my data in such a way as to facilitate use by both myself and others in the future.
Analyzing your data and handling the outputs	I often have to redo my analyses or examine their products to determine what procedures or parameters were applied.	After I finish my analysis, I document the specific parameters, procedures, and protocols applied.	I regularly document the specifics of both my analysis workflow and decision making process while I am analyzing my data.	I have ensured that the specifics of my analysis workflow and decision making process can be understood and put into action by others.
Sharing and publishing your data	I share the results of my research, but generally I do not share the underlying data.	I share my data only when I'm required to do so or in response to direct requests from other researchers.	I regularly share the data that underlies my results and conclusions in a form that enables use by others.	Because of my excellent data management practices, I am able to efficiently share my data whenever I need to with whomever I need to.



HTTPS://ARIZONA.BOX.COM/V/ASTROLABE-OSF-MARCH2018

Get out of your research bubble

Discipline-less Events

- GIS Conferences
  - Foss4G
  - ESRI UC

- GIS Day
  - ***"Tribal GIS in the Mountain Region: Geospatial Technologies and Tribal Consultation for Adaptive Planning in Integrated Resource Management"***
  - ***"DroughtView: Combining On-the-ground Know-how with Remotely Sensed Data to Assess Drought Impacts"***
  - ***"Image processing on Cyverse with Bisque"***

- ***Poster Sessions***

Find Partners

National Socio-Environmental Synthesis Center

- "At SESYNC we have seen dramatic growth in the number and depth of interactions among scholars from disciplines who have rarely collaborated"
- "Research teams SESYNC have identified linkages such as how upstream watershed conditions can predict children's health in developing countries."
- "Another SESYNC research pursuit integrated risk perception and subsequent behavioral response with climate change models to suggest that mitigation may benefit from new policies and communication strategies."

Thanks!