Transforming Research
Brown University, Providence, RI, USA,
3-4 October 2018

Understanding & Enabling Impact in the (with the) Community

2018 Transforming Research @ Brown University

Kristi Holmes, PhD
Northwestern University Feinberg School of Medicine
Galter Health Sciences Library & Learning Center
Department of Preventive Medicine-Health & Biomedical Informatics
@kristiholmes

- What is impact?
- Who is your audience?
- What are the intersections?

- Taking the next step…

- What is impact?
- Who is your audience?
- What are the intersections?

- Taking the next step…

An increasing pressure to show impact – how to define? (local perspectives, broad application)

A Definition of Research Impact

Research impact is the demonstrable contribution that research makes to the economy, society, culture, national security, public policy or services, health, the environment, or quality of life, beyond contributions to academia.

Research Impact Principles and Framework, Australian Research Council
http://www.arc.gov.au/general/impact.htm

Impact of NIH Research:

improvements in health through treatment and prevention, contributions to society through economic growth and productivity, and expansion of the biomedical knowledge base through cutting-edge research and cultivation of the biomedical workforce of today and tomorrow.

Our Health – *promoting treatment and prevention*
Our Society – *driving economic growth and productivity*
Our Knowledge – *expands the biomedical knowledge base*

Impact of NIH Research, National Institutes of Health, US
http://www.nih.gov/about-nih/what-we-do/impact-nih-research

A foundation for assessment & partnership

- Galter Health Sciences Library & Learning Center
- Northwestern University Clinical and Translational Sciences Institute (NUCATS)

NUCATS

Northwestern Medicine
Feinberg School of Medicine

Northwestern University | Northwestern Medicine | Member Portal

Northwestern University
Clinical and Translational Sciences Institute

Search Northwestern Universi

A CTSA partner accelerating discoveries toward human health

Getting Started | Resources | Funding | Education & Career Development | Galter Library

NUCATS

Accelerating Discoveries Toward Better Health

Participating Institutions: Northwestern | Northwestern Memorial HealthCare | Ann & Robert H. Lurie Children's Hospital of Chicago | Northwestern Medicine Feinberg School of Medicine | Shirley Ryan Abilitylab

Who We Are

NUCATS provides investigators, participants and stakeholders in the research continuum with an extensive array of resources, consultative services and expertise in order to accelerate transformative scientific discoveries from the lab to patients and the community. It is our goal to continually increase the quality, safety, efficiency, speed and impact of innovative clinical and translational research.

From Discoveries to Health

Biomedical research exists on a continuum from early discovery to human trials to population health. These phases inform and influence one another, and each phase poses unique challenges and requirements. NUCATS resources and experts are available to support all of our partners across the continuum.

Basic Science

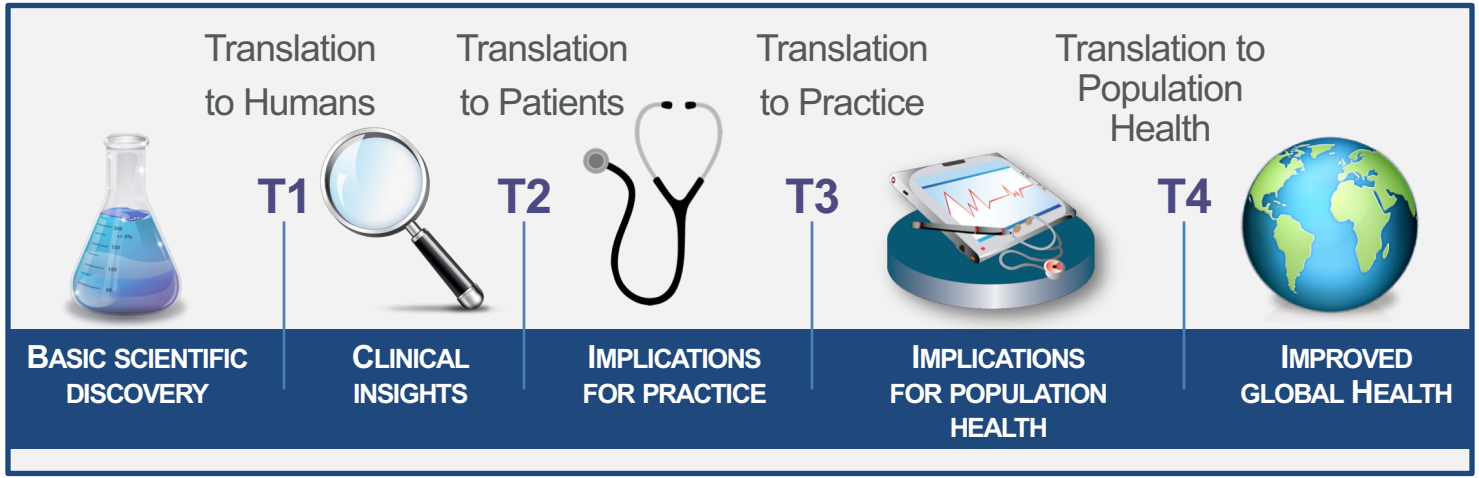
Pre-Clinical

Clinical Trials

Translation to Practice

Population Health

Biomedical research evolves: Accelerating discovery & implementation



Education & training
Team Science
Idea development
Research process
Communication
Assessment & Improvement

Adapted from: http://www.academicdepartments.musc.edu_sebin_b_o_Translational_Science.jpg

NUCATS Engagement & Translation: Hub-Wide Goals and Sample Indicators

	Process Metrics	Impact Metrics
Communication	# of users, collaborators, #/type/level of engagement with communications (open/click rate)	Attention metrics (e.g., social media, news mentions, etc.) of NUCATS-supported research and activities
Diversity & Inclusion / Researcher Development	# under-represented minority (URM) and early-stage investigator (ESI) papers & grants; trainee progress in training program	URM/ESI leadership on research activities, mentor performance reviews, career development and path trajectory; IDP-based metrics; career advancement of core users and collaborators and growth of diversity
Research Projects, Pilot Projects	# papers & other research products, # applicants; grant funding, publications, conference presentations, and other activities linked to pilot	Success stories; applicant & awardee breadth/diversity across domains, research populations, & translational stages; longitudinal outcomes; community partnerships
Methodology & Technology Innovations	# patents, tech transfer agreements, # SBIR proposals, pilots, innovation funds; # commits & forks	Innovation awards and recognition; application of new methodologies in practice; treatments to market
CTS Research with Under-Represented Groups	# new trials, participants; # publications; monitor access by # and % minorities enrolled/completing trials	# studies/publications evaluating a health disparity; # and % of minorities among all participants, # and % of all trials with minorities at proportions in the patient population
Open Science	# outputs in open access journals/repositories; production & use of open data, open source (OS) software, and other tools;	Adoption of open science principles and methods; open data reuse; assessment of 'FAIR-ness' (findable, accessible, interoperable, and reusable); reproducibility success stories
Innovation & Entrepreneurship	# active users; # public-private partnerships and associated tools/products	ROI analysis; tools identified and shared with consortium; # projects utilizing good data practices
Stakeholder Engagement	# stakeholder events, # and types of stakeholder-focused materials & outputs; # of facilitated collaborative engagements; CCH ShARP Panel metrics	# participating in research for the first time; % participating in a second event; institutional changes valuing CSE; increased engagement of early stage researchers; changes in community and clinical practice
Community Engagement & Dissemination	# papers/presentations, # new research contacts, # of investigators/orgs receiving training and consultation; diversity & density of outreach (GIS);	Companion lay summaries published for papers; # of grant proposals incorporating D&I study aims and data collection; growth in number and types of practice-based research network initiatives
Interdisciplinary Collaboration	affiliation of collaborators (domain and organization); # projects submitted/funded, source of funding	Team domain & role diversity; success stories
Knowledge Translation	# and types of KT projects completed, underway, planned; lay summaries	Downstream citations and tracking; text analysis of research products; evidence of use by societal groups; open innovation with partners beyond academia
Sustainability	# proposals, internal proposals review; funding ratios	Faculty development; incorporation of sustainability plans
Training and Education	# of training sessions, volume of trainees; time/resource cost; pre-/post-event surveys to assess knowledge transfer and satisfaction	# publications, grant proposals submitted/funded; #/role trainees & home organization; number/% & type CTS research positions; success stories

- What is impact?
- Who is your audience?
- What are the intersections?

- Taking the next step…

ChicagoCHEC

Chicago Cancer Health Equity Collaborative

Like us Follow us Email us Signup for updates Questions? Google Translate

About Research Opportunities Resources Events News

About ChicagoCHEC

Our mission is to advance cancer health equity through meaningful scientific discovery, education, training, and community engagement.

Mission Background Impact Team Institutions Community Partners Cores

Requires

- *tri-institutional partnership and a focus on cancer health equity.*
- *collaborations with the community on cancer health equity issues.*

ChicagoCHEC Retweeted

Jen Brown @JenBrownARCC · Sep 21

All @chicagochec research includes community engagement. R
change driven by community question & energy. Community par
@chicagochec Community Forum.

ChicagoCHEC Retweeted

Chancellor Salgado @
.@ChiCityColleges stu
fellowship to explore c
Partnerships are powe

ChicagoCHEC Retweeted

Melissa Simon @DrMelissaSimon · S
It's lunch time at our @chicagochec #
ChicagoCHEC student posters and g
resources for cancer ❤️

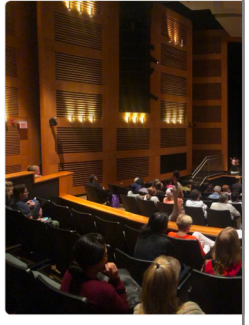
3 12

ChicagoCHEC @chicagochec · Sep 8

Joining the Mexican Consulate in their efforts to increase cancer education
@UICancerCenter @NEIU @DrMelissaSimon @LurieCancer @NIH_NCCIH

ChicagoCHEC @chicagochec

Survivor panel at the ChicagoC



2 7

ChicagoCHEC @chicagochec · Aug 30

Great start to UIC's CHER Chicago Community Symposium: Structural Violence
& Health Equity.

2 4

ChicagoCHEC @chicagochec · Aug 31

At the African Festival of Arts @UICancerCenter @NEIU @NIH_NCCIH

@chicagochec · Aug 15

e neighborhood promoting cancer care @NEIU @UICancerCenter
Med @DrMelissaSimon @theNCI

3

Health for All

Real Talk: Clinical Trials Beta

Home | About the Project | Learn About | FAQs | Contact

DRAFT

Clinical trials are research to find new ways to prevent, detect, or treat disease. These studies help doctors find better medical treatments for all people.

Support

The National Library of Medicine (NLM) provided funding support for this project. NLM grant G08LM012688 to M. Simon.

Click on a topic below to learn more:

- Clinical trial basics
- Trusting clinical trials
- Diversity in clinical trials
- Pros & clinica

CHICAGO PUBLIC LIBRARY

THE UNIVERSITY OF CHICAGO

UIC

Frequently Asked

About the Project

Clinical trials help improve medicine. They help doctors find better ways to prevent, diagnose, and treat disease. It's important for more people to take part in clinical trials. If more people do, then medical breakthroughs can work for people from all walks of life.

All people have a right to be in groundbreaking research. All people have a right to enjoy medical breakthroughs. All people have a right to make their own choices about clinical trials.

Doctors and scientists at Northwestern University created Health for All. We're working with Chicago libraries, community organizations, and city agencies. We're all working together to make clinical trials easier to learn about. We want to share information and real stories so all people can make their own decisions.

Goals

1. Help people across Chicago learn about clinical trials.
2. Help libraries support people who want to learn about clinical trials.
3. Do research to improve how libraries can help people learn about clinical trials.

- What is impact?
- Who is your audience?
- What are the intersections?

- Taking the next step…

It takes technology & culture.

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Academic information on Twitter: A user survey

Ehsan Mohammadi, Mike Thelwall, Mary Kwasny, Kristi L. Holmes

Published: May 17, 2018 • https://doi.org/10.1371/journal.pone.0197265

Abstract

Although counts of tweets citing academic papers are used as an informal indicator of interest, little is known about who tweets academic papers and who uses Twitter to find scholarly information. Without knowing this, it is difficult to draw useful conclusions from a publication being frequently tweeted. This study surveyed 1,912 users that have tweeted journal articles to ask about their scholarly-related Twitter uses. Almost half of the respondents (45%) did not work in academia, despite the sample probably being biased towards academics. Twitter was used most by people with a social science or humanities background. People tend to leverage social ties on Twitter to find information rather than searching for relevant tweets. Twitter is used in academia to acquire and share real-time information and to develop connections with others. Motivations for using Twitter vary by discipline, occupation, and employment sector, but not much by gender. These factors also influence the sharing of different types of academic information. This study provides evidence that Twitter plays a significant role in the discovery of scholarly information and cross-disciplinary knowledge spreading. Most importantly, the large numbers of non-academic users support the claims of those using tweet counts as evidence for the non-academic impacts of scholarly research.

- ✓ 45% OUTSIDE OF ACADEMIA
- ✓ SOCIAL SCIENCE / HUMANITIES BACKGROUND
- ✓ PEOPLE LEVERAGE SOCIAL TIES
- ✓ USED TO ACQUIRE AND SHARE REAL-TIME INFORMATION AND TO DEVELOP CONNECTIONS
- ✓ MOTIVATIONS VARY BY DISCIPLINE, OCCUPATION, AND EMPLOYMENT SECTOR, BUT NOT MUCH BY GENDER
- ✓ TWITTER PLAYS A SIGNIFICANT ROLE IN THE DISCOVERY OF SCHOLARLY INFORMATION AND CROSS-DISCIPLINARY KNOWLEDGE SPREADING

Most importantly, the large numbers of non-academic users support the claims of those using tweet counts as evidence for the non-academic impacts of scholarly research.

Attention metrics matter!

http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0197265

Nature 508, 312–313 (17 April 2014) doi:10.1038/508312a

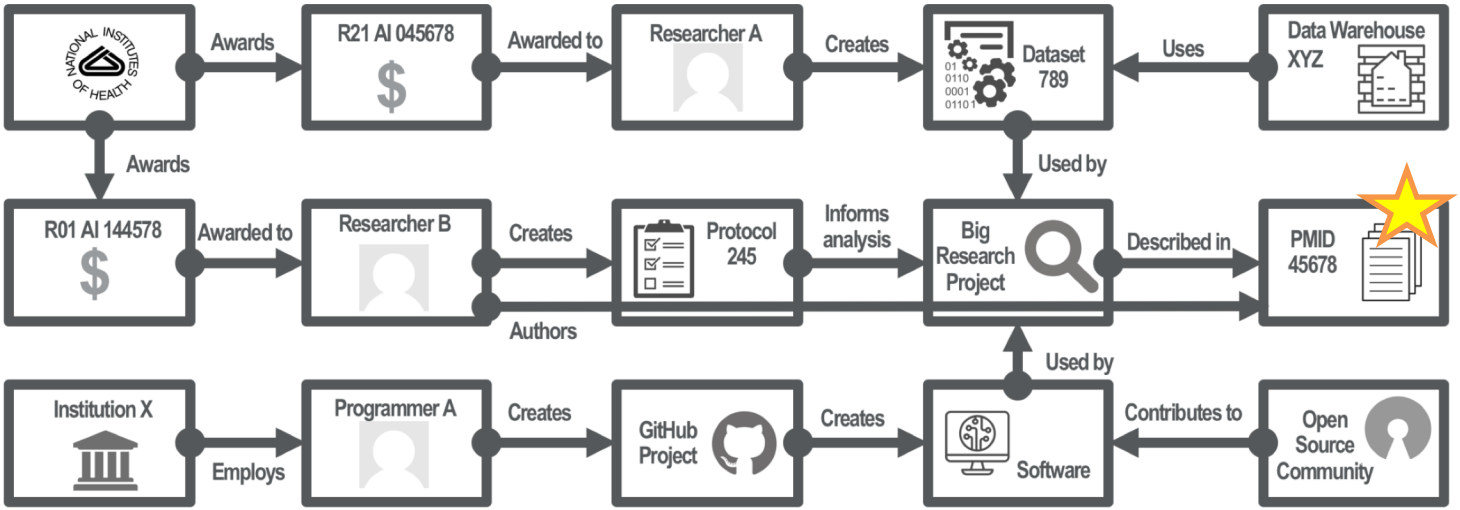
CRT

CRediT

CRediT is high-level taxonomy, including 14 roles, that can be used to represent the roles typically played by contributors to scientific scholarly output. The roles describe each contributor's specific contribution to the scholarly output.

https://casrai.org/credit/

Better attribution: extending credit beyond the publication to give credit where credit is due (researchers, communities, citizens, infrastructure, etc.)



Adapted from Julie McMurry

What work is being done, who is doing it, and what outputs are being created?

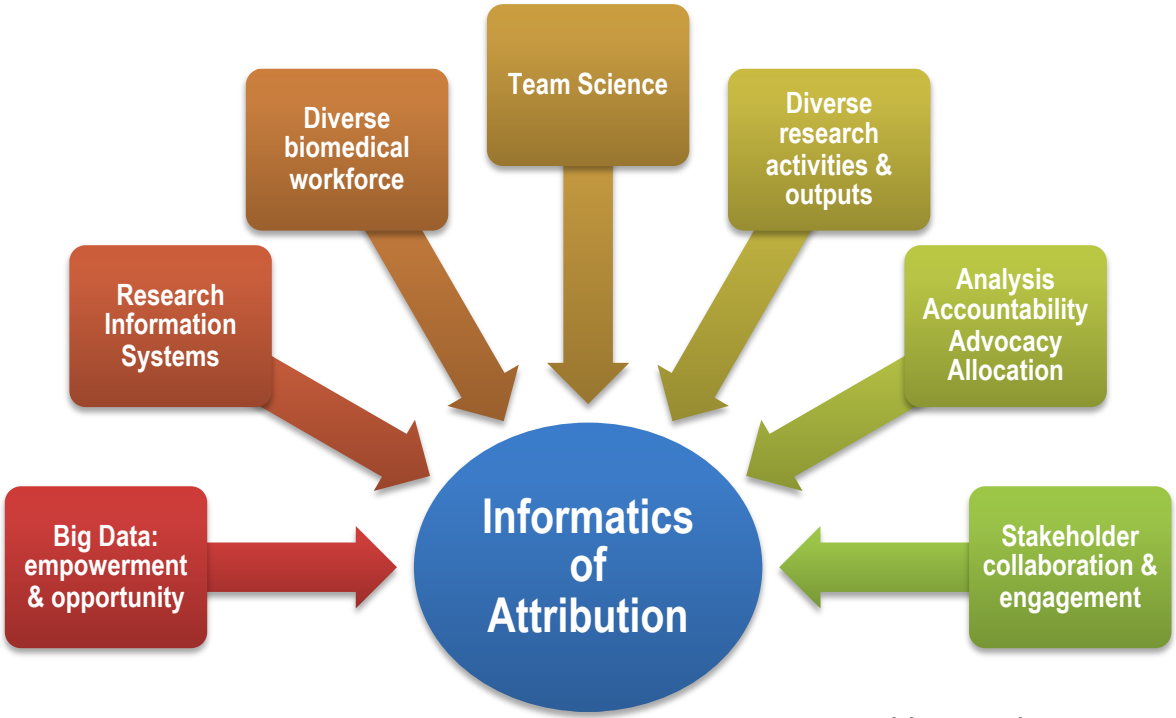
1. Understand deeply the requirements for a computable attribution system from a large diversity of stakeholders;
2. Build model(s) to meet these requirements (CRO, ROO);
3. Evaluate the models in real pilot systems with real data.

By using contribution roles & research outputs to develop infrastructure to understand the scholarly ecosystem, we can better understand, leverage, and credit a diverse translational community

CTSA Clinical & Translational Science Awards Program

NATIONAL CENTER FOR DATA TO HEALTH

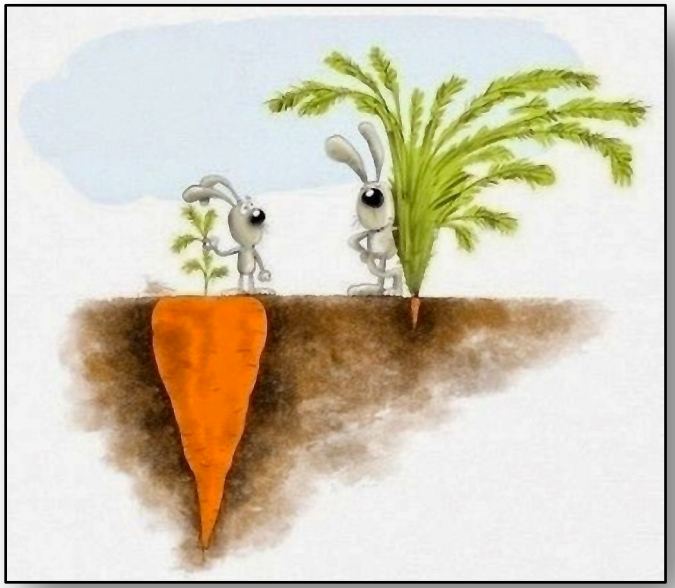
Why now & how do we get there?



http://bit.ly/AttributionSignUp

NATIONAL CENTER FOR DATA TO HEALTH

http://www.rand.org/content/dam/rand/pubs/research_briefs/RB9700/RB9716/RAND_RB9716.pdf



Desired outcomes: Machine-actionable approaches to…

- Understand our changing scholarly ecosystem
- Do a better job of giving credit where credit is due
- Leverage expertise data to improve translational processes and efficiencies

thank you & acknowledgements

- Teams
  - Galter Library, NUCATS, ChicagoCHEC, Health for All, CD2H
- NIH Support
  - UL1TR001422 (NCATS), U54CA202995, U54CA202997, and U54CA203000 (NCI), G08LM012688 (NLM), U24TR002306 (NCATS)

- National Information Standards Organization. Outputs of the NISO Alternative Assessment Metrics Project. 2016. Report No.: Recommended Practice RP-25-2016.
- Sarli CC, Dubinsky EK, Holmes KL. Beyond citation analysis: a model for assessment of research impact. J Med Libr Assoc. 2010; 98(1):17-23. PMID: 20098647; PMCID: PMC2801963.
- Gutzman KE, Konkiel S, White M, et al. Attribution of Work in the Scholarly Ecosystem 2016. Available from: https://figshare.com/articles/Attribution_of_Work_in_the_Scholarly_Ecosystem/3175198 .
- White M, Haendel M, Brush M. Contribution Ontology: A repository for representation of a person's role in research processes and outputs [Data model]. 2016 Available from: https://github.com/openrif/contribution-ontology
- European Commission Directorate-General for Research and Innovation, Open Science Working Group on Rewards/Recognition. Evaluation of Research Careers fully acknowledging Open Science Practices: Rewards, incentives and/or recognition for researchers practicing Open Science [Report].. Brussels, Belgium: European Commission; 2017. Available from: https://ec.europa.eu/research/openscience/pdf/os_rewards_wgreport.pdf - view=fit&pagemode=none
- Alberta Innovates - Health Solutions. Annual Impact Report: 2014-15 Alberta, Canada: Alberta Innovates - Health Solutions; 2016. Available from: http://www.aihealthsolutions.ca/media/Annual-Impact-Report-2014-2015.pdf
- Becker Medical Library Model for Assessment of Research Impact. St. Louis, MO: Bernard Becker Medical Library; 2014. Available from: https://becker.wustl.edu/impact-assessment

frontiers in Research Metrics and Analytics

THIS ARTICLE IS PART OF THE RESEARCH TOPIC
Evaluating Research: Acquiring, Integrating, and Analyzing Heterogeneous Data

CONCEPTUAL ANALYSIS ARTICLE
Front. Res. Metr. Anal., 04 October 2018 | https://doi.org/10.3389/frma.2018.00028

Using ORCID, DOI, and Other Open Identifiers in Research Evaluation

Laurel L. Haak*, Alice Meadows and Josh Brown

ORCID, Bethesda, MD, United States

EDITED BY

Kristi Holmes
Northwestern University, United States

REVIEWED BY

Raf Guns
University of Antwerp, Belgium

Julie A. McMurry
Oregon Health & Science University, United States

Heather L. Coates
Indiana University, Purdue University Indianapolis, United States

An evaluator's task is to connect the dots between program goals and its outcomes. This can be accomplished through surveys, research, and interviews, and is frequently performed *post hoc*. Research evaluation is hampered by a lack of data that clearly connect a research program with its outcomes and, in particular, by ambiguity about who has participated in the program and what contributions they have made. Manually making these connections is very labor-intensive, and algorithmic matching introduces errors and assumptions that can distort results. In this paper, we discuss the use of identifiers in research evaluation—for individuals, their contributions, and the organizations that sponsor them and fund their work. Global identifier systems are uniquely positioned to capture global mobility and collaboration. By leveraging connections between local infrastructures and global information resources, evaluators can map data sources that were previously either unavailable or prohibitively labor-intensive. We describe