Understanding & Enabling Impact in the (with the) Community

2018 Transforming Research @ Brown University
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• What is impact?
• Who is your audience?
• What are the intersections?

• Taking the next step…
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• Who is your audience?
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• 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
A foundation for assessment & partnership

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

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

Requires

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

About ChicagoCHEC

Our mission is to advance cancer health equity through meaningful scientific discovery, education, training, and community engagement.
Joining the Mexican Consulate in their efforts to increase cancer education.

At the African Festival of Arts—Great start to UI’s CHER Chicago Community Symposium: Structural Violence & Health Equity.
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.

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.
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It takes technology & culture.
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
Credit where credit is due

Liz Allen, Amy Brand, Jo Scott, Micah Altman and Marjorie Hlava are trialling digital taxonomies to help researchers to identify their contributions to collaborative projects.

Research today is rarely a one-person enterprise, and success comes with a team effort. Thoughtful credit is due to everyone involved.

Through the endorsement of individuals’ contributions, researchers can start to move away from the dominant metrics that judge scientific output using bibliometric indices. Journal articles could be classified using a 14-role taxonomy (see ‘Who did what?’). The survey was sent to 1,200 corresponding authors of published scientific articles linked to PLOS journals.

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.)

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.
Why now & how do we get there?

Informatics of Attribution

- Team Science
- Diverse biomedical workforce
- Diverse research activities & outputs
- Analysis Accountability Advocacy Allocation
- Stakeholder collaboration & engagement
- Big Data: empowerment & opportunity
- Research Information Systems


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

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

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ORCID, Bethesda, MD, 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...