Research Impact, Scholarly Output, and Models of Sustainability in the Libraries

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Health Sciences Libraries
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Overview

I. The mandate for metrics

II. Metrics in the Medical School

III. Building a metrics system with Scopus

IV. Philosophical foray into sustainability
Piecing together the mandate
Piecing together the mandate

Office of the President

Office of the Vice President for Research (OVPR)

University Vision

Strategic Goals and Initiatives

Research Vision

Strategic Goals and Initiatives
Office of the President

VISION

The University of Minnesota – Twin Cities will be preeminent in solving the grand challenges of a diverse and changing world

STRATEGIC INITIATIVES

1. Build an exceptional University where grand societal challenges are addressed
2. Support excellence and reject complacency
3. Establish a culture of reciprocal engagement, capitalizing on our unique location
4. Aggressively recruit, retain, and promote field-shaping researchers and teachers
FIVE YEARS FORWARD
Bringing people together in new ways, fostering discoveries and making our world a better place

THEMATIC AREAS

1. Enhance research excellence
2. Advance transdisciplinary partnerships
3. Accelerate transfer of knowledge for the public good
4. Promote culture of serendipity

1. Promote initiatives where the university can demonstrate global preeminence
2. Ensure high quality, state of the art research systems
3. Grow and recruit award winning faculty
4. Reduce faculty administrative burden
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Piecing together the mandate

Common Theme

Support, encourage, and recognize excellence at the University of Minnesota
Piecing together the mandate

Office of the President

Office of the Vice President for Research (OVPR)

University of Minnesota Medical School

University Vision

Strategic Goals and Initiatives

Research Vision

Strategic Goals and Initiatives

Medical School Vision

Strategic Goals and Initiatives
Piecing together the mandate

**MEDICAL SCHOOL VISION**

To be a world-class medical school, advancing health at the forefront of learning and discovery

Promote a culture that demands and rewards **excellence**
Scholarship Metrics Initiative

1. The scholarship of an institution is defined by the achievements of its faculty.

2. The University of Minnesota Medical School is home to world-class researchers.

3. To attract more world-class researchers, the Medical School can showcase and encourage faculty achievements.
Scholarship Metrics Initiative

Ways to recognize and encourage scholarship

1. Track *scholarly output* and profile the productivity of faculty

2. Showcase the work of faculty who have made a *large impact* in their field
Timeline

- **February**
  - Brooks Jackson appointed dean of the Medical School

- **March**
  - Dean Jackson approaches the Libraries for data

- **Jan 2014**
- **Dec 2014**
Scopus

over 21,000 (+) Journals

5,000 Publishers

almost 50 million Books

50 million records

6.5 million Conference papers

24 million Patents
Scopus

Publishers indexed in Scopus

- 60% Others
- 10% ELSEVIER
- 8% Springer
- 5% Wiley-Blackwell
- 5% Taylor & Francis
- 2% Sage
- Wolters Kluwer
- IEEE
- Oxford University Press
- INDERSCIENCE publishers
- BENTHAM SCIENCE
- Cambridge UNIVERSITY PRESS
- Emerald
- macmillan Publishers

Subject coverage in Scopus

- Physical Sciences 30%
- Health Sciences 32%
- Social Sciences 23%
- Life Sciences 15%

http://www.elsevier.com/online-tools/scopus/content-overview
January 2014
- Brooks Jackson appointed dean of the Medical School

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- Dean Jackson approaches the Libraries for data

March
- Data provided
Wall of Scholarship
Wall of Scholarship

University of Minnesota

Research Impact, Scholarly Output
February
Brooks Jackson appointed dean of the Medical School

March
Dean Jackson approaches the Libraries for data

May
Data + Development

April
Data provided

October
Wall of Scholarship revealed

Jan 2014

Dec 2014
Manifold Metrics System

- Each quarter, new publication data for all paid, full time Medical School faculty (1,178) are aggregated via the Scopus API

- Profiles are created for each faculty showing publication activity and different research impact metrics

- Purposes
  1. Hold faculty and departments accountable for tracking their scholarly output (publications)
  2. Establish mechanism for recognizing top scholars (Wall of Scholarship project)
Don’t other platforms do this?

Such as Experts?

Yes...

but no.
Don’t other platforms do this?

• **Experts@MN** does not provide a comprehensive list of Medical School faculty

• Canonical Medical School faculty lists are difficult to obtain; *affiliates* complicate things *(a lot)*

• Dean Jackson requested custom metrics not defined in the literature (yet) and thus not calculated by citation indexes
Data pipeline

List of faculty → Scopus API → Publication data → Storage in database → Aggregation + analysis → Scholarly metrics profiles for faculty
Individual profile

Aggregate metrics

List of publications

Visualized metrics (e.g., citation distribution)
Individual profile

Relative impact of publications over time
This graph shows Brooks's publications and their relative impact over time. Each circle represents a published paper, indicated by year on the horizontal axis and citation count on the vertical axis. The sizes of the circles illustrate relative comparisons of citations to each paper; a larger circle means that paper has received a larger share of citations made to Brooks's scholarship.

Cumulative h-index over time
Here, Brooks's h-index is plotted cumulatively over time. For each year over Brooks's publication career, the h-index is recalculated considering publications and their citation counts up through that year. Note that the citation counts used to calculate yearly indices in this graph are current values, not values at those given points in time.
## Faculty Summary

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**Research Impact, Scholarly Output**

- **Department profile**
- **Departmental summary**
## Custom Filter

### Publications, 2014: through 2014:

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<td>The impact of donor viral replication at transplant on recipient infections posttransplant: A prospective study</td>
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<td>Age-specific prevalence of Epstein-Barr virus infection among Minnesota children: Effects of race/ethnicity and family environment</td>
<td>Clinical Infectious Diseases</td>
<td>Condron, Lawrence M.; Cederberg, Laurel E.; Robinovitch, Mark D.; Lipsky, Rhoda V.; Go, Janice C.; Delaney, Amanda S.; Schmaling, David O.; Thomas, William; Balfour, Henry H.;</td>
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<td>Rous sarcoma virus synaptic complex capable of concerted integration is kinetically trapped by human Immunodeficiency virus integrase strand transfer inhibitors</td>
<td>Journal of Biological Chemistry</td>
<td>Pandey, Krishan K.; Bera, Sibes; Korolev, Sergey V.; Campbell, Mary Ann; Yin, Zhiqi; Althara, Hideki; Grandemont, Dussne P.;</td>
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<td>American Journal of Surgical Pathology</td>
<td>Hart, Melissa K.; Thakral, Beenu; Yaffe, Sooja L.; Balfour, Henry H.; Singh, Charanjeet; Spears, Michael D.; McKenna, Robert W.;</td>
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### Overview

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Demonstration

http://z.umn.edu/medmetrics

Best viewed using Chrome
Advantages

1. System makes it relatively simple to assess achievements at both individual and departmental levels.

2. System is modular and therefore extendible — altmetrics, visualizing collaborations.

Feasibility constraints

- The **Scopus API** has design flaws that make its behavior sometimes unpredictable

- **HR data** is dirty – canonical faculty lists are hard to come by (and our HR system is changing)
  - How do we handle affiliates?
  - How do we determine eligibility for the Wall of Scholarship?
Feasibility constraints

- **Scopus data** is dirty, too

- Scopus does not always have complete data for faculty
  - Publications that appear in PubMed may not appear in Scopus, and thus they will not appear in Manifold
  - Scopus affiliation data can be misleading, making author disambiguation more difficult (*ORCID*)

How do we balance efficiency and sustainability with the need for manual curation to ensure high data quality?
Sustainability

**TWO FACETS**

Technological + Infrastructural

- Data, dedicated server space, database administration

Intellectual

- Responsible use and interpretation of metrics
Impact metrics are increasingly popular among researchers and administrators alike.

How do we develop a sustainable model of metrics usage?
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</table>
Sustainability means overcoming the *world-is-flat problem* in metrics usage and replacing it with a *data-as-manifold* model of interpretation.
Right now

• Pilot evaluation underway in the Department of Psychiatry
  – Usability testing
  – Accuracy of publication data – do faculty need to verify?
  – Aesthetics and design

• Pilot results will inform next steps

• Aiming for full launch mid-January 2015, after the next big data dump (early January)
Moving forward

• Working on automated deployment package
  – Instance deployed for College of Biological Sciences (much smaller!)
  – Required input: list of faculty, list of departments

• UMN Libraries are recruiting an applications developer

• More broadly: how do we measure impact in disciplines that do not rely on traditional measures, such as in arts and humanities?
Contact

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@stevengbraun