LEVERAGING SOFTWARE TO IMPROVE ACADEMIC PROGRAMS AND FACULTY HIRING

SCUP 2019 Annual Conference

July 14–16, 2019 | Washington State Convention Center, Seattle, WA

University at Buffalo
College of Arts and Sciences

Agenda

- **Introduction**

- **Disciplinary Excellence – Internal Call for Proposal**

- **Stage 1: Which program to choose?**

  - **Examine Call for Proposal to determine metrics/rubric**

  - **Internal data**

  - **Academic Analytics Data**

- **Stage 2: Program is chosen**

  - **Academic Analytics Data**

- **Final Outcome**

Learning Outcomes

1. Participants in this session will learn how to present, interpret and report data from a specific case study.

2. Participants in this session will learn how to use specific data sets and visualizations to plan and evaluate academic programming and staffing.

3. Participants in this session will learn how to lead in discussions related to data-informed decision making.

4. Participants in this session will learn how to use data to inform decision making related to strategic planning for academic units at a University.

Molly J Wilson, PhD
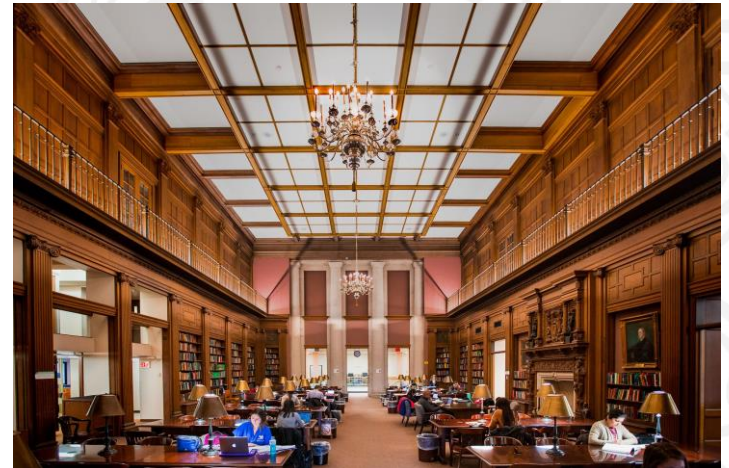
Associate, Client Solutions

Academic Analytics

Patrick McDonald, PhD

Assistant Dean for Planning and Analytics

College of Arts and Sciences – SUNY Buffalo

University at Buffalo (UB)

University at Buffalo (UB)

University at Buffalo
- Premier Research-intensive Public University – SUNY Flagship
- Member of the American Association of Universities (AAU)
- 12 Schools/Colleges
- 30,000 Students
- 8,700 Degrees
- 6,000 Employees
- 2,500 Faculty
- $1.6B Annual Budget

College of Arts and Sciences
- 28 Departments and 15 Academic Programs
  - Chemistry
  - Physics
  - English
  - Psychology
  - Comp Lit
  - Music
- 7,000 UG
- 1,600 GR
- 422 T/TT Faculty
- $108M Tuition Rev

Academic Analytics

- At UB since 2011

- Holds data about research activity at all US PhD-granting institutions

- Data at the person level allows for customized analysis and unit modeling

- All benchmarking done within discipline (important!)

- **Scholarly Research Index** – rank-based Z score based on
  - Federal Grants
  - Articles
  - Conference Proceedings
  - Citations
  - Honorific Awards
  - Books

7

University at Buffalo
Office of the Provost

BUILDING DISCIPLINARY EXCELLENCE
An Investment Fund

GOAL

Identify and invest in strategies to strengthen disciplinary excellence at UB

DEFINITION OF DISCIPLINARY EXCELLENCE

Superior performance in the research and graduate education as measured by the productivity and impact of faculty research, the quality and success of PhD programs, other key measures particular to the specific discipline ***and*** the recognition of this performance in national and international program rankings.

FINANCIAL PARAMETERS

The Provost will invest up to $1M in recurring funds and $10M in "start-up" funds in building disciplinary excellence. The funds will be awarded ***by September 1*** to enable new faculty searches to begin in the fall semester. Funds requested will be for faculty salary and start-up funds. A matching commitment from the proposing Dean of no less than one third of the total investment is expected.

PROCESS

1. Each unit seeking investment should propose a strategy ***by July 15*** to build disciplinary excellence in programs best positioned to become national leaders. The proposals should be no longer than 5 pages and include:

   a. Evidence for choice of program that might include such measures as research productivity and impact, strength in graduate education, current position and/or potential for significant advance in the rankings.

   b. Key investments to be made that will allow these programs to achieve national leadership in these disciplines.

   c. Metrics of success to be used in reflecting on the effectiveness of the investment strategy.

2. Provost will announce the university investments to be made in building disciplinary excellence ***by September 1.***

6-4-18

University at Buffalo
Office of the Provost

BUILDING DISCIPLINARY EXCELLENCE
An Investment Fund

GOAL
Identify and invest in strategies to strengthen disciplinary excellence at UB

DEFINITION OF DISCIPLINARY EXCELLENCE
Superior performance in the research and graduate education as measured by the productivity and impact of faculty research, the quality and success of PhD programs, other key measures particular to the specific discipline *and* the recognition of this performance in national and international program rankings.

FINANCIAL PARAMETERS
The Provost will invest up to $1M in recurring funds and $10M in "start-up" funds in building disciplinary excellence. The funds will be awarded *by September 1* to enable new faculty searches to begin in the fall semester. Funds requested will be for faculty salary and start-up funds. A matching commitment from the proposing Dean of no less than one third of the total investment is expected.

PROCESS

1. Each unit seeking investment should propose a strategy *by July 15* to build disciplinary excellence in programs best positioned to become national leaders. The proposals should be no longer than 5 pages and include:
   a. Evidence for choice of program that might include such measures as research productivity and impact, strength in graduate education, current position and/or potential for significant advance in the rankings.
   b. Key investments to be made that will allow these programs to achieve national leadership in these disciplines.
   c. Metrics of success to be used in reflecting on the effectiveness of the investment strategy.

2. Provost will announce the university investments to be made in building disciplinary excellence *by September 1.*

6-4-18

Office of the Provost
562 Capen Hall, Buffalo, NY 14260-1606
716.645.2992 (F) 716.645.3685
ubprovost@buffalo.edu
buffalo.edu/provost

Strengthen disciplinary excellence, already existing? Good to great?

Graduate education focus, not undergraduate, strong in research measures

Program rankings (US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing? Current position or advance, bang for the buck.

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

Strengthen disciplinary excellence, already existing? Good to great?

Graduate education focus, not undergraduate, strong in research measures

Program rankings
(US News, Academic Analytics, AAU)
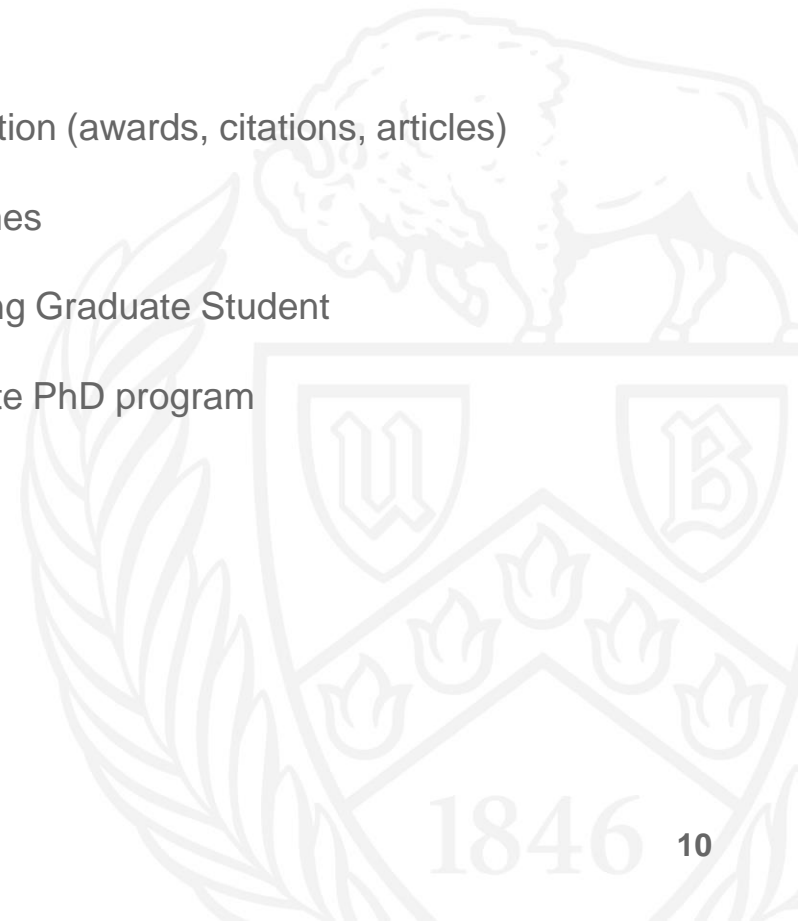
As defined by rankings?

Strengthen disciplinary excellence, already existing? Current position or advance, bang for the buck.

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

What programs in CAS have achieved disciplinary excellence or are on the verge, as defined by:

- Rankings

- Research Dollars

- Research Reputation (awards, citations, articles)

- Graduate Outcomes

- Quality of Incoming Graduate Student

- Vitality of Graduate PhD program

10

Strengthen disciplinary excellence, already existing? Good to great?

Graduate education focus, not undergraduate, strong in research measures

Program rankings
(US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing? Current position or advance, bang for the buck.

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

Strengthen disciplinary excellence, already existing? Good to great?

Graduate education focus, not undergraduate, strong in research measures

Program rankings
(US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing? Current position or advance, bang for the buck.

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

Chemistry   **Biology**   **Communicative Disorders**   **Psychology**

12

Strengthen disciplinary excellence, already existing? Good to great?

Chemistry   **Biology**   **Communicative Disorders**   **Psychology**

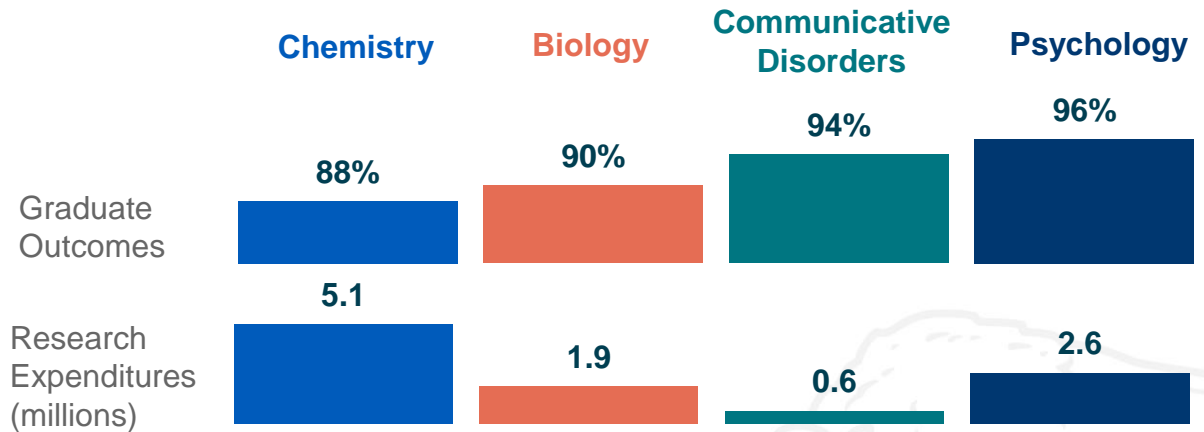Graduate education focus, not undergraduate, strong in research measures

Program rankings
(US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing? Current position or advance, bang for the buck.

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

Strengthen disciplinary excellence, already existing? Good to great?

Graduate education focus, not undergraduate, strong in research measures

Program rankings
(US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing? Current position or advance, bang for the buck.

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

	Chemistry	Biology	Communicative Disorders	Psychology
Graduate Outcomes	88%	90%	94%	96%
Research Expenditures (millions)	5.1	1.9	0.6	2.6

Strengthen disciplinary excellence, already existing? Good to great?

Graduate education focus, not undergraduate, strong in research measures
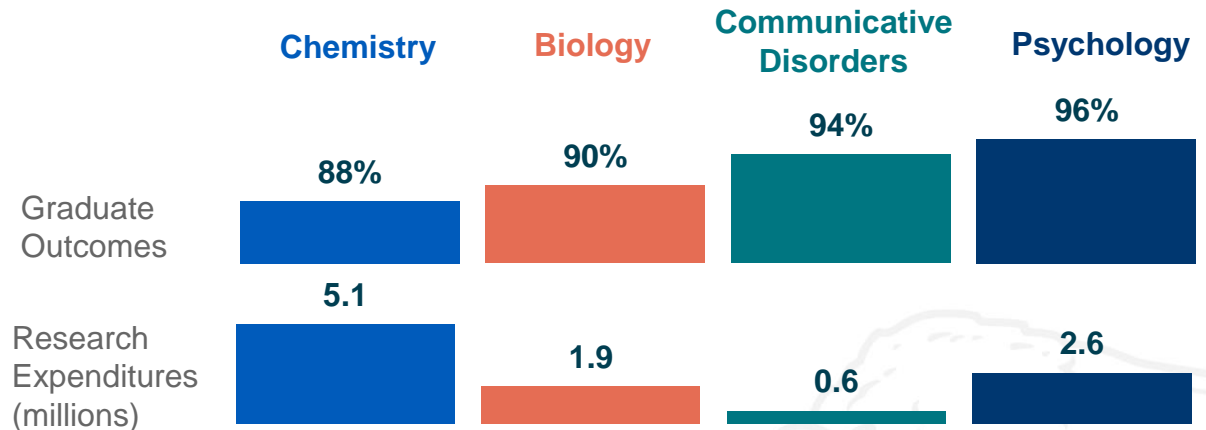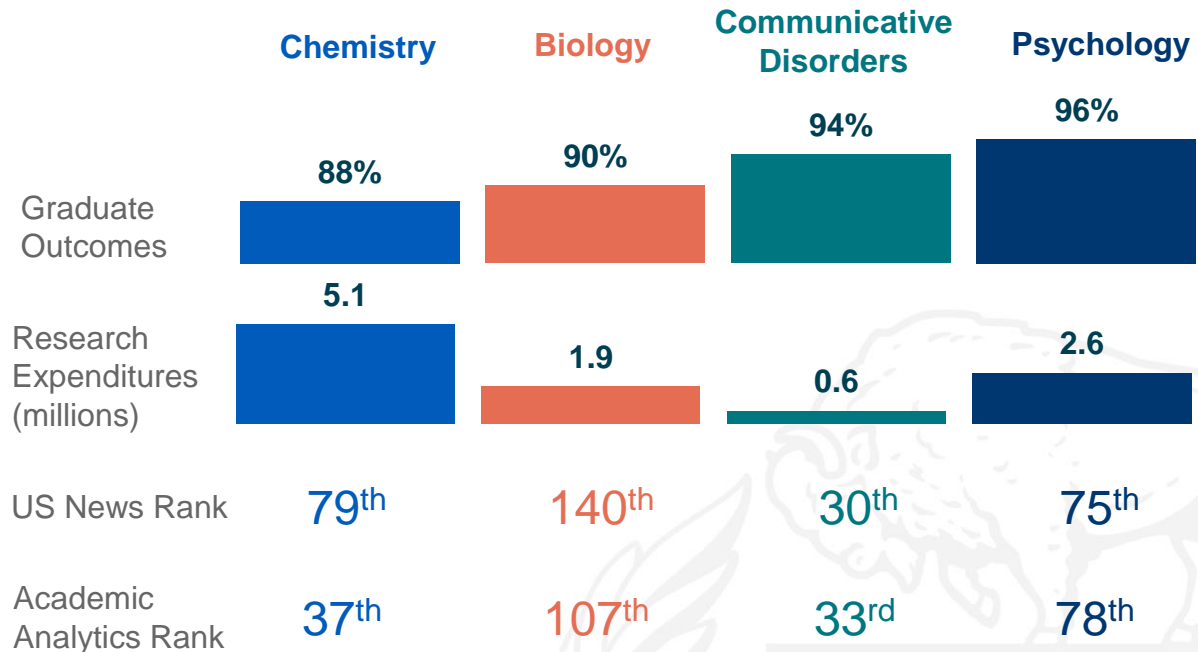
Program rankings
(US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing? Current position or advance, bang for the buck.

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

	Chemistry	Biology	Communicative Disorders	Psychology
Graduate Outcomes	88%	90%	94%	96%
Research Expenditures (millions)	5.1	1.9	0.6	2.6

15

Strengthen disciplinary excellence, already existing? Good to great?

Graduate education focus, not undergraduate, strong in research measures

Program rankings (US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing? Current position or advance, bang for the buck.

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

	Chemistry	Biology	Communicative Disorders	Psychology
Graduate Outcomes	88%	90%	94%	96%
Research Expenditures (millions)	5.1	1.9	0.6	2.6
US News Rank	79th	140th	30th	75th
Academic Analytics Rank	37th	107th	33rd	78th

1846

16

Strengthen disciplinary excellence, already existing? Good to great?

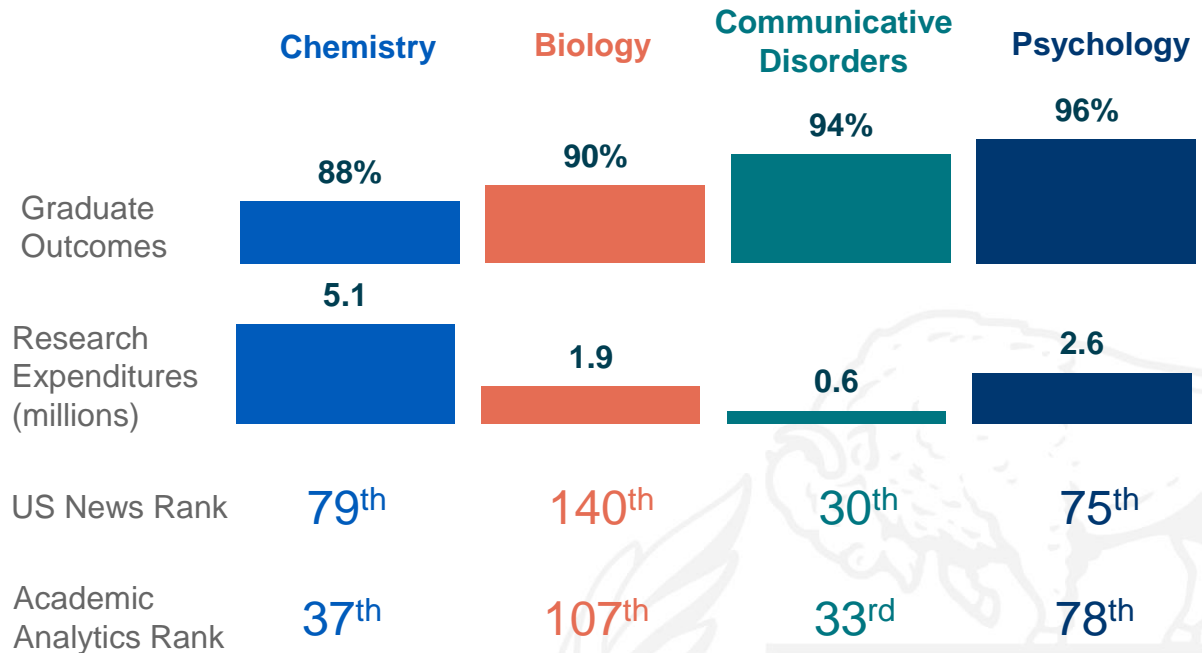Graduate education focus, not undergraduate, strong in research measures
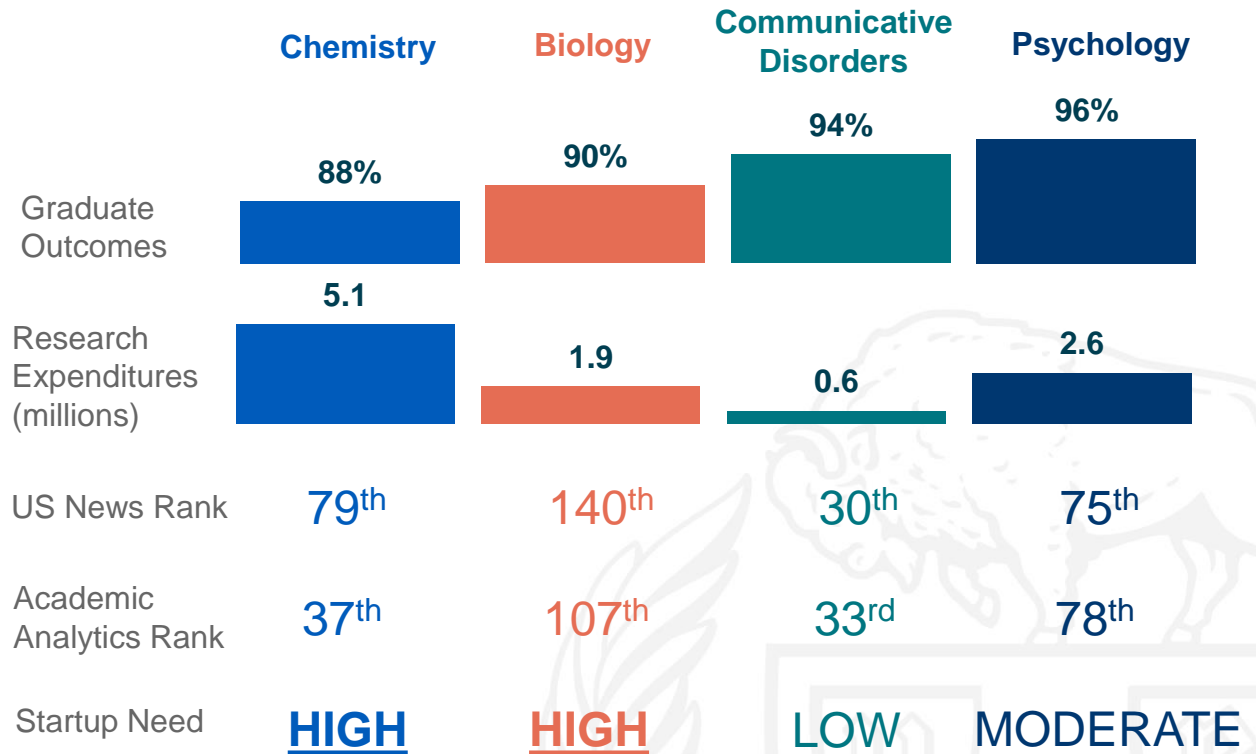
Program rankings
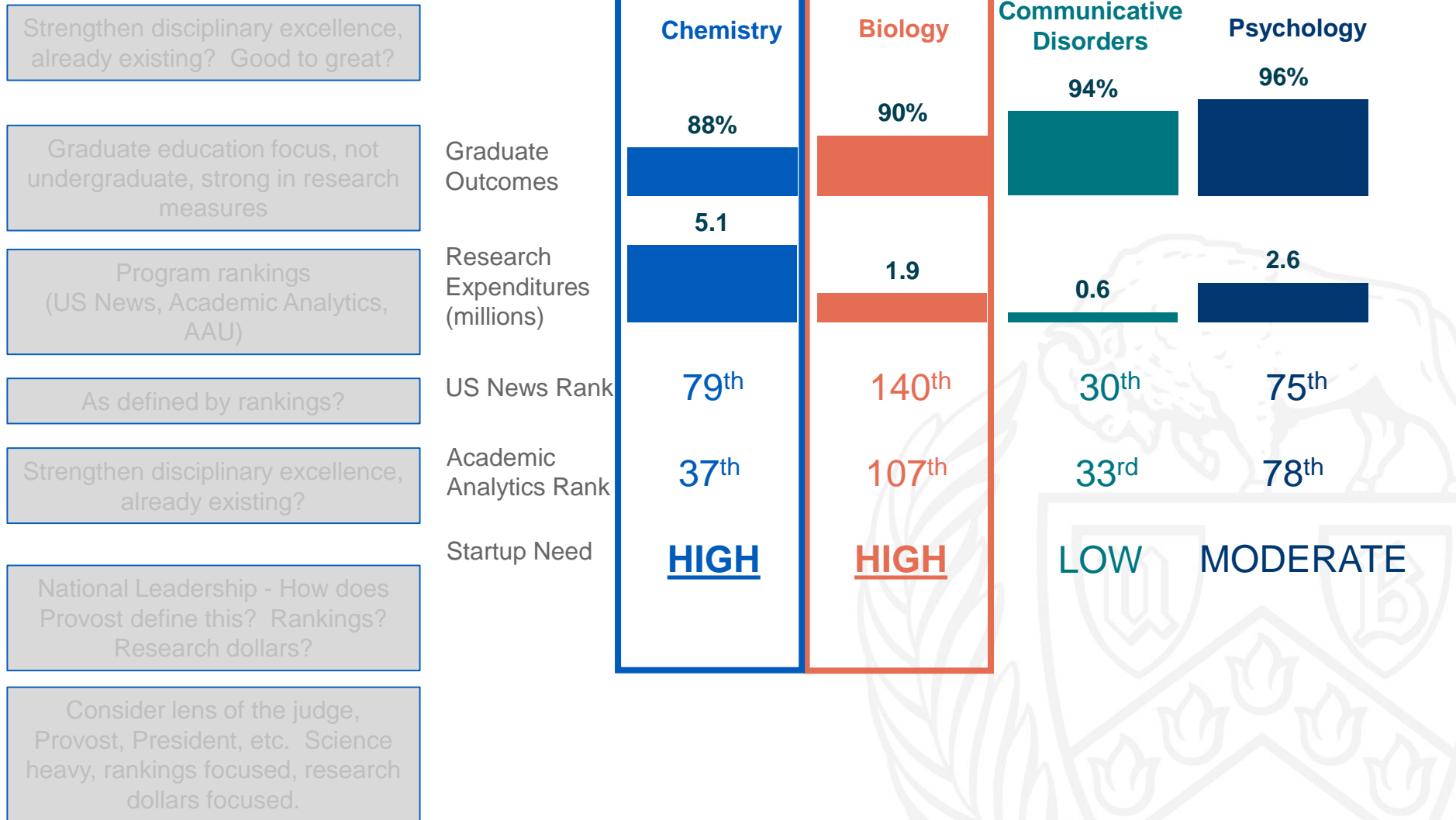(US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing?

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

	Chemistry	Biology	Communicative Disorders	Psychology
Graduate Outcomes	88%	90%	94%	96%
Research Expenditures (millions)	5.1	1.9	0.6	2.6
US News Rank	79th	140th	30th	75th
Academic Analytics Rank	37th	107th	33rd	78th

17

Strengthen disciplinary excellence, already existing? Good to great?

Graduate education focus, not undergraduate, strong in research measures

Program rankings
(US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing?

National Leadership - How does Provost define this? Rankings? Research dollars?
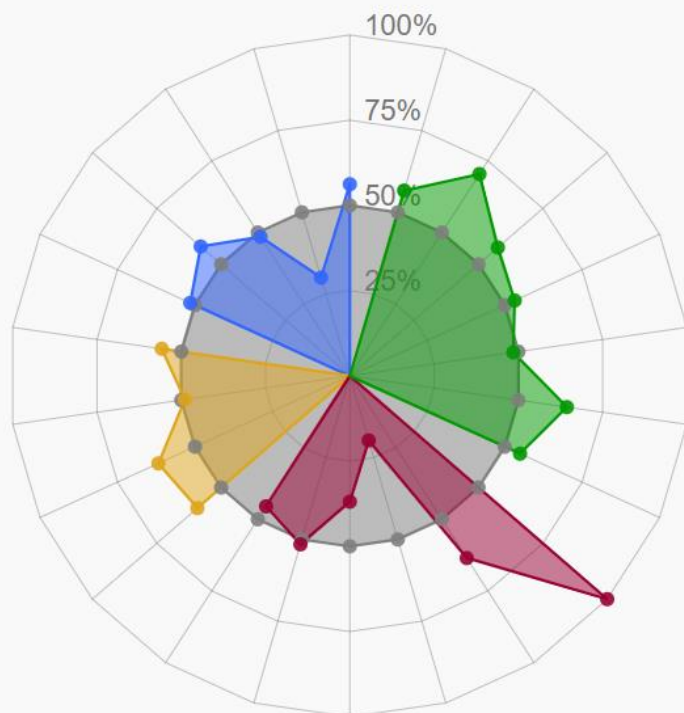
Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.
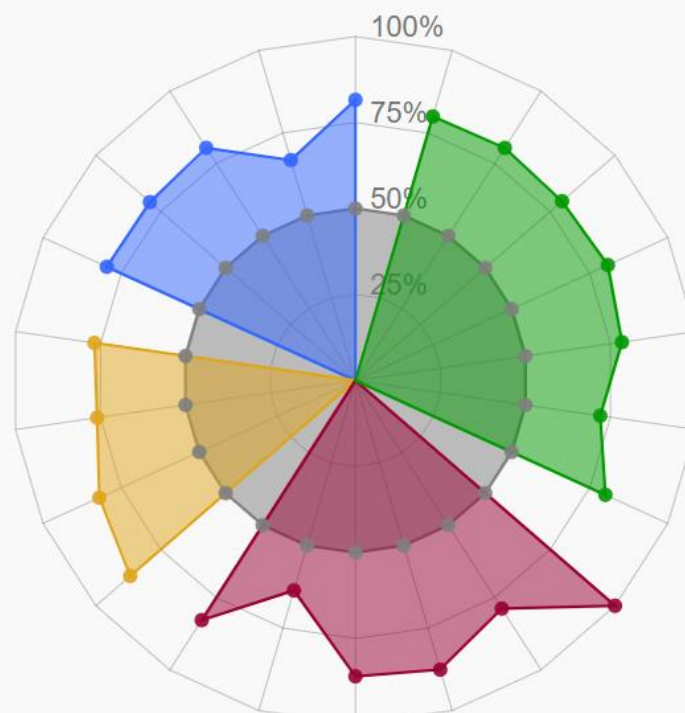
	Chemistry	Biology	Communicative Disorders	Psychology
Graduate Outcomes	88%	90%	94%	96%
Research Expenditures (millions)	5.1	1.9	0.6	2.6
US News Rank	79th	140th	30th	75th
Academic Analytics Rank	37th	107th	33rd	78th
Startup Need	HIGH	HIGH	LOW	MODERATE

18

Strengthen disciplinary excellence, already existing? Good to great?

Graduate education focus, not undergraduate, strong in research measures

Program rankings (US News, Academic Analytics, AAU)

As defined by rankings?

Strengthen disciplinary excellence, already existing?

National Leadership - How does Provost define this? Rankings? Research dollars?

Consider lens of the judge, Provost, President, etc. Science heavy, rankings focused, research dollars focused.

	Chemistry	Biology	Communicative Disorders	Psychology
Graduate Outcomes	88%	90%	94%	96%
Research Expenditures (millions)	5.1	1.9	0.6	2.6
US News Rank	79th	140th	30th	75th
Academic Analytics Rank	37th	107th	33rd	78th
Startup Need	HIGH	HIGH	LOW	MODERATE

19

1846

Unit Overall Research Activity
(Where are they now?)

Biology

Chemistry

Legend:
- Median (gray)
- Articles (blue)
- Awards (yellow)
- Citations (dark red)
- Federal Grants (green)

Collaboration within Department: Biology & Chemistry

Biology

Chemistry

Articles

Books

Conference Proceedings

Grants

Collaboration within UB: Biology & Chemistry

Biology

Chemistry

Articles
Books
Conference Proceedings
Grants
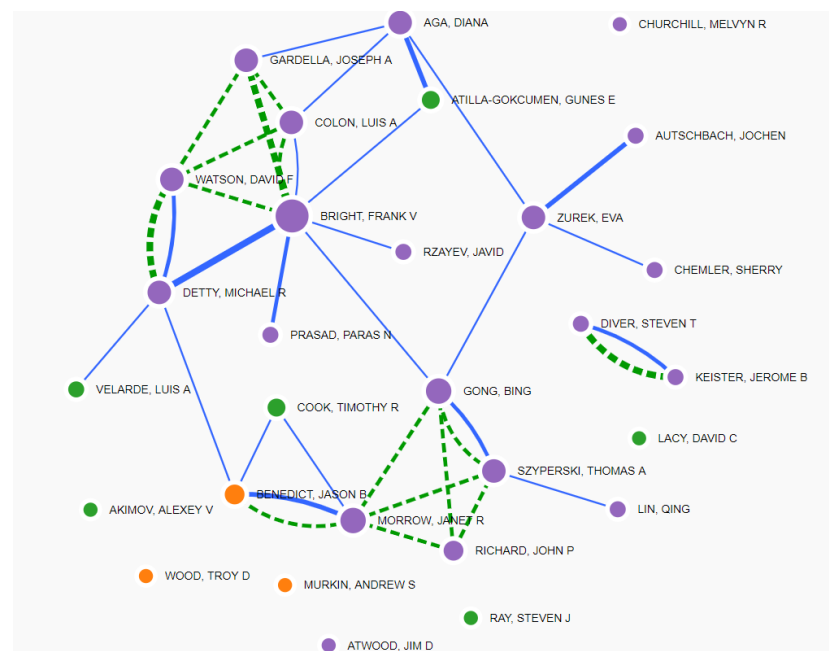
Collaboration Across Institutions: Biology & Chemistry
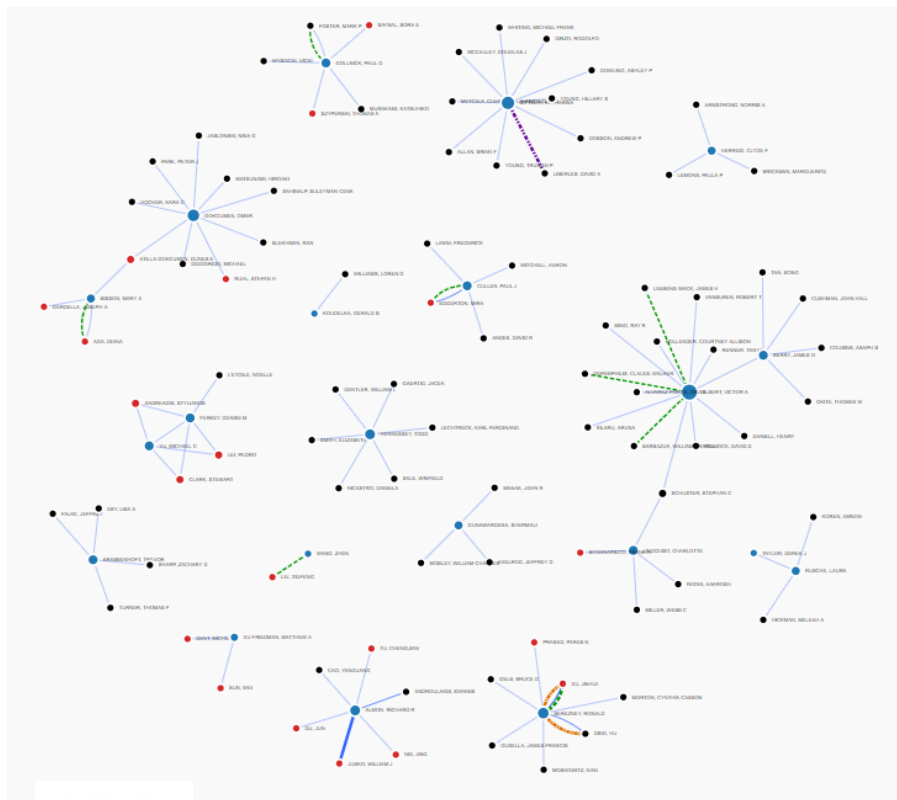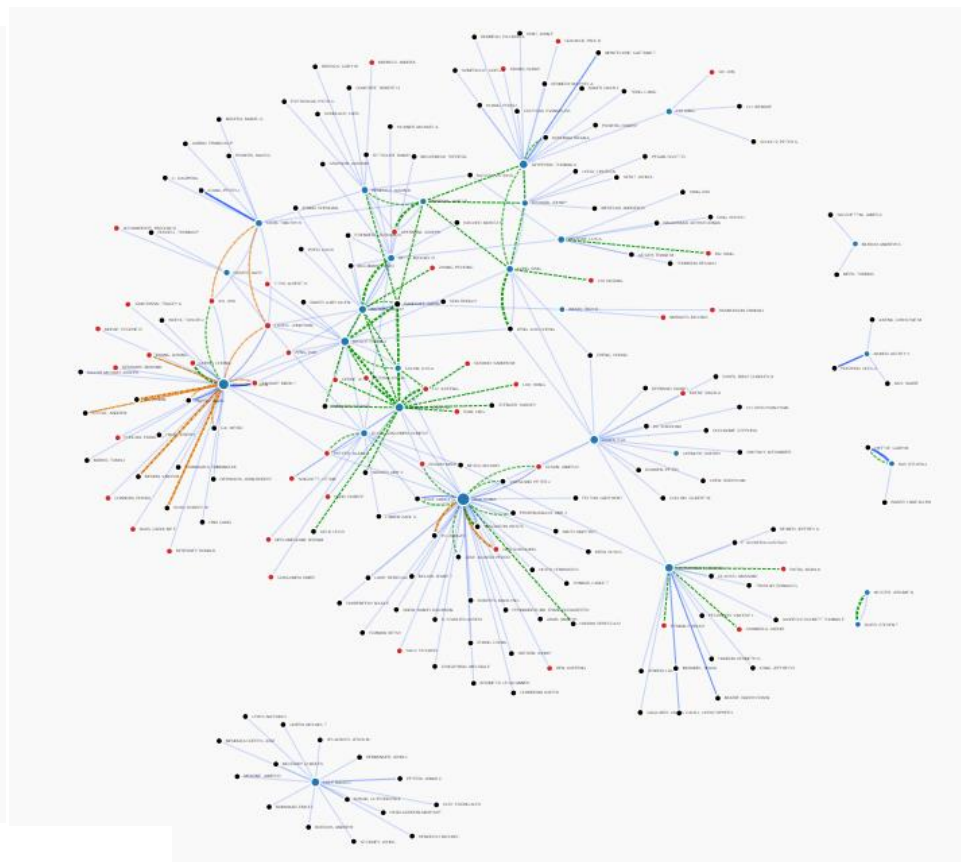
Biology

Chemistry

— Articles
···· Books
··· Conference Proceedings
– – – Grants

Rank-Based Relative Research Activity of Faculty

Biology
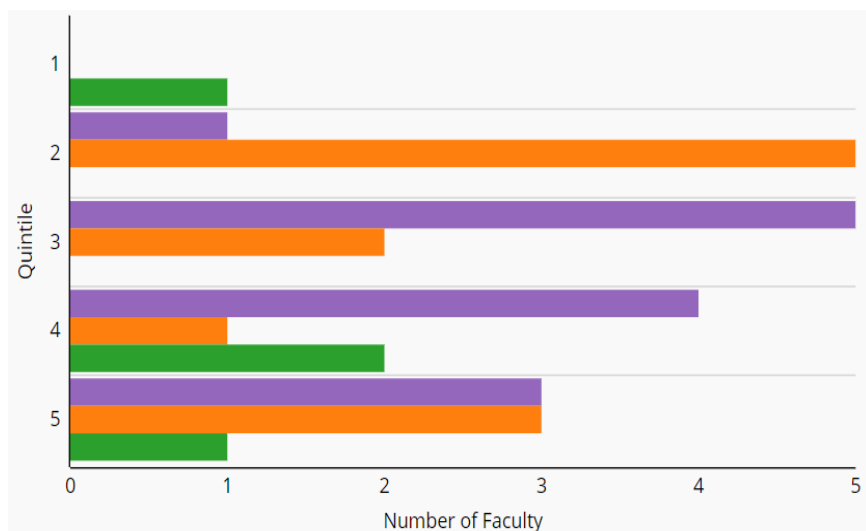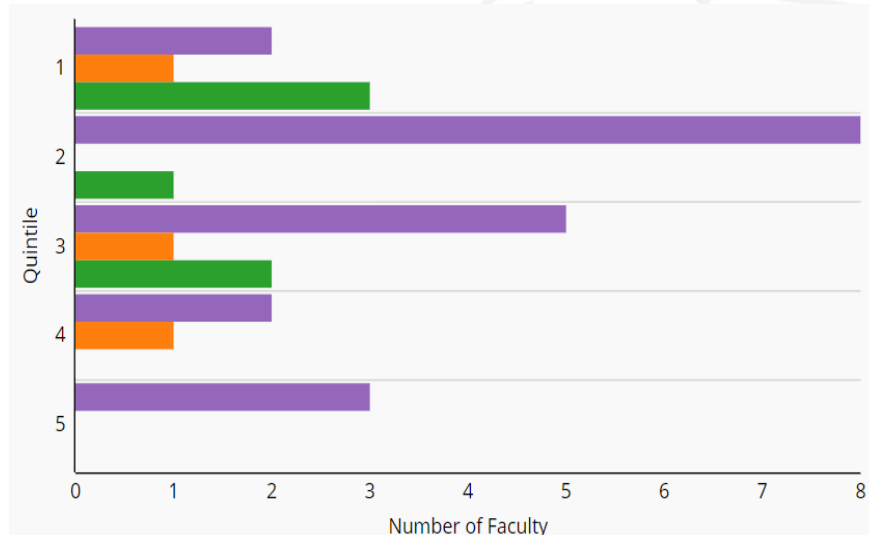
Chemistry

Career Progression

Biology
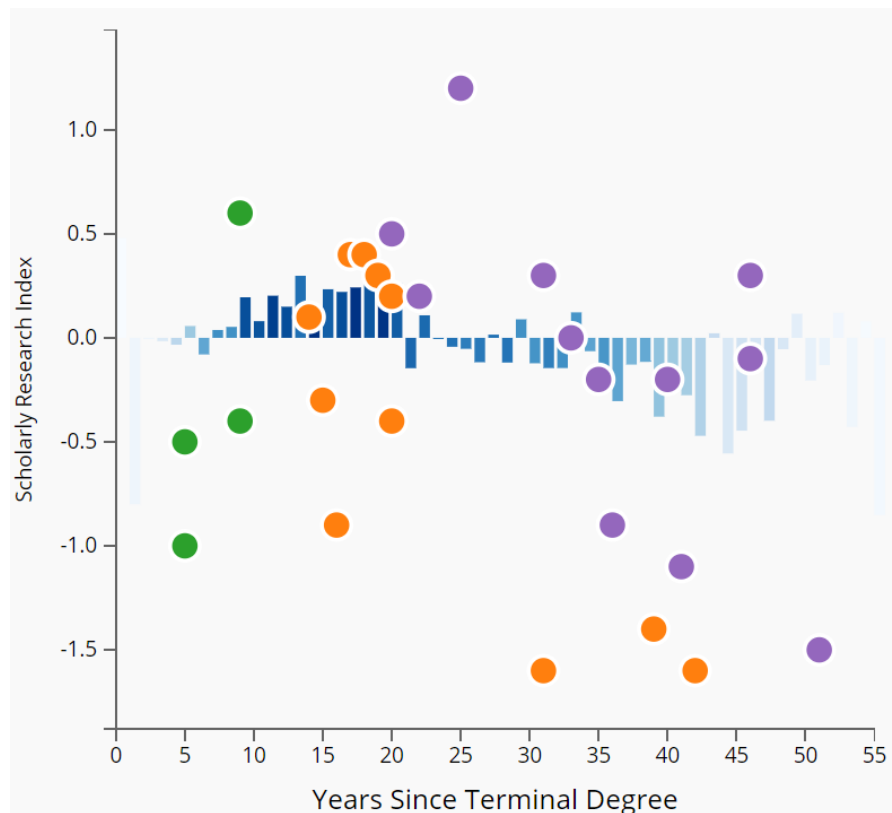
Chemistry
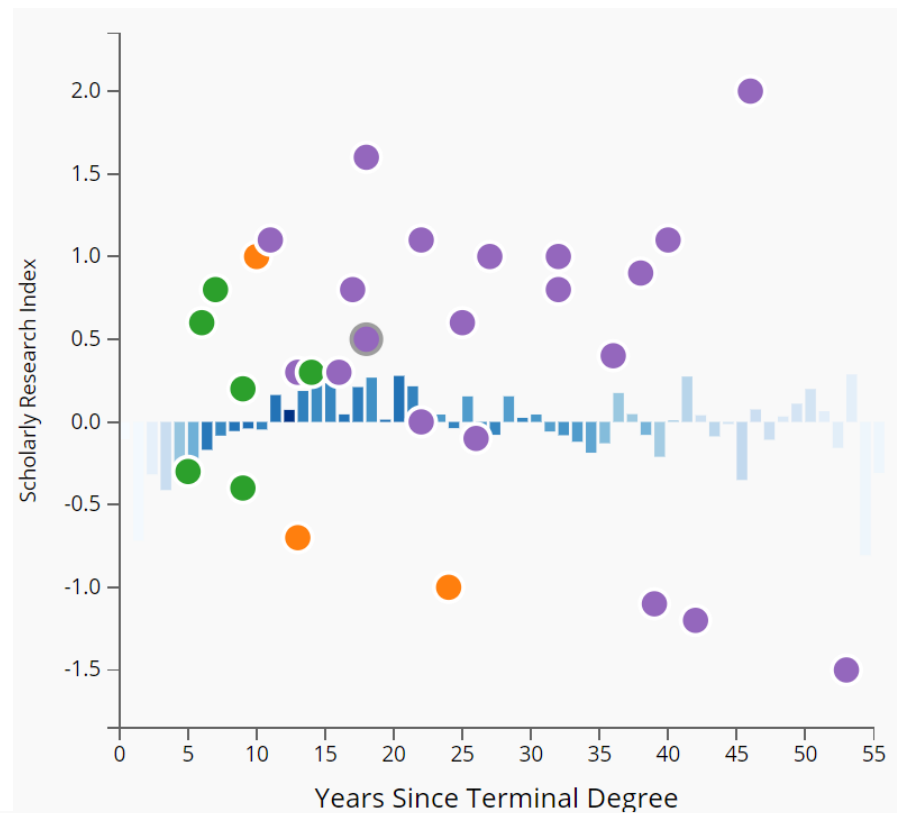
Rationale for Biology Proposal

Change measures that matter to Biologists (grant funding, citations, awards, articles - Academic Analytics Rankings → Increased visibility & perception among leading Biologists. → Rise in US News world report rankings, etc.

Making the argument for new hires

From the Biology department's self study:

- "The fact that ~35% of the faculty have served for over 30 years translates into a [rapidly upcoming opportunity.]"

- "New faculty are the best graduate student recruiters and students tend to join and succeed in these labs."

- Relieve research faculty from heavy teaching loads
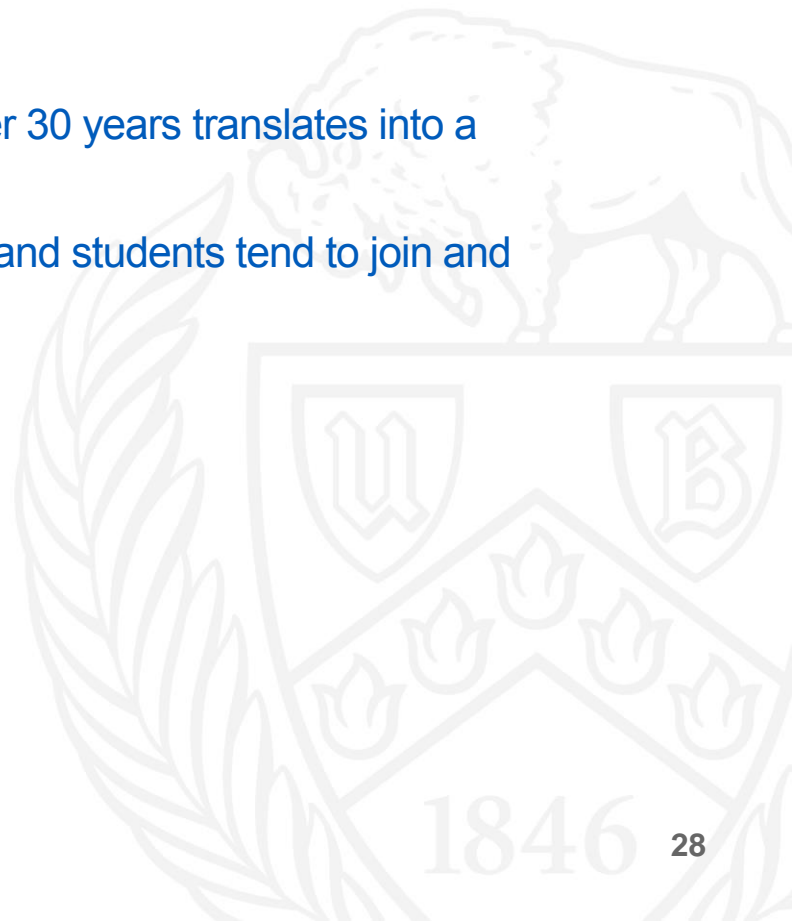
Career Progression & Modeling

Figure 2: Biology Department – Individual Faculty Career Progression vs. Peers (SRI & Yrs. from Term Degree)
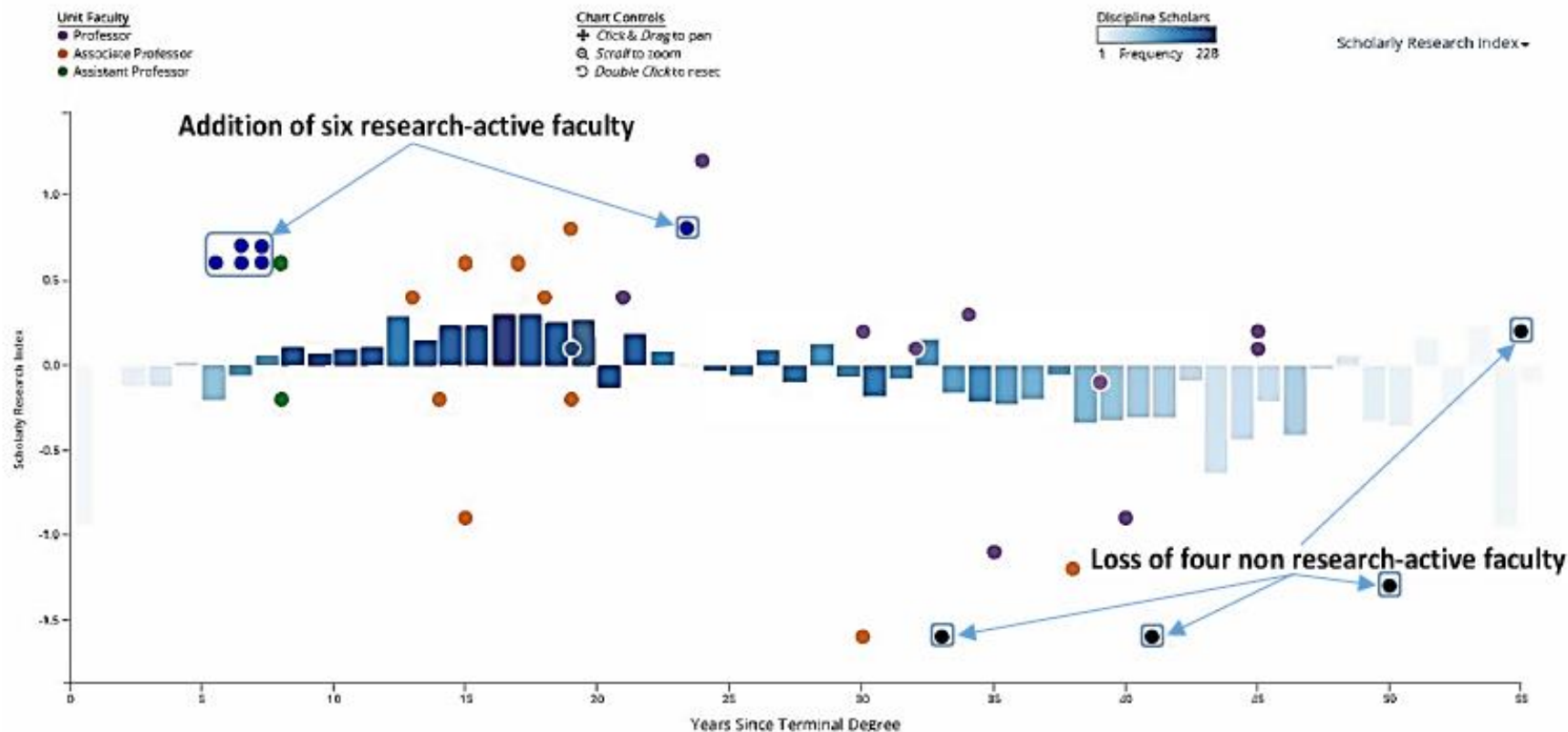
Model out retirements, model in hires

Change in Scholarly Research Index

**Table 2: Biology Department Changes in Rank & Percentile via Academic Analytics**

Measure	Current Rank	Projected Rank	Change	Current %tile	Projected %tile	Change
Scholarly Research Index (SRI)	107	74	+33	53	68	+15

Change in other specific measures

Table 3: Biology Department Changes in Rank & Percentile via Academic Analytics

Measure	Current Rank	Projected Rank	Change	Current %tile	Projected %tile	Change
% Faculty with Article	131	58	+73	43	75	+32
% Faculty with Grant	76	51	+25	67	78	+11
% Faculty with Citation	140	63	+77	39	73	+34
% Faculty with Award	81	54	+27	65	77	+12

Figure 1: Biology Department Changes in Key Productivity Measures vs. Peers via Academic Analytics

Current
Measures of Productivity per Academic Analytics

Projected
Measures of Productivity per Academic Analytics
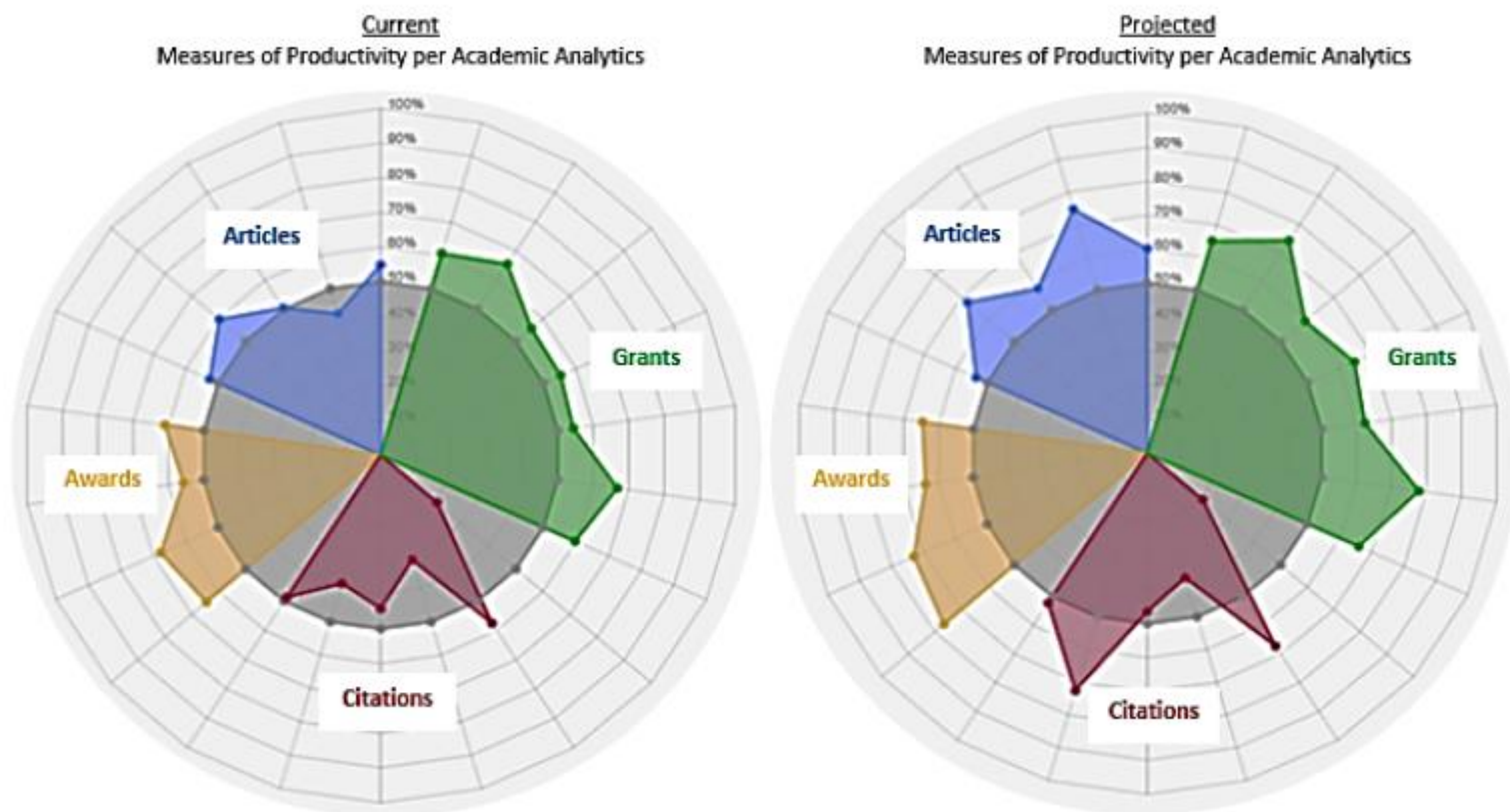
Results from the proposal

Immediate hire lines for 2 faculty (2/3 support from Provost office, 1/3 from College):

Biology assistant or associate professor –gene regulation

Biology assistant or associate professor –genetic adaptation to environment

Future hire lines for 2 faculty (supported by college)

Biology assistant or associate professor – collaborator with above

Biology assistant or associate professor – collaborator with above

SUNY Empire Innovation Program (EIP) hire

Biology professor – sex differences in neurobiology of disease or similar

Questions?

Patrick McDonald

psm6@buffalo.edu

Molly Wilson

mjwilson@academicanalytics.com