

USING TABLEAU TO EXPLORE & REPORT UNDERGRADUATE RESEARCH EXPERIENCES

2022 ConnectUR Annual Conference

Co-Presenters: Craig Zywicki & Amy Childress



Office of Undergraduate Research

6/22/2022 | 1

1

Key Takeaways

Through engaging in this session, participants will:

- Learn about how Tableau may be used to report descriptive statistics about UREs.
- Consider how to adapt (or start) tracking participation to facilitate use of Tableau at their institutions.
- Discover components of their current model they can defenestrate, and replace with better options.



This QR code will take you to the website:

(<https://purdue.edu/undergrad-research/conferences/CUR2022.php>)

Which contains information from multiple ConnectUR presentations by staff in the Purdue University Office of Undergraduate Research.



Office of Undergraduate Research

6/22/2022 | 2

2

The Big Picture: Undergraduate Research within the University

Practices that improve the student experience and persistence (HIPs):

- First-year seminars and experiences
- Common intellectual experiences
- Learning communities
- Writing-intensive courses
- Collaborative assignments and projects
- Diversity/Global learning
- ePortfolios
- Internships
- Capstone courses and projects
- Service learning, Community-based learning
- **Undergraduate research**



6/22/2022 | 3

3

The Big Picture: Office of Undergraduate Research (OUR)

UG Recruitment	Program Support	Consultation	Communication
• OURConnect • Research Roundtables • OUR Scholars • FY URE Program • One-on-One Consultations	• Online Courses • CURE – Purdue Fellows Program • UG Research Conferences • Grant Funding • Seminars • Mentorship • Evaluation & Assessment	• Grant Proposals • Program Design • Program Implementation • Ongoing Program Administration	• Newsletters • Website • Social Media • Course Presentations • Student Organizations



6/22/2022 | 4

4

The Big Picture: Institutional Reporting

Within our context at Purdue University, we prioritize:

- **Assessment/Evaluation:** using data to describe effectiveness of OUR program components, or use assessments to continually improve program effectiveness.
- **Research:** using data used to develop or test theory or concepts, with broader implications possible within or beyond Purdue University.

Institutional reporting includes:

- Tracking undergraduate research participation (students, their mentors, and the experiences).
- Disseminating descriptive information about undergraduate research experiences.



6/22/2022 | 5

5

Why Tableau? Institutional Reporting Answers...

By Student:

- *Who [does, does not] participate in UREs? (Possible breakouts by colleges/schools, demographics, etc).*
- *How many students participated within [academic period, academic year, academic career)?*

By Mentor:

- *Who [does, does not] mentor students in UREs? (Possible breakouts by colleges/schools, ranks/positions, etc).*
- *How many [faculty, staff] mentored within [academic period, academic year)?*
- *Who did I mentor, and for which project(s) within [academic period, academic year, career)?*

By URE (e.g., the project):

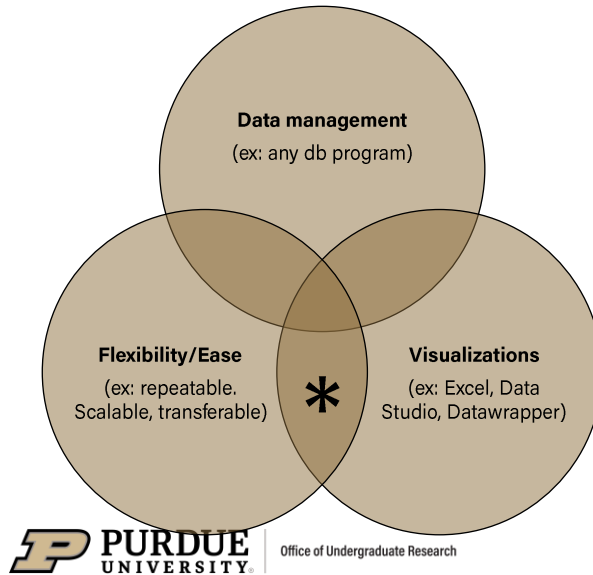
- *What projects are available by type?*
- *How many [students, mentors] participated in projects?*
- *Which experiences received recognition (e.g., an award)?*



6/22/2022 | 6

6

Why Tableau? Compare Features to Needs



Alternatives comparable to Tableau:

- Which characteristics matter to you?
- Which option meets your needs?
- Which options are immediately available to you?

Tableau is not a tool for:

- Statistical analyses (could be used for reporting).
- Qualitative analyses/reporting.

6/22/2022 | 7

7

OUR Datasets used for Reporting Tableau

By Student:

- Key variables
- Personal identifiers
- Personal demographics
- Academic characteristics:
 - At start,
 - At end, and
 - Longitudinal
- [others]
- Pivot of mentor variables
- Project variables

By Mentor:

- Key variables
- Personal identifiers
- Personal demographics
- Position characteristics
- [others]
- Pivot of student variables
- Project variables

Project/Experience Data:

- Key variables
- Group/Org
- Title
- Abstract
- When (e.g., term or start/end dates)
- [others]
- Pivot of student variables
- Pivot of mentor variables

Typical Key Variables: Unique IDs and academic period used to distinguish unique cases.

6/22/2022 | 8

8

Sample Data Collection Strategies

Sources:

- OUR Programs:
 - Applications
 - Attendance/Registration
 - Artifacts
- Institutional:
 - Registrar (student and course)
 - HR (employment)
- Campus Partners:
 - Use whatever they obtain.
 - Use reporting to suggest why/how to improve their data collection.

Timing:

- Distinguish data needed withing time frames:
 - Periods/terms
 - Annual
 - Lifetime
- Identify and use cycles:
 - Census
 - Term end
 - Key events

Reflection: Challenges and Limitations

- Missing (for OUR, 2018 to present is reliable)
- Bad data (e.g., not identified)
- Messy data
- Underreporting:
 - "At least # students participated in an undergraduate research experience..."
 - "Based on data available we know..."
- Sustainability/Repeatability, for example, who:
 - Understands the data (by variables or cases)?
 - Can manage the data?
 - Can use the data in reporting (e.g., know Tableau)?

Reflection: Recommendations

- Identify your AER and reporting expectations.
 - Consider how each informs the other; avoid duplication of efforts.
- Identify and address your challenges and limitations.
- If data not reliable, create a new phase of data collection/reporting.
 - "Since 2018,...."
- Find campus partners and collaborate.
- Tableau visualizations time consuming, but worth the effort for:
 - Cyclical reporting
 - Repetitive or breakout reporting
- What's next for us with...
 - ...data:
 - Continuous improvements in collection.
 - Collaborating with new Office of Experiential Education.
 - ...institutional reporting:
 - Integrating more descriptives/options.
 - Online dissemination (exploratory dashboards and website embedding).
 - ...research:
 - Creating UREs to work with OUR data.
 - Grant proposals and dissemination.

