Meeting Demand Through Process Improvement

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About Tufts OIR

• Tufts University
  • Private research university
  • Undergraduate, graduate, and professional students
  • Ten schools
  • Approximately 11,800 students

• Office of Institutional Research
  • Under the Provost’s Office
  • 9 staff members
Core OIR Activities

- Survey research
- Internal and external data requests
- Mandated reporting & accreditation
- University- and school-level dashboards
- Fact Book
- Committee work
Survey Projects

• In 2018-19, OIR logged nearly 100 survey related projects
  • Design, administer and analyze 40-50 surveys per year
  • Survey consulting
  • Longitudinal analysis
  • Ad hoc reporting

• Summary reports are generated for all surveys OIR administers
Data Requests

- In 2018-19, OIR completed approximately 170 data requests

- Additional 5-10 large “data projects” also done each year

- Range from simple requests completed in less than an hour to projects requiring several months to complete
Data Demands at Tufts

• Demand for data at Tufts has significantly increased over the past 5 years
  • Requests are more complex and more frequent
  • Financial challenges have led to a greater need for “live” data

• As other offices become overwhelmed with data requests, they turn to OIR for help

• Multiple offices provide data support to university stakeholders
Data Challenges

• No formal data governance program
  • Unregulated data access
  • Inconsistent data definitions

• Decentralized university
  • 8 Registrars and Admissions Directors
  • Schools have autonomy when selecting application systems
  • Varied business processes

• Significant turnover in senior administration
Risks of Unmet Demand

- When OIR cannot meet its demand, this does not prevent others from acquiring data elsewhere
  - Offices have started hiring their own data analysts
  - Same requests are made to multiple offices

- This increases the risk of unintended negative outcomes
  - Data breaches
  - Inconsistent reporting
  - Privacy violations
  - Misinterpretation of information
To continue operating as a leading resource for information on campus and minimize the aforementioned risks, our IR office has focused its efforts on three main areas:

- Self-Service Tools
- Documentation
- Process Automation
Self-Service Tools

- Our office has been able to reduce the number of data requests by providing tools that allow clients to access information on demand.
Deans’ Data Hub
Table of Contents

Admissions Trends
This dashboard provides trends data for various admissions metrics. The dashboard can be filtered by school, subdivision, degree type and academic plans and can be further broken down by various sub-categories. Trends data are updated each fall for completed admissions cycles.

Enrollment Trends
This dashboard shows trends in student headcounts over time. The dashboard can be filtered by school, subdivision, academic year, degree type and academic plans and can be further broken down by various sub-categories.

Course Registration Trends
This dashboard shows trends of classes and enrollments over time. The dashboard can be filtered by school, academic year, and type of class.

Degrees Awarded Trends
This dashboard shows trends of graduating students over time. The dashboard can be filtered by school, subdivision, academic year, degree type and academic plans and can be further broken down by various sub-categories.

Research Doctorate Graduation Rates & Time to Degree
This dashboard shows completion rates and median time-to-degree for Tufts’ doctorate programs. The dashboard can be filtered by school and academic plans.

Academic Analytics
The below link redirects users to school-level dashboards created by Academic Analytics. These are separate reports external to the Deans Data Hub and are updated annually by Academic Analytics. Users must have access to Academic Analytics in addition to the Deans’ Data Hub to access these reports.
Key Outcomes

• About 500 views to Fall Enrollment Calculator in the past year

• Data analysts now have on-demand access to clean, user-friendly data sets

• Several dashboards are accessed regularly by multiple users; many with more than 1000 views in the past year

“You have no idea how much access to these dashboards will free up time for all of us.”

“This is really amazing and is going to transform the way we work…”
Improving the office’s documentation helps us provide more consistent and timely information to stakeholders:

- Documentation required for all projects
- Internal data dictionaries
- Improved footnotes and annotations
- Standardized office file storage
- Templates for documenting processes
- Training guides for student research assistants
Standardized File Storage

• Documentation folder

• Standardized folder structures
Documentation
Goal is: Reading through will give you all the information you need to know about what was requested, how the request was done, how to update in the future

Background information
☐ Requestor Name
☐ Requestor Title
☐ Date requested
☐ Date due
☐ Date Completed
☐ What is requested? Why is it being requested (if available)?
☐ Is this request for internal or external purposes?
☐ If external, what purpose:
☐ If external, are definitions/instructions available? (If yes, save in Documentation/ Communication folder)
☐ Is this or will this be a recurring report?
☐ If recurring, is there any relevant history?

Data Source Used
☐ Describe data source used

Method/Process
☐ Describe method/process to come up with final numbers.
☐ Describe all manual data manipulations in enough detail that they can be recreated
☐ Steps for updating

Review/Checking
☐ Data/Process Reviewed by:
  ☐ Date Reviewed:
☐ Documentation Reviewed by:
  ☐ Date Reviewed:
☐ Any notes from review:
Training Guides

- With detailed training guides, student research assistants can now produce complete survey summary reports.
Key Outcomes

• Cyclical projects with thorough documentation take less time to complete each year

• Student research assistants can now independently accomplish more complex tasks

• Staff turnover has less impact on office productivity

• Training for new staff members has improved significantly
Process Automation

- Our IR office has been automating processes by leveraging our technological resources
For at least 15 years, OIR was coding open-ended survey responses using FileMaker

- Slow, cumbersome and manual process
- Volume of open-ended responses has been increasing; In 2017-18, more than 90,000 open-ended responses were collected and 70% of these were coded

Coding comments is a key component of our survey reporting; clients expect it and rely upon it
Advantages of using a dedicated qualitative analysis program

| User-friendly | Easy to edit, combine, and split categories  
|               | Tools to view summary of coded data throughout coding process |
| Reduces error | Straightforward coding layout and setup  
|               | Minimal data preparation |
| Standardization | Easy to load categories from previous years, other surveys, or other questions on same survey |
| Communication | Annotations and memos allow analysts and RAs to provide and implement feedback |
| Interactive | Engaging coding tools (various ways of viewing data, coding, and reviewing work) |
| Versatile | Supports a variety of qualitative analysis tools/methods |
OIR has moved many cyclical data requests from Excel to Tableau to allow for improved report automation

- Many projects can now be completed by simply updating the relevant data source

Example: Annual address reporting requires significant data cleaning/manipulation

- Data cleaning is completed using Tableau string calculations
- Process has gone from taking days to hours
R and Qualtrics

- With the help of a student research assistant, OIR built an R package to analyze Qualtrics survey data
Survey Summary Reports

- Reports include:
  - Demographics of survey population
  - Response frequencies for all closed-ended questions
  - Appendices containing full-text responses for all open-ended questions
    - Often include tables of coded comments as well
  - Often create multiple summary reports for each survey for different population groups
    - For example, created 56 summary reports for Graduate Student Exit Survey last year
QualtricsTools

• What can the QualtricsTools package do?
  • Automatically generate frequency reports of closed-ended questions
  • Table responses to open-ended questions
  • Create split reports for subgroups (e.g. school and department level reporting)
  • Reshape data for Tableau

• User-friendly interactive app; requires minimal R experience to run
Automating with Python

- Python is a powerful, easy to learn programming language

- Our office has been using Python scripts to...
  - Generate reports
  - Interact with the Qualtrics API
  - Clean qualitative data
Generating Reports with Python

- Example: Every year, seniors are asked to identify three people who made a significant impact on them during their time at Tufts as well as identify an excellent course.
- Approximately 1,500 reports are generated from these data.
Qualtrics API

- Daily Qualtrics emails sent automatically to IR staff
- Automatically export Qualtrics csv files
Python String Cleaning

<table>
<thead>
<tr>
<th>ResponseID</th>
<th>Name (Original)</th>
<th>Name (clean)</th>
<th>Score</th>
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VBA Macros

- OIR uses macros in Microsoft to format reports
  - Consistent look and feel across our reports
  - Analysts are spending less time on formatting, more time on analyzing
Key Takeaways

- Research Assistants are working independently on more challenging projects
- Staff are less inundated with simple data requests and can focus efforts on more complex data projects
- Projects that previously took months to complete, can now be completed in days
- Training for new staff members is more effective
- Projects are more evenly distributed among staff
- OIR is working more efficiently while consistently producing accurate reports