Meeting Demand Through Process Improvement

Christina Butler, Assistant Director
Tufts University Office of Institutional Research

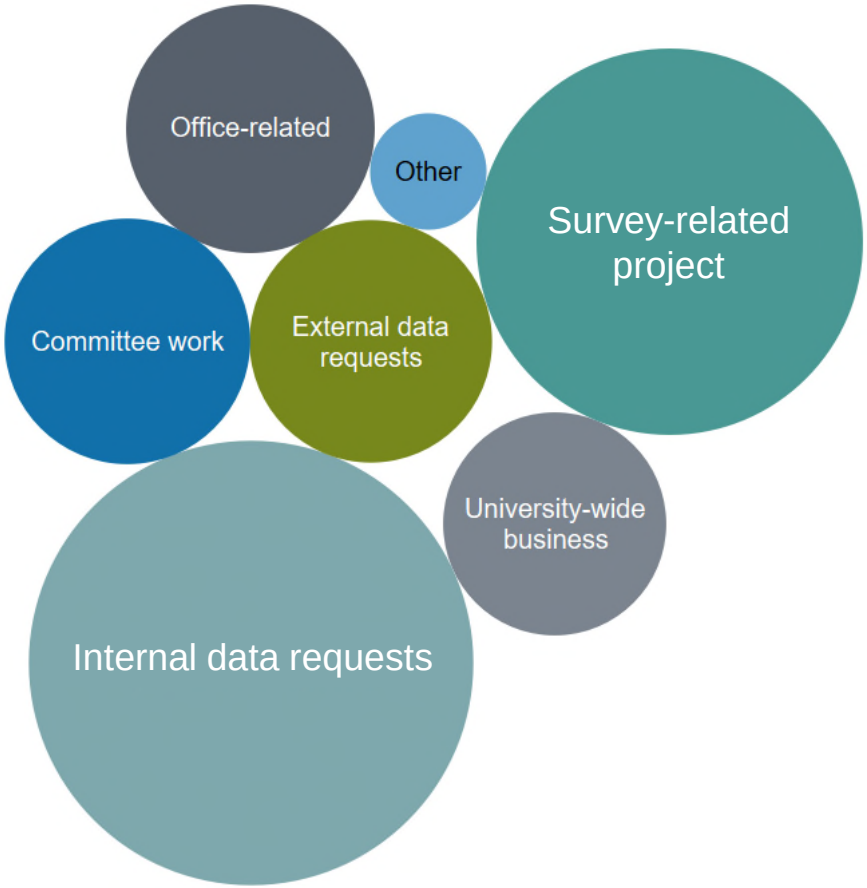
46th NEAIR Annual Conference, Newport, RI
November 4, 2019

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

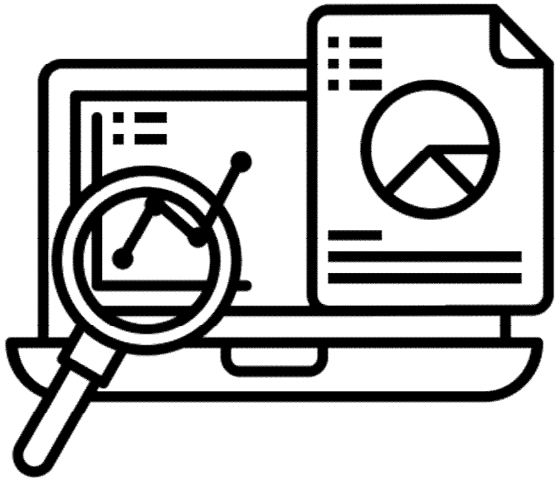


Survey Projects

- 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

OIR Process Improvement

- 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:

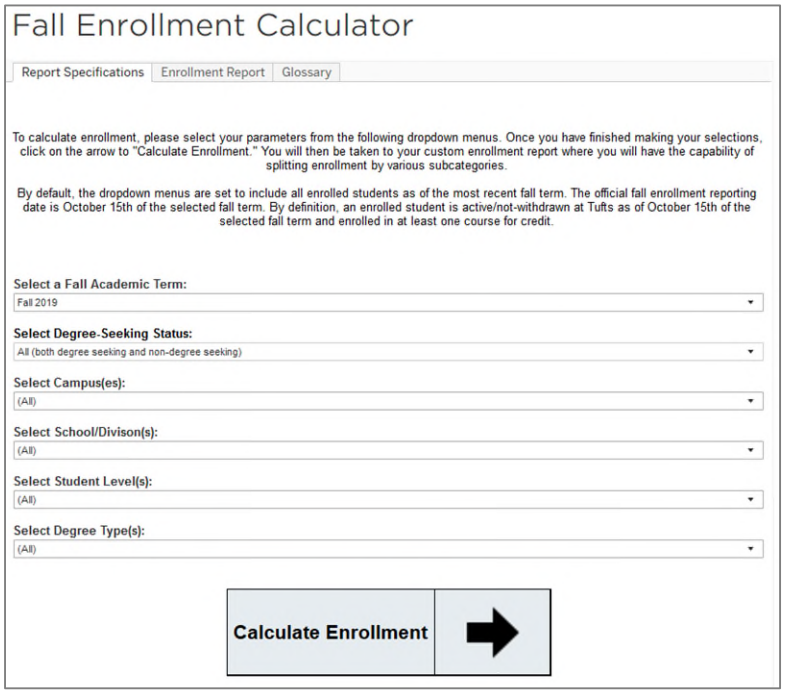
Self-Service Tools

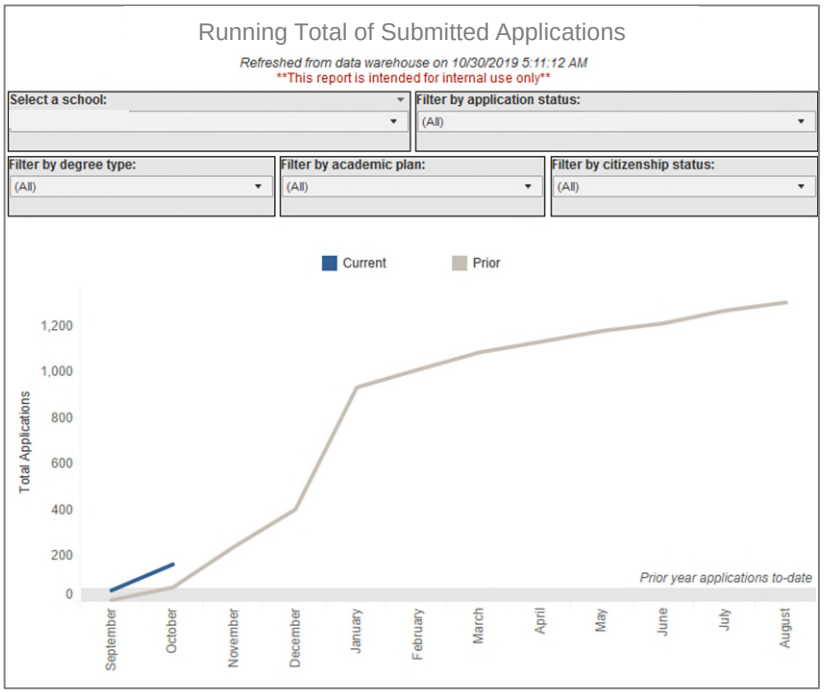
Documentation

Process Automation

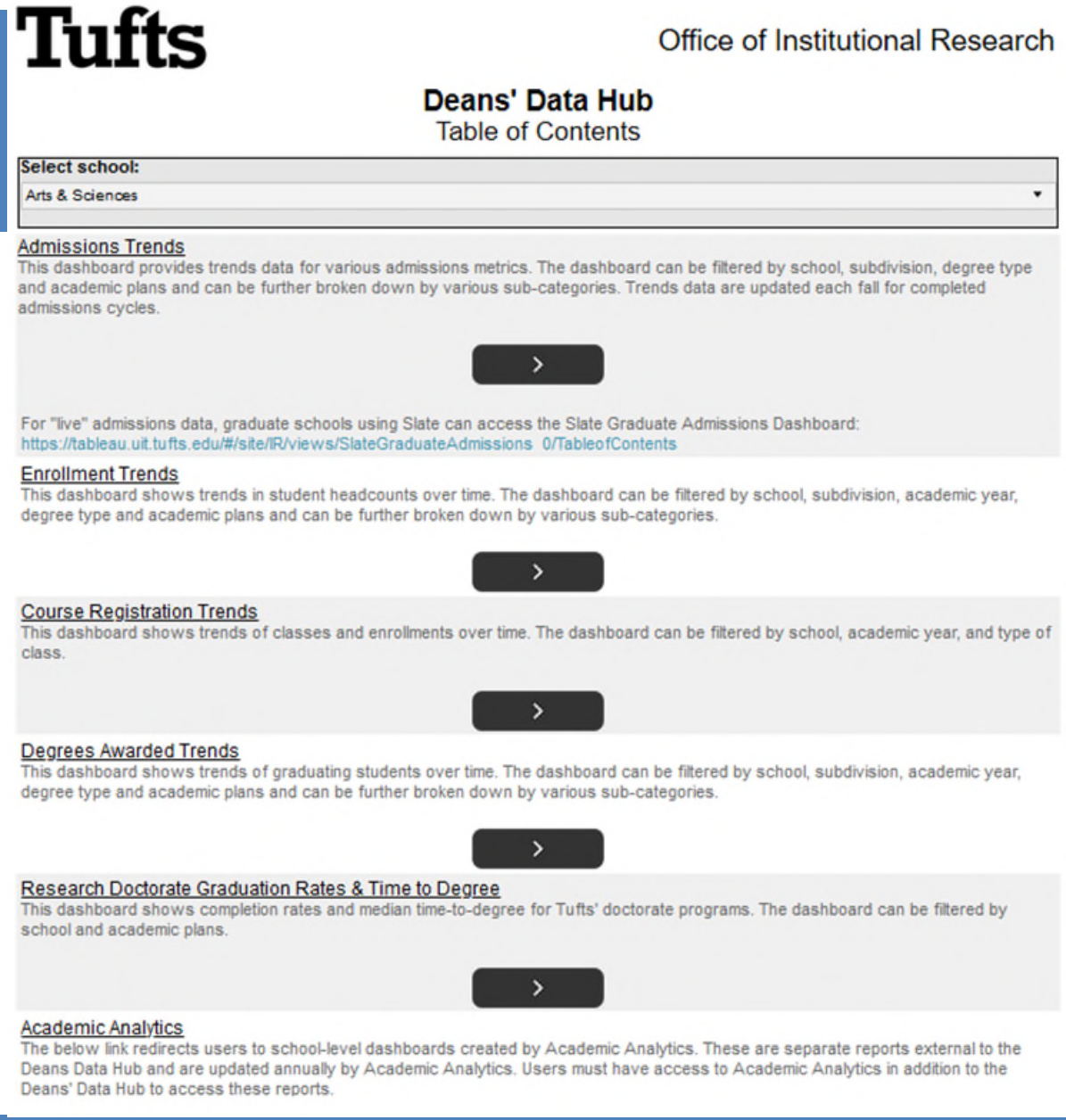
Self-Service Tools

- Our office has been able to reduce the number of data requests by providing tools that allow clients to access information on demand





Tufts Office of Institutional Research


Tufts
Office of Institutional Research
Deans' Data Hub
Table of Contents
Select school:
Arts & Sciences
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.
For "live" admissions data, graduate schools using Slate can access the Slate Graduate Admissions Dashboard:
https://tableau.uit.tufts.edu/#/site/IR/views/SlateGraduateAdmissions_0/TableofContents
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

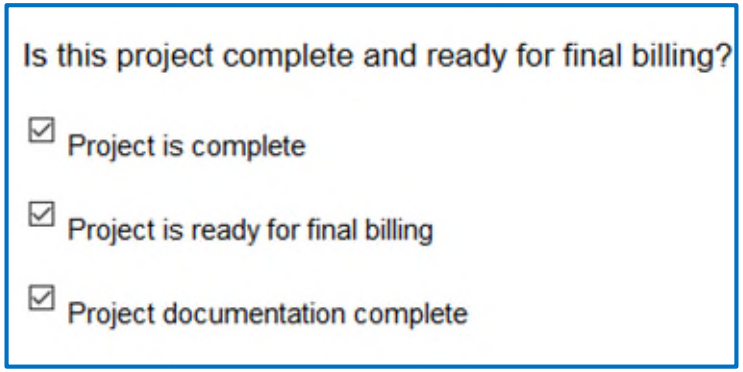
- About 500 views to Fall Enrollment Calculator in the past year
- Data analysts now have on-demand access to clean, user-friendly data sets
- Several dashboards are accessed regularly by multiple users; many with more than 1000 views in the past year

"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…"

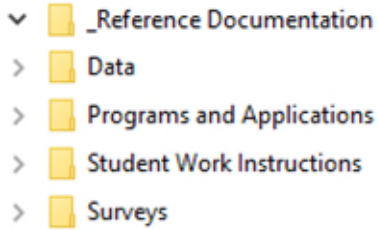
Documentation

- 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

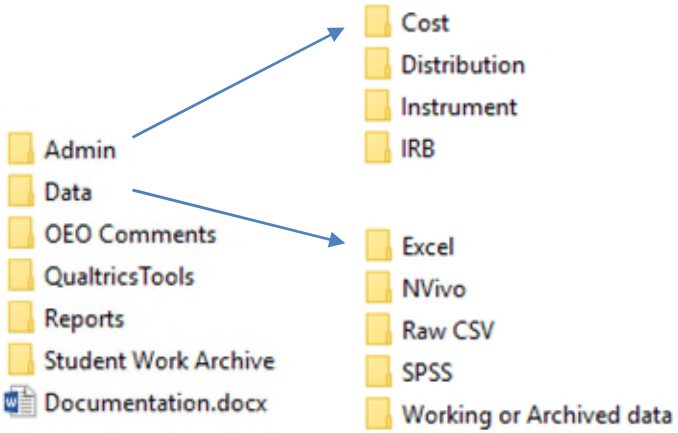


Standardized File Storage

- Documentation folder



- Standardized folder structures



Documentation Templates

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

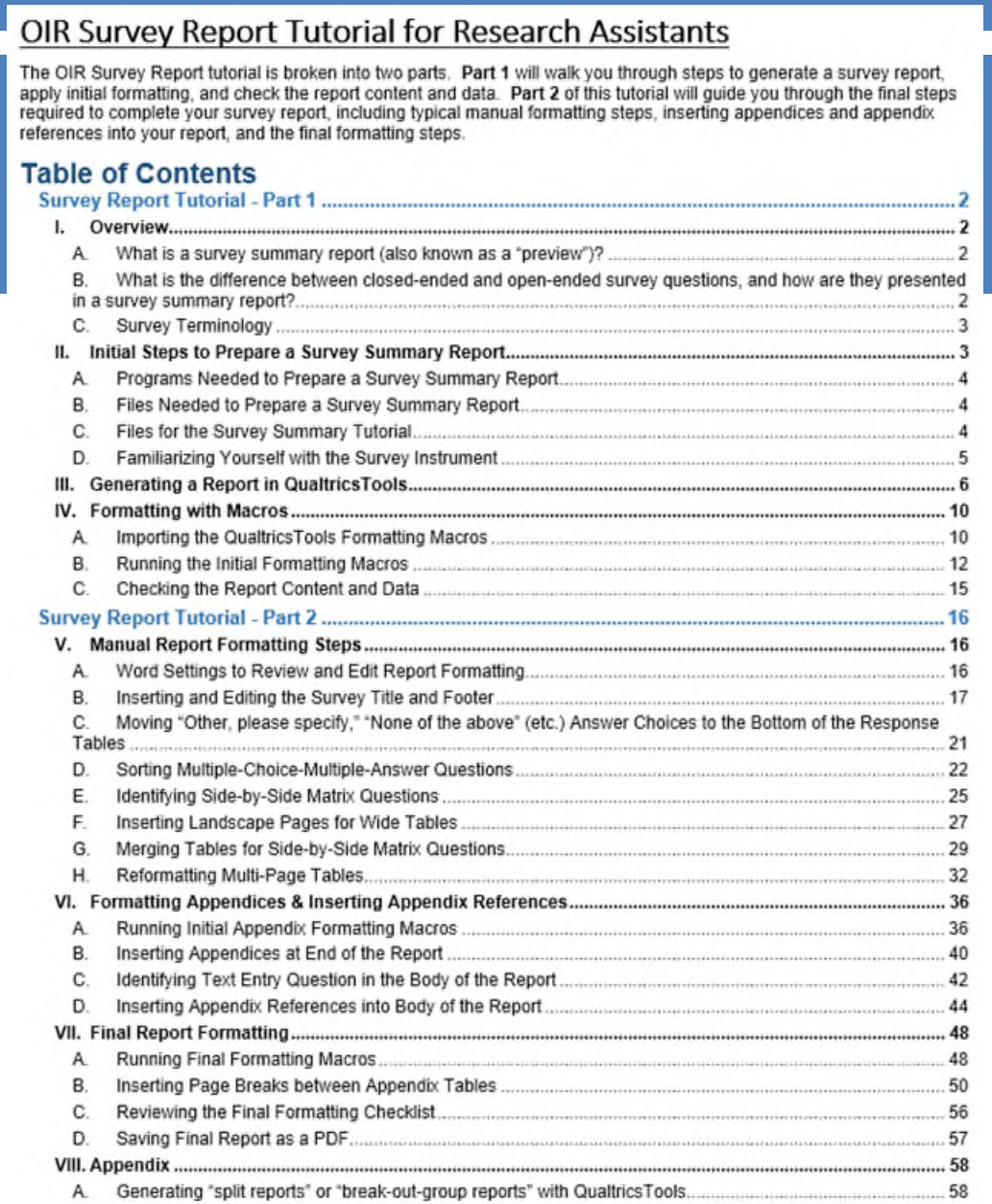
- ☐ Describe method/process to come up with final numbers.
- ☐ Describe all manual data manipulations in enough detail that they can be recreated
- ☐ Steps for updating

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



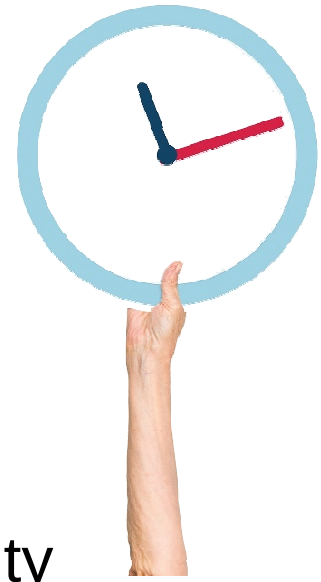
OIR Survey Report Tutorial for Research Assistants

The OIR Survey Report tutorial is broken into two parts. **Part 1** will walk you through steps to generate a survey report, apply initial formatting, and check the report content and data. **Part 2** of this tutorial will guide you through the final steps required to complete your survey report, including typical manual formatting steps, inserting appendices and appendix references into your report, and the final formatting steps.

Table of Contents

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

FileMaker → NVivo

- 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

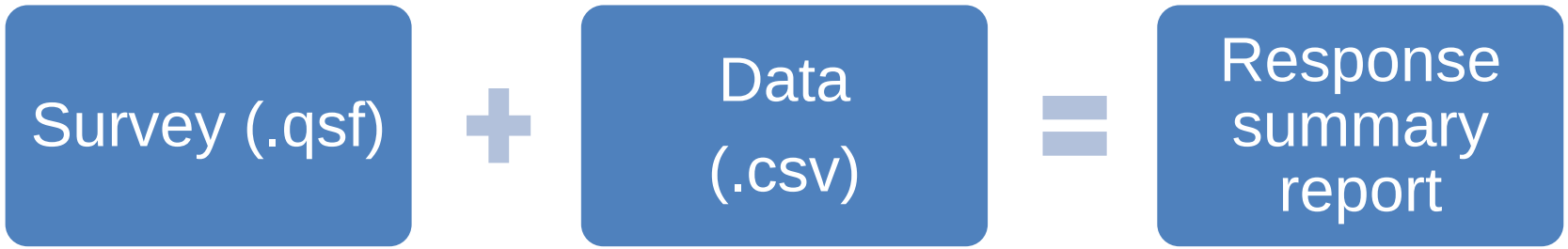
User-friendly	• Easy to edit, combine, and split categories • Tools to view summary of coded data throughout coding process
Reduces error	• Straightforward coding layout and setup • Minimal data preparation
Standardization	• Easy to load categories from previous years, other surveys, or other questions 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

Excel → Tableau

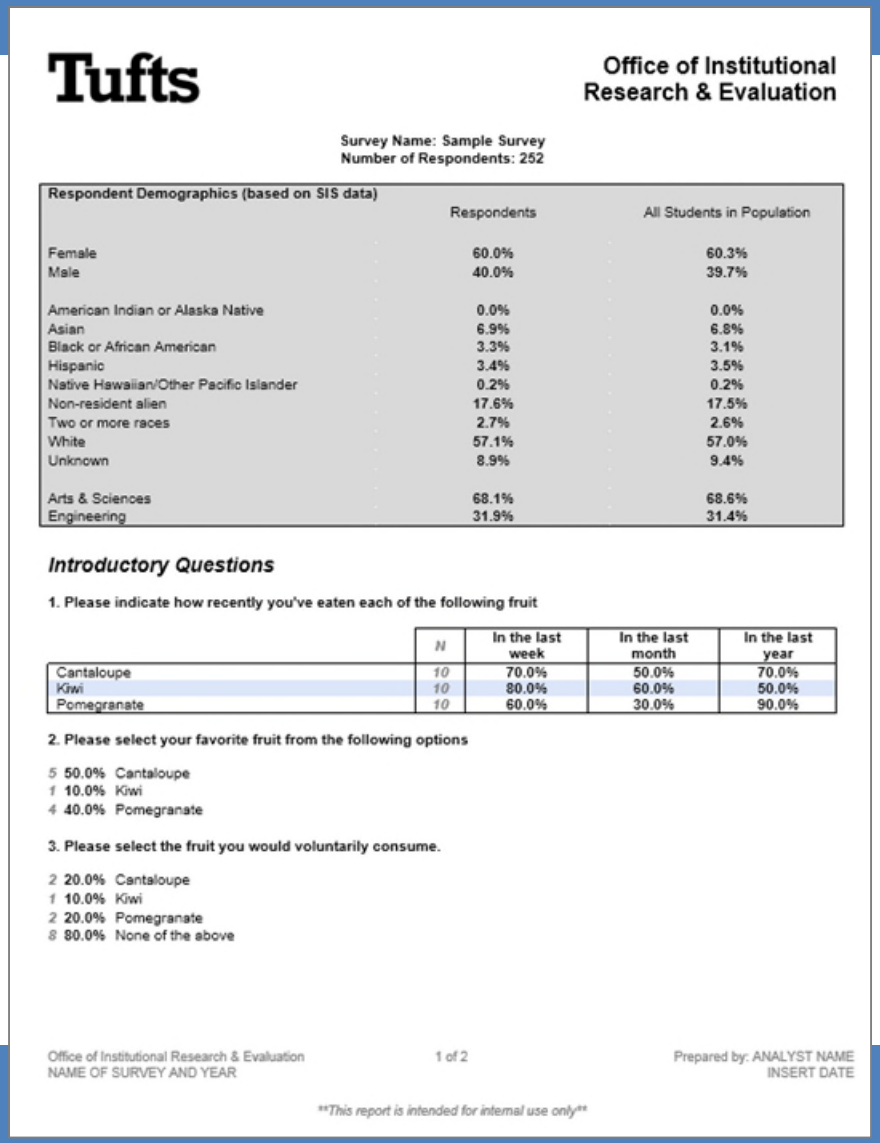
- OIR has moved many cyclical data requests from Excel to Tableau to allow for improved report automation
  - Many projects can now be completed by simply updating the relevant data source
- Example: Annual address reporting requires significant data cleaning/manipulation
  - Data cleaning is completed 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



Tufts

Office of Institutional Research & Evaluation

Survey Name: Sample Survey
Number of Respondents: 252

Respondent Demographics (based on SIS data)	Respondents	All Students in Population
Female	60.0%	60.3%
Male	40.0%	39.7%
American Indian or Alaska Native	0.0%	0.0%
Asian	6.9%	6.8%
Black or African American	3.3%	3.1%
Hispanic	3.4%	3.5%
Native Hawaiian/Other Pacific Islander	0.2%	0.2%
Non-resident alien	17.6%	17.5%
Two or more races	2.7%	2.6%
White	57.1%	57.0%
Unknown	8.9%	9.4%
Arts & Sciences	68.1%	68.6%
Engineering	31.9%	31.4%

Introductory Questions

1. Please indicate how recently you've eaten each of the following fruit

	N	In the last week	In the last month	In the last year
Cantaloupe	10	70.0%	50.0%	70.0%
Kiwi	10	80.0%	60.0%	50.0%
Pomegranate	10	60.0%	30.0%	90.0%

2. Please select your favorite fruit from the following options

5 50.0% Cantaloupe
1 10.0% Kiwi
4 40.0% Pomegranate

3. Please select the fruit you would voluntarily consume.

2 20.0% Cantaloupe
1 10.0% Kiwi
2 20.0% Pomegranate
8 80.0% None of the above

Office of Institutional Research & Evaluation
NAME OF SURVEY AND YEAR
1 of 2
Prepared by: ANALYST NAME
INSERT DATE

This report is intended for internal use only

- 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

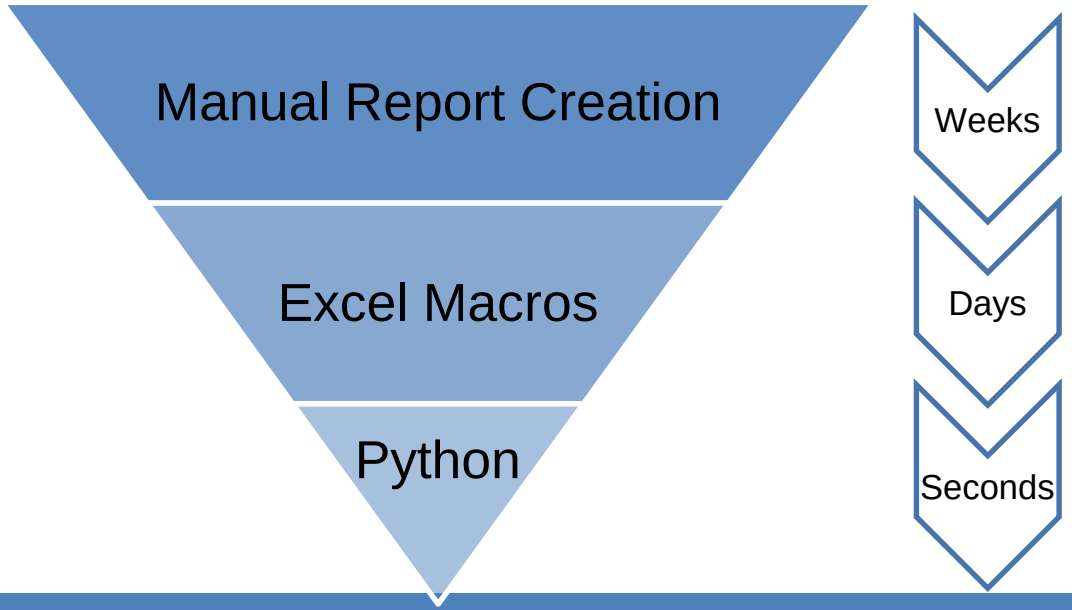
- Python is a powerful, easy to learn programming language

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

qualtrics XM

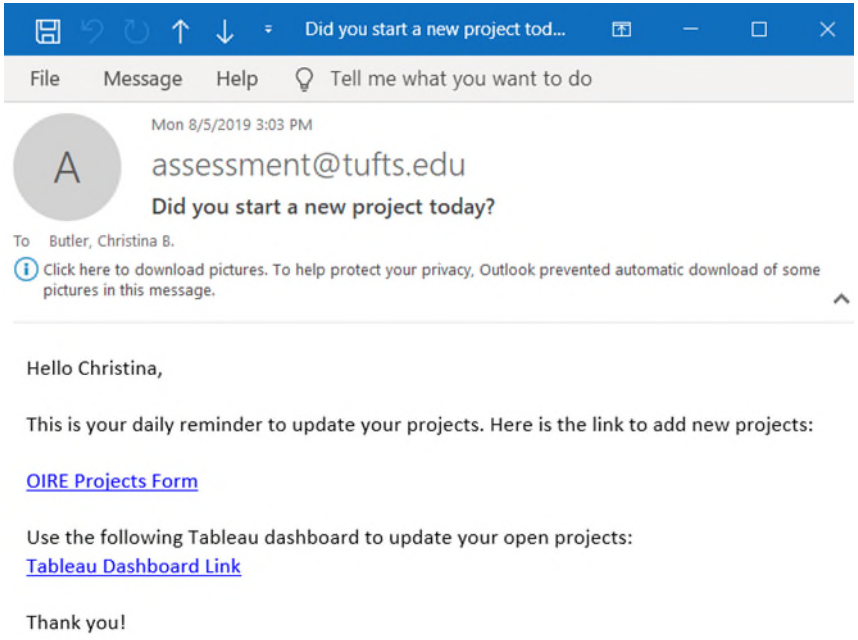
Generating Reports with Python

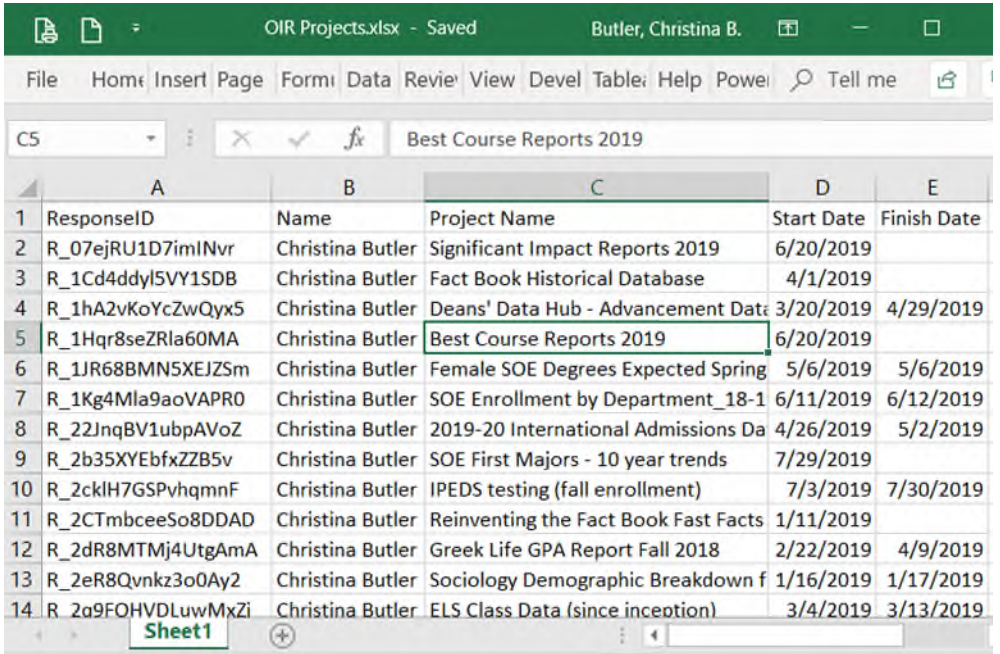
- Example: Every year, seniors are asked to identify three people who made a significant impact on them during their time at Tufts as well as identify an excellent course
- Approximately 1,500 reports are generated from these data



Qualtrics API

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





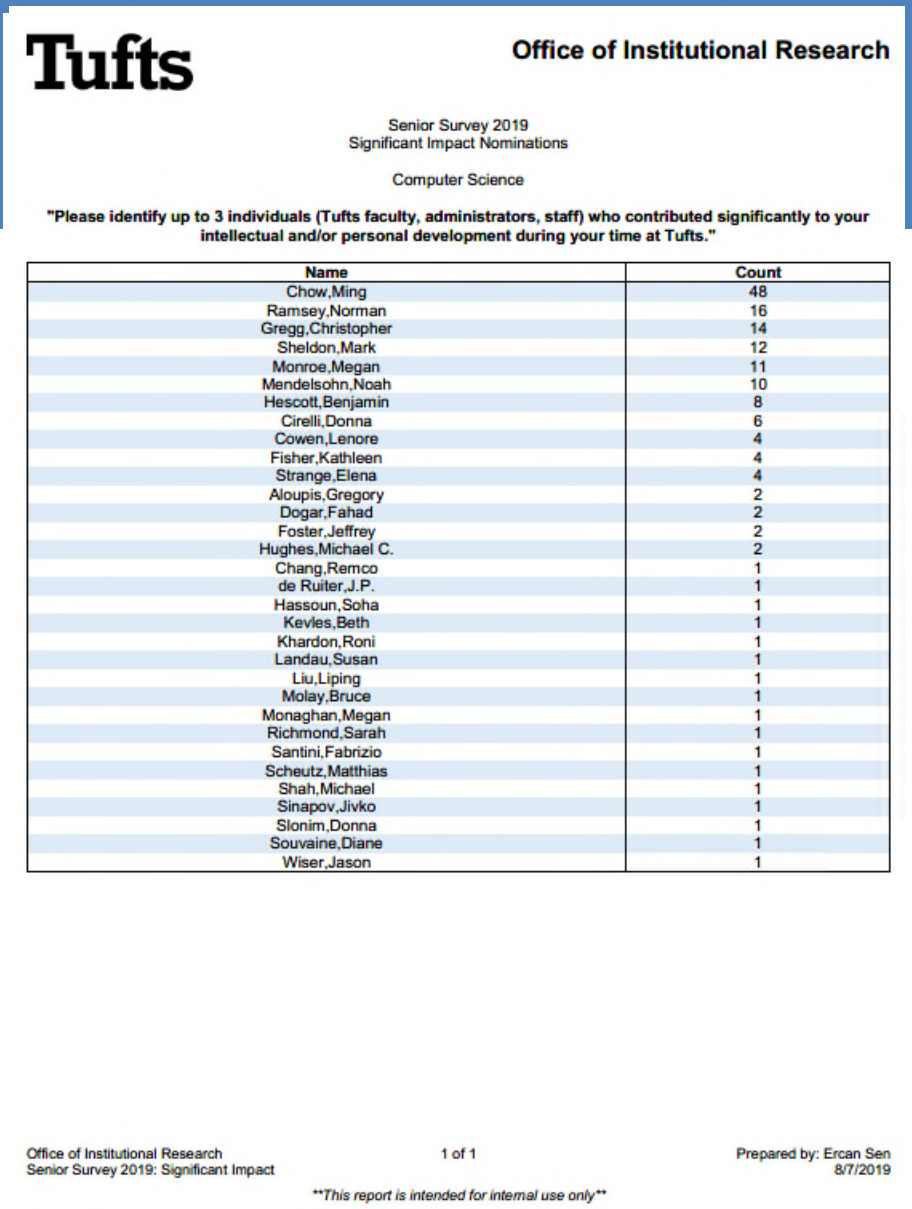
	A	B	C	D	E
1	ResponseID	Name	Project Name	Start Date	Finish Date
2	R_07ejRU1D7imINvr	Christina Butler	Significant Impact Reports 2019	6/20/2019	
3	R_1Cd4ddyl5VY1SDB	Christina Butler	Fact Book Historical Database	4/1/2019	
4	R_1hA2vKoYcZwQyx5	Christina Butler	Deans' Data Hub - Advancement Data	3/20/2019	4/29/2019
5	R_1Hqr8seZRla60MA	Christina Butler	Best Course Reports 2019	6/20/2019	
6	R_1JR68BMN5XEJZSm	Christina Butler	Female SOE Degrees Expected Spring	5/6/2019	5/6/2019
7	R_1Kg4Mla9aoVAPR0	Christina Butler	SOE Enrollment by Department_18-1	6/11/2019	6/12/2019
8	R_22JnqBV1ubpAVoZ	Christina Butler	2019-20 International Admissions Da	4/26/2019	5/2/2019
9	R_2b35XYEbfxZZB5v	Christina Butler	SOE First Majors - 10 year trends	7/29/2019	
10	R_2cklH7GSPvhqmnF	Christina Butler	IPEDS testing (fall enrollment)	7/3/2019	7/30/2019
11	R_2CTmbceeSo8DDAD	Christina Butler	Reinventing the Fact Book Fast Facts	1/11/2019	
12	R_2dR8MTMj4UtgAmA	Christina Butler	Greek Life GPA Report Fall 2018	2/22/2019	4/9/2019
13	R_2eR8Qvnkz3o0Ay2	Christina Butler	Sociology Demographic Breakdown f	1/16/2019	1/17/2019
14	R_2q9FOHVDLuwMxZi	Christina Butler	ELS Class Data (since inception)	3/4/2019	3/13/2019

Python String Cleaning

ResponseID	Name (Original)	Name (clean)	Score
R_agBT6h33iFt1rlT	Aaron White	Aaron White	100
R_2YDLYQSXVXgZE3L	Abby brethauer	Abby G. Brethauer	95
R_3maea1b0fgoDTGX	Abby Brethauer	Abby G. Brethauer	95
R_3Dky278kCB2MXNH	Abi Williams	Abiodun Williams	86
R_1ptUmnrcERWpVXn	Adam Hoyt	Adam Hoyt	100
R_3k6Rq0EDxXM4znD	Adam Hoyt	Adam Hoyt	100
R_1OUZLmXyO3i9OMc	Adam Spellmire	Adam M. Spellmire	95
R_1OZZp1CtRIkOwGr	H. Adlai Murdoch	Adlai Murdoch	95
R_27Pt3V2f0veOGb1	H. Adlai Murdoch	Adlai Murdoch	95
R_vDAIRIaehEEbE1r	H. Adlai Murdoch	Adlai Murdoch	95
R_3ndBtdGJd8PkYRk	Professor H. Adlai Murdoch	Adlai Murdoch	90
R_Z37CDidTzg0No1b	Adolf Cuevas	Adolfo Cuevas	96
R_25sUbZlIUwkKWbY	Adolfo Cuevas	Adolfo Cuevas	100
R_u4cAFwfZUX4XHWx	Adolfo Cuevas	Adolfo Cuevas	100
R_R4WQ2CcOvOcmClz	Adolfo Cuevas PhD	Adolfo Cuevas	95
R_SCWELdRNCcRMFa1	Ambassador Alan Solomont	Alan Solomont	90
R_3qrpgyMMLw2kKQe	Jay Cantor	Alfred Jay Cantor	90
R_9HUlFGTvQ7869Cp	Jay Cantor	Alfred Jay Cantor	90
R_1OwtvbaT4qqUNCH	Reza Mirsajadi	Ali-Reza Mirsajadi	95
R_3sntF1zlLqkOWjp	Professor Alisha Rankin	Alisha Rankin	90
R_1poeSyF3moedvEa	Amar Bhidé	Amarnath V. Bhide	72*

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



Tufts

Office of Institutional Research

Senior Survey 2019
Significant Impact Nominations

Computer Science

"Please identify up to 3 individuals (Tufts faculty, administrators, staff) who contributed significantly to your intellectual and/or personal development during your time at Tufts."

Name	Count
Chow,Ming	48
Ramsey,Norman	16
Gregg,Christopher	14
Sheldon,Mark	12
Monroe,Megan	11
Mendelsohn,Noah	10
Hescott,Benjamin	8
Cirelli,Donna	6
Cowen,Lenore	4
Fisher,Kathleen	4
Strange,Elena	4
Aloupis,Gregory	2
Dogar,Fahad	2
Foster,Jeffrey	2
Hughes,Michael C.	2
Chang,Remco	1
de Ruiter,J.P.	1
Hassoun,Soha	1
Kevles,Beth	1
Khardon,Roni	1
Landau,Susan	1
Liu,Liping	1
Molay,Bruce	1
Monaghan,Megan	1
Richmond,Sarah	1
Santini,Fabrizio	1
Scheutz,Matthias	1
Shah,Michael	1
Sinapov,Jivko	1
Slonim,Donna	1
Souvaine,Diane	1
Wiser,Jason	1

Office of Institutional Research
Senior Survey 2019: Significant Impact

1 of 1

Prepared by: Ercan Sen
8/7/2019

This report is intended for internal use only

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