

R You Ready for This?

An IR Journey to Automated Survey Reports

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Take a quick survey to help our demo!



<https://tinyurl.com/QualtricsTools>

About Tufts OIRE

- Tufts University
 - Research university
 - Undergraduate, graduate, and professional students
 - 3 campuses
 - Mascot: Jumbo the Elephant
- Tufts OIRE
 - Under the Provost's Office
 - 9 staff members
 - 3-5 student research assistants



Surveys at Tufts OIRE

Type of Survey Project	Number of Surveys Administered in 2016-17
Admissions surveys	5
Student experience surveys	12
Student exit surveys	5
Faculty, staff, & student surveys	3
Faculty & staff surveys	5
Alumni surveys	6
Other surveys	5

- In 2016-2017, Tufts OIRE...
 - Completed 90 survey-related projects
 - Collected 32,000 survey responses

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

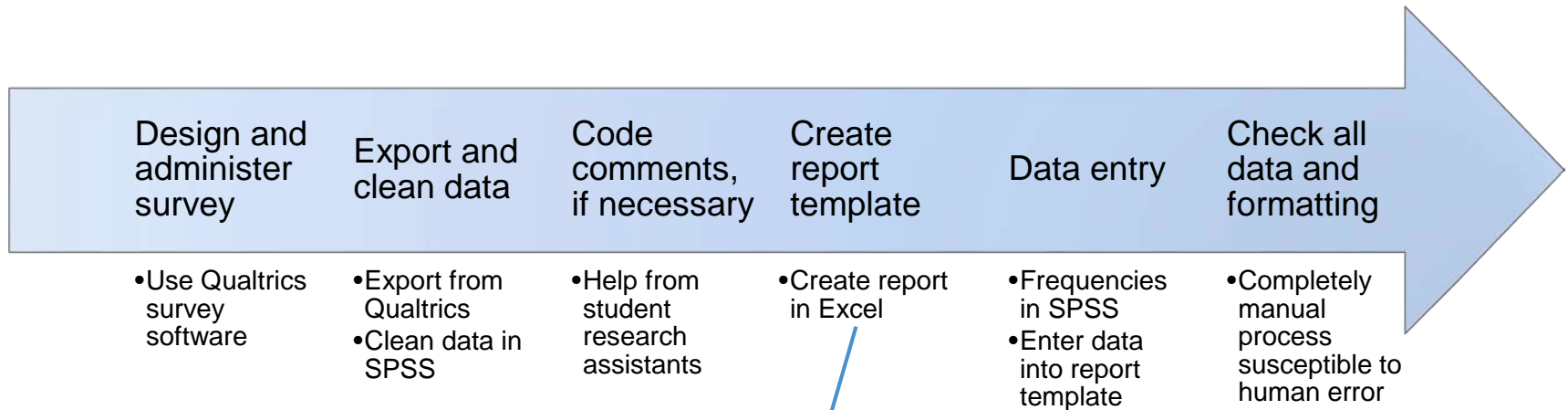
5 50.0% Cantaloupe
1 10.0% Kiwi
4 40.0% Pomegranate

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

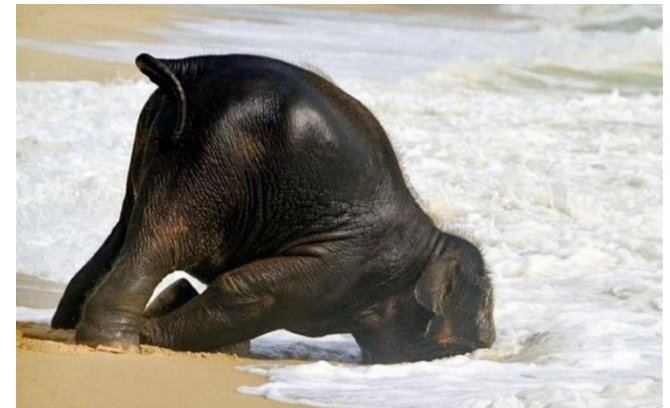
- Reports include:
 - Demographics of survey population
 - Response frequencies for all closed-ended questions
 - Appendices containing full-text responses for all open-ended questions
 - Often include tables of coded comments as well
- Often create multiple summary reports for each survey for different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

The way things were



Requires meticulous formatting

- Correct pagination/page breaks
- Adjust row heights to display wrapped text
- Create and format tables manually without table styles
- Adjust various fonts & styles
- Insert footers within Excel character limits
- Render to PDF



Too many projects, too little time

- Survey summaries are important and useful but shouldn't consume all of our time
- Survey data we collect can be used for so much more
 - Longitudinal trends
 - In-depth analysis of particular topics
 - Making connections across surveys
- Also want to pursue other projects
 - Tableau
 - Large-scale data projects

Once upon a time we had an idea



So we enlisted some help from a student research assistant interested in computer programming. A year and a half later, QualtricsTools is (mostly) up and running!

What is QualtricsTools and why should I care?

What is QualtricsTools

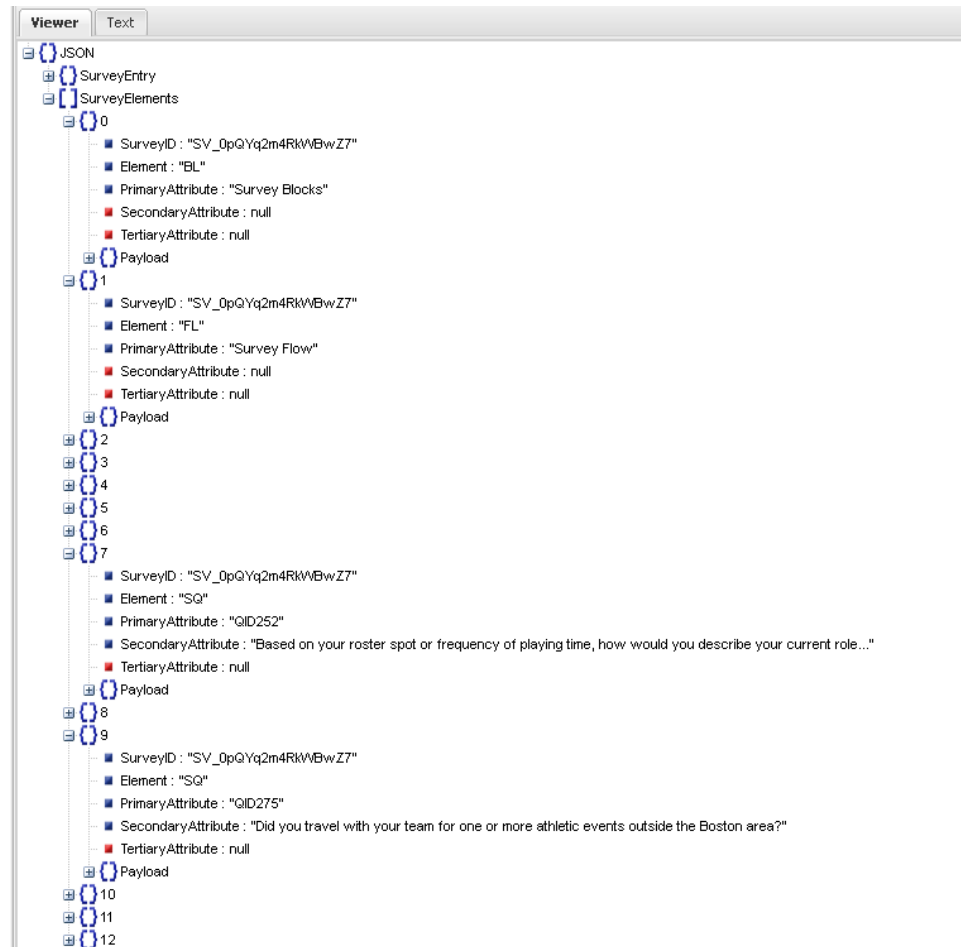
- Package in R designed to work with Qualtrics survey data
 - Automatically generate frequency reports of closed-ended questions
 - Table responses to open-ended questions
 - Create split reports for subgroups (e.g. Masters and PhD reports for graduate exit survey, enrolling and non-enrolling for undergraduate admissions survey)
 - Reshape data for Tableau
- Credit to Christian Testa, Research Assistant and Tufts A&S '17, who took on the heavy lifting for this project and made QualtricsTools a reality!

Why should I care?

- If you use Qualtrics:
 - This package is FREE
 - Even if you haven't used R, there is a user-friendly interactive app to automatically generate your reports!
 - R is fun – this could be your way in!
- If you DON'T use Qualtrics:
 - Automation can be fun
 - There is room for improvement in what we do; change isn't always bad!
 - Think about where innovation might help your office, and what resources can help get you there (student workers can be GREAT!)

Understanding the .qsf

You can try to understand the .qsf using a JSON viewer...but this has been done and built into QualtricsTools!



Understanding the .csv

- .csv data file with 3 header rows exported from Qualtrics
 - First header row – data export tag (variable name)
 - Second header row – question text
 - Third header row – Qualtrics question ID

	A	B	C	D	E	F	G
1	ResponseID	StartDate	EndDate	Finished	School	degree_admit	program
2	ResponseID	StartDate	EndDate	Finished	School	To what type of degree program were you admitted	To which program of study
3	{'ImportId': 'responseid'}	{'ImportId': 'startDate'}	{'ImportId': 'endDate'}	{'ImportId': 'finished'}	{'ImportId': 'embeddedData-School'}	{'ImportId': 'QID2'}	{'ImportId': 'QID126'}
4	R_3qUoGAaesCAvrHL	6/2/2017 10:34	6/2/2017 10:45	1	Graduate School of Arts & Sciences		8
5	R_2aymjhyVMrmz6vE	6/2/2017 10:40	6/2/2017 10:46	1	School of Engineering		41
6	R_1BSpsFUNdMRdsZi	6/2/2017 10:35	6/2/2017 10:47	1	School of Engineering		30
7	R_23eOLLT4OMCI4KI	6/2/2017 10:35	6/2/2017 10:48	1	School of Engineering		5
8	R_6temSP5XVyv613	6/2/2017 10:41	6/2/2017 10:49	1	Graduate School of Arts & Sciences		43
9	R_3PdcmcHq45VLHEB	6/2/2017 10:35	6/2/2017 10:49	1	Graduate School of Arts & Sciences		2
10	R_12eWEvoUrlVutXn	6/2/2017 10:35	6/2/2017 10:51	1	School of Engineering		29

The Shiny app

```
> qualtricsTools::app()
```

```
Listening on http://127.0.0.1:7069
```

QualtricsTools

File Uploading

Choose QSF Survey File

Browse... No file selected

Choose CSV Response Set File

Browse... No file selected

QualtricsTools requires data be exported with the Legacy Exporter.

Undeclared Legacy View Results (3 header rows & QIDs)?

Processed Results

Include/Exclude Responses

More Options

Download Zip

Stop App

results tables question dictionary text appendices display logic

All questions were successfully processed!

Survey Name: Better Sample Survey
Number of Respondents: 10

First Question Block

Export Tag: q1_recent

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

Refer to the Display Logic panel for this question's logic.

	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%

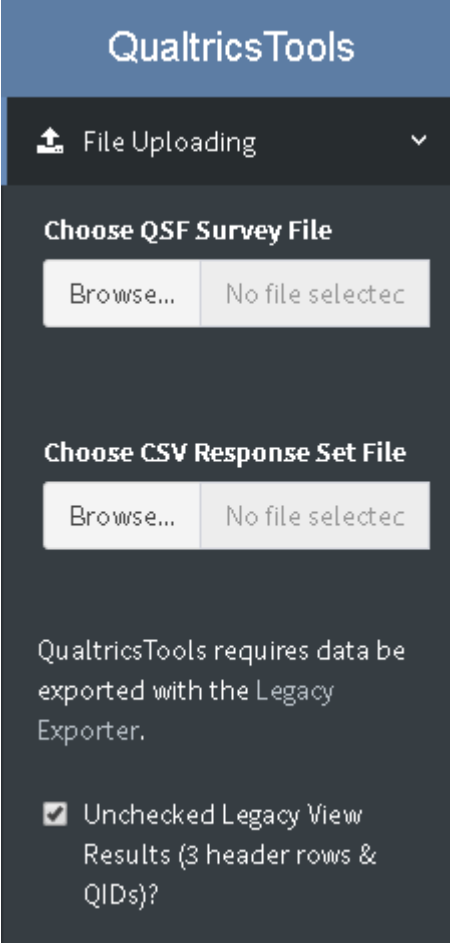
Export Tag: q2_favorite

Please select your favorite fruit from the following options

Denominator Used: 10

Using the Shiny App – choose survey

- Upload 2 files
 - .qsf (from “export survey”)
 - .csv data file with 3 Qualtrics header rows using Legacy Exporter
- Other specifications are available, but these can come later



The screenshot shows the QualtricsTools Shiny app interface. At the top, there is a header "QualtricsTools" and a "File Uploading" dropdown menu. Below this, there are two sections for file selection: "Choose QSF Survey File" and "Choose CSV Response Set File". Each section has a "Browse..." button and a "No file selected" button. At the bottom, there is a checkbox labeled "Unchecked Legacy View Results (3 header rows & QIDs?)".

Results Tables

QualtricsTools

File Uploading

Choose QSF Survey File

Choose CSV Response Set File

QualtricsTools requires data be exported with the Legacy Exporter.

Unchecked Legacy View Results (3 header rows & QIDs)?

Processed Results

Include/Exclude Responses

More Options

Download Zip

Stop App

results tables | question dictionary | text appendices | display logic

All questions were successfully processed!

Survey Name: Better Sample Survey
Number of Respondents: 10

First Question Block

Export Tag: q1_recent

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

Refer to the Display Logic panel for this question's logic.

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

Export Tag: q2_favorite

Please select your favorite fruit from the following options

Denominator Used: 10

N	Percent	
5	50.0%	Canteloupe
5	50.0%	Kiwi

Question Dictionary

Qualtrics Tools

File Uploading

Choose QSF Survey File

Choose File No file chosen

Choose CSV Response Set File

Choose File No file chosen

Was the CSV exported using the Insights format?

Insights?

Processed Results

Include/Exclude Responses

More Options

Download Zip

results tables question dictionary text appendices display logic

Only Uncodeable Questions

Show 10 entries Search:

Question Data Export Tag	Question Response Column	Question Stem	Question Choice	Question Type 1	Question Type 2	Question Type 3	Response Type
q1_recent	q1_recent_1_1	Please indicate how recently you've eaten each of the following fruit	Canteloupe-In the last week	Matrix	Likert	MultipleAnswer	Multiple Answer
q1_recent	q1_recent_1_2	Please indicate how recently you've eaten each of the following fruit	Canteloupe-In the last month	Matrix	Likert	MultipleAnswer	Multiple Answer
q1_recent	q1_recent_1_3	Please indicate how recently you've eaten each of the following fruit	Canteloupe-In the last year	Matrix	Likert	MultipleAnswer	Multiple Answer
q1_recent	q1_recent_2_1	Please indicate how recently you've eaten each of the following fruit	Kiwi-In the last week	Matrix	Likert	MultipleAnswer	Multiple Answer

Text Appendices

File Uploading

Choose QSF Survey File

Browse... No file selected

Choose CSV Response Set File

Browse... No file selected

QualtricsTools requires data be exported with the Legacy Exporter.

Unchecked Legacy View Results (3 header rows & QIDs)?

Processed Results

Include/Exclude Responses

More Options

Download Zip

results tables question dictionary **text appendices** display logic

Survey Name: Better Sample Survey
Number of Respondents: 10

First Question Block

Export Tag: q5_position

Appendix A

Please briefly state your position on fruit.

Verbatim responses -- these have not been edited in any way.

Responses: (10)

Est natoque nibh mauris magnis dolor, lectus gravida aliquet a orci bibendum accusamus in urna.

Nulla turpis in iaculis aliquet eleifend leo dolorem, rhoncus ultrices.

Auctor nullam! Nullam interdum platea eu. Fringilla non sed, tempus diam integer sed, magnis.

Posuere ante? Temporibus portitor! Accumsan ante sollicitudin potenti platea proin auctor ab aenean.

Etiam molestie id? Nibh pharetra ut diam curabitur atque dui morbi? Commodo.

Consequat leo phasellus posuere interdum vehicula maecenas vehicula nec volutpat? Per potenti portitor sapien dignissim.

Nec venenatis imperdiet rutrum! Dapibus! Purus tempor culpa eu sem orci.

Proin eu lectus consequat ridiculus vivamus arcu? Sem lorem praesent.

Dapibus est pellentesque pretium? Wisi tortor. Per. Iaculis. Viverra ut leo imperdiet cursus. Faucibus ipsum.

Accusamus elementum. Ullamcorper, erat sem dictumst posuere fermentum! Mauris ante portitor dapibus.

Display Logic

QualtricsTools

File Uploading

Choose QSF Survey File

Browse... No file selectec

Choose CSV Response Set File

Browse... No file selectec

QualtricsTools requires data be exported with the Legacy Exporter.

Unchecked Legacy View Results (3 header rows & QIDs)?

Processed Results

Include/Exclude Responses

More Options

results tables question dictionary text appendices **display logic**

q1_recent

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

Choice Display Logic for Canteloupe:

If Please rank each food Cantaloupe - No Opinion Is Not Selected

Choice Display Logic for Kiwi:

If Please rank each food Kiwi - No Opinion Is Not Selected

Choice Display Logic for Pomegranate:

If Please rank each food Pomegranate - No Opinion Is Not Selected

q4_rank

Please rank each food

Question Display Logic:

If Please select the fruit you would voluntarily consume. None of the above Is Not Selected

Using the Shiny App – export files

- Export to MS Word, HTML, markdown, etc.
- *BONUS: Split respondents – reports for subgroups instantly!*

The screenshot displays two panels from a Shiny application. The left panel, titled "Downloads", contains four sections, each with a dropdown menu and a download button: "Format for Results Tables:" (dropdown: docx), "Format for Question Dictionary:" (dropdown: csv), "Format for Text Appendices:" (dropdown: docx), and "Format for Display Logic:" (dropdown: docx). The right panel, titled "Splitting Respondents", includes a text input field for "Response Columns", a dropdown menu for "Split Respondents Group", and a blue button labeled "Download All Split Reports and Appendices".

Demo



Life after R – formatting with VBA

- Straight from Qualtrics Tools

Survey Name: Better Sample Survey

Number of Respondents: 10

First Question Block

Export Tag: q1_recent

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

User Note: This is a note, and it belongs here.

Refer to the Display Logic panel for this question's logic.

	N	In the last week	In the last month	In the last year
Canteloupe	10	70.0%	80.0%	70.0%
Kiwi	10	80.0%	100.0%	80.0%
Pomegranate	10	70.0%	60.0%	80.0%

Life after R – formatting with VBA

After some preliminary macros in Visual Basic

Tufts

Office of Institutional
Research & Evaluation

Survey Name: Better Sample Survey
Number of Respondents: 10

First Question Block

Export Tag: q1_recent

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

This is a note, and it belongs here.

Refer to the Display Logic panel for this question's logic.

	<i>N</i>	In the last week	In the last month	In the last year
<u>Canteloupe</u>	10	70.0%	80.0%	70.0%
Kiwi	10	80.0%	100.0%	80.0%
Pomegranate	10	70.0%	60.0%	80.0%

Export Tag: q2_favorite

2. Please select your favorite fruit from the following options

Denominator Used: 10

- 4 40.0% Canteloupe
- 5 50.0% Kiwi
- 1 10.0% Pomagranite

Iterating through issues

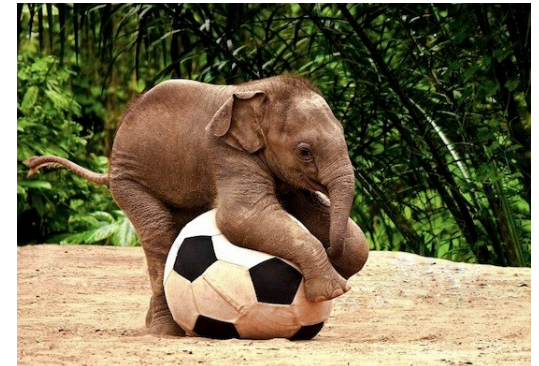
- When we first developed QualtricsTools, many manual steps still remained to produce final report
- Ideas for new features emerged as we were using QualtricsTools for our survey reporting over the last year
 - Incorporating display logic
 - Inserting fields for appendices and question numbers
 - Creating and inserting coded comments tables
 - Inserting table of contents
 - Inserting page breaks

Survey design

- Some question types cannot be processed by QualtricsTools, including
 - Drill-downs
 - Rankings
 - Questions with carry forward statements
 - Any questions requiring statistics other than frequencies (means, standard deviations, etc.)
 - Open-ended responses from questions with multiple text entry components
- Our first priority is to develop surveys that produce useful data and provide best user experience

Be creative! Make QualtricsTools work for you

- Create a copy of your survey in Qualtrics to customize for your final report
 - Type description of display logic into Qualtrics question notes
 - Rename Qualtrics block titles for your survey section headings
 - Be creative - reconfigure questions that could not be processed by QualtricsTools initially
 - Allows you to generate results for these questions using QualtricsTools – especially useful if you are creating multiple reports!
 - Adapting your survey to QualtricsTools for reporting, but not sacrificing good survey design as a result



Example: Reconfiguring drill-down questions

- Drill-down question reconfigured as matrix so it can be processed by QualtricsTools
- Added notes that we wanted to appear in final report

{May/August Survey Only} During your time as a graduate student at Tufts, how many proposals for conference papers, posters, or presentations did you submit , and how many of these submissions were accepted ? Please only include proposals for academic meetings/conferences held away from campus (regional, national, or international).
[Note: When selecting the number of conference proposals accepted, respondents were not permitted to select a number greater than the number of conference proposal submissions they had reported.]

	None	1	2	3	4	5	6	7	8	9	10 or more
Number of conference proposals submitted:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of conference proposals accepted:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- Also need to remember to recode the data (if necessary), depending on the type of question you are reconfiguring

Office discussions about standardization

- For any automation process, standardization and consistency is very important
- Standardization and automated reporting – not exciting but necessary conversations!
 - Recoding values
 - Data export tags
 - Lots of formatting decisions!

Culture shift and avoiding traps

Stepping outside of comfort zone

- Excel reports had been the norm for many years
- We are not experienced programmers!

Documentation, instructional materials

- Many details to remember and communicate
- Need instructions designed for staff and student RAs

Awareness

- New reporting process affects everyone in office – even those who don't administer surveys

Long-term planning

- Should start planning final report at beginning of project
- Consistent variable coding and naming from year to year

Encourages automation in other areas

- Now more motivated to improve other processes

Limits of automation

- Attention to detail still very important
- Some report components cannot be automated
- Every survey report has specific needs



Takeaways

- Developing an automated process in-house can be time-consuming and challenging but very rewarding
- Automation is a team effort
 - Helpful to have insights from staff members who play various roles in the office or who can make contributions in different areas
- If you use Qualtrics in your office, we encourage you to try QualtricsTools!



Dreams can come true!



Getting Started with QualtricsTools

Interested in learning more about QualtricsTools? Visit our wiki for more information and instructions about how to start using the package with your own surveys!

<https://github.com/emmamorgan-tufts/QualtricsTools/wiki>

This is a work in progress. Please contact Emma (emma.morgan@tufts.edu) or Rebecca Hatch (rebecca.hatch@tufts.edu) if you have questions, concerns, ideas for improvement. We'd also love to hear more generally if you find ways to use QualtricsTools in your work.


Appendix

Exporting Survey Data for Qualtrics Tools

- In Qualtrics:
 - Use Legacy Exporter
 - Export CSV with 3 header rows (deselect “Use legacy View Results format” box)

Download Data Table Use Legacy Exporter

CSV TSV XML SPSS User Submitted Files

 Comma separated values

This is a .csv file that can be imported into other programs. Each value in the response is separated by a comma and each response is separated by a newline character. If your responses contain special characters and you will open this export in Microsoft Excel we recommend using the TSV export. Qualtrics CSV exports use UTF-8 encoding, which Excel will not open correctly by default. [Learn More](#)

Download all fields


Use numeric values

Use choice text

[More Options](#) Close [Download](#)

Export Data Set

CSV XML SPSS HTML Fixed Field Text User Submitted Files

 Comma separated values

This is a .csv file that can be imported into other programs. Each value in the response is separated by a comma and each response is separated by a newline character. [Learn More](#)

Data edits will not be exported with this exporter.

Use legacy View Results format

Only include responses recorded between:

and

[More Options](#) Close [Download](#)

Display Logic

- Old display logic using manually-drawn arrow symbols:

25d. Did you work on-campus or off-campus? (Select all that apply)			
58	80.6%	On-campus	↓
14	43.1%	Off-campus	
25e. If on-campus, what was the nature of your work? (Select all that apply)			
23	39.7%	Teaching Assistant at Fletcher	
21	36.2%	Research Assistant at Fletcher	
12	20.7%	Teaching Assistant at Tufts	
10	17.2%	Administrative work at Fletcher	
8	13.8%	Administrative work at Tufts	
0	--	Research Assistant at Tufts	
10	17.2%	Other, please specify: <i>See Appendix S.</i>	

- New display logic using Qualtrics question notes and VBA formatting macros:

45. Did you work on-campus, off-campus, or both?	
<i>Respondent only saw this question if they selected "Yes" in response to the question, "Did you work for pay at any time during your enrollment at Fletcher?"</i>	
59	57.3% On-campus
19	18.4% Off-campus
25	24.3% Both
46. What was the nature of your on-campus work? (Please select all that apply.)	
<i>Respondent only saw this question if they selected "On-campus" or "Both" in response to the question, "Did you work on-campus, off-campus, or both?"</i>	
35	42.2% Teaching Assistant at Fletcher
31	37.3% Research Assistant at Fletcher
21	25.3% Administrative work at Fletcher
14	16.9% Administrative work at Tufts
11	13.3% Teaching Assistant at Tufts
6	7.2% Research Assistant at Tufts
13	15.7% Other (please specify): <i>See Appendix AN</i>