

# To Qualtrics or to REDCap ...that is the question!

An Overview Of Two UCSF-Offered Data Collection Software Packages

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# Introductions



# Before we begin...

***Our target audience:*** Those who have not used one or both packages and are curious to learn about the broad capabilities (and pitfalls) of these packages.

**May not** be suitable for expert users who are interested in discussing specific advanced capabilities of these packages.

Note that we will not discuss advanced features of REDCap (APIs and external modules). Tomorrow's seminar by Bill Santo will do that.

The approximate length is 30 slides.

# A quick overview...

Sections
1. Comprehensive features
2. Question types & Programming
3. Demonstrations of sample surveys
4. Survey access/administration
5. Reports, Statistics, Graphs & Data export
6. Additional features
7. Customer support
8. Case studies
9. Summary & Recommendations
10. Survey ingredients
11. Questions & Discussion



# Introduction – Qualtrics

- ▶ Software for collecting and “analyzing” data
- ▶ Started in 2002, the company now has over 1,300 employees globally
- ▶ Privately owned, funded by venture capital investments
- ▶ Database is maintained in off-site location (in the same jurisdiction), not in the cloud
- ▶ Qualtrics was rated #12 by *Forbes Cloud 100* (“hottest private tech companies”) in 2016 and #6 in 2017



# Introduction – REDCap

- ▶ **REDCap** (Research Electronic Data Capture) is an application for building and managing online surveys and databases.
- ▶ Developed by a multi-institutional consortium initiated at Vanderbilt University in 2004. Currently on version 8.5.10
- ▶ Each institute's system is independently maintained and supported. All data captured is stored on its own servers.
- ▶ As of 8/24/2018, it is used worldwide at 3026 institutions in 126 countries. Has 577K projects with 777K users.

*Fun fact: "The redcap is a type of malevolent, murderous goblin found in Border folklore..."*

# Comprehensive features

	Qualtrics	REDCap
Web based, secure	✓	✓
HIPAA compliant	✓	✓
Suitable for multi-site survey administration	✓	✓
Online and offline modes of administration (data collection)	✓	✓
Multiple language capability	✓	✓
Surveys may be modified during the course of the study	✓	✓
Editable look-and-feel (themes, logos)	✓	✓
"Quick" development of surveys (beware: garbage in, garbage out!)	✓	✓
"Free" to UCSF users	✓	✓



# Typical question types

Question types	Notes	Qualtrics	REDCap
Check one (Radio buttons)	<ul style="list-style-type: none"><li>• Yes/No, True/False</li><li>• Likert-type questions</li></ul> <p><i>How much do you agree with the following statement?</i></p> <p><i>Cats are my favorite animal.</i></p>	✓	✓
Check all that apply	<p><i>What types of pets do you have?</i></p>	✓	✓
Numeric entry	<p><i>How many cats do you have?</i></p>	✓	✓
Text entry	<p><i>What is your veterinarian's name?</i></p>	✓	✓
Vertical or horizontal 0 -10	<p>Can have "anchors" at ends and middle (Special case of "check one")</p>	✓	✓
Visual analog scale (VAS)	<p><i>How much of the time do you spend vacuuming?</i></p>	✓	✓



# Typical question types (con't)

Question types	Notes	Qualtrics	REDCap
Date	<i>When did you get your first cat?</i>	sort of	✓
Time span	<i>How long have you been an animal hoarder?</i>	work-around	work-around
Calculated variables	Can use previously calculated variables in question text/response text of items <i>#_cats_having_kittens = total_#_cats - #_cats_spayed_or_neutered</i>	yes, but can't back up	yes, but not in response text or bounds
Signature	Capture handwritten signature <i>eg. for consent</i>	✓	✓ (caveat)
Upload files	<i>Please share a cute picture of your favorite cat.</i>	✓	✓

# Programming & implementation

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	Qualtrics	REDCap
Branching /display logic	✓	✓
Skip logic	sort of	Contact admin
Piping of text	✓	✓
“Refuse to answer” option	mostly	workaround
Validations	✓	sort of
Stop forward progress	✓	sort of
Online programming	✓	✓
Offline programming	✗	✓
Smart variables	✗	✓
“Action tags”	some	✓



A quick demonstration of  
a simple survey in each  
software package

# Unusual question types

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- ▶ Qualtrics
  - ▶ Side by side
  - ▶ Heat map
  - ▶ Ranking
  - ▶ Graphic slider
  - ▶ Highlight



# Survey access & modes of administration

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- ▶ Online and offline
- ▶ Public link (with option to create a custom URL)
  - ▶ allows multiple responses per participant
- ▶ Private link
  - ▶ via the participant contact list
  - ▶ invitations can be scheduled for specific times
  - ▶ reminders may be set (up to 5 for REDCap)
  - ▶ allows tracking of incomplete surveys
- ▶ Surveys can be accessed via a URL or via a Quick Response (QR) code
- ▶ Save incomplete surveys and return later
- ▶ REDCap has new feature that allows infinite repeats of a survey

# Reports

- ▶ Ad-hoc reporting using custom queries
- ▶ Report queries can be designed, saved and shared with selected users
- ▶ Queries may contain filters and logic
- ▶ Ordering (sorting) available
- ▶ Summary functions (totals, averages, etc) are **not** available in REDCap
- ▶ The query output can be downloaded or printed (may need further formatting)



# Statistics and Graphs

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- ▶ REDCap – very barebones
  - ▶ Text fields → n and missing data
  - ▶ Numeric fields → min, max, standard deviation, sum, and the percentiles; a graph with the distribution
  - ▶ Multiple choice questions → response distribution of the choices; option to view as a bar chart or as a pie chart
  - ▶ Images can be downloaded
- ▶ Comparatively, Qualtrics has more features

# Data Exports

	Qualtrics	REDCap
Types		
Excel / Comma Delimited (.csv)	✓	✓
SPSS	✓	✓
SAS, Stata, R	✗	✓
Features		
Specify particular instruments to export	✗	✓
Limit export of fields tagged as "identifier"	✗	✓



# Additional Features

	Qualtrics	REDCap
Longitudinal studies	work-around	✓
Randomization of participants	sort of	✓
Randomization of questions	✓	✗
Text-to-speech capability	✗	✓
SMS	if licensed	Twilio (not free)
Voice call services	IVR (not free)	Twilio (not free)
Export survey as PDF file	✓	✓
Export survey in MS-Word format	✓	✗
Export codebook	✓	✓

# Add'l Features – Longitudinal detail

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- ▶ Qualtrics
  - ▶ Uses “embedded data” & personalized hyperlink to carry forward data
  - ▶ Can authenticate on DOB or other PHI (don't need to have “PID”)
  - ▶ Pushes carry-forward variables into a “Contact List”, where if necessary, edits can be made by-hand
- ▶ REDCap
  - ▶ Instruments are assigned to each survey
    - ▶ Don't need to make edits more than once if repeated in multiple surveys
  - ▶ Can “pipe in” values from previous surveys



# Add'l Features – Randomization detail

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- ▶ Qualtrics
  - ▶ Simple randomization only!
  - ▶ Qualtrics proprietary internal feature, can't set seed/don't know algorithm
  - ▶ Need to manipulate design to use for treatment; It is designed to randomly present blocks of questions to the subject
  - ▶ It allows the restriction "evenly present elements", which forces the groups to be equal (if even N) possibly at the expense of true randomization
- ▶ REDCap
  - ▶ Calls Excel table with randomization scheme
  - ▶ Can create the excel table in any statistical software package (SAS, SPSS) – need a statistician!
  - ▶ Can specify more complex randomization schemes, ex. block randomization with randomly permuted block sizes



# Beyond Surveys – Advanced Features in REDCap

- ▶ Create, store and manage databases (but not relational)
- ▶ Data imports from external sources
- ▶ Double data entry
- ▶ File transfers in a HIPAA compliant setting (Send-it)
- ▶ User rights, user roles, data access groups
- ▶ Scheduling/ Calendar
- ▶ Audit trail/ logging
- ▶ Data Quality Rules – for forms only
- ▶ Interaction with external software via Application Programming Interfaces (details in tomorrow's seminar)



# Customer Support – Qualtrics

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- ▶ **Get help in real-time 24-7** (they have offices globally)!
- ▶ They will log into your project and review solutions with you in real-time
- ▶ If help person doesn't have answer, they quickly get back to you
- ▶ They will also create quick videos of how to implement complex features
- ▶ Depends on the skills of the person
- ▶ Or you can review online documentation

# Customer Support – REDCap

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- ▶ Does not have any centralized support team
- ▶ Each institution has their own support staff
- ▶ Quality of support varies depending on the staff's level of expertise
  - ▶ Don't always have an answer
  - ▶ One-word answers
  - ▶ Back-end programming
- ▶ "Reinventing the wheel"
- ▶ Software constantly evolving, more so than Qualtrics
- ▶ Better to search Google rather than the Help menu within REDCap since many institutions have great online help kits



# Customer Support – REDCap at UCSF

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- ▶ REDCap Basic Overview training is currently being taught twice a month, one traditional classroom and one webinar.
  - ▶ Traditional classroom (*must have UCSF or Provider ID*) → "REDCap 101" on UC Learning Center
  - ▶ Webinar (*suitable for external collaborators and others without a UCSF ID*) → fill in online form on UCSF REDCap website
- ▶ REDCap Users Drop-in Clinic: Next on 9/5/2018 from 9:00 AM to 11:00 AM at Mission Center Building (MCB) - Room 303A.
- ▶ REDCap Chatter Group
- ▶ Academic Research Systems Support: **[its-arssupport@ucsf.edu](mailto:its-arssupport@ucsf.edu)**

# Case study 1:

Cross-sectional – the Pre-seminar Survey (N = 96)

Project Needs	Qualtrics	REDCap
Simple question types	✓	✓
Check one	✓	✓
Check all that apply	✓	✓
Text entry	✓	✓
Simple branching logic	✓	✓
Online administration	✓	✓
Anonymous link	✓	✓
Prevent ballot box stuffing	✓	✗



# Case study 2:

## Longitudinal Couples Study w/ Randomization – DuoPACT

Project Needs	Qualtrics	REDCap
Unusual question types		
Side-by-side, work-around for time span	✓	✗
Question separation hidden, work-around for time span	✓	✓
Heat map for IOS	✓	✗
Complex skips		
Calculate upper bound from prior response choice	✓	✗
Calculate age from date to use in skips	✗	✓
Score differences between responses to use in skips	✗	✓

# Case study 2 (con't):

## Longitudinal Couples Study w randomization - DuoPACT

Project Needs	Qualtrics	REDCap
Carry forward of information		
Editable in Contact List rather than survey data	✓	✗
Complex randomization scheme *	✗	✓
Stop forward movement in survey (ex. interviewer password)	✓	✗
Scheduling feature	✗	✓
Programming time savers		
Copy/paste in excel spreadsheet Data Dictionary	✗	✓
Can call same instrument, no need to duplicate edits	✗	✓

\* Used Qualtrics for surveys, REDCap for randomization (block with randomly permuted block sizes, scheme created in SAS)



# A programmer/analyst's perspective

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- ▶ Data needs to be cleaned before analysis
  - ▶ ex. up-coding "other" write-in responses
  - ▶ Save scoring for after!
    - ▶ A change in response can be noted in "Fixit Log" and edited in data after
  - ▶ Clean data after in data management software, not directly in database
- ▶ Reporting features
- ▶ Types of available exports matter
- ▶ Need for a data manager throughout the project

# In summary....

- ▶ For a simple, short survey, either is fine; we recommend Qualtrics
- ▶ At the other extreme, if you have an awesomely talented survey programmer and statistician, you can use either package since she can usually make the software do whatever you need. But then, beware of the 'real' cost of these free packages 😊



# When Qualtrics...?

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- ▶ When you want a beautiful, user-friendly interface
- ▶ Cross sectional
- ▶ SMS is needed
- ▶ One of the special question types from Qualtrics needs to be used
- ▶ When you want pretty presentation/user-interface of survey
- ▶ You have a savvy data person to help convert data to a usable package
- ▶ Qualtrics is more intuitive and easier to figure out
- ▶ The support is better!!

# When REDCap?

- ▶ Have a multisite study with numerous personnel who need varying levels of access to the study data
- ▶ Need to do (non-survey) data entry by staff (eg. from paper forms)
- ▶ Need to save attachments as part of records (eg. x-rays, lab work)
- ▶ Longitudinal study and/ or an RCT
- ▶ Need the scheduling function
- ▶ Audit trail/ logging – always great to have
- ▶ Transferring files in a HIPAA compliant setting (Send-it)
- ▶ Create, store and manage databases including data other than surveys
- ▶ **Don't care that data validations within surveys are mere suggestions!**
- ▶ Don't get frustrated with the dearth of support when you need it



# Wishlist!

- ▶ Qualtrics
  - ▶ Data transfer to SAS including variable formats
  - ▶ Support for longitudinal studies
  - ▶ Refuse to answer – built-in and uniquely coded
  - ▶ Read in custom randomization plans
- ▶ REDCap
  - ▶ 'Real' data validation, not merely 'suggestions'!
  - ▶ Use of piped text in validation
  - ▶ Request response in addition to required response
  - ▶ Enhanced text-to-speech
  - ▶ Refuse to answer – built-in and uniquely coded

# Survey ingredient #1 – Complete Survey in MS Word

- ▶ Answering the research question(s)?
  - ▶ Question types
  - ▶ Usable for quantitative research? *i.e.* not open ended
- ▶ Satisficing
  - ▶ Conversational as possible
  - ▶ Full range of response options/Refuse to Answer
- ▶ Skip language, plan ahead
  - ▶ What if Refused?
- ▶ Using appropriate variable names
- ▶ Calculations



# Survey ingredient #2 – Programmer & Data Collection Software Package

- ▶ Need a good programmer
- ▶ Need a good data manager
- ▶ Choose the right data collection/database software package
  - ▶ Questionnaire Development System (QDS), Computer Assisted Survey Information Collection (CASIC), Survey Monkey, etc.
  - ▶ Qualtrics and REDCap
  - ▶ Do you need audio support?
    - ▶ Text to speech
    - ▶ Wave files (.wav)



# Survey ingredient #3 – Testing Protocol & Team to Test

- ▶ Two Research Assistants (RA)/full run through: RA1 = “interviewer”, RA2 = “participant”
- ▶ RAs denote edits in Word doc. For those that need to be made to:
  - ▶ Computer survey in **Word comment bubbles**
  - ▶ Word version of survey in **track changes**
- ▶ Test – Edit – Repeat
- ▶ Test individual sections with complex skip patterns separately
- ▶ **TEST, TEST, TEST!** Find errors before you go into the field!! Benefits include:
  - ▶ Catch skip logic and programming errors
  - ▶ Hear survey aloud, uncover issues
  - ▶ Practice for RAs





Questions?

!!!!????!!!!

*“No programming, networking or database experience is needed to use REDCap. Simple design interfaces within REDCap handle all of these details automatically.”*

- UCSF REDCap Help page



!!!!????!!!!

*“Conception to production-level  
survey/database in less than one  
day.”*

- UCSF REDCap Home page



# Quotes from survey






*“Please discuss tech support...”*




*“... I've received excellent support  
from the Qualtrics team.”*






*“Qualtrics is a more sophisticated product, but Redcap's ability to export to SAS with variable names versus Qualtrics numbering of variables from v1 to v1000 makes Redcap the product of choice.”*

*Sam and Dee: It is very easy to program variable names in Qualtrics, just like in REDCap. Once that's done, Qualtrics exports data out using those variable names 😊*



*“Qualtrics is really not suitable for RCTs,  
but it has a lot more functionality for  
questionnaires.”*






*“Across at least two, separate projects, I ran into the same problem with Qualtrics ... SAS choked on the exported data”*



*“... REDCap is improving all the time,  
adding important features.”*





*“Qualtrics and REDCap both have their pros and cons - neither is a perfect system, but both definitely have their uses!”*



# Thank you!

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