



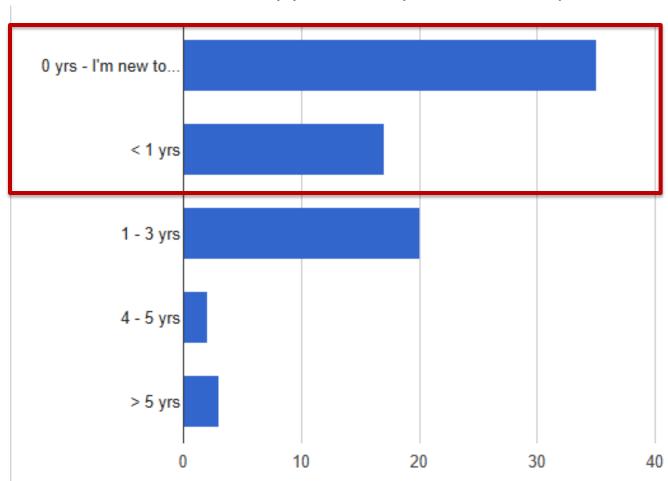
REDCap: Research Electronic Data Capture

All Purpose Data Tool

Mary Geda Sui Tsang January 22, 2025

Today's Audience







Introduction and Learning Objectives

- Learn about REDCap:
 - What it is
 - How it is organized at Yale
 - How to access it
 - Functionality
 - What steps are used to build projects
 - How you can get data into REDCap
 - Tools: reports, statistics, and exports
 - Resources to help you get started

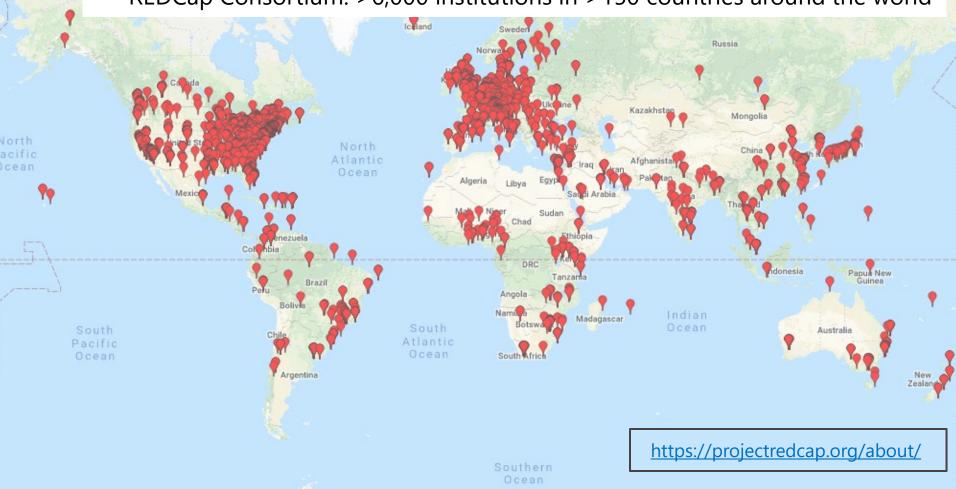


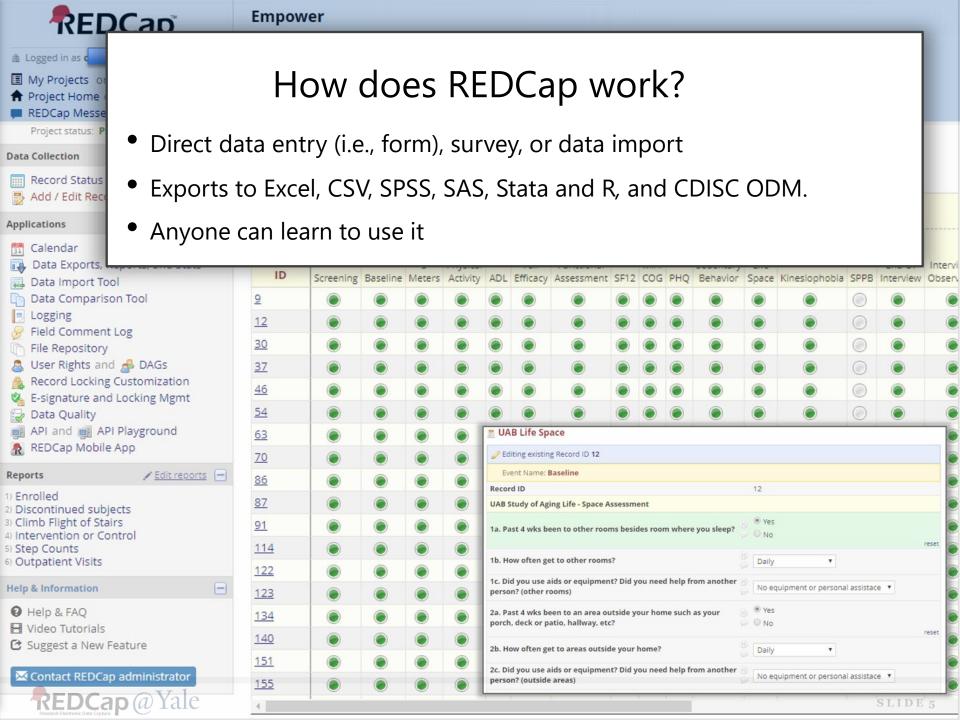
- Establish database/biobank/repository for clinical research
- How to create new forms
- General information.
- How to create questionnaires, and what are the options for administering them (text, MyChart, email, etc). Thank you!
- An overview of the tool and its use cases.
- Exporting data for statical usage
- How to use automation to make data analyses more efficient.
- How to have multiple adjudicators with the same patient demographic data.
- Multiple features like populating questions or using visualization for survey questions



Arctic Ocean Arctic Ocean

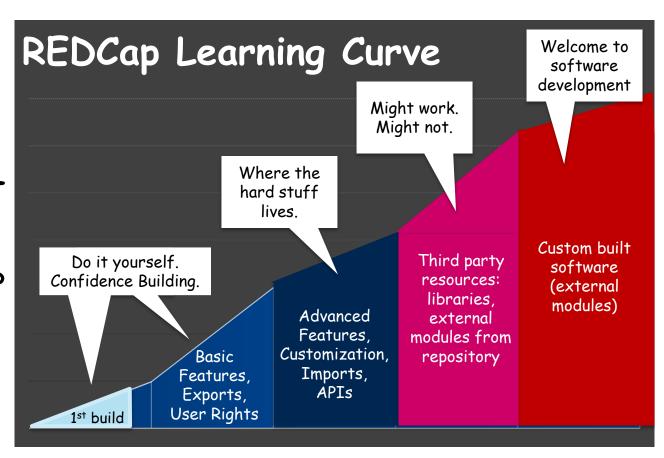
- REDCap (Research Electronic Data Capture) is a secure web-based application for data capture and study management.
- Developed at Vanderbilt in 2004 by Paul A. Harris and colleagues
 - Clinical and Translational Science Award (CTSA) funding
- REDCap Consortium: >6,000 institutions in >150 countries around the world





Advantages: User Friendly

Knowledge/Capabilities



Time/Effort



Advantages





Security & Compliance

 Yale NETID credentials and multi-factor authentication (University Server)



- 2. Secure servers behind an enterprise firewall, encrypted with TLS
- 3. Regulatory Requirements

HIPAA, FDA 21 CFR Part 11, GDPR



https://portal.redcap.yale.edu/resources/security-compliance



Navigating- How do I get access?



Data System Triage Team (YCCI)

HIPAA Compliant



GDPR Compliant

21 PART 11 Compliant

REDCap at Yale University

Yale NewHaven Health





How do I contact Data System Triage?

• Website:

https://portal.redcap.yale.edu/



Email:

researchproject.data.triage@yale.edu



REDCap YNHH Servers

Your project is hosted on the **YNHH** servers if you see this logo, server name, or the following web addresses:

Yale NewHaven Health

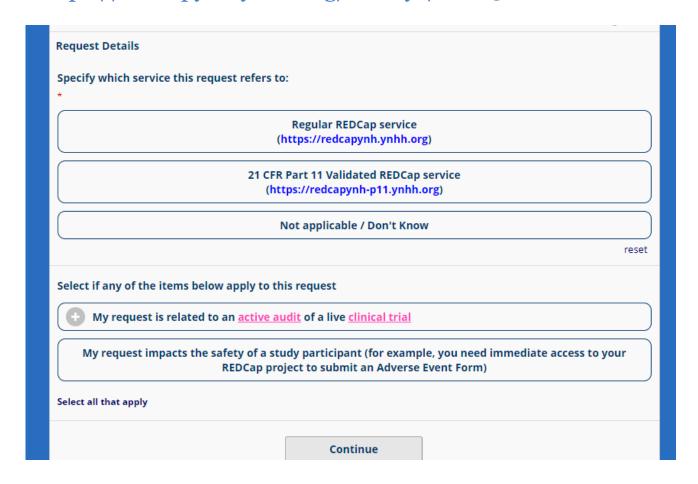


SERVER NAME	WEBSITE	
Standard REDCap	https://redcapynh.ynhh.org/	EPIC- CDIS/FHIR
21 CFR Part 11 Validated REDCap	https://redcapynh-p11.ynhh.org	FDA Regulated



REDCap YNHH Services- Get Help

https://redcapynh.ynhh.org/surveys/?s=Y3EMDLDLRL





REDCap Yale Servers

Your project is hosted on the **Yale University** servers if you see this logo, server name, or the following web addresses:

REDCap at Yale University

SERVER NAME	WEBSITE
REDCap I	https://poa-redcap.med.yale.edu/
REDCap II	https://redcap.research.yale.edu/



REDCap Services- Get Help

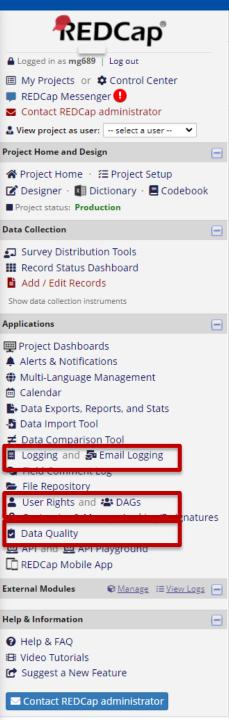
Email: redcap@yale.edu



QUESTIONS or COMMENTS?

Next: Quality Control/Compliance Functions





Quality Control and Compliance

- 1. Logging: Audit trails
- 2. User Rights and Access
- 3. Data Quality
- 4. Field Level Controls



REDCap 201 November 2024

Logging: Audit trails

■ Logging

Export (CSV):	■ All logging	All pages using current filters	Current page
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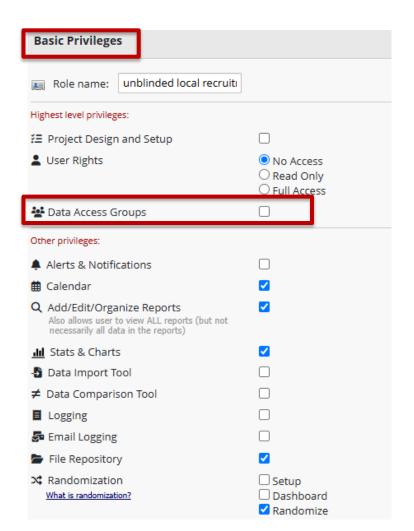
This module lists all changes made to this project, including data exports, data changes, and the creation or deletion of users.

Filter by event:	All event types (excluding	page views)	~							
Filter by user name:	All users	~									
Filter by record:	All records 🗸										
Filter by time range from		<u>∰</u> to			31	Custom range	Past Day	Past Week	Past Month	Past Year	
Displaying events (by most recent):	1 - 100 (Page 1	of 3) 🔻	•								

Time / Date	Username	Action	List of Data Changes OR Fields Exported
10/22/2021 2:52pm		Manage/Design	Copy project as PID=2139 ("Copy of eConsent Scanned Image De mo")
09/14/2021 12:54pm		Manage/Design	Download instrument ZIP file
09/09/2021 12:11pm		Manage/Design	Download instrument ZIP file
09/09/2021 11:47am		Manage/Design	Download instrument ZIP file
07/08/2021 2:53pm		Manage/Design	Edit project field
07/08/2021 2:52pm	5	Manage/Design	Reorder project fields
05/04/2021 9:08pm	[survey responde nt]	Updated Response 224	date_signed = '2021-05-04', fname = 'aaa', Iname = 'bbb', participant_sign = '156712', participant_consent_v2_complete = '0'
05/04/2021 8:42pm	[survey responde nt]	Updated Response 225	participant_sign = '156705'
05/04/2021 8:42pm	[survey responde nt]	Updated Response 225	date_signed = '2021-05-04', fname = 'test', Iname = 'test',



User Rights & Access



Privileges for Viewing and Exporting Data														
Data Viewing Rights pertain to a user's ability to view or edit data on pages in the project (e.g., data entry forms, reports). Users with 'No Access' Data Viewing Rights for a given instrument will not be able to view that instrument for any record, nor will they be able to view fields from that instrument on a report. Data Export Rights pertain to a user's ability to export data from the project, whether through the Data Exports page, API, Mobile App, or in PDFs of instruments containing record data. Note: Data Viewing Rights and Data Export Rights are completely separate and do not impact one another.														
	D	ata Vie	wing Rights	;		Data Expo	rt Rights							
	No Access (Hidden)	Read Only	View & Edit		No Access	De- ldentified*	Remove All Identifier Fields	Full Data Set						
Screening Form	0	O	0		0	0	0	0						
Contact Information Form	O	0	0		0	0	0	0						
Consent Call Log	0	0	0		0	0	0	0						
Consent Form	0	0	0		O	0	0	0						
Interview Call Log	0	O	0		O	0	0	0						
Interview Start	0	O	0		0	0	0	0						
ESAS	0	0	0		0	0	0	0						
Physical Function: Activities Of Daily Living	0	O	0		O	0	0	0						
Physical Activity: Leisure Time (Baseline)	0	<u></u>	0		•	0	0	0						



Data Quality

REDCap allows you to create rules that can be used to monitor and check data quality.

	Rules	Apply t	o: All records	3 ▼	
Rule #	Rule Name	Rule Logic (Show discrepancy only if)	Real-time execution ?	Total Discrepar	-
Α	Missing values*	-		313	<u>v</u> i
В	Missing values* (required fields only)	-		0	<u>vi</u>
С	Field validation errors (incorrect data type)	-		0	<u>vi</u>
D	Field validation errors (out of range)	-		0	<u>v</u>
E	Outliers for numerical fields (numbers, integers, sliders, calc fields)	-		0	<u>v</u>
F	Hidden fields that contain values**	-		0	<u>vi</u>
G	Multiple choice fields with invalid values	-		0	<u>vi</u>
Н	Incorrect values for calculated fields	-		0	v

Field-Level Controls

		, it will be added to the form or	t by completing the fields below and clicking the Save button at the this page. For an overview of the different field types available, yo
	Field Type: Text Box (Short T	Text, Number, Date/Time,	
	Field Label		Variable Name (utilized during data export) ONLY letters, numbers, and underscores Enable auto naming of variable based upon its Field Label?
	Field Annotation (optional)	© Learn about Action Tags	Validation? (optional) None - or - Enable searching within a biomedical ontology ?
	Explanatory notes - not displayed on a	ny page ?	choose ontology to search Required?* No Yes * Prompt if field is blank
			Identifier? No Yes Does the field contain identifying information (e.g., name, SSN, address)?
	OCap 101 cober 2024		Custom Alignment Right / Vertical (RV) Align the position of the field on the page
			Field Note (optional) Small reminder text displayed underneath field



QUESTIONS or COMMENTS?

Next: Building a Project



Before You Start: Decide What Type of Project Design is Needed

- Classic Database
- Longitudinal

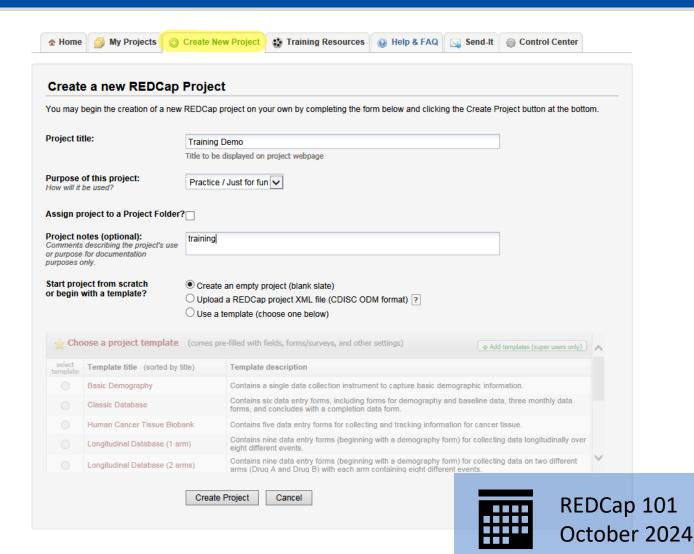
Before you Start: Decide How to Collect the Data

- Case Report Form/Data Collection Form
- Survey

REDCap projects can have both FORMS and SURVEYS.



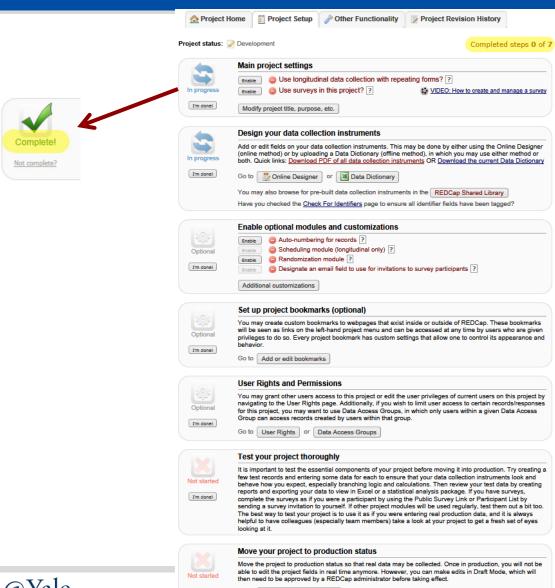
Overview: How a project is built







Setting up a Project: Step-by-Step



Go to Move project to production

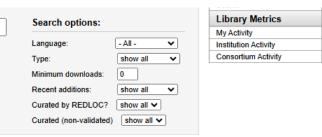


Example of a Build: Instrument Library





REDCap Shared Library



V	PROMIC	Search options:		Library Metrics
Keyword search:	PROMIS			My Activity
		Language: - All -	~	Institution Activity
	Search the library	Type: show a	all 🗸	Consortium Activity
		Minimum downloads: 0		
		Recent additions: show a	all 🗸	
		Curated by REDLOC? show a	all 🗸	
		Curated (non-validated) show	all 🗸	

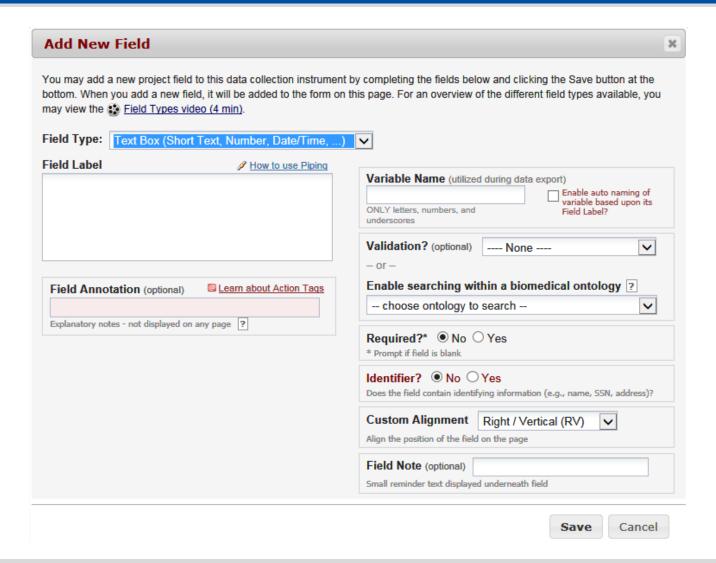
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 >>

Found 2106 results matching your search	Didn't find what you were looking for? Suggest a validated in	nstrument for library inclusion
Title		Downloads
➤ PROMIS Perfil completo Función sexual y Satisfacción v2.0 (Muje	er activa sexualmente) 🛨 [Battery]	3
➤ PROMIS Sexual Function and Satisfaction v2.0 Full Profile (Sexu	ally Active Female) ★ [Battery]	8
➤ PROMIS-29+2 Profile/Battery v2.1 (PROPr) ★ [Battery]		341
➤ PROMIS - 29 Profile/Battery v2.0 ★ [Battery]		737
➤ PROMIS - 43 Profile v2.0 (Spanish) ★		27
➤ PROMIS - 43 Profile/Battery v2.0 ★ [Battery]		55



REDCap

Example of a Build: Creating Fields





Example of a Build: Uploading Metadata

Data Dictionary

 The Data Dictionary is a formatted spreadsheet in CSV (comma separated format) containing the metadata used to construct data collection instruments and fields.

This is recommended for advanced users.

	Α	В	С	D	Е	F	G	Н	I	J	K	L	М	N	О	Р	Q	R	S
1	Variable /	Form Nam	Section He	Field Type	Field Label	Choices, C	Field Note	Text Valida	Text Valid	Text Valid	Identifier?	Branching	Required F	Custom Al	Question	Matrix Gro	Matrix Rar	Field Anno	tation
2	id	screening_e	enrollmen	t text	Participant	ID code		number											
3	screendate	screening_e	enrollmen	t text	Date of sci	reening		date_mdy					у						
4	version_sc	screening_e	enrollmen	text	Version								у						
5	intid_scr	screening_e	enrollmen	t text	Interviewe	r ID							у						
6	participate	screening_e	enrollmen	t dropdown	Have you	1, Yes 2,	No 8, Dor	n't know				[version_s	у						
7	name_pric	screening_e	enrollmen	t dropdown	Is the subje	1, Yes - U1	.9 - Eligible	for IMAGIN	2, Yes -	IMAGIN - E	igible for U	[version_s	у						
8	name_pric	screening_e	enrollmen	t dropdown	Is the subje	1, Yes - NO	OT Eligible	2, No - Elig	gible			[version_s	у						
9	age	screening_e	enrollmen	t text	How old w	ere you on	your last b	number	16	100			у						

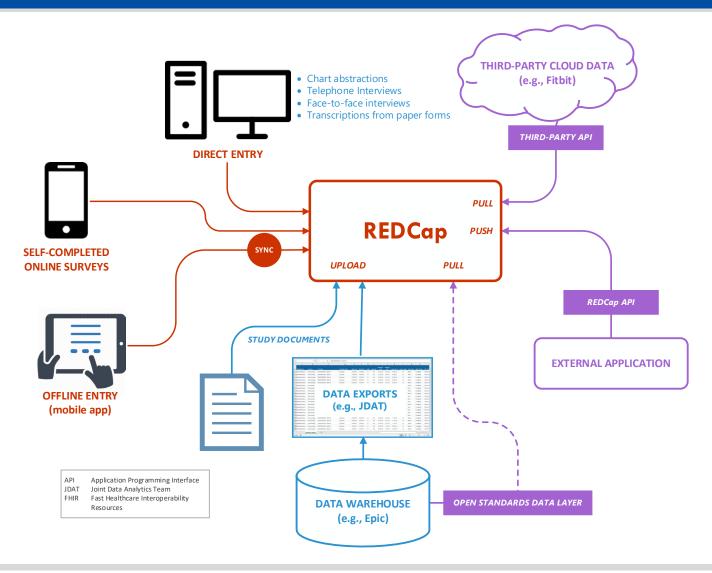


QUESTIONS or COMMENTS?

Next: Collecting Data

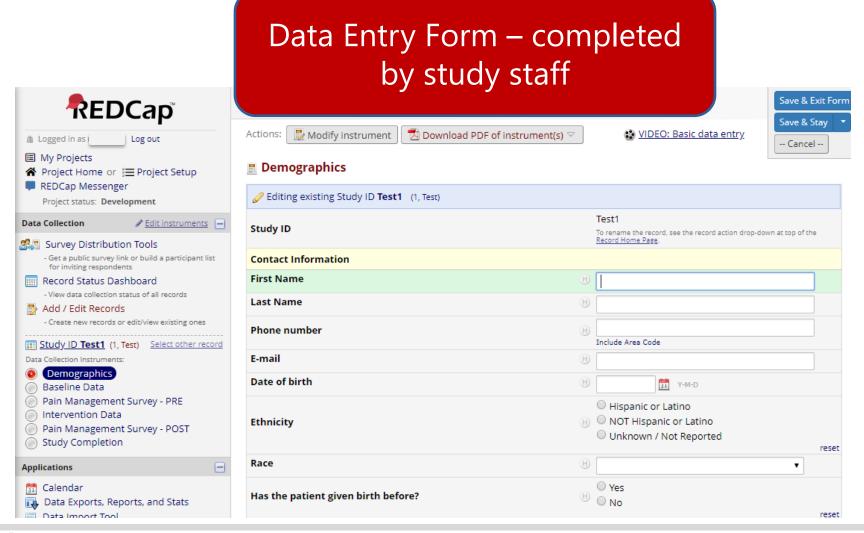


Collecting Data: How Data is Captured



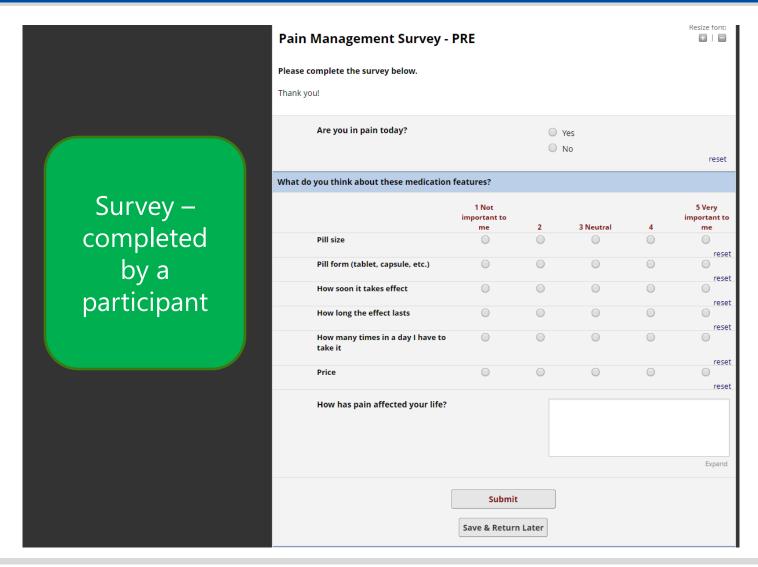


Example of Case Report Form Data Collection Form





Example of Data Collection Form: Surveys



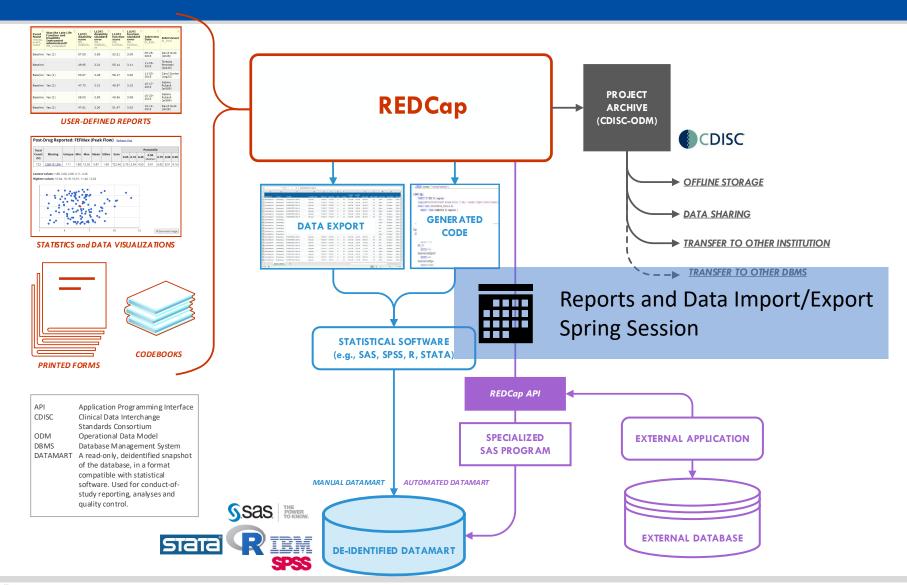


QUESTIONS or COMMENTS?

Next: Data Management Tools



Advanced Overview: Data Management



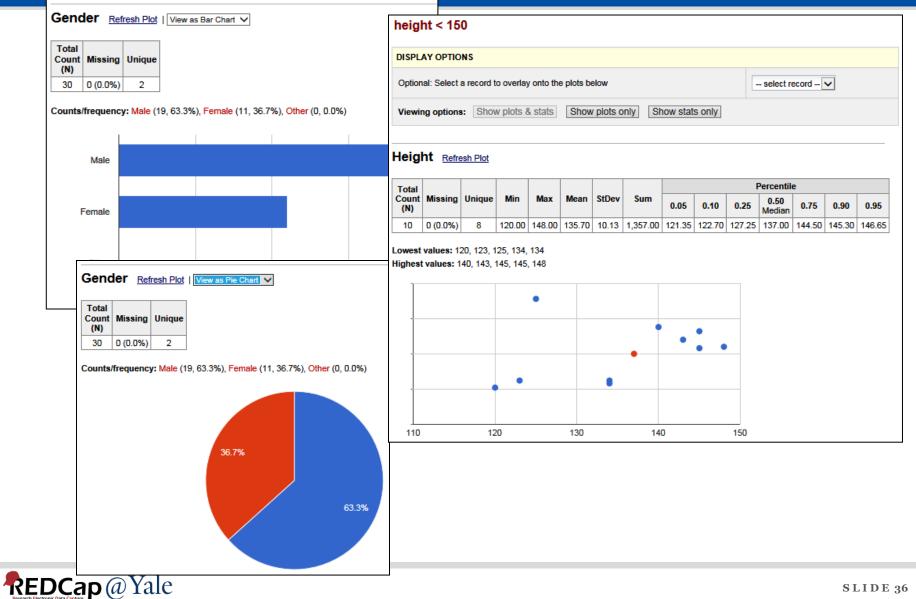
Data Management Tools: Reporting

Reports can be used to facilitate data management, interim results and analysis

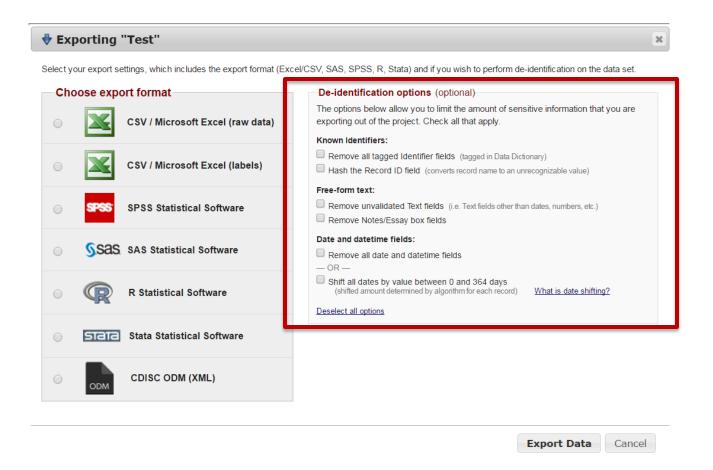




Data Management Tools: Statistics and Graphs/Charts



Data Management Tools: Exports





Data Management Tools: Data Dictionary Codebook

• The Data Dictionary Codebook is a 'human' readable, read-only version of the project data dictionary.

□ Print page □ Data Dictionary Codebook						
#	Variable / Field Name	Field Label Field Note	Field Attributes (Field Type, Validation, Choices, Calculations, etc.)			
Instr	Instrument: Demographics (demographics)					
1	subjid	Subject ID	ext (integer, Min: 8000, Max: 8999), Required			
2	demo_date	Date Completed Demographics Form	xt (date_mdy), Required			
3	demo_init	Staff Initial	xt, Required			
4	age	Section Header: Demographics Form	text (integer, Min: 40), Required			
		Age				
5	sex	Gender	radio, Required 1 Male 0 Female			
6	ethnic	Ethnicity	radio, Required 1 Hispanic or Latino 2 Not Hispanic or Latino 3 Unknown 4 Declined to answer			
7	race	Race	radio, Required 1 American Indian or Alaskan Native 2 Asian 3 Black or African American 4 Native Hawaiian or Pacific Islander 5 White 6 Mixed race 7 Unknown			



QUESTIONS or COMMENTS?

Next: Resources to help you get started



REDCap Support



Training Sessions
Consultations



REDCap – "Project Builders"

Data Management Services

Yale Center for Clinical Investigation (YCCI)

https://medicine.yale.edu/ycci/researchservices/

Yale Center for Analytic Science (YCAS)

https://ysph.yale.edu/ycas/

Yale Pepper Center/Program on Aging (POA)

https://medicine.yale.edu/internal-

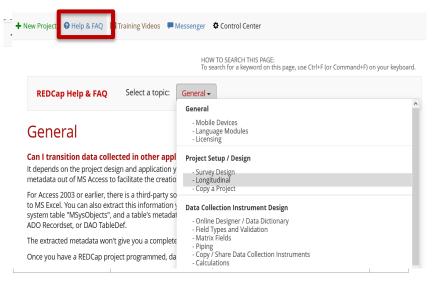
medicine/geriatrics/peppercenter/cores/operations/



REDCap's Do-It-Yourself Resources

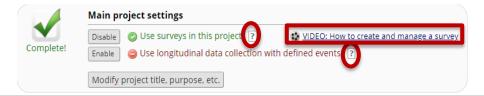
https://projectredcap.org/resources/videos/

25+ training video tutorials
Help & FAQ



Embedded text and videos throughout.

For example, in the online designer:





Yale's Do-It-Yourself Resources

https://portal.redcap.yale.edu/resources/



FAQ Library: Step-by-step instructions

eConsent.

Framework

🥞 🥀 REDCap @ Yale 🥃 Frequently Asked Question (FAQ) Library

- Build an eConsent
- Administer eConsent
- Revisions

How do I build an eConsent? [Copy & Paste or Type Content]

There are two ways to build an electronic consent document (eConsent) using REDCap. These instructions explain how to copy and paste (or type) content into REDCap. To build an eConsent by scanning an image of the consent form, please refer to FAQ: Build an eConsent [Scanned Image].



Other Videos & Libraries

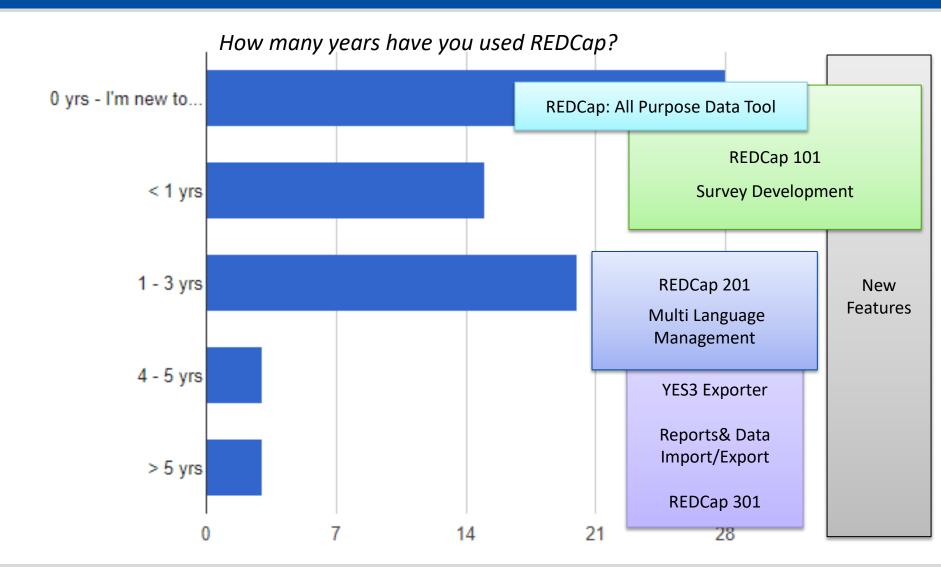


Spring Trainings

- New Features
 - Tuesday, February 25th at 1:00
- Managing Data in REDCap
 - Thursday, March 6th from 1:00
- Yale Study Support Suite (YES3)- Exporter
 - Wednesday, March 26th at 11:00
- Multi Language Management
 - Monday, April 21st at 1:00
- REDCap 301
 - Tuesday, May 13th at 11:00



Trainings & Audience https://portal.redcap.yale.edu/resources/training





Consultations and Services



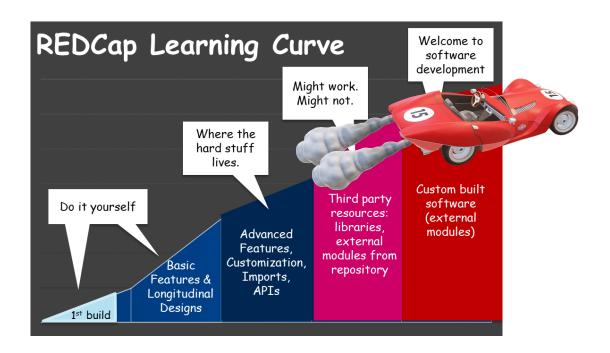
QUESTIONS or COMMENTS?





EXTRA CONTENT

Next: Advanced Data Management Tools





Advanced Data Management Tools: External Modules (EMs)

Individual packages of software that extend REDCap's functionality.



Repository of External Modules

The REDCap Repo is a centralized repository of curated External Modules that can be downloaded and installed in REDCap by a REDCap administrator. External Modules are add-on packages of software that can extend REDCap's current functionality, as well as provide customizations and enhancements for REDCap's existing behavior and appearance, either at the system level or project level. The modules provided here were created and submitted by software developers at various REDCap institutions around the world.

If you have created a module and wish to submit it to be listed in the REDCap Repo, please complete the <u>Module Submission Survey</u>. Updated versions must also be submitted via the survey. To learn more about the REDCap Repo module review process, you may download the <u>Module Review Guidelines (PDF)</u>.

You may search below for available modules. If you got to this site directly, you will be able to view information about each module, but you will not be able to download modules from this page unless you arrived here from the REDCap application and are a REDCap administrator. If you have questions or are experiencing issues, please contact redcap@yumc.org.

Disclaimer: The modules listed in the REDCap Repo have gone through a process of testing, validation, and curation by the Vanderbilt REDCap Team with help from trusted individuals in the REDCap Consortium. It should not be assumed that all modules are bug-free or perfect, so please be aware that the entire risk as to the quality and performance of the module as it is used in your REDCap installation is borne by the REDCap administators who download and install the modules.





External Modules (EMs)

- Commonly used external modules
 - Image Map
 - User can click on image regions to select field options, e.g. pain map
 - Cross-project piping
 - Pipe data from one project to another project
 - Auto Complete Form Status Based on Required Fields

*Contact us for suitability of external modules for your project



YES3 External Modules

HOME > NEWS > REDCAP@YALE TEAM SECURES NIH FUNDING TO SUPPORT REDCAP EXTERNAL MODULES

REDCap@Yale team secures NIH funding to support REDCap External Modules



October 5, 2021

Coming Soon!

Powerful REDCap software tools to support your research.

We are happy to announce that the REDCap@Yale team has secured funding through a <u>NIH NOSI award</u> along with two Development Projects under the Yale OAIC Pepper Center to make components of the Yale Study Support Suite (YES3), a Dashboard EM and a Study Portal EM, widely available.

As part of our 2021-2022 NIH award for the Yale Study Support Suite (YES3), we are sponsoring two internships.

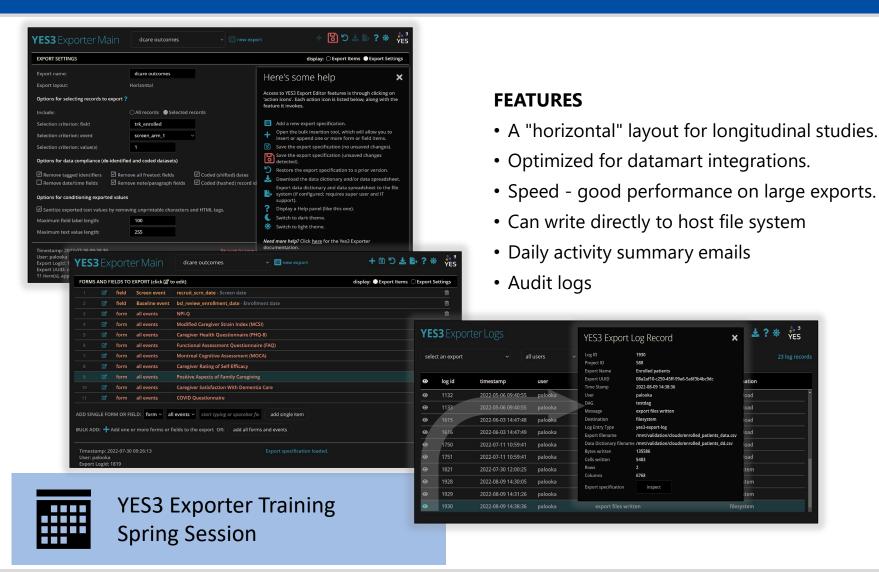
Click the link below for more information.

External link: https://medicine.yale.edu/news-article/yale-program-on-agental-program-on-



First Release: The YES3 Exporter

AVAILABLE NOW



QUESTIONS from the audience

How do users choose between REDCap and Qualtrics?



REDCap versus Qualtrics

	Qualtrics	REDCap
Expense/Cost	None	None
Learning Curve	Easy	Moderate
Classic or Longitudinal Design	Classic	Both
Randomization	Yes (limited)	Yes
Instrument type (survey, direct data entry)	Survey	Both
Editable look-and-feel (graphic customization)	Yes	Yes (limited)
Data Quality Checks	Yes	Yes
File uploads- scans, images, documents	Yes	Yes
API integration	Yes	Yes
Data Dictionary format	None (.qsf/JSON file)	Excel/CSV
Ability to import datasets	No	Yes
Automated survey invitations and email alerts	Yes	Yes
Data Export Types	SPSS, CSV,TSV, Excel, XML	SPSS, Stata, R, SAS, Excel, CSV, CDISC-ODM



REDCap Advantages Features not available in Qualtrics

- Export to SAS, STATA, R, SPSS, .csv
- Data quality rules
- Longitudinal or repeated measures
- Audit trails in logins
- Automated Survey Invitation and email alert options
- Ability to use a survey as both a survey and a case report form
- eConsent frameworks in Survey Settings

Source: https://ccts.uic.edu/wp-content/uploads/sites/569/2021/03/Qualtrics-to-REDCap_v2021.pdf



Qualtrics Advantages: Features not available in REDCap

- Export to .tsv
- Flexibility to graphically customize survey forms, web browser format (e.g., page at a time), and mobile device format (e.g., one question at a time)
- Nice library of pre-built surveys, blocks, and questions
- Survey flow features not available in REDCap: Question Randomizer,
 Web Service, authenticator, embedded data, table of contents
- Additional survey question types: Side by Side, Constant Sum, Hot Spot, Drill down, Gap Analysis, Timing, Pick Group Rank, Heat Map, Graphic Slider, record browser information
 - Some of these additional field types may be supported by REDCap external modules
- Additional survey applications: Survey Scoring

Source: https://ccts.uic.edu/wp-content/uploads/sites/569/2021/03/Qualtrics-to-REDCap v2021.pdf

