

Online Survey Design & Administration with REDCap - Part 1

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Agenda

Part 1

- What and why REDCap?
- Getting started
- Quick tour around REDCap
- Creating a REDCap project
 - Lab 1: Creating an account & project
- Creating a data instrument
 - Lab 2: Creating an instrument
- Creating reports and exporting data
 - Lab 3: Creating a report

Part 2

- Collecting data from participants using surveys
- Inviting participants to one-time surveys
 - Lab 4: Creating a one-time survey
- Creating follow-up surveys
- Importing data into REDCap
 - Lab 5: Importing data into REDCap
- Project status: development vs. production
- Summary of other useful REDCap features

What is REDCap?

- REDCap == Research Electronic Data Capture
- REDCap is an Electronic Data Capture (EDC) system
- EDC systems are used to capture data onto an electronic system (i.e., a database)
 - Survey systems are similar to EDCs but are primarily intended to directly survey a participant
 - EDCs, on the other hand, are generally used by study staff to enter data from paper forms or while interviewing a participant or perhaps abstracting their chart
 - REDCap is an EDC that also supports surveys

Where did REDCap come from?

- REDCap was developed at Vanderbilt University for the use of universities and non-profit institutions
- REDCap is maintained by the REDCap Consortium of which UW & CSDE are members
- REDCap is for non-profit use only

And where is REDCap going?

- REDCap is installed on more than 7,500 partner sites and is current serving over 2 million projects with 3.5 million users
- REDCap has a vibrant & active community and is constantly being upgraded and improved

Quick Tour

Home page

Welcome to REDCap!

REDCap is a secure web platform for building and managing online databases and surveys. REDCap's streamlined process for rapidly creating and designing projects offers a vast array of tools that can be tailored to virtually any data collection strategy.

REDCap provides automated export procedures for seamless data downloads to Excel and common statistical packages (SPSS, SAS, Stata, R), as well as a built-in project calendar, a scheduling module, ad hoc reporting tools, and advanced features, such as branching logic, file uploading, and calculated fields.

Learn more about REDCap by watching a [brief summary video \(4 min\)](#). If you would like to view other quick video tutorials of REDCap in action and an overview of its features, please see the [Training Resources](#) page.

NOTICE: If you are collecting data for the purposes of human subjects research, review and approval of the project is required by your Institutional Review Board.

If you require assistance or have any questions about REDCap, please contact [REDCap Administrator \(mbw@uw.edu\)](mailto:REDCapAdministrator@mbw@uw.edu).

REDCap Features

Build online surveys and databases quickly and securely in your browser

- Create and design your project using a secure login from any device. No extra software required. Access from anywhere, at any time.

Fast and flexible - Go from project creation to starting data collection in less than one day. Customizations and changes are possible any time, even after data collection has begun.

Advanced instrument design features - Auto-validation, calculated fields, file uploading, branching/skip logic, and survey stop actions.

e-Consent - Perform informed consent electronically for participants via survey.

Diverse and flexible survey distribution options - Use a list of email addresses or phone numbers for your survey respondents and automatically contact them with personalized messages, and track who has responded. Or create a simple link for an anonymous survey for mass email mailings, to post on a website, or print on a flyer.

REDCap Mobile App - Collect data offline using an app on a mobile device when there is no WiFi or cellular connection, and then later sync data back to the server.

Data quality - Use field validation, branching/skip logic, and Missing Data Codes to improve and protect data quality during data entry. Open data queries to automatically identify and resolve discrepancies and other issues real-time.

Custom reporting - Create custom searches for generating reports to view aggregate data. Identify trends with built-in basic statistics and charts.

Export data to common analysis packages - Export your data as a PDF or as CSV data for easy analysis in SAS, Stata, R, SPSS, or Microsoft Excel.

Secure file storage and sharing - Upload and share any type of file with anyone in the world through the File Repository feature or Send-It tool. Also works with exports and other built-in file uploading features.

Data-based triggers and alerts - Send real-time alerts and notifications to your team or other stakeholders via email, text, or phone based on certain data being entered or specific questions having a particular answer.

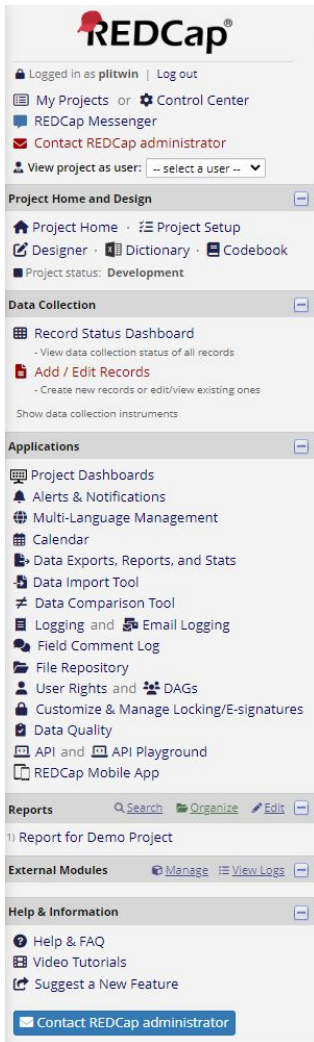
Connect to other resources - Use built-in features (API) to move data to/from your project. Build your own custom software development features to connect your project to other systems.

My Projects Page

[Home](#)[My Projects](#)[+ New Project](#)[Help & FAQ](#)[Training Videos](#)[Send-It](#)[Messenger](#)[Control Center](#)

Listed below are the REDCap projects to which you currently have access. Click the project title to open the project. [Read more](#) To review which users still have access to your projects, visit the [User Access Dashboard](#).

My Projects		Organize	Collapse All	Filter projects by title				
Project Title	PID	Records	Fields	Instruments	Type	Status		
Paul's Demo Project	15	0	2	1 form				
Another Project	16	0	2	1 form				



Project Navbar

Access to most parts of REDCap, including:

- Other pages (My Projects, Project Home, etc.)
- Data collection
- Other Components (Applications)
- Reports
- Help

Your Navbar will vary depending on your security level & items in project

Project Setup page

Paul's Demo Project

PID 15

Project Home

Project Setup

Other Functionality

Project Revision History

Edit project settings

Project status: Development

Completed steps 0 of 7



Not started

I'm done!

Main project settings

Disable

Use surveys in this project?

VIDEO: How to create and manage a survey

Enable

Use longitudinal data collection with defined events?

Modify project title, purpose, etc.



Not started

I'm done!

Design your data collection instruments & enable your surveys

Add or edit fields on your data collection instruments (survey and forms). This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method). You may then enable your instruments to be used as surveys in the Online Designer. Quick links: [Download PDF of all instruments](#) OR [Download the current Data Dictionary](#)

Go to

Online Designer

or

Data Dictionary

Explore the

REDCap Instrument Library

Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been tagged?

Learn how to use [Smart Variables](#) [Piping](#) [Action Tags](#) [Field Embedding](#) [Special Functions](#)



Optional

I'm done!

Enable optional modules and customizations

Enable

Repeating Instruments

Disable

Auto-numbering for records

Enable

Scheduling module (longitudinal only)

Enable

Randomization module

Enable

Designate an email field for communications (including survey invitations and alerts)

Enable

Twilio SMS and Voice Call services for surveys and alerts

Enable

SendGrid Template email services for Alerts & Notifications

Additional customizations

Provides access to

- Online designer
- Data dictionary
- Project title
- Many project settings
- Optional modules and customizations
- User rights

Tabs across top, provide additional access to

- Project Home
- Revision history







Your access to some features will be affected by security level

Record Status Dashboard

Record Status Dashboard (all records)

Displayed below is a table listing all existing records/responses and their status for every data collection instrument (and if longitudinal, for every event). You may click any of the colored buttons in the table to open a new tab/window in your browser to view that record on that particular data collection instrument. Please note that if your form-level user privileges are restricted for certain data collection instruments, you will only be able to view those instruments, and if you belong to a Data Access Group, you will only be able to view records that belong to your group.

Legend for status icons:

-  Incomplete
-  Unverified
-  Complete
-  Incomplete (no data saved) [?](#)
-  Partial Survey Response
-  Completed Survey Response

Dashboard displayed:

[Create custom dashboard](#)




















































Displaying record of 68 records

records per page

[+ Add new record](#)

Displaying: [Instrument status only](#) | [Lock status only](#) | [All status types](#)

[Table not displaying properly](#) [?](#)

Subject Id	Reversal task - REDCap test/practice	RadialArraySetup	Radialarraywarmups	Radialarraytrials
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

Provides

- Overview of all your records
- Access to custom dashboards
- Ability to add new records

Add/Edit Records

Add / Edit Records

You may view an existing record/response by selecting it from the drop-down lists below. To create a new record/response, click the button below.

Total records: 303	
Choose an existing Subject Id	-- select record -- ▾
	+ Add new record

Data Search	
Choose a field to search <small>(excludes multiple choice fields)</small>	All fields ▾
Search query <small>Begin typing to search the project data, then click an item in the list to navigate to that record.</small>	<input type="text"/>

Allows you to

- Select a record by subject/record id
- Add a new record
- Search for a record by most fields in project

Creating a REDCap Project

What is a REDCap Project?

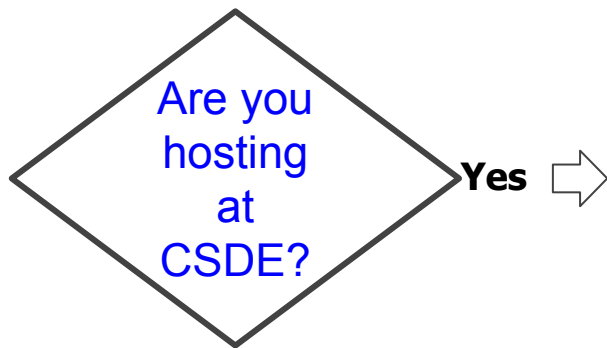
- A **project** is a self-contained container for all related data collected for a research or other project
- Think of a **project** as a **database** in REDCap
- All projects are independent of other projects, regardless of who created the other projects
- You can see all your projects (i.e., all projects for which you have user rights) at the My Projects page

Lab 1: Creating Your Account and a Project

In this lab you will create a REDCap Account and a project

1. Create an temporary account on Vanderbilt REDCap Server
2. Create a new project

Creating a REDCap Project at UW

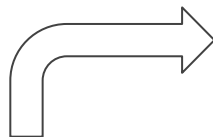


No
(ITHS, etc.)



Talk to your host about account/project creation

Request access by emailing **csde_help@uw.edu**



Login with your UW NetID at <https://surveys.csde.washington.edu/>



Follow instructions in email to verify account & log back in



Click **New Project** along top bar

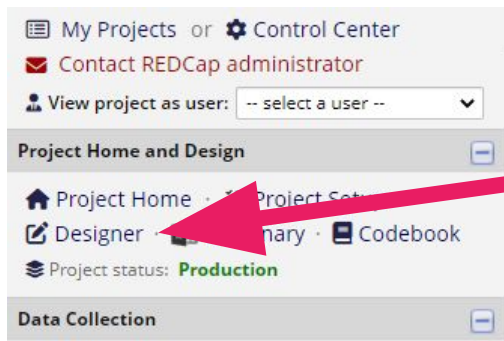
A screenshot of the REDCap web application's top navigation bar. The bar is light gray and contains the REDCap logo on the left, followed by several menu items: 'Home', 'My Projects', '+ New Project' (highlighted with a blue border), 'Help & FAQ', 'Training Videos', 'Send-It', and 'Messenger'.

Creating an Instrument

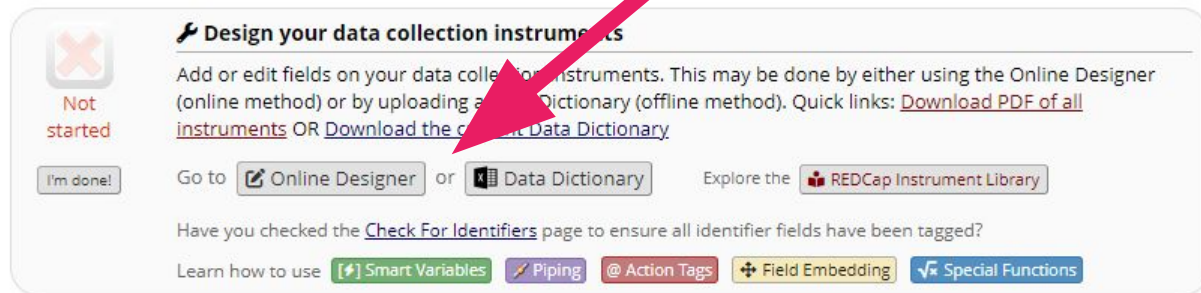
What is a REDCap Instrument?

- Recall that a **project** is a self-contained container for all related data collected for a research or other project
- A **project** is essentially a **database** in REDCap
- An **instrument** is a way to collect a set of related data
 - Synonyms for instrument are form and survey
- A project may contain many instruments
 - For example, a project studying a disease might contain the following instruments:
 - Demographics
 - Medical History
 - Current Medications
 - Outcomes

Creating an instrument using the designer



My Projects or Control Center
Contact REDCap administrator
View project as user: -- select a user --
Project Home and Design
Project Home · Project Settings
Designer · Library · Codebook
Project status: Production
Data Collection



Design your data collection instruments

Add or edit fields on your data collection instruments. This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method). Quick links: [Download PDF of all instruments](#) OR [Download the current Data Dictionary](#)

Go to [Online Designer](#) or [Data Dictionary](#) Explore the [REDCap Instrument Library](#)

Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been tagged?

Learn how to use [Smart Variables](#) [Piping](#) [Action Tags](#) [Field Embedding](#) [Special Functions](#)

Starting with a new project

- For new projects, you will start with a single data collection instrument, **Form 1**
- **Do not delete** this instrument; **rename** it instead

Data Collection Instruments

[+ Create](#) a new instrument from scratch

[Import](#) a new instrument from the official [REDCap Instrument Library](#) ?

[Upload](#) instrument ZIP file from another project/user or [external libraries](#) ?

Form options:

[Form Display Logic](#)


Instrument name	Fields	View PDF	Instrument actions
Form 1	1		Choose action ▾

Rename

Copy

Delete

Download instrument ZIP



Your first instrument (form)

- The first form in the project will always have the **record_id** field as first and only field
- **Don't delete this field;** it is the primary key of your project; but you can rename it.
- Click on **Add Field** button at bottom to add additional fields

The screenshot shows the 'Online Designer' tab selected in a navigation bar. Below the navigation bar, there are two buttons: 'Create snapshot of instruments' and 'VIDEO: How to use this page'. A green box contains the text: 'Ready to add fields. You may now begin adding fields to your data collection instrument below using the Online Designer. Alternatively, you may build your fields in the Data Dictionary (offline method) by clicking its tab above.' Below this, there are two paragraphs of text explaining the module's purpose and how to use it. A blue button labeled 'Return to list of instruments' is visible. The main content area shows 'Current instrument: Form 1' and a 'Preview instrument' button. Below this, there is a field labeled 'Record ID' with a 'Variable: record_id' label and a 'Variable' icon. A note below the field states: 'NOTE: The field above is the record ID field and thus cannot be deleted or moved. It can only be edited.' At the bottom, there are three buttons: 'Add Field', 'Add Matrix of Fields', and 'Import from Field Bank'. Two red arrows point to the 'Add Field' button and the 'Record ID' field.

Project Home Project Setup Online Designer Data Dictionary Codebook

Create snapshot of instruments VIDEO: How to use this page
Last snapshot: never ?

Ready to add fields

You may now begin adding fields to your data collection instrument below using the Online Designer. Alternatively, you may build your fields in the Data Dictionary (offline method) by clicking its tab above.

This module will allow you to create new data collection instruments/surveys or edit existing ones. Changes may be made by either using the **Online Designer** or **Upload Data Dictionary** (see tabs above), in which you may use either method or both. The Online Designer may help you get some initial fields/forms built quickly or to make quick edits, but using the Data Dictionary file may be more helpful if you will be adding a large number of fields for this project.

This page allows you to build and customize your data collection instruments one field at a time. You may add new fields or edit existing ones. New fields may be added by clicking the Add Field buttons. You can begin editing an existing field by clicking on the **Edit** icon. If you decide that you do not want to keep a field, you can simply delete it by clicking on the **Delete** icon. To reorder the fields, simply **drag and drop** a field to a different position within the form below. NOTE: While in development status, all field changes will take effect immediately in real time.

Return to list of instruments

Current instrument: **Form 1** Preview instrument

Variable: record_id
Record ID

NOTE: The field above is the record ID field and thus cannot be deleted or moved. It can only be edited.

Add Field Add Matrix of Fields Import from Field Bank

Adding a field

- Clicking the Add Field button brings up the **Add New Field** dialog
- This dialog will vary based on the chosen **Field Type**

Add New Field

You may add a new project field to this data collection instrument by completing the fields below and clicking the Save button at the bottom. When you add a new field, it will be added to the form on this page. For an overview of the different field types available, you may view the [Field Types video \(4 min\)](#).

Field Type:

Field Label Use the Rich Text Editor ?

Variable Name (utilized in logic, calcs, and exports)

ONLY letters, numbers, and underscores Enable auto naming of variable based upon its Field Label?

How to use: [Smart Variables](#) [Piping](#) [Field Embedding](#)

Validation? (optional)

---- None ----

- OR -

-- select ontology service --

Required?* No Yes
* Prompt if field is blank

Identifier? No Yes
Does the field contain identifying information (e.g., name, SSN, address)?

Custom Alignment
Align the position of the field on the page

Field Note (optional)
Small reminder text displayed underneath field

Action Tags / Field Annotation (optional)

Learn about [@ Action Tags](#) or [using Field Annotation](#)

Save Cancel

Field Types

- Standard fields

Field Type ✓ ---- Select a Type of Field ----

- Text Box (Short Text)
- Notes Box (Paragraph Text)
- Calculated Field
- Multiple Choice - Drop-down List (Single Answer)
- Multiple Choice - Radio Buttons (Single Answer)
- Checkboxes (Multiple Answers)
- Yes - No
- True - False
- Signature (draw signature with mouse or finger)
- File Upload (for users to upload files)
- Slider / Visual Analog Scale
- Descriptive Text (with optional Image/File Attachment)
- Begin New Section (with optional text)
- Dynamic Query (SQL)

- Plus Matrix fields

	Never	Rarely	Seasonally	Several times a month	At least once a week up to daily
Meat and/or seafood protein (<i>beef, pork, lamb, poultry, fish, organ meats, processed deli meat, etc.</i>)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-meat protein (<i>tofu, other soy products, egg, beans, peas, etc.</i>)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grains, starches, and/or cereals (<i>rice, potato, yam, corn, bread, pasta, grains, chips, crackers, etc.</i>)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Designing an instrument using the data dictionary

The screenshot shows the Microsoft Excel interface with a spreadsheet containing a data dictionary. The spreadsheet has columns for Variable, Form Name, Section Header, Field Type, Field Label, Choices/Calculations/Slider Labels, Field Note, Text Validity, and Identification. The data is organized into rows, with some rows containing detailed notes and choices for specific variables.

Variable	Form Name	Section Header	Field Type	Field Label	Choices, Calculations, OR Slider Labels	Field Note	Text Valid:Text Valid:Text Valid:Identifi
record_id	demographics		text	Record ID			
dm_first_n	demographics		text	First name			
dm_last_n	demographics		text	Last name			
dm_dob	demographics		text	Birthdate		date_mdy	today
dm_books	demographics		checkbox	How do you read books?	1, I read paper books 2, I read books on my phone/eReader/computer 3, I listen to audio books? 4, I don't read books		
dm_audio	demographics		checkbox	When do you listen to audio books?	1, In the car 2, On the bus or train 3, When walking or hiking 4, When running 5, In my home 6, At other times/places (explain below)		
dm_audio	demographics		notes	Please elaborate on the other times/places you listen to audio books?			
dm_tv	demographics		yesno	Do you own a television?			
lv_date	lab_values		text	Today's date		date_mdy	
lv_sbp	lab_values		text	Systolic blood pressure		integer	
lv_dbp	lab_values		text	Diastolic blood pressure		integer	
lv_hr	lab_values		text	Heart rate		per minute	number

Branching logic



Add/Edit Branching Logic

Branching Logic may be employed when fields/questions need to be hidden under certain conditions. If branching logic is defined, the field will only be visible if the conditions provided are true (i.e. show the field only if...). You may specify those conditions in the text box below for the Advanced Branching Logic Syntax or by choosing the Drag-N-Drop Logic Builder method, which allows you to build your logic in a much easier fashion by simply dragging over the options you want. You may switch back and forth between each method if you wish, but please be aware that since the advanced logic allows for greater complexity, it may not be able to be switched over to the Drag-N-Drop method if it becomes too complex.

Choose method below for the following field: **shows - What shows do you watch?**

Advanced Branching Logic Syntax How to use:

Show the field ONLY if...

[tv] = '1'

Test logic with a record: -- select a record -- [Clear logic](#)

— OR —

Drag-N-Drop Logic Builder

Field choices from other fields
(drag a choice below to box on right)

- audio_books_when = In my home (5)
- audio_books_when = At other times/places (explain below) (6)
- audio_books_other = (define criteria)
- tv = Yes (1)
- tv = No (0)
- books_complete = Incomplete (0)
- books_complete = Unverified (1)
- books_complete = Complete (2)

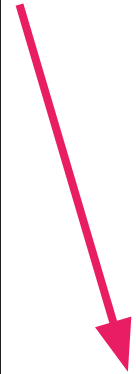
⇒ **Drag and Drop** ⇒

Show the field ONLY if...

ALL below are true
 ANY below are true

tv = Yes (1) **X**

[Clear logic](#)



Other form features

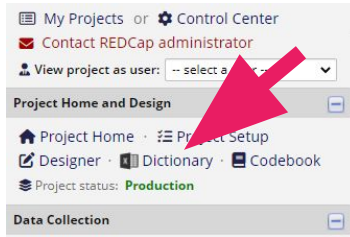
- **Validation** of fields
 - Email address, date, time, number with min and max
- **Calculated** fields
- **Piping** of data
 - Customize labels or display previously-entered data
- **Action Tags** (field modifiers)
 - Use to make fields read only, set a default value, hide fields, retire no-longer used choices, etc.

Lab 2: Creating an Instrument

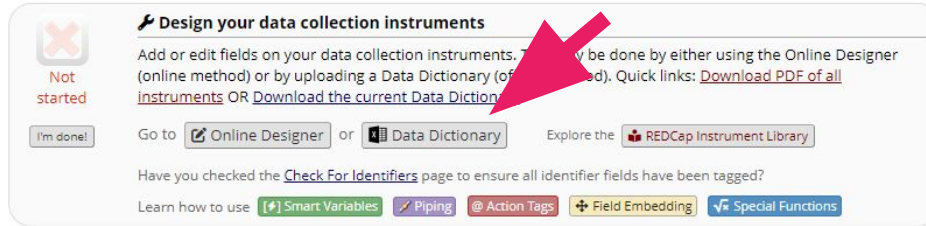
- In this lab you will create an instrument using the online designer.
- You will create different types of fields and add some branching logic to your instrument.
- You will also add a few records to the project
- Extra credit: After creating the instrument, download the data dictionary and make a modification and upload the data dictionary to see your change

Backup Data Dictionary for Next Week *Now!*

- Your trial account will expire before our next class
- Download your project data dictionary *now* and email it to yourself or save it to USB key, so you have it for next week's class



-or-



Creating Reports & Exporting Data

Reporting and Exporting Data

- REDCap allows you to create reports which can be viewed or be used to export data
- Data can be exported to...
 - CSV/Excel
 - SPSS
 - SAS
 - R
 - STATA

Creating a Report

- Click **Data Exports, Reports, and Stats** under Applications
- Click **Create New Report** and give your report a name
- Then complete four report steps:
 1. Set user access (optional)
 2. Add fields to the report using dropdowns or **Quick Add** button
 - optionally set additional report options (e.g., included survey timestamp, decide how to handle event/repeating data, etc.)
 3. Set an optional filter using dropdowns or advanced logic.
 - optionally add live filters
 4. Optionally order the results with sort fields

Any report can also be used to export data

Lab 3: Creating a Report

- In this lab you will create a report, preview the report, and export data using it.

Summary & Next Time

Summary

- REDCap is a rich web-based and research-oriented electronic data capture program
- A project is a self-contained container for your data; IOW a database in REDCap
- An instrument is a way to collect a set of related data
- A project would typically contain multiple instruments
- Synonyms for instrument are form and survey
- REDCap makes it easy to create projects and instrument

Next time

- You will explore how instruments can be altered so that participants can complete them w/o having to login to REDCap
- You will learn how to invite participants to surveys
- You will also learn how to import data into REDCap
- You will also explore project status (development vs production)
- And we will touch on other useful REDCap features