# Basics of REDCap Survey and Project Design

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# Agenda

- What and Why REDCap?
- Getting started
- Quick tour around REDCap
- Creating a REDCap project
  - Lab 1: Creating Your Account and a Project
- Creating a data instrument
  - Lab 2: Creating an Instrument
- Inviting participants to complete a survey
- Creating reports and exporting data
- Other REDCap Features and Training & Docs

# 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?

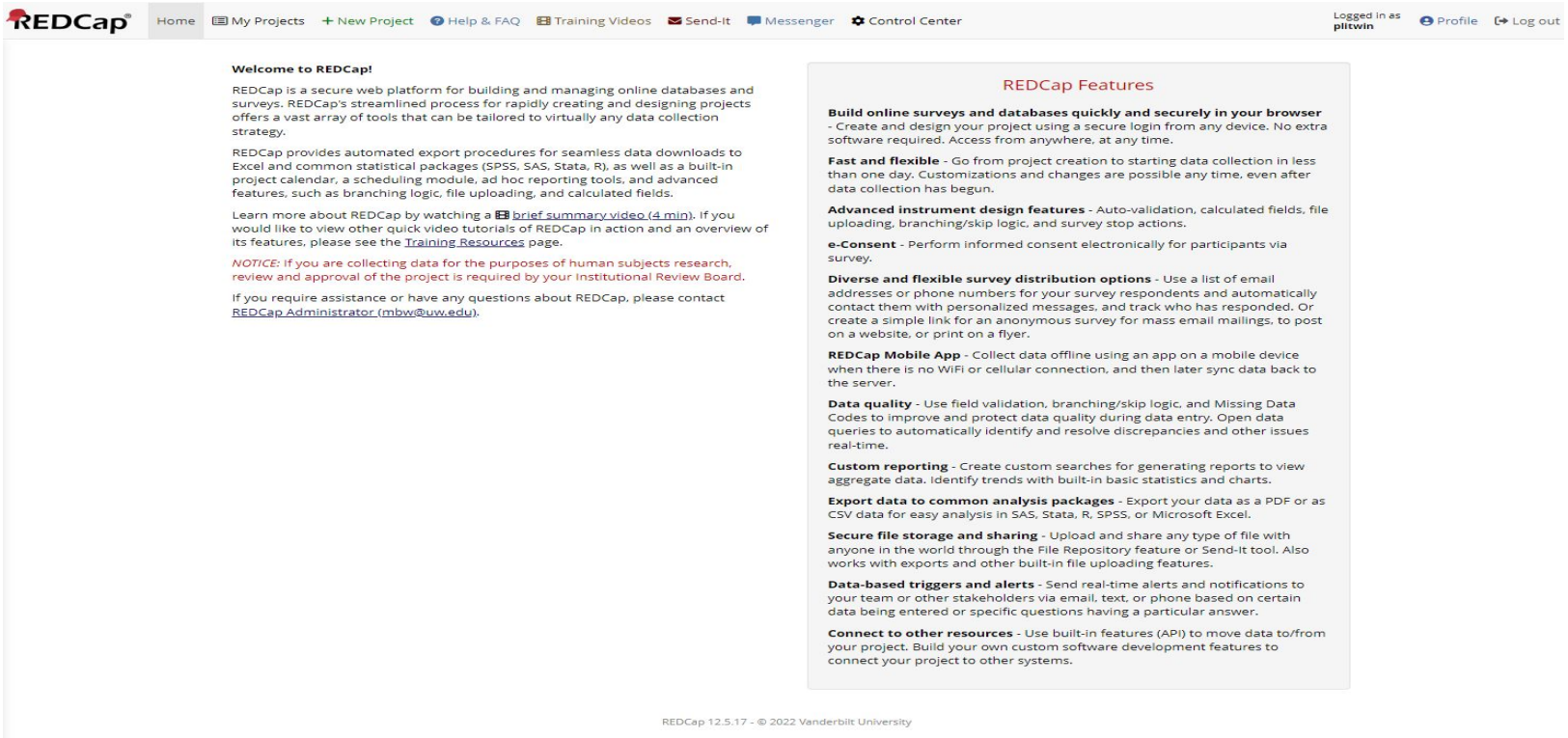
- REDCap was developed at Vanderbilt University for the use of universities and non-profit institutions
- REDCap is maintained by the REDCap Consortium of which UW & CSDE are members
- REDCap is for non-profit use only

# And where is REDCap going?

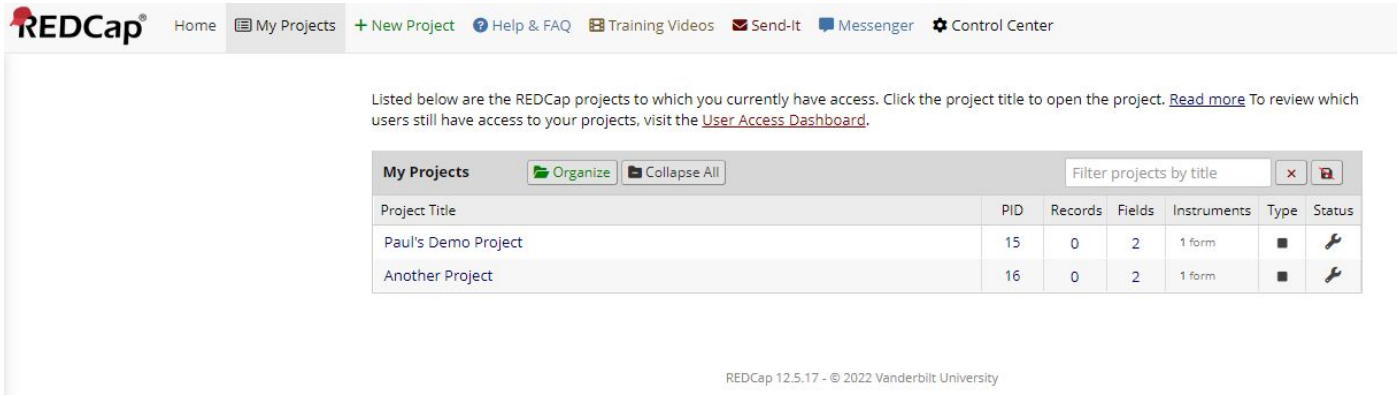
- REDCap is installed on more than 7,000 partner sites and is current serving 1.9 million projects with 3 million users
- REDCap has a vibrant & active community and is constantly being upgraded and improved

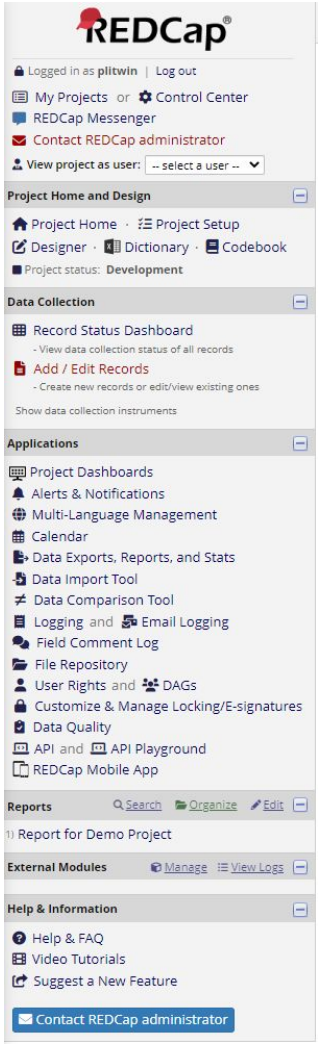
# Quick Tour

# Home page


REDCap
Home
My Projects
+ New Project
Help & FAQ
Training Videos
Send-It
Messenger
Control Center
Logged in as
plitwin
Profile
Log out
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).
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.
REDCap 12.5.17 - © 2022 Vanderbilt University

# My Projects Page





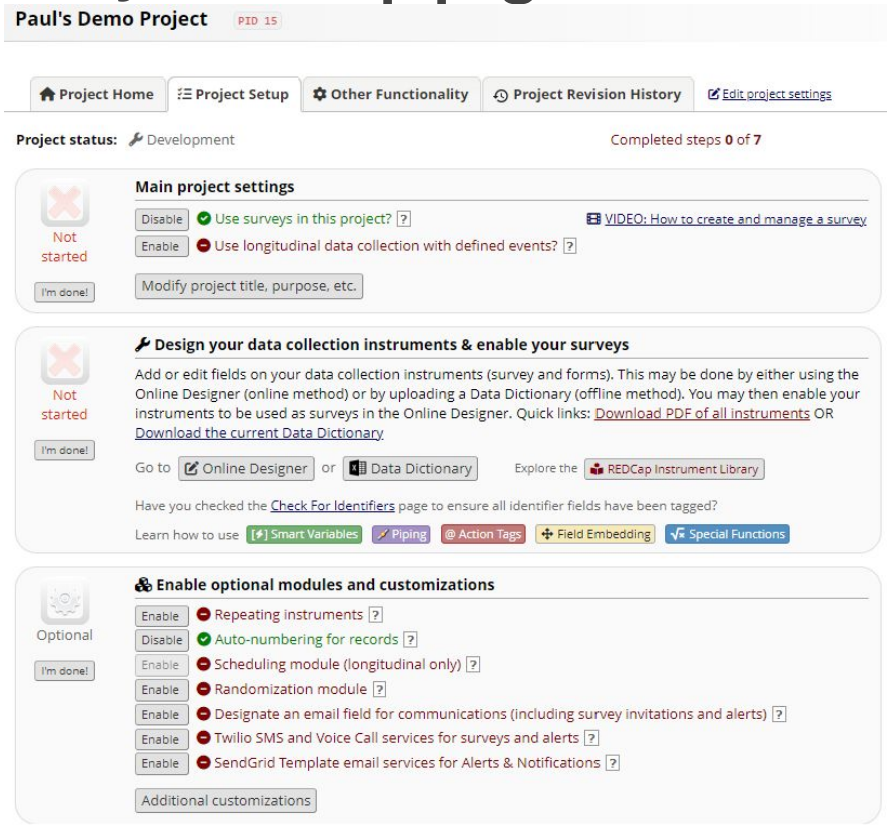

# Project Navbar

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




**Provides access to**

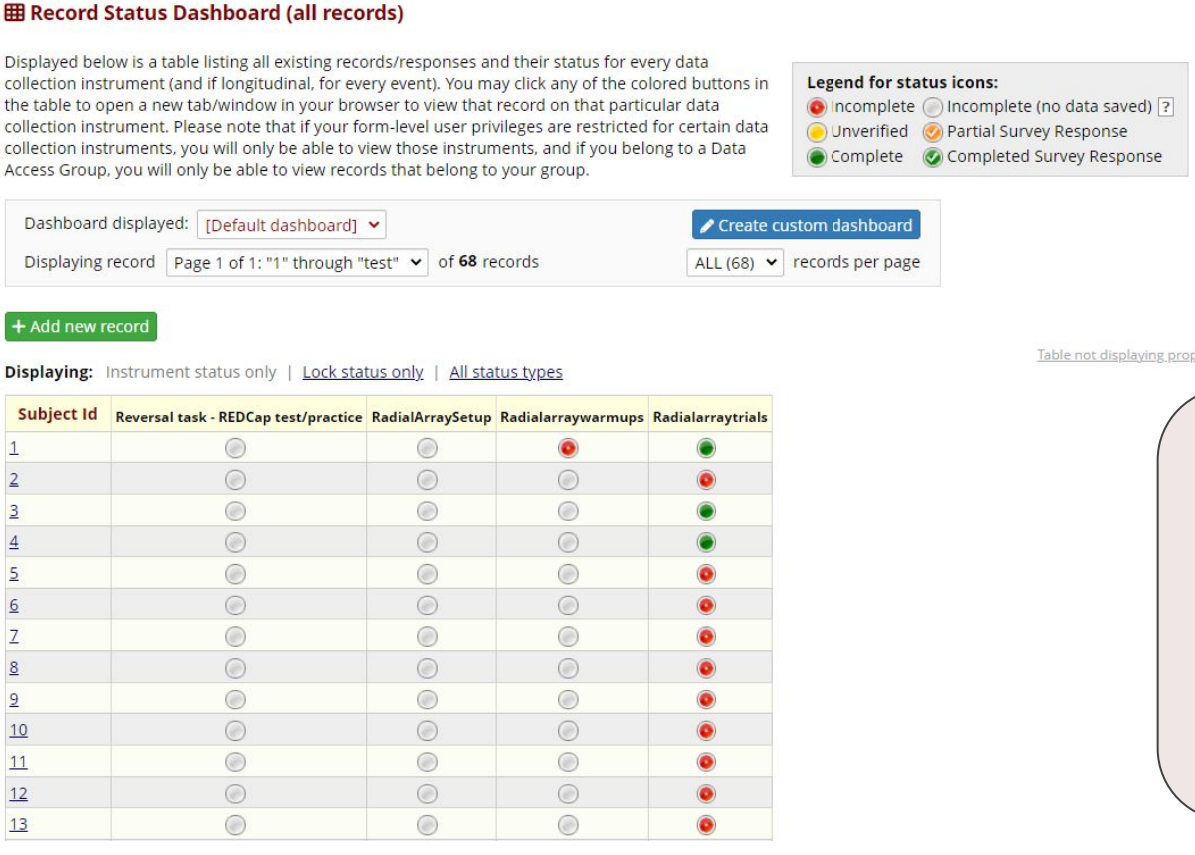
- Online designer
- Data dictionary
- Project title
- lots of project settings
- optional modules and customizations
- user rights

**Tabs across top, provide addtnl access to**

- Project Home
- Revision history

Your access to some features will be affected by security level

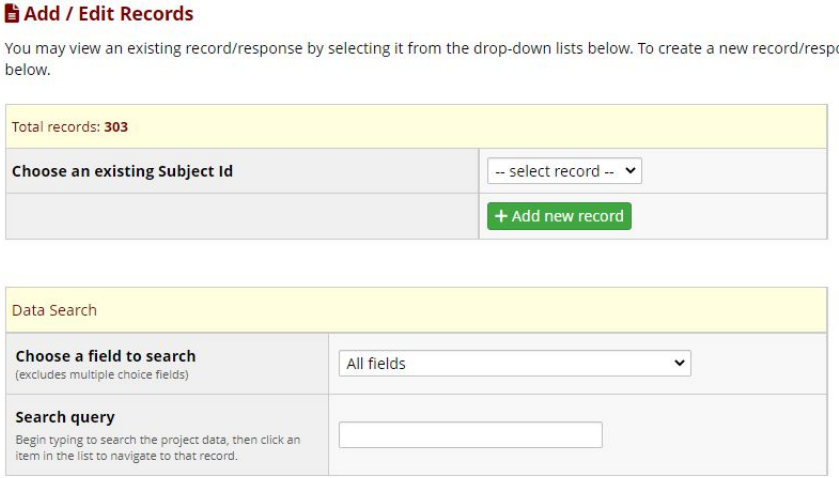
# Record Status Dashboard




**Provides**

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

# Add/Edit Records




**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

# Creating a REDCap Project at UW

Are you hosting at CSDE?

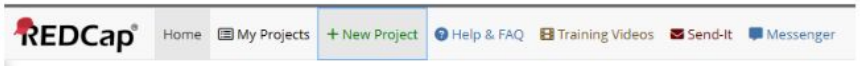
**Yes**

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




**No**
(ITHS, etc.)

Talk to your host about account/project creation

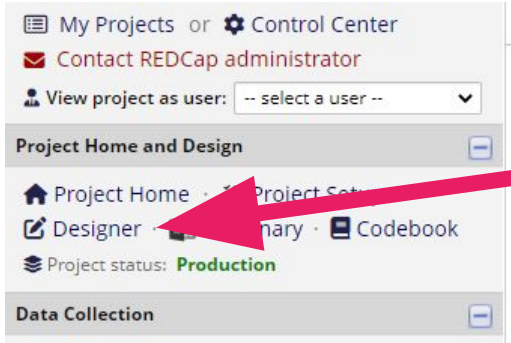
# Lab 1: Creating Your Account and a Project

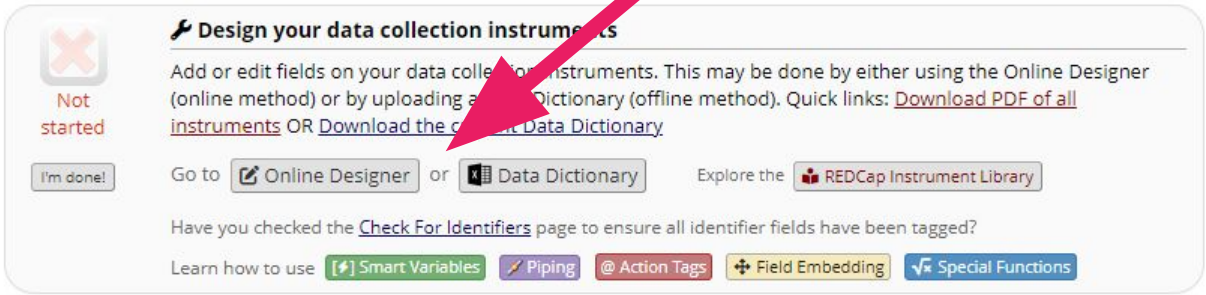
In this lab you will create an REDCap Account. There are two possible paths

a. Steps if you have a UW NET ID (UW student, staff, affiliates):
    i. Create an account/login on CSDE REDCap Server
    ii. Create a new project
b. Steps if you are not affiliated with UW:
    i. Create an temporary account on Vanderbilt REDCap Server
    ii. Create a new project

# Creating an Instrument

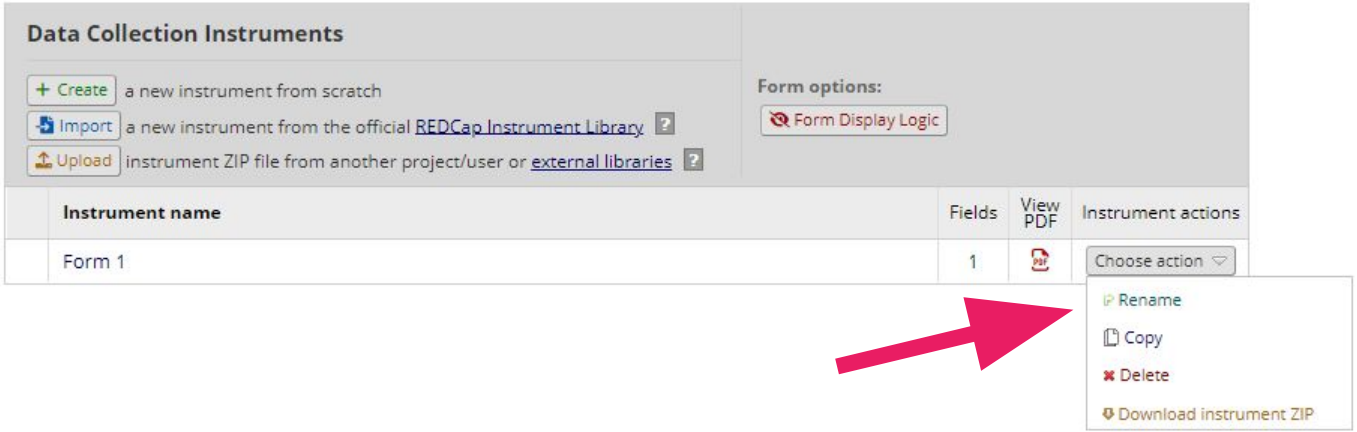
# Creating an instrument using the designer



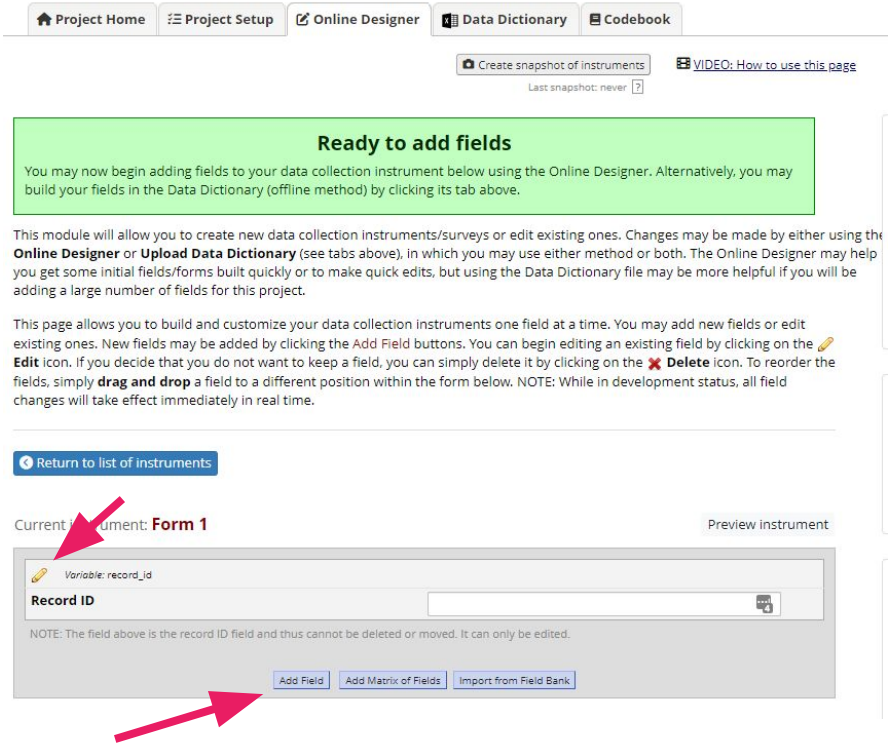
# Starting with a new project

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



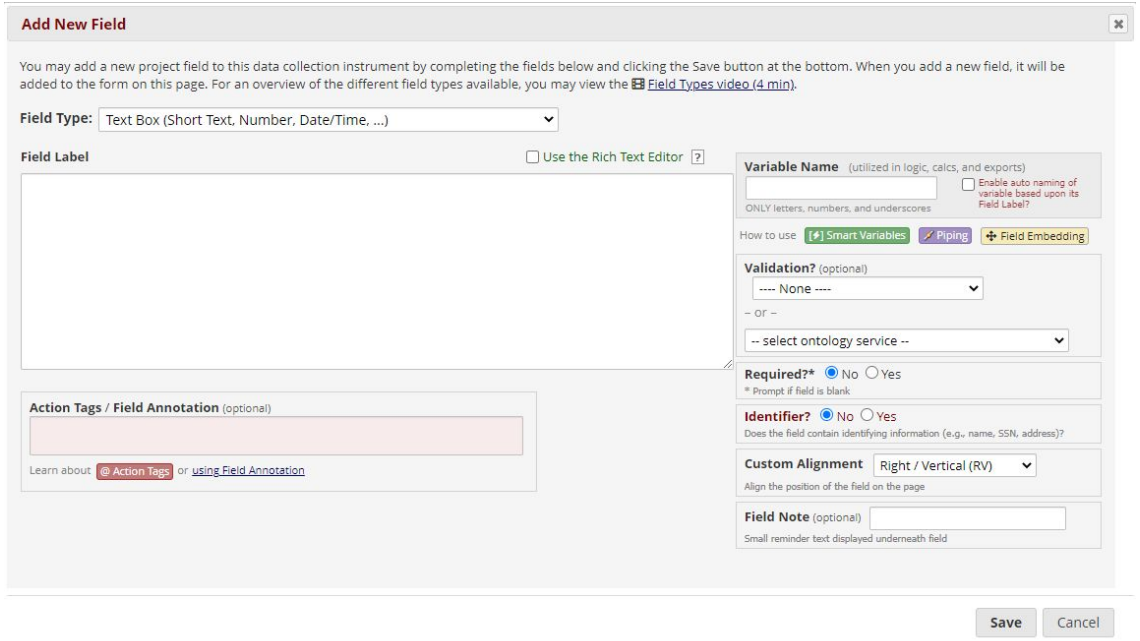
# Your first instrument (form)

- 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



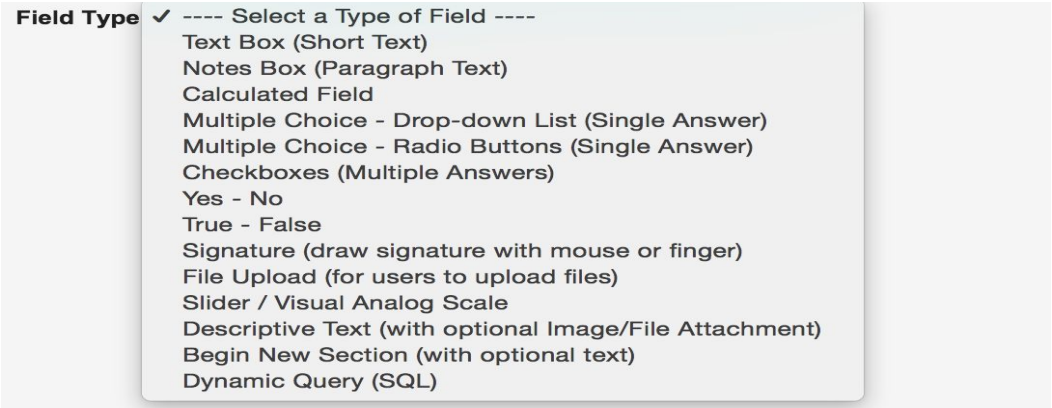
# Adding a field

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



# Field Types

- Standard fields

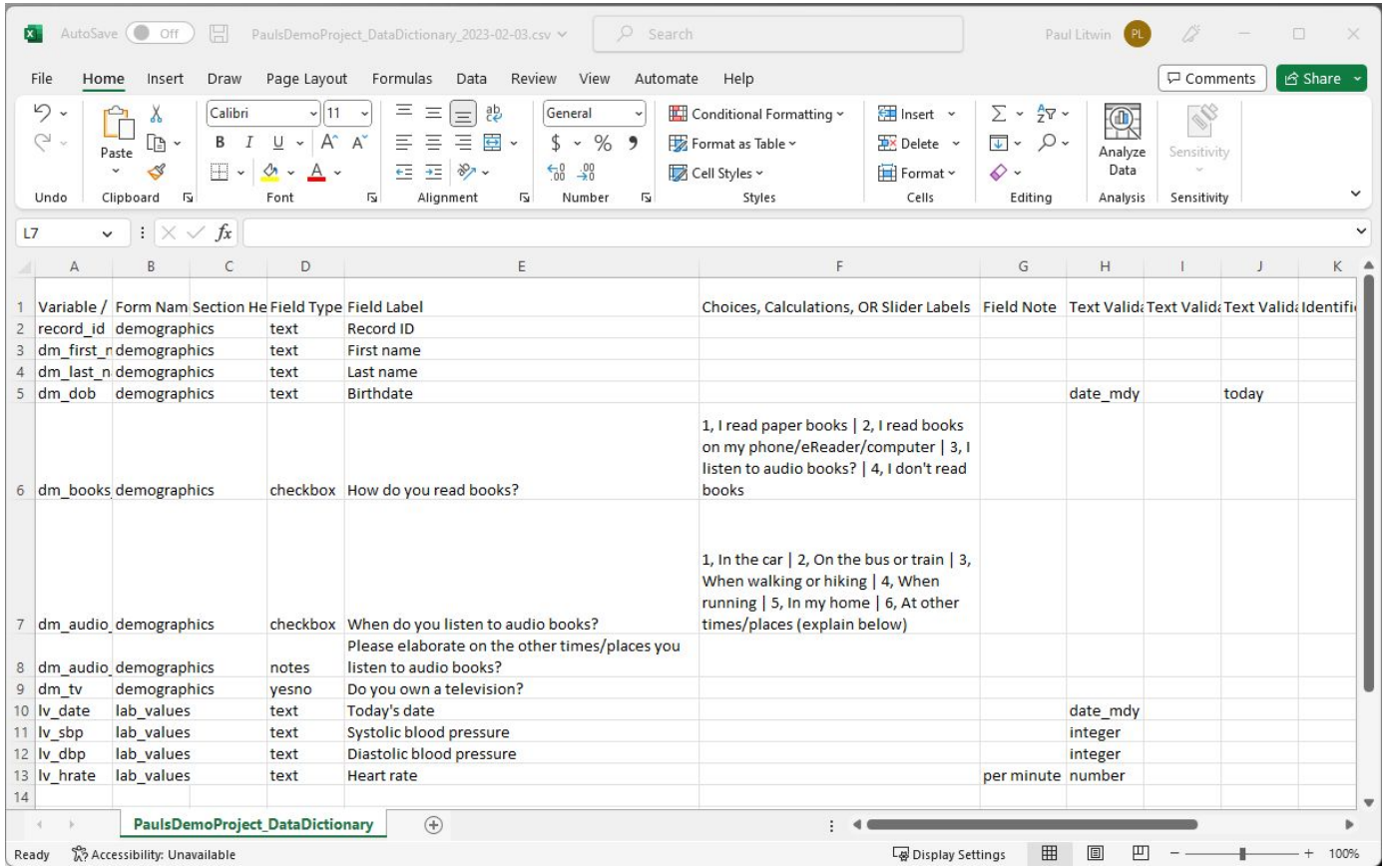



- Plus Matrix fields

# Other form features

- You an also use the **data dictionary** (spreadsheet) to create forms instead of or in addition to using the **designer**
- **Branching** (skip logic)
- **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.

# Designing an instrument using the data dictionary



| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Variable / | Form Nam | Section He | Field Type | Field Label | Choices, Calculations, OR Slider Labels | Field Note | Text Valida | Text Valida | Text Valida | Identifi |
| 2 | record_id | demographics | | text | Record ID | | | | | | |
| 3 | dm_first_r | demographics | | text | First name | | | | | | |
| 4 | dm_last_n | demographics | | text | Last name | | | | | | |
| 5 | dm_dob | demographics | | text | Birthdate | | | date_mdy | | today | |
| 6 | 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 | | | | | |
| 7 | 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) | | | | | |
| 8 | dm_audio_ | demographics | | notes | Please elaborate on the other times/places you listen to audio books? | | | | | | |
| 9 | dm_tv | demographics | | yesno | Do you own a television? | | | | | | |
| 10 | lv_date | lab_values | | text | Today's date | | | date_mdy | | | |
| 11 | lv_sbp | lab_values | | text | Systolic blood pressure | | | integer | | | |
| 12 | lv_dbp | lab_values | | text | Diastolic blood pressure | | | integer | | | |
| 13 | lv_hrate | lab_values | | text | Heart rate | | per minute | number | | | |
| 14 | | | | | | | | | | | |

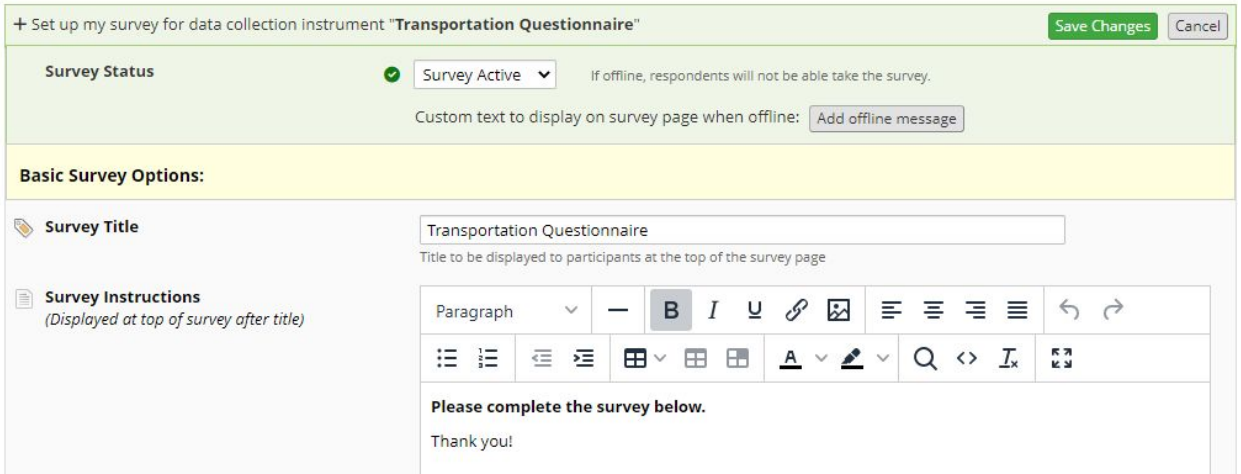
# Lab 2: Creating an Instrument

- In this lab you will create an instrument using the online designer
- Extra credit: After creating the instrument, download the data dictionary and make a modification and upload the data dictionary to see your change

# Inviting Participants to Take a Survey

# Understanding surveys

- A survey is an instrument that is enabled to be taken by a participant
- Once enabled, surveys settings control how the survey looks and behaves

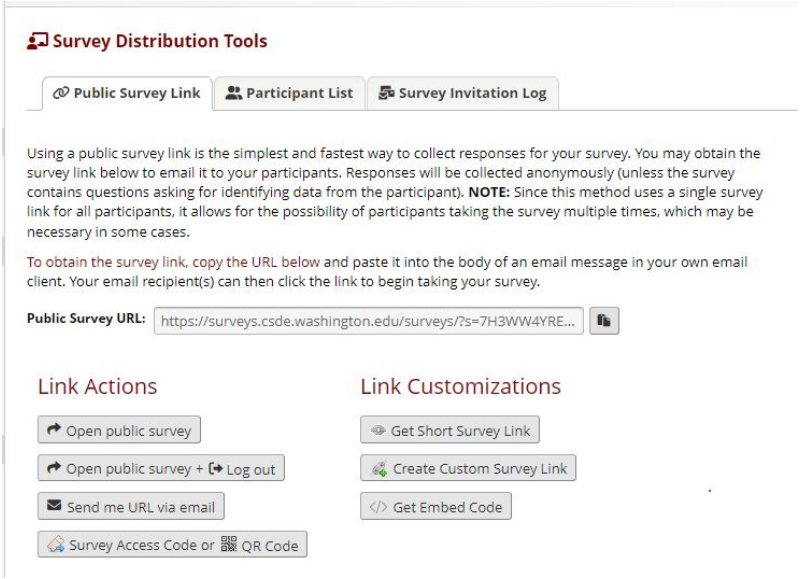


# Anonymous vs Non-anonymous Surveys

- Surveys can be anonymous or non-anonymous
  - **Anonymous surveys** are surveys that can be accessed from a **public survey link** and don't require you pre-identify the participant.
    - There can only be one anonymous survey per REDCap project
  - **Non-anonymous surveys** require you to send an invite to a participant you have already identified

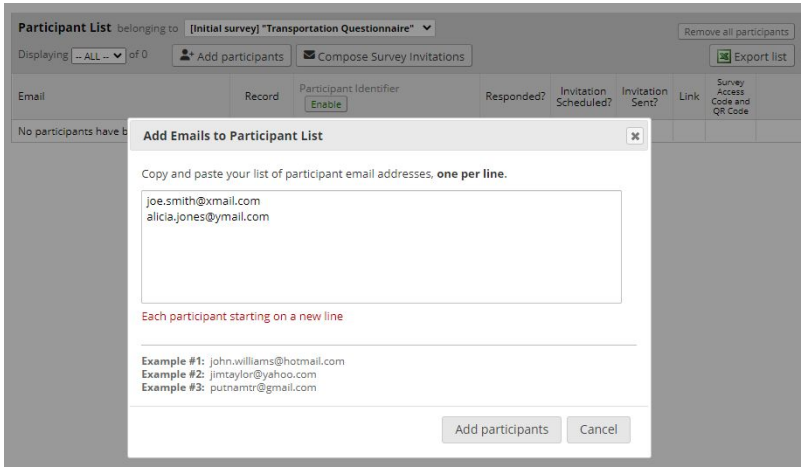
# Anonymous Surveys

- Once you have enabled surveys for the project, **Survey Distribution Tools** appears under Data Collection in the left-hand nav bar
- Click on Survey Distribution Tools to Get to the **Public Survey Link** tab and the **Public Survey URL** box.

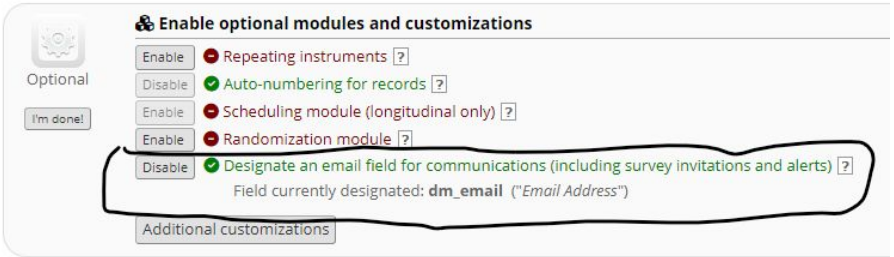


# Non-anonymous surveys require an email address

1. The email address can come from a Participant List (found under **Survey Distribution Tools**: **Participant List** tab)




2. Or the email can come from a **field on a previously completed instrument** in the same project



# Three ways to invite participants to a survey

1. In batches via **Compose Survey Invitations** (found under Survey Distribution Tools)
2. Automatically based on the completion of another instrument using **Automated Survey Invites (ASIs)**
3. Similar to using ASIs, you can also use the more flexible/powerful **Alerts & Notifications**

# 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

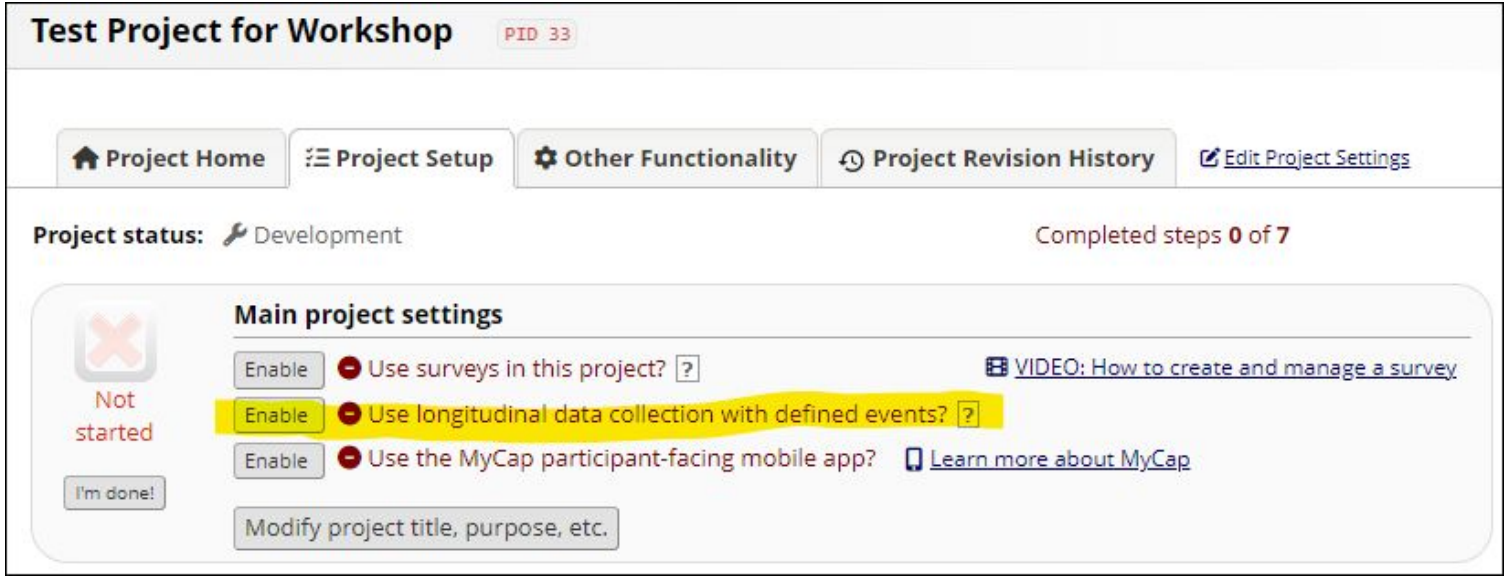
- Click **Data Exports, Reports, and Stats** under Applications
- Click **Create New Report** and give your report a name
- Then complete four report steps:
  1. Set user access (optional)
  2. Add fields to the report using dropdowns or **Quick Add** button
     - optionally set additional report options (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

# Other REDCap Features

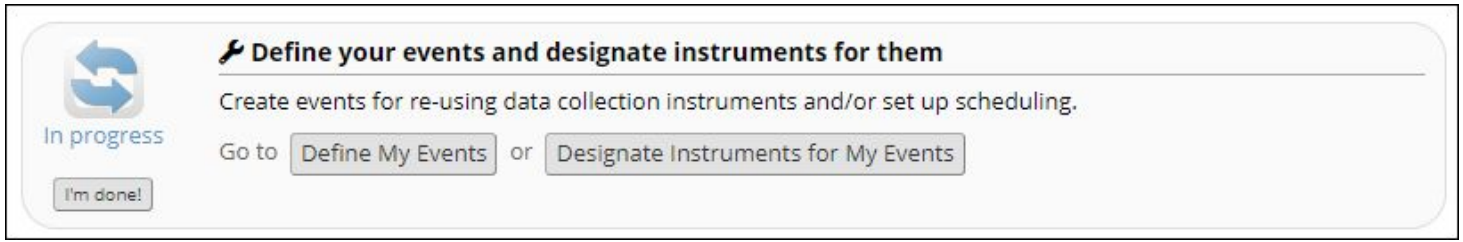
# Longitudinal Projects

- If you need to collect data at multiple timepoints, you can enable longitudinal data collection in Project Setup



# Longitudinal Projects

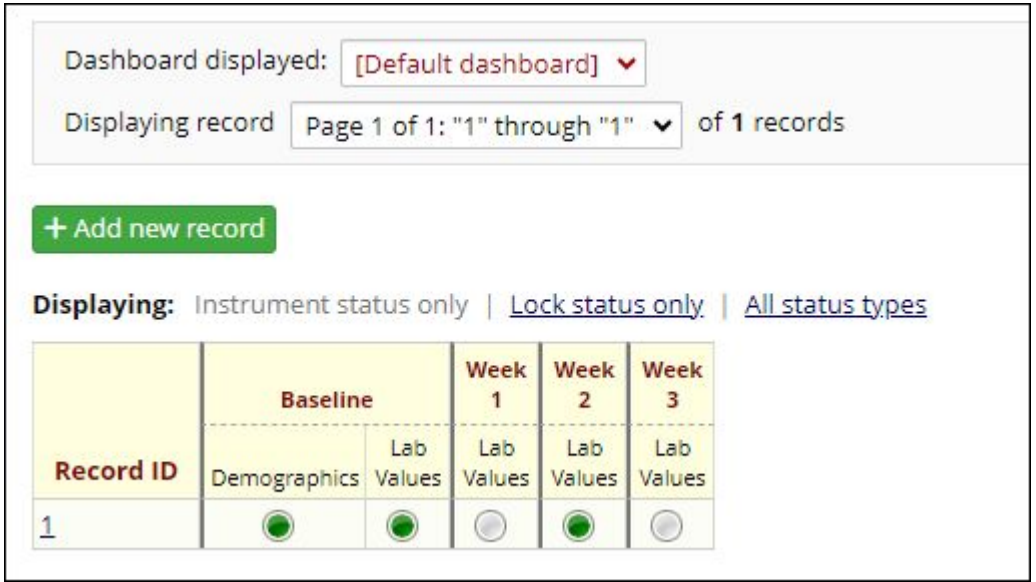
- Once enabled, you configure your timepoints by…
  - Defining events
  - Designating instruments for events




- Once you do this, data dashboard will change to show all the events (see next slide)

# Longitudinal Projects

- Example of a data dashboard in longitudinal project with 4 events



# Project Status

- All projects start out in the **Development status**
  - Development projects can be freely edited
  - Use this status prior to collecting real data
- Production status
  - From the Project Setup page, scroll to the bottom to **Move your project to production status**
  - Once in production status, extra safeguards are put in place
    - Updates to design, require entering draft mode where you can safely draft your changes while existing users/participants still see the old design until those changes are submitted (finalized)
    - REDCap automatically keeps copies of your data dictionary and prevents you from making destructive changes

# Security

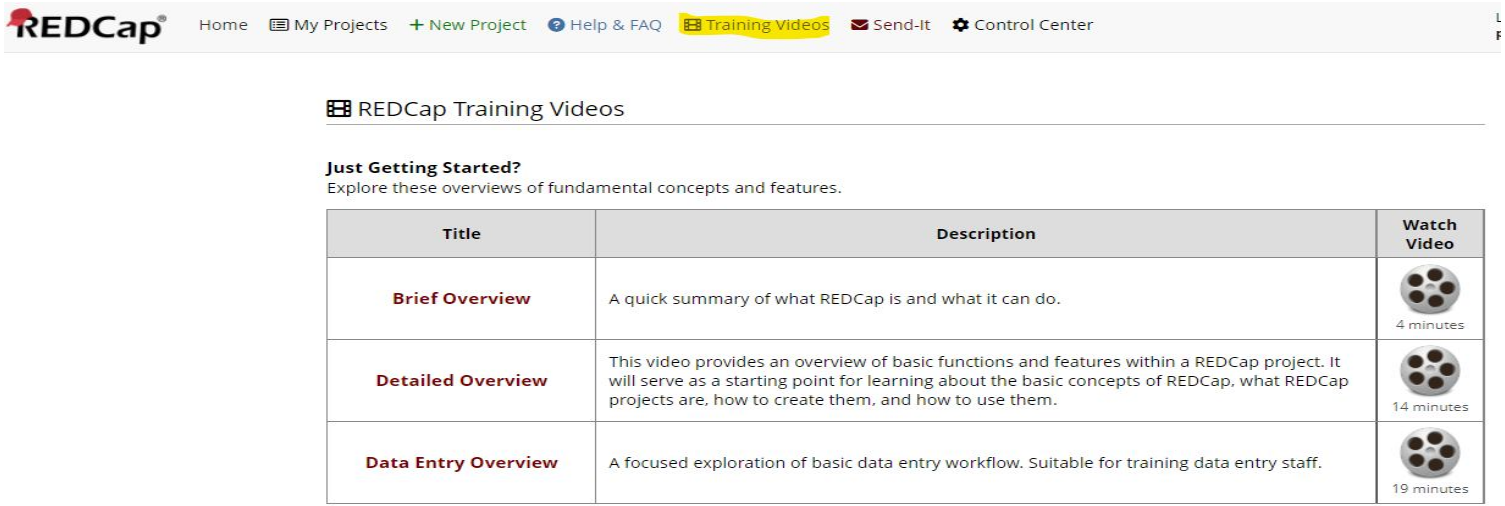
- REDCap allows you to grant security at a very fine grain per user or role (groups of users)
- Can also use Data Access Groups (DAGs) to segment data per sites

# Other Capabilities

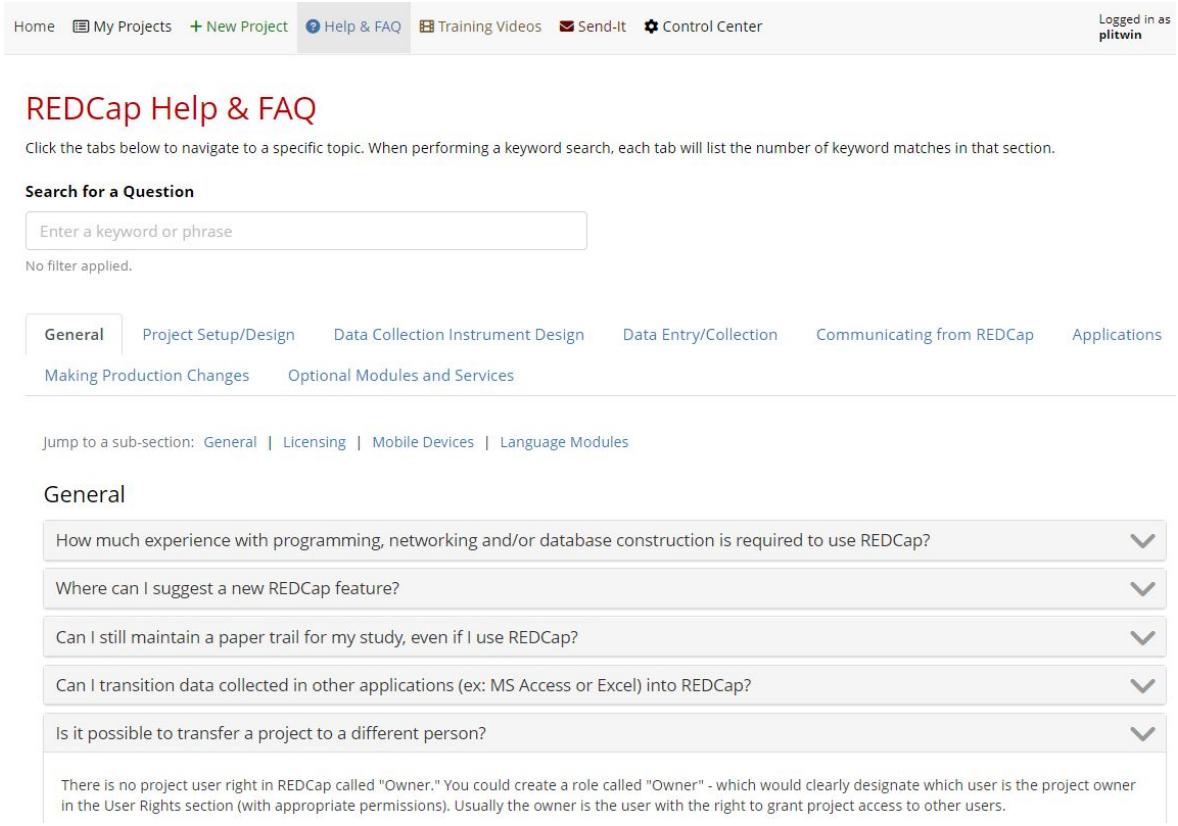
- Randomization support
- Auto-numbering for records
- Rich automated logging of all data entry, schema changes, etc
- Support for field comments (to note special circumstances or something to come back to)
- Data Import
- Rich expression language you can use for branching logic, report filtering, calculations, logic to control alert and automated survey emails
- Support for two mobile REDCap Apps - REDCap Mobile (for staff) and MyCap (for pts)
- *And lots more...*

# Training & Docs (1 of 2)

- Right within REDCap…



# Training & Docs (2 of 2)



# Summary

- REDCap is a rich web-based and research-oriented electronic data capture program
- REDCap is a vibrant product with a bright future
- REDCap is easy to get started with but will also grow with you as you get more comfortable with it