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 currently 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

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 (14 min). If you would like to view other quick videos tutorials of REDCap in action and an overview of its features, please see the Training Resources page.

NOTE: 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 (mtv@wustl.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 marketing, 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 Wi-Fi 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 mine data to/from your project. Build your own custom software development features to connect your project to other systems.
Listed below are the REDCap projects to which you currently have access. Click the project title to open the project. To review which users still have access to your projects, visit the User Access Dashboard.

<table>
<thead>
<tr>
<th>My Projects</th>
<th>Project Title</th>
<th>PID</th>
<th>Records</th>
<th>Fields</th>
<th>Instruments</th>
<th>Type</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Paul's Demo Project</td>
<td>15</td>
<td>0</td>
<td>2</td>
<td>1 form</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Another Project</td>
<td>16</td>
<td>0</td>
<td>2</td>
<td>1 form</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 additional access to:
- Project Home
- Revision history

Your access to some features will be affected by security level.
Record Status Dashboard

Displays 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.

Table not displaying properly?

Displaying:
- Instrument status only
- Locked status only
- All status types

<table>
<thead>
<tr>
<th>Subject Id</th>
<th>Reversal task - REDCap test/practice</th>
<th>RadialArraySetup</th>
<th>RadialArrayWarmups</th>
<th>RadialArrayTrials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>2</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>3</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>4</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>5</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>6</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>7</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>8</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>9</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>10</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>11</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>12</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>13</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>

Legend for status icons:
- incomplete
- incomplete (no data saved)
- Unverified
- Partial Survey Response
- Complete
- Completed Survey Response

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
- Search for a record by most fields in project

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

No

(ITHS, etc.)

Talk to your host about account/project creation

Click **New Project** along top bar
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 a temporary account on Vanderbilt REDCap Server
   ii. Create a new project
Creating an Instrument
Creating an instrument using the designer

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 an Instrument Dictionary (offline method). Quick links: Download PDF of all Instruments OR Download the current Data Dictionary

- Go to Online Designer
- Explore the REDCap Instrument Library

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
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 can 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

<table>
<thead>
<tr>
<th>Variable / Form Name</th>
<th>Section</th>
<th>Field Type</th>
<th>Field Label</th>
<th>Choices, Calculations, OR Slider Labels</th>
<th>Field Note</th>
<th>Text Validation</th>
<th>Text Validation</th>
<th>Text Validation</th>
<th>Text Validation</th>
</tr>
</thead>
<tbody>
<tr>
<td>record_id</td>
<td></td>
<td>text</td>
<td>Record ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dm_first_n</td>
<td></td>
<td>text</td>
<td>First name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dm_last_n</td>
<td></td>
<td>text</td>
<td>Last name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dm_date</td>
<td></td>
<td>text</td>
<td>Birthday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dm_books</td>
<td></td>
<td>checkbox</td>
<td>How do you read books?</td>
<td>1, I read paper books</td>
<td>2, I read books on my phone/eReader/computer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dm_audio_books</td>
<td></td>
<td>checkbox</td>
<td>When do you listen to audio books?</td>
<td>1, In the car</td>
<td>2, On the bus or train</td>
<td>3, When walking or hiking</td>
<td>4, When running</td>
<td>5, In my home</td>
<td>6, At other times/places (explain below)</td>
</tr>
<tr>
<td>dm_travel</td>
<td></td>
<td>notes</td>
<td>listen to audio books?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dm_tv</td>
<td></td>
<td>yes/no</td>
<td>Do you own a television?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lv_date</td>
<td></td>
<td>text</td>
<td>Today's date</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lv_dbp</td>
<td></td>
<td>text</td>
<td>Systolic blood pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lv_dbp</td>
<td></td>
<td>integer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lv_dia</td>
<td></td>
<td>text</td>
<td>Diastolic blood pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lv_dbp</td>
<td></td>
<td>integer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lv_hr_rate</td>
<td></td>
<td>text</td>
<td>Heart rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lv_hr_rate</td>
<td></td>
<td>number</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: The data dictionary includes information on how data are collected and validated, ensuring the instrument is designed with the necessary fields and validation rules.*
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

<table>
<thead>
<tr>
<th>Record ID</th>
<th>Baseline Demographics</th>
<th>Week 1 Lab Values</th>
<th>Week 2 Lab Values</th>
<th>Week 3 Lab Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dashboard displayed: [Default dashboard] dropdown
Displaying record: Page 1 of 1: “1” through “1” of 1 records

Add new record

Displaying: Instrument status only | Lock status only | All status types
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...

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
<th>Watch Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Overview</td>
<td>A quick summary of what REDCap is and what it can do.</td>
<td>4 minutes</td>
</tr>
<tr>
<td>Detailed Overview</td>
<td>This video provides an overview of basic functions and features within a REDCap project. It will serve as a starting point for learning about the basic concepts of REDCap, what REDCap projects are, how to create them, and how to use them.</td>
<td>14 minutes</td>
</tr>
<tr>
<td>Data Entry Overview</td>
<td>A focused exploration of basic data entry workflow. Suitable for training data entry staff.</td>
<td>19 minutes</td>
</tr>
</tbody>
</table>
## REDCap Help & FAQ

Click the tabs below to navigate to a specific topic. When performing a keyword search, each tab will list the number of keyword matches in that section.

### Search for a Question

Enter a keyword or phrase

No filter applied.

### General

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much experience with programming, networking and/or database construction is required to use REDCap?</td>
<td>There is no project user right in REDCap called &quot;Owner.&quot; You could create a role called &quot;Owner&quot; - which would clearly designate which user is the project owner in the User Rights section (with appropriate permissions). Usually the owner is the user with the right to grant project access to other users.</td>
</tr>
<tr>
<td>Where can I suggest a new REDCap feature?</td>
<td></td>
</tr>
<tr>
<td>Can I still maintain a paper trail for my study, even if I use REDCap?</td>
<td></td>
</tr>
<tr>
<td>Can I transition data collected in other applications (e.g., MS Access or Excel) into REDCap?</td>
<td></td>
</tr>
<tr>
<td>Is it possible to transfer a project to a different person?</td>
<td></td>
</tr>
</tbody>
</table>
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