

# REDCAP INTRODUCTION CLASS

*June 7, 2016*



 **REDCap**  
Research Electronic Data Capture

**ITHS**

Institute of Translational Health Sciences  
Accelerating Research. Improving Health.

# LEARNING OBJECTIVES

- What is REDCap?
- How do I get started in REDCap?
- Basic design
- User rights
- Data collection
- Exporting data



# Agenda

## Overview



*What is REDCap?*

## Getting access



*Project Navigation*

## Design



*How to design your variables...*

## Testing



*Testing your forms, user rights*

## Data collection



*Creating records*

## Export



*Exporting Data*

# ITHS' Focus

- Speeding science to clinical practice for the benefit of patients and communities
- Promotes translation of scientific discovery by:
  - ❑ Fostering innovative research
  - ❑ Cultivating multi-disciplinary partnerships
  - ❑ Training the next generation of researchers
- More information: [www.iths.org](http://www.iths.org)

Laboratory

Clinic

Community



# What is REDCap?

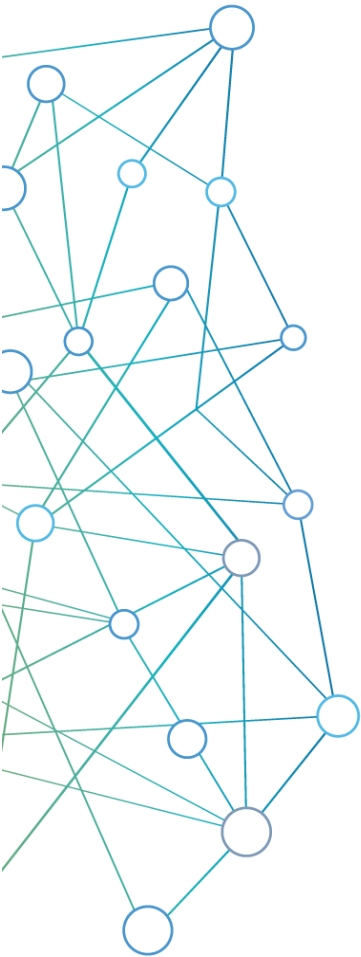


**1,700-plus  
installations  
worldwide**

- ▶ Electronic Data Capture (EDC)
- ▶ Web based
- ▶ Built for research
- ▶ HIPAA compliant
- ▶ User-friendly
- ▶ ITHS REDCap
  - ▶ Free to use
  - ▶ Highly secure
  - ▶ Backed up daily



# Accessing REDCap



## University of Washington net ID's

*Use your UW net ID to login at:*

*<https://redcap.iths.org>*

*to create an account*

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## Other University ID's

*Select universities can log in with their ID's on our REDCap installation*

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## Partner Institutions

*Fred Hutch, SCCA, Seattle Children's, PATH, and regional institutions can request ID's*

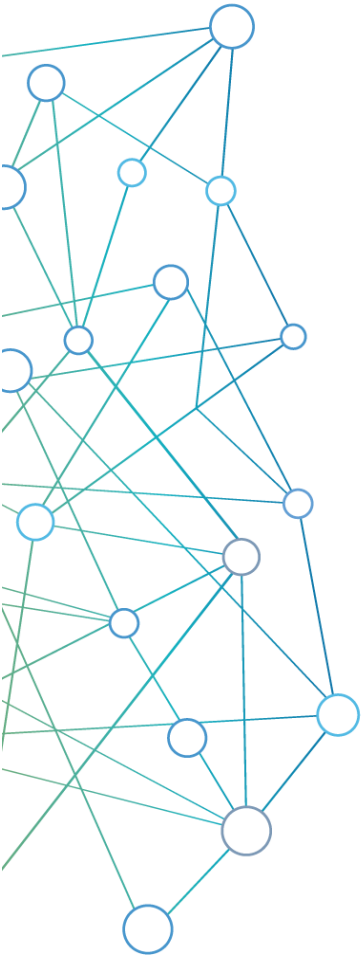
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## Others

*Can use ITHS REDCap for free as long as they are affiliated with one of our partner institutions*

*[ITHS new outside user request form](#)*

# Security



## Web service setup

- *Managed by the UW*
  - *Encrypted on secure servers (256 bit)*
  - *UW HIPAA compliant*
- 

## Three tiered access

- *System login*
  - *Project access*
  - *User restrictions*
- 

## Audit trails

- *Logging feature*
- 

## De-identified data export

- *Identify variables as Personal Health Information (PHI)*
- *Export module with de-identifying option*

# Overall Navigation

Home

My Projects

Request New Project

Training Resources

Help & FAQ

My Profile



**REDCap**™

My Profile | Log out

Home My Projects Create New Project Training Resources Help & FAQ Control Center

Listed below are the REDCap projects to which you currently have access. Click the project title to open the project. Newly created projects begin in **Development status** as you begin to build and design them. When you are ready to begin entering real data in the project, you may move it to **Production status** to designate the project as officially collecting data. When you are finished collecting data or if you wish to stop collection, the project may be set to **Inactive status**, although it may be brought back to Production status at any time when you are ready to begin collecting data again. Also listed is the project type, which designates if the project is in **classic** or **longitudinal** data collection format. Since you are a super user, you will see any projects that have been set as template projects designated with a star.

**My Projects** Organize Filter projects by title

| Project Title   | Records | Fields | Instruments | Type | Status |
|-----------------|---------|--------|-------------|------|--------|
| + Demo (16)     |         |        |             |      |        |
| + Ops (9)       |         |        |             |      |        |
| + Consults (10) |         |        |             |      |        |

The projects listed below are public and are accessible by anyone. No authentication (i.e. username/password) is required to access them directly. (Note to Super Users: To hide all public projects, modify the setting in the Control Center on the Home Page Configuration page.)

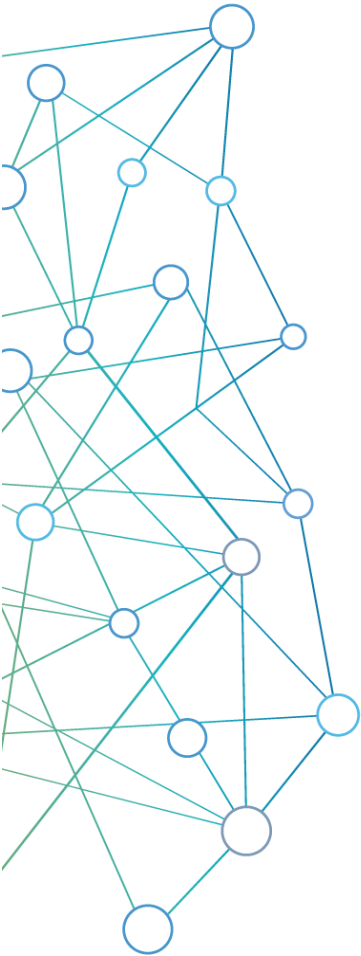
**Public Projects**

|                |
|----------------|
| Example Survey |
|----------------|

Show Archived Projects



# Project Request / Approvals



## Project requests

*Done within one business day*

---

## Needed information

- *Project title*
  - *Purpose*
    - *Research*
      - *Principal investigator*
      - *IRB*
      - *Type of research*
  - *Project folder*
  - *Project notes*
- 

## Template, blank slates & XML files

- *Use a template to get started quickly*
  - *Use the blank slate option to start from scratch*
  - *Use a REDCap XML file to load an entire project*
-

# Project-Level Navigation

Navigation

Data collection

Applications

Help & Information

Project Home

Project Setup

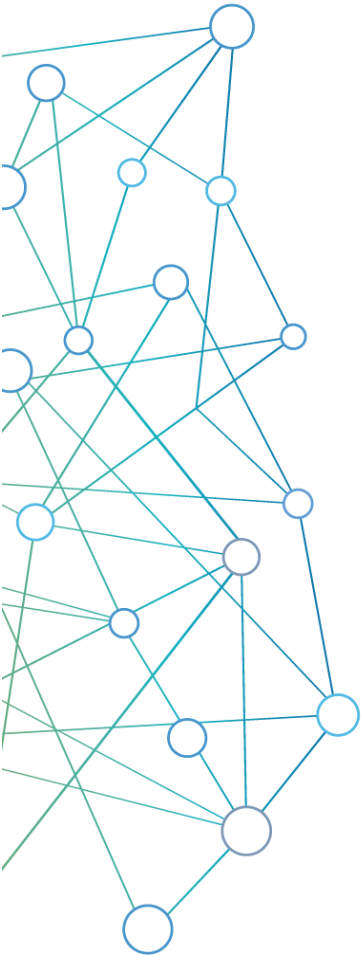
Other Functionality



The screenshot shows the REDCap project-level navigation interface for a project named 'AE Demo'. The interface is divided into several sections:

- Header:** Displays the REDCap logo, the user's login information (Logged in as bdeveer@washington.edu), and navigation tabs for Project Home, Project Setup, Other Functionality, and Project Revision History. It also shows the project status as 'Development' and 'Completed steps 0 of 8'.
- Left Sidebar:** A navigation menu with categories: My Projects, Data Collection (with an 'Edit instruments' link), Applications, and Help & Information. The Applications list includes: Calendar, Data Exports, Reports, and Stats, Data Import Tool, Data Comparison Tool, Logging, Field Comment Log, File Repository, User Rights and DAGs, Record Locking Customization, E-signature and Locking Mgmt, Data Quality, API and API Playground, REDCap Mobile App, ITHS REDCap User Mailing List, Free REDCap Classes, and ITHS REDCap (User) FAQ. The Help & Information section includes: Help & FAQ, Video Tutorials, and Suggest a New Feature.
- Main Content Area:** Contains four main sections, each with a 'In progress' indicator and an 'I'm done!' button:
  - Main project settings:** Includes options to 'Use longitudinal data collection with repeating forms?' (checked) and 'Use surveys in this project?' (unchecked). A link to a video 'How to create and manage a survey' is provided.
  - Design your data collection instruments:** Provides instructions on adding or editing fields and offers links to 'Online Designer' or 'Data Dictionary'. It also mentions the 'REDCap Shared Library'.
  - Define your events and designate instruments for them:** Offers options to 'Define My Events' or 'Designate Instruments for My Events'.
  - Enable optional modules and customizations:** Lists several optional modules: 'Auto-numbering for records' (checked), 'Scheduling module (longitudinal only)' (unchecked), 'Randomization module' (unchecked), and 'Designate an email field to use for invitations to survey participants' (unchecked). There is also an 'Additional customizations' button.

# Instrument Design



## Online designer

- *Wizard type instrument design*
  - *Very forgiving*
  - *Great way to learn*
- 

## REDCap shared library

- *Quickest way to load an instrument*
  - *Curated by Vanderbilt University*
- 

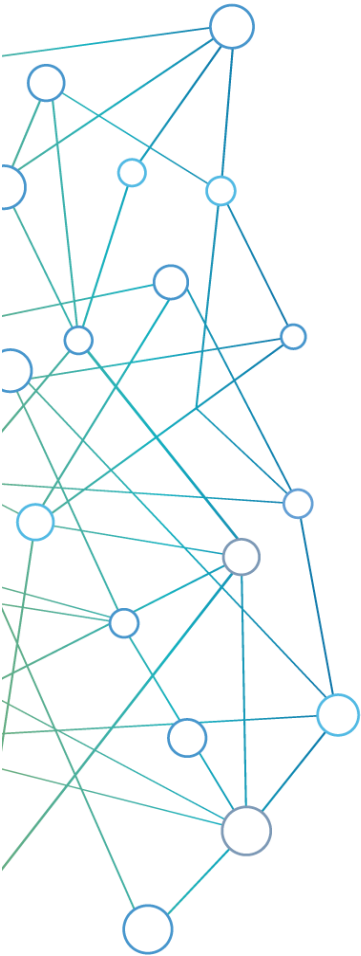
## Zip files

- *Import individual instruments from other projects*
  - *Great for sharing commonly used instruments*
- 

## Data dictionary

- *Advanced feature that defines an entire project*
- *Excel file that you customize outside of REDCap*

# Online Designer General



## Instruments

- *Create, Import, Upload*
  - *Rename, Copy, Delete, Download instrument ZIP*
  - *No limit on the number of forms in a project*
- 

## Variables

- *Each instrument has to have at least one variable*
  - *Variables can be deleted, edited, and moved within a project*
- 

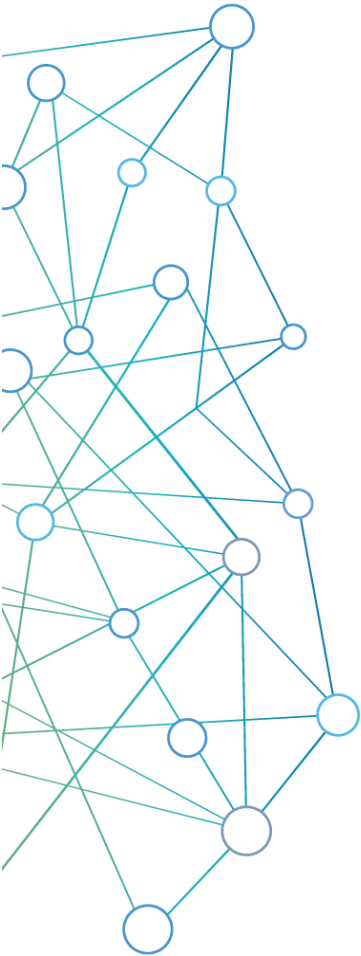
## Variable limits

- *No real “technical” limit*
  - *Best practices: No more than 1000 variables per form*
- 

## Surveys versus Instruments

- *Each instrument can be turned into a survey*
- *Any survey can still be filled out as a form*

# Variable Creation



## Necessary attributes

- *Field type*
  - *Field label*
  - *Variable name*
- 

## Optional attributes

*Required, Identifier, Custom Alignment, Field note, Field Annotation, Action tags*

---

## Conditional attributes

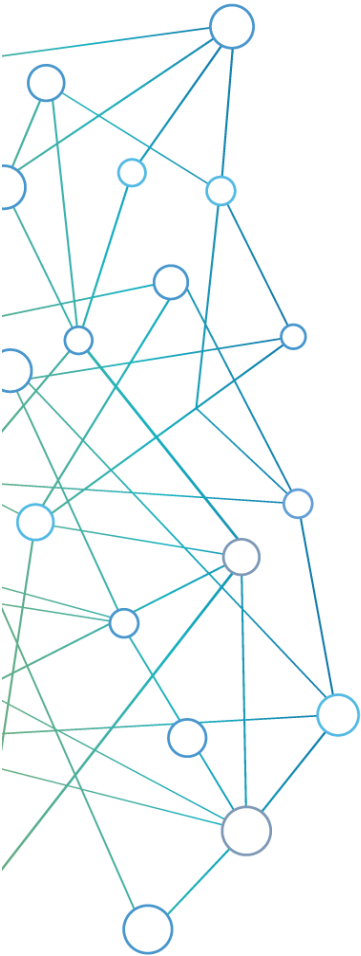
*Validation, Minimum, Maximum, Ontology lookup, Choices*

---

## Matrix fields

*Collection of variables*

# Field Types General



## Unstructured field types

- *Free text*
  - *Comment boxes*
  - *Dates, numbers, etcetera*
- 

## Structured field types

- *Limited set of answers*
  - *Pre-defined*
- 

## Special & calculation field types

- *Uploading files*
  - *Doing calculations with entered data*
- 

## Display field types

- *Plain text, HTML, video, audio, pictures, files*



# Structured Field Types

Unstructured

---

**Structured**

---

Special

---

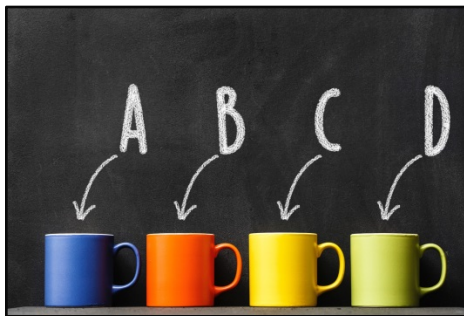
Calculations

---

Display

---

Matrix



## Single answer

- ▶ Drop down
- ▶ Radio button
- ▶ Slider
  - ▶ 0 to 100 scale
- ▶ Pre-baked choices:
  - ▶ Yes/No
  - ▶ True/False

## Multiple answer

- ▶ Checkboxes
  - ▶ Stored differently as single answer
  - ▶ Has different branching logic syntax



# Special Field Types

Unstructured

---

Structured

---

**Special**

---

Calculations

---

Display

---

Matrix



## Signature

- ▶ Allows people to “sign”
- ▶ Captures a small jpeg file
- ▶ Preferable to the “check if agree” method
- ▶ Works on both computers and touch enabled devices

## File upload

- ▶ Any file type is allowed
- ▶ REDCap just stores the file
- ▶ 100 Mb limit per upload
- ▶ Useful for:
  - ▶ Photos
  - ▶ Consent documents
  - ▶ Scanned documentation

# Calculation Field Type

Unstructured

---

Structured

---

Special

---

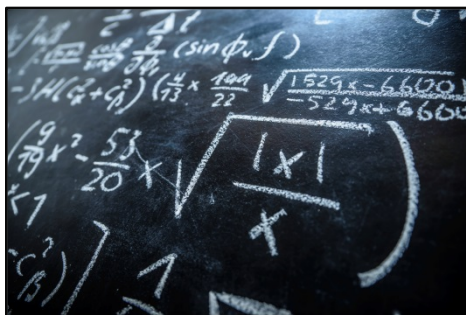
**Calculations**

---

Display

---

Matrix



## Calculations

- ▶ Always have to have a number as an end result
- ▶ Limited to variables in that particular record
- ▶ Same syntax as branching logic
- ▶ Special functions are allowed
  - ▶ Datediff()
  - ▶ Sum()
  - ▶ Mean()
  - ▶ Full list ([FAQ special functions](#))
- ▶ Used for:
  - ▶ Scoring tools
  - ▶ Simple calculations (like BMI)
- ▶ Test out calculations in a test record

# Display Field Types

Unstructured

---

Structured

---

Special

---

Calculations

---

**Display**

---

Matrix



| Destination | Flight Number | Time  |
|-------------|---------------|-------|
| NEW YORK    | 945           | 10:20 |
| LONDON      | 3681          | 10:25 |
| AMSTERDAM   | 8240          | 10:25 |
| PARIS       | 2287          | 10:30 |
| LOS ANGELES | 026           | 10:35 |
| BERLIN      | 2108          | 10:40 |
| MILANO      | 5278          | 10:40 |
| MUMBAI      | 130           | 10:40 |
| SINGAPORE   | 1099          | 10:45 |
|             |               | 10:50 |

## Descriptive field

- ▶ Text
  - ▶ HTML is allowed
- ▶ Video
  - ▶ Hosted outside of REDCap (YouTube, Vimeo)
  - ▶ Inline or Inside popup
- ▶ Audio
- ▶ Picture
- ▶ Files
  - ▶ 100 Mb limit

## Section header

- ▶ Used to separate blocks of variables
- ▶ Can be used in surveys to create separate pages

# Matrix Field Types

Unstructured

---

Structured

---

Special

---

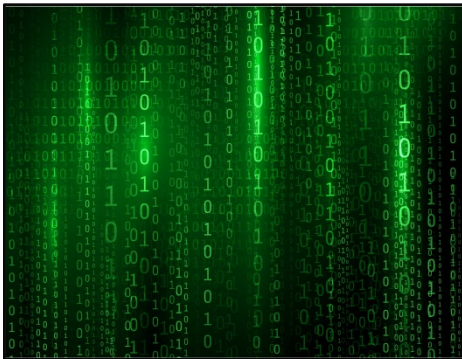
Calculations

---

Display

---

**Matrix**

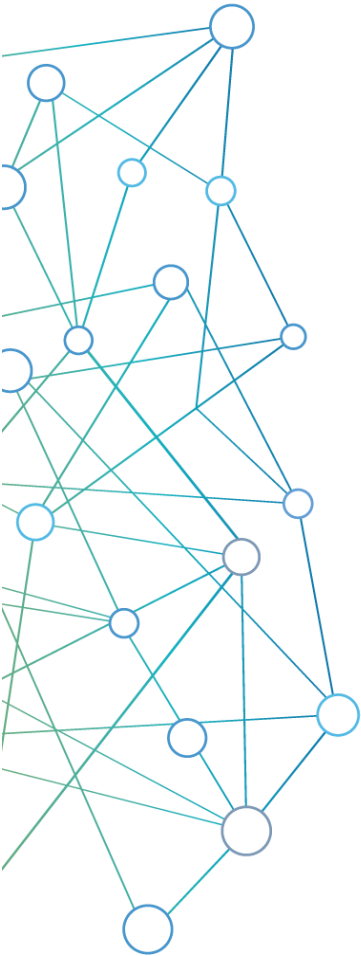


## Matrix

- ▶ Groups a set a variables together
  - ▶ Radio buttons
  - ▶ Ranking
  - ▶ Checkboxes
- ▶ Columns are the options
  - ▶ All the options for all the variables have to match
- ▶ Rows are the questions/variables
- ▶ Branching logic is allowed on individual questions

# Branching Logic

## Drag and Drop Method



### The art of hiding fields

*Set up a logic statement to be either true or false based on entered variables*

*A true outcome shows a field, a false one hides the field*

---

### Project limited

*References values in other forms or events, but not other projects*

---

### Drag and drop method

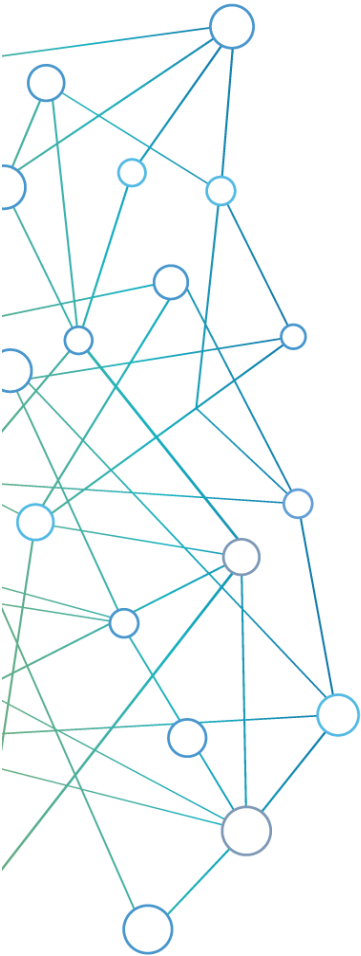
*Allows you to craft logic without knowing the syntax or having any kind of programming experience*

---

### Syntax method

*Allows for much more complex logic, but is difficult to set up correctly*

# Basic User Rights



## Adding users to your project

*Anybody, that has a user account on the ITHS REDCap server can be added to your project as a user with a custom set of rights*

---

## Form rights

*Hide forms completely, View-only mode or full access*

---

## Application rights

*Give users only access to application they actually need*

---

## User roles

*Useful for when you need to add a lot of users with the same rights quickly*

# Approval process



Most of the time, you will not have contact with the REDCap administrator.

However there are some specific situations where there are some safety measures that require administrator involvement.

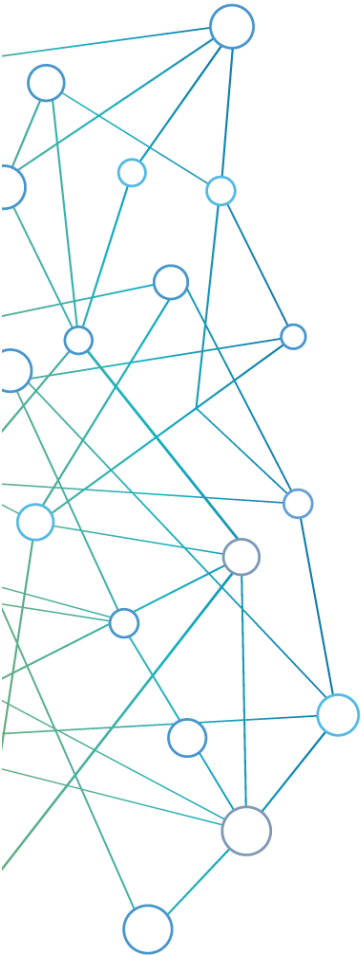
**Project creation /  
Copy project**

*Approved quickly and almost always  
Done to keep REDCap running smooth*

**Change approval**

*Approved within one business day  
Done to prevent inadvertent data loss  
You have final say*

# Basic Data Entry



## Add / Edit Records

*Located in the data collection menu. Entering a new record ID will create a new record. Entering an existing record ID will allow you to edit the record.*

---

## Data Search

*Allows the user to search based on one of the capture variables, provided that they are unique enough to identify records.*

---

## Unique record ID's

*Each REDCap record will have a unique ID. The ID is always stored in the very first variable of your very first instrument.*

---

## Deleting test records

*Done by moving to production, erasing all data, or deleting individual records*



# Record Status Dashboard

| Study ID                             | Baseline<br>Baseline<br>(Arm 1:<br>Intervention<br>Drug A) | Field Type<br>Demo<br>Baseline<br>(Arm 1:<br>Intervention<br>Drug A) | Follow up<br>Month 1<br>(Arm 1:<br>Intervention<br>Drug A) | Medications<br>Month 1<br>(Arm 1:<br>Intervention<br>Drug A) | Follow up<br>Month 2<br>(Arm 1:<br>Intervention<br>Drug A) | Medications<br>Month 2<br>(Arm 1:<br>Intervention<br>Drug A) | Follow up<br>Month 3<br>(Arm 1:<br>Intervention<br>Drug A) |
|--------------------------------------|--|--|--|--|--|--|--|
| <a href="#">1</a> Obama, Barry       |  |  |  |  |  |  |  |
| <a href="#">2</a> Putin, Vladimir    |  |  |  |  |  |  |  |
| <a href="#">3</a> Merkel, Angela     |  |  |  |  |  |  |  |
| <a href="#">4</a> Lagarde, Christine |  |  |  |  |  |  |  |
| <a href="#">10</a> Rubio, Marco      |  |  |  |  |  |  |  |
| <a href="#">12</a> Biden, Joe        |  |  |  |  |  |  |  |
| <a href="#">14</a> Trump, Donald     |  |  |  |  |  |  |  |

**Legend for status icons:**







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

# Basic Data Export

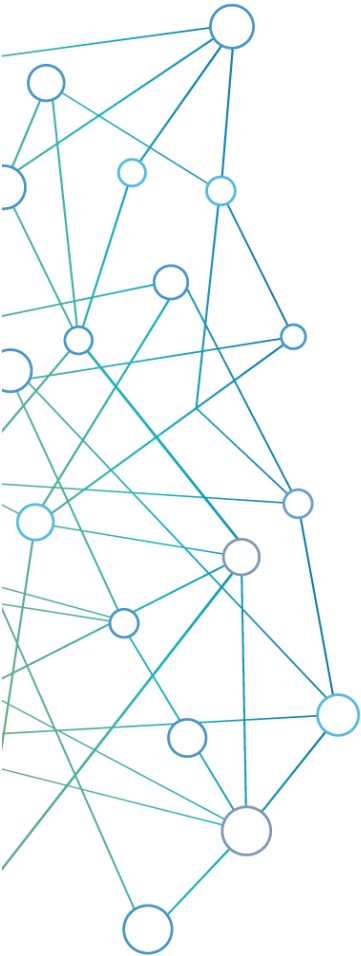
You can export your entire data set in a few seconds in a couple of different formats.

You can also create and save custom reports that create subsets of your data. These subsets are exportable in the same way as the entire data set.

**Choose export format**

-  CSV / Microsoft Excel (raw data)
-  CSV / Microsoft Excel (labels)
-  SPSS Statistical Software
-  SAS Statistical Software
-  R Statistical Software
-  Stata Statistical Software

# Advanced Classes



## Data Dictionary

*Learn how to use the data dictionary, advanced branching logic syntax and how to import and export large data sets.*

---

## Longitudinal Studies & Surveys

*Learn how to properly set up longitudinal studies and how to best utilize survey functionality within REDCap.*

---

## Best Practices

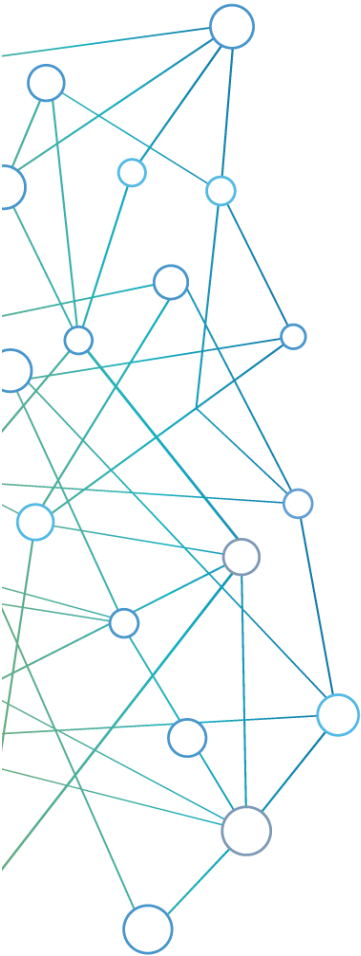
*Learn about the advanced capabilities of REDCap and gain some best practices insight.*

---

## REDCap Class Schedule

*For dates and sign up information click on the header.*

# Resources



## Talking point

- [REDCap Class Schedule](#)
- 

## Talking point

- [REDCap Training Resources](#)
  - [Help & FAQ](#)
  - [ITHS Specific FAQ](#)
  - [Tip of the Month Archive](#)
- 

## Talking point

**EMAIL:** [iths\\_redcap@uw.edu](mailto:iths_redcap@uw.edu)

*(REDCap community email list)*

**EMAIL:** [iths\\_redcap\\_admin@uw.edu](mailto:iths_redcap_admin@uw.edu)

*(REDCap administrators; last resort for help)*

Thank You



# Questions?

