REDCap Training 101

Introduction to building project in REDCap

Sui Tsang
REDCap@Yale Team
12/16/2019
Introduction and Learning Objective

• Learn how to access training materials available in REDCap.
• Understand how to set up a REDCap project.
• Know how to manage user rights.
• Recognize features available.
• Find out how to export data to statistical packages.
• Learn about the new features that are available.
What is REDCap?

*Web-based software* used to create and manage research databases and participant surveys.

*Developed as a tool* to help researchers collect and manage data effectively and responsibly.
What are the advantages of REDCap?

**Accessible**
- web-based access (on and off campus)
- access for multi-site collaborations

**Customizable**
- fast and flexible to design
- modifications at anytime

**Accurate**
- ensures consistent and accurate data entry
- data quality checks to look for errors

**Secure**
- user authentication against Yale active directory
- Data are stored on ITS maintained secure servers
How do I access REDCap?

• Request a study account by emailing REDCap@yale.edu

• Current fee: $140 per month per study

• Yale NetID and password is required for login
  – CANNOT reset password in REDCap. Reset your Yale NETID through Yale ITS.

Question: My project involves people outside Yale. How do they login?
Answer: You can provide a Yale NET ID. Refer to the ITS website on how to obtain sponsored NetID for external collaborators.
Training Resources

23 training videos available in REDCap

[Image of REDCap interface]

REDCap Training Videos

Just Getting Started?
Explore these overviews of fundamental concepts and features.

<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>
List of Training Videos

1. Brief Overview
2. Detailed Overview
3. Data Entry Overview
4. Introduction to Instrument Development
5. Online Designer
6. Data Dictionary
7. Project Field Types
8. Applications Overview
9. The Calendar
10. Scheduling Module
11. Data Access Groups for multi-site projects
12. Types of Projects
13. Traditional Project
14. Single Survey Project
15. Longitudinal Project
16. Longitudinal Project + Scheduling
17. Operations
18. Defining Events in Longitudinal Projects
19. Designating Instruments for Events in Longitudinal Projects
20. Repeatable instruments and events
21. REDCap Mobile App
22. Locking Records
23. Data Resolution Workflow
Where can you find help and answers?

HELP & FAQ

This is also a good place to look up syntax for calculated field, branching logics or piping.
Training Resources

• ‘How to’ links throughout REDCap. For example, in online designer:

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: Text Box (Short Text, Number, Date/Time, ...)

Field Label
Test Date

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

How to use: Smart Variables, Piping

Validation? (optional) Date (M-D-Y)
Minimum: 
Maximum: 

Enable searching within a biomedical ontology?
How do I create a new project in REDCap?

- Click the ‘+New Project’ tab, fill in the form (remember to enter the PI and study information).
- Click ‘Send Request’.

- After we verify that there is a study billing account, we will create the project and notify you via email within 1-2 business days.
QUESTIONS?
SETTING UP YOUR PROJECT:

WHERE DO I BEGIN?
Decide What Type of Project is Needed

1. Classic Database – Each form can only be completed once. One record per subject.

2. Longitudinal –
   - Data collected multiple times per subject
     - Fixed number of collection points that correspond to pre-defined events (e.g. initial evaluation, 3mo. follow-up, 6mo. follow-up, 1yr follow-up)
   - Optional scheduling via a project calendar
   - Can have multiple study arms
Decide How to Collect the Data

- **Data Entry**
  - Data entered by REDCap users (i.e. research staff).
  - Offline data collection available via mobile app.

- **Survey**
  - On-line survey completed by participants.
  - Participants do not need to have a Yale NetID.

A project can have both surveys and data entry forms.
How to Set Up your Project

**Main project settings**
- Use surveys in this project?
- Use longitudinal data collection with defined events?

**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 Shared 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](#)

**Define your events and designate instruments for them**
Create events for re-using data collection instruments and/or set up scheduling.

Go to [Define My Events](#) or [Designate Instruments for My Events](#)

**Enable optional modules and customizations**
- Repeatable instruments and events?
- Auto-numbering for records?
- Scheduling module (longitudinal only)?
- Randomization module?
- Designate an email field for sending survey invitations?

Field currently designated: testemail ("Test email")

Additional customizations
Project Setup: Enable Settings

If applicable:
1. Enable longitudinal setting
2. Enable survey setting
How to Set Up your Project

Main project settings
- Use surveys in this project
- Use longitudinal data collection with defined events

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.

- Go to Online Designer or Data Dictionary
- Explore the REDCap Shared Library
- Have you checked the Check For Identifiers page to ensure all identifier fields have been tagged?
- Learn how to use Smart Variables, Piping, and Action Tags

Define your events and designate instruments for them
Create events for re-using data collection instruments and/or set up scheduling.
- Go to Define My Events or Designate Instruments for My Events

Enable optional modules and customizations
- Repeatable instruments and events
- Auto-numbering for records
- Scheduling module (longitudinal only)
- Randomization module
- Designate an email field for sending survey invitations
  - Field currently designated: testemail ("Test email")

Additional customizations
Design the project instruments using either (a.) online designer or (b.) data dictionary.

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 Shared 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
Project Set Up: Building with the On-line Designer

a. On-line Designer
   - Allows you to create/modify/delete data collection instruments and fields (questions) using your web browser.
   - Changes are made in real time and available immediately for review and testing.

The Online Designer will allow you to make project modifications to fields and data collection instruments very easily using only your web browser. NOTE: While in development status, all field changes will take effect immediately in real time.

<table>
<thead>
<tr>
<th>Data Collection Instruments</th>
<th>Survey options:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Survey Queue 📝</td>
</tr>
<tr>
<td></td>
<td>Survey Notifications 💌</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Add new instrument:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create 🩸, a new instrument from scratch</td>
</tr>
<tr>
<td>Import 🤝, a new instrument from the official REDCap Shared Library 🌐</td>
</tr>
<tr>
<td>Upload 📡, instrument ZIP file from another project/user or external libraries 🌐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instrument name</th>
<th>Fields</th>
<th>View PDF</th>
<th>Enabled as survey</th>
<th>Instrument actions</th>
<th>Survey-related options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening &amp; Enrollment Form</td>
<td>105</td>
<td>📋</td>
<td>✅ Enable</td>
<td>Choose action</td>
<td>🌐 Survey settings, 🔍 + Automated Invitations</td>
</tr>
<tr>
<td>Phone Interview</td>
<td>128</td>
<td>📋</td>
<td>✅</td>
<td>Choose action</td>
<td>🌐 Survey settings, 🔍 + Automated Invitations</td>
</tr>
</tbody>
</table>
Project Set Up: Building with the On-line Designer

1. Edit field

2. Copy field

3. Specify branching logic

4. Move field (can move to other form)

5. Delete field
b. 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.
• To use this feature, you will download the current dictionary, make modifications, and THEN upload the modified data dictionary on the data dictionary page.

**IMPORTANT**: Always upload the ENTIRE data dictionary. Never upload a partial data dictionary.

**Steps for making project changes:**
1. Download the current Data Dictionary OR Download Data Dictionary with drafted changes
2. Edit the Data Dictionary (see the Help & FAQ for help)
3. Upload the Data Dictionary using the form below
4. The changes will be made to the project after the Data Dictionary has been checked for errors

**Upload your Data Dictionary file** (CSV file format only)
Format for min/max validation values for date and datetime fields: MM/DD/YYYY or YYYY-MM-DD

Browse... No file selected.
Upload File
First field of the first form has to be the record key (e.g. Participant ID).

- This field cannot be deleted or moved.
- Data in this field must be unique.
- This field can be auto-assigned by REDCap (Project Setup → Enable optional modules → Enable auto-numbering for records)
Building Forms: Field Name

• Each field name must be:
  – Unique
  – Lowercase
  – Contain fewer than 26 characters
  – Contain only letters, numbers, and underscores.

• In general, field names should be as short in length as possible and maintain meaning.
<table>
<thead>
<tr>
<th>Field Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEXT</td>
<td>single-line text box (for text, numbers and dates etc.)</td>
</tr>
<tr>
<td>NOTES</td>
<td>large text box for multiple lines of text</td>
</tr>
<tr>
<td>DROPDOWN</td>
<td>dropdown menu with options</td>
</tr>
<tr>
<td>RADIO</td>
<td>radio buttons with options</td>
</tr>
<tr>
<td>CHECKBOX</td>
<td>checkboxes to allow selection of more than one option</td>
</tr>
<tr>
<td>FILE</td>
<td>upload a document</td>
</tr>
<tr>
<td>CALC</td>
<td>perform real-time calculations</td>
</tr>
<tr>
<td>SQL</td>
<td>select query statement to populate dropdown choices</td>
</tr>
<tr>
<td>DESCRIPTIVE</td>
<td>text displayed with no data entry and optional image/file attachment</td>
</tr>
<tr>
<td>SLIDER</td>
<td>visual analogue scale; coded as 0-100</td>
</tr>
<tr>
<td>YESNO</td>
<td>radio buttons with yes and no options; coded as 1, Yes</td>
</tr>
<tr>
<td>TRUEFALSE</td>
<td>radio buttons with true and false options; coded as 1, True</td>
</tr>
<tr>
<td>MATRIX</td>
<td>display a group of similar multiple choice fields in a very compact area on a page</td>
</tr>
<tr>
<td>SIGNATURE</td>
<td>draw signature with mouse or finger</td>
</tr>
</tbody>
</table>
Validation is an important tool that can be used to prevent errors. It also helps when exporting data to statistical packages.
Building Forms: Drop Down 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: Multiple Choice - Drop-down List (Single Ans)

Field Label
Race

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

Required?*  ○ No  ○ Yes
* Prompt if field is blank

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

Custom Alignment  Right / Vertical (RV)
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
Building Forms: Action Tags

- Action tags allow you to perform special actions within REDCap. Each action tag has a corresponding action that is performed for the field.

- In REDCap, action tags begin with the '@' sign
  - Placed inside a field’s “Field Annotation”.

```
Field Label
Test default value

Choices (one choice per line)  Copy existing choices
1, Yes
2, No

Action Tags / Field Annotation (optional)
@DEFAULT='2'

Adding new Participant ID code 1111
Event Name: Flu Clinic (Arm 1: U19)
Participant ID code
1111

test secondary unique field

Test default value

Learn about @ Action Tags or using Field Annotation
```
# Building Forms: Action Tags

## Currently available action tags

<table>
<thead>
<tr>
<th>Action Tag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>@APPUSERNAME-APP</td>
<td>@NONEOFTHEABOVE</td>
</tr>
<tr>
<td>@BARCODE-APP</td>
<td>@NOW</td>
</tr>
<tr>
<td>@CHARLIMIT</td>
<td>@PASSWORDMASK</td>
</tr>
<tr>
<td>@DEFAULT</td>
<td>@PLACEHOLDER</td>
</tr>
<tr>
<td>@HIDDEN</td>
<td>@RANDOMORDER</td>
</tr>
<tr>
<td>@HIDDEN-APP</td>
<td>@READONLY</td>
</tr>
<tr>
<td>@HIDDEN-FORM</td>
<td>@READONLY-APP</td>
</tr>
<tr>
<td>@HIDDEN-SURVEY</td>
<td>@READONLY-FORM</td>
</tr>
<tr>
<td>@HIDEBUTTON</td>
<td>@READONLY-SURVEY</td>
</tr>
<tr>
<td>@HIDECOMBO</td>
<td>@SYNC-APP</td>
</tr>
<tr>
<td>@LATITUDE</td>
<td>@TODAY</td>
</tr>
<tr>
<td>@LONGITUDE</td>
<td>@USERNAME</td>
</tr>
<tr>
<td>@MAXCHECKED</td>
<td>@WORDLIMIT</td>
</tr>
<tr>
<td>@MAXCHOICE</td>
<td></td>
</tr>
</tbody>
</table>

Refer to REDCap on-line designer for description of each action tag.
Building Forms: Smart Variables

- Allow reference information other than data fields (e.g. event, repeat instance, DAG or users etc.)

Example: Set the default value of a field to be the value of the previous event.
Building Forms: Smart Variables Examples

Other examples:

1. Branching logics based on DAG name
   \[record-dag-name]=‘DAG name’

2. Branching logics based on arm number
   \[arm-number]=‘1’

3. Age at first instance of repeating instrument
   \[age][first-instance]
Building Forms: Tagging Identifiers

• Fields that constitute protected health information (PHI) can be marked as an “Identifier”

• These fields can then be excluded on data export, allowing for analysis of “de-identified” data

• Users can also be restricted in their ability to export Identifier fields based on access rights
Building Forms: Calculated Fields

- **Best practice**: Not to use calculated fields excessively on data collection instruments.

- Syntax: JavaScript

- Calculations can only result in numbers (i.e. cannot use calculated field to concatenate strings or return a date).

**Examples:**

- Age calculation: `rounddown((datediff([dob],[hosp_date],"y","mdy")),0)`
- Sum of scores: `sum([field1], [field2], [field3])`

*Refer to ‘Help and FAQ’ for more examples.*
Building Forms: Branching Logic

- You can use a Drag-N-Drop Logic Builder or Advanced Branching Logic Syntax
- You can use fields on the current data entry form OR other forms
- If fields from different events are used in branching logic, the field name needs to be preceded by an event name, e.g. `[screening_arm_1][field1]`
  - Event names can be found in ‘Define My Events’ page

**Drag-N-Drop Logic Builder**

Displaying field choices for the following data collection instrument:
Screening & Enrollment Form

<table>
<thead>
<tr>
<th>Field choices from other fields (drag a choice below to box on right)</th>
</tr>
</thead>
<tbody>
<tr>
<td>testrowz = bad (4)</td>
</tr>
<tr>
<td>testrowz2 = Worst (5)</td>
</tr>
<tr>
<td>test_field2 = (define criteria)</td>
</tr>
<tr>
<td>age = (define criteria)</td>
</tr>
<tr>
<td>ageout = Yes (1)</td>
</tr>
<tr>
<td>ageout = No (2)</td>
</tr>
<tr>
<td>agegroup1 = 21-30 (1)</td>
</tr>
</tbody>
</table>

**Advanced Branching Logic Syntax**

Show the field ONLY if...
- ALL below are true
- ANY below are true

(ageout) = '2'

Test logic with a record: -- select record --
Building Forms: Piping

Without Piping:

What kind of ice cream do you like?
- Chocolate
- Strawberry
- Vanilla

How often do you eat _____ ice cream?
- Once a week
- Twice a week
- Three times a week

With Piping:

What kind of ice cream do you like?
- Chocolate
- Strawberry
- Vanilla

How often do you eat Chocolate ice cream?
- Once a week
- Twice a week
- Three times a week
How to use piping:

- Select the variable "ice cream".
- Choose the field type "Multiple Choice - Radio Buttons (Single Answer)".
- Label the field as "How often do you eat [ice cream] ice cream?".
- Choose the options "Once a week", "Twice a week", and "Three times a week".

This setup allows for piping, where responses from one field are automatically applied to another field.
QUESTIONS?
How to Set Up your Project

**Main project settings**

- **Complete!**
- **Not complete?**
  - Modify project title, purpose, etc.

**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 REDCap Shared 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

**Define your events and designate instruments for them**

Create events for re-using data collection instruments and/or set up scheduling.

- Go to Define My Events or Designate Instruments for My Events

**Enable optional modules and customizations**

- **Optional**
- **I'm done!**

- **Complete!**
- **Not complete?**
  - Modify Repeatable instruments and events
  - Enable Auto-numbering for records
  - Disable Scheduling module (longitudinal only)
  - Disable Randomization module
  - Disable Designate an email field for sending survey invitations

Field currently designated: testemail ("Test email")

Additional customizations
Defining Events
Longitudinal Projects

• Defining Events allows you to:
  – Use data collection forms multiple times for any given project record.
  – Generate new schedules to display on the Calendar.

Define your events and designate instruments for them

Create events for re-using data collection instruments and/or set up scheduling.

Go to Define My Events or Designate Instruments for My Events
### How to Define Events

**WARNING:**
Deleting any events below will result in data loss. Please proceed with caution.

```html
<table>
<thead>
<tr>
<th>Event #</th>
<th>Days Offset</th>
<th>Offset Range Min / Max</th>
<th>Event Name</th>
<th>Custom Event Label (optional)</th>
<th>Unique event name (auto-generated)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0/-0/0</td>
<td>Flu Clinic</td>
<td>flu_clinic_arm_1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>0/-0/2</td>
<td>Day 2-4 Blood Draw</td>
<td>day_24_blood_draw_arm_1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>0/-0/2</td>
<td>Day 7 Blood Draw</td>
<td>day_7_blood_draw_arm_1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>28</td>
<td>0/-0/0</td>
<td>Day 28 Blood Draw</td>
<td>day_28_blood_draw_arm_1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>70</td>
<td>0/-0/0</td>
<td>Day 70 Blood Draw</td>
<td>day_70_blood_draw_arm_1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>100</td>
<td>0/-0/0</td>
<td>Non-Flu Blood Draw</td>
<td>nonflu_blood_draw_arm_1</td>
<td></td>
</tr>
</tbody>
</table>
```

- Unique event name is auto-generated.
- This is where you will find the event names for use in branching logic.

**Arm name:** U19

- [Rename Arm 1](#)  | [Delete Arm 1](#)

---

**Arm 1:** U19    **Arm 2:** IMAGIN  [+Add New Arm](#)
How to Designate Instruments to Events

The event list and instrument mappings can be downloaded from one project and uploaded to another project.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening &amp; Enrollment Form</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone Interview</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Draw Form</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Frailty Assessment</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Withdrawal</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genetic Data Repository Consent</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Blood Draw Form (Non-Flu)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Arm name: **U19**
How to Set Up a Survey

Enable any form as a survey in On-line Designer

1. Open survey setting
2. Configure the survey

Survey features:

– Schedule automated survey invitations
– Set up a survey queue
– Create unique login code for survey respondents
– Set up researcher notifications upon survey completion
How to Send Surveys to Participants

1. Public link: survey must be the first form. Record will be created as each survey is completed
2. Designate an email field for sending survey (recommended method)
3. Add participants to ‘Manage survey participants’ page

REDCap has many advanced features that can be used for setting up surveys. This will be covered in the survey training.
How to Set Up your Project

Main project settings
- Use surveys in this project? Yes
- Use longitudinal data collection with defined events? No
- Modify project title, purpose, etc.

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 Shared 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

Define your events and designate instruments for them
Create events for re-using data collection instruments and/or set up scheduling.
Go to Define My Events or Designate Instruments for My Events

Enable optional modules and customizations
- Repeatable instruments and events
- Auto-numbering for records
- Scheduling module (longitudinal only)
- Randomization module
- Designate an email field for sending survey invitations

Field currently designated: testemail (“Test email”)

Additional customizations
Optional Modules and Customizations

Other additional customizations:
1. Set a custom record label
2. Define a secondary unique field
3. Order the records by another field
4. Enable the Field Comment Log or Data Resolution Workflow (Data Queries)
5. Enable the Data History widget for all data collection instruments
6. Display the Today/Now button for all date and time fields on forms/surveys
7. Require a 'reason' when making changes to existing records
## Optional Modules: Repeatable Instruments

REDCap has the ability to repeat a data collection instrument or an entire event an unlimited number of times without having to pre-specify the frequency.

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Repeat entire event or selected instruments?</th>
<th>Instrument name (select instruments to repeat)</th>
<th>Custom label for repeating instruments (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline (Arm 1: Intervention)</td>
<td>Repeat Instruments (repeat)</td>
<td>Screenining, Tracking Visits, Goal Facilitation Visit, PCP Visit, Cardiology Visit, OPACIC, Collaborate V5.0, MoCA Recall Introduction, TBQ, Global Health Promis Scale V1.2, MoCA Recall, Demographics, Interviewer Observation, Discontinuation, Eligibility Waiver, Medication, Chronic Condition, Chronic Condition Category</td>
<td>[gfdate], [pcpdate], [carddate]</td>
</tr>
<tr>
<td>FU (Arm 1: Intervention)</td>
<td>-- not repeating --</td>
<td>OPACIC, Collaborate V5.0, TBQ, Global Health Promis Scale V1.2</td>
<td>[diagnosiscode], [problemname]</td>
</tr>
</tbody>
</table>
Optional Modules: Repeatable Instruments

- Repeatable instruments shown on record home page:

<table>
<thead>
<tr>
<th>Repeating Instruments</th>
<th>PCP Visit Baseline (Arm 1: Intervention)</th>
<th>Chronic Condition Baseline (Arm 1: Intervention)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal Facilitation Visit</strong> Baseline (Arm 1: Intervention)</td>
<td>1 10-10-1966</td>
<td>1 F32.9, Depression</td>
</tr>
<tr>
<td></td>
<td>2 01-24-1967</td>
<td>2 I10, Hypertension</td>
</tr>
<tr>
<td></td>
<td>3 03-20-1967</td>
<td>3 K21.9, Esophageal reflux</td>
</tr>
<tr>
<td></td>
<td>4 04-12-1967</td>
<td>4 Z00.00, Encounter for preventive health examination</td>
</tr>
<tr>
<td></td>
<td>5 04-27-1967</td>
<td>5 G20, Parkinson's disease</td>
</tr>
<tr>
<td></td>
<td>6 05-25-1967</td>
<td>6 M54.6, Pain, upper back</td>
</tr>
<tr>
<td>+ Add new</td>
<td>+ Add new</td>
<td>7 I49.3, Premature ventricular contractions</td>
</tr>
</tbody>
</table>
QUESTIONS?
FINAL STEPS BEFORE IMPLEMENTATION:

USER RIGHTS AND TESTING
Granting User Rights in REDCap: Individual Users

- User access can be set up by “Custom Right” or “Role Based” access
- **Best Practice:** “Role Based” access
Granting User Rights in REDCap: Individual Users

Basic rights = Access to the Project

Data entry rights = Access to Individual Forms

Exporting data is NOT linked to Data Entry Rights. User with Full Export Rights can export ALL data from the data collection instruments.
Granting User Rights in REDCap: Data Access Groups (DAGs)

- “Data Access Group” is an advanced feature that is useful for multi-center trials and collaborations, especially for HIPAA compliance.

- Users in a particular Data Access Group can only see records entered by other users in that Data Access Group.

### Create new groups:
Add new data access groups to which users may be assigned.

- Enter new group name
- Add Group

### Assign user to a group:
Users may be assigned to any data access group.

- Assign user
- -- Select User --
- to
- [No Assignment]
- Assign

<table>
<thead>
<tr>
<th>Data Access Groups</th>
<th>Users in group</th>
<th>Number of records in group</th>
<th>Unique group name (auto-generated)</th>
<th>Group ID number</th>
<th>Delete group?</th>
</tr>
</thead>
<tbody>
<tr>
<td>test</td>
<td></td>
<td>5</td>
<td>test</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>test2</td>
<td>*************</td>
<td>1</td>
<td>test2</td>
<td>1823</td>
<td></td>
</tr>
<tr>
<td>[Not assigned to a group]</td>
<td>*************</td>
<td>134</td>
<td>* Can view ALL records</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Testing your Project

Testing, Testing, Testing!
Make sure you test your project thoroughly by entering test data. Have other users enter data or complete surveys. Also export the test data to make sure the format can be used for data analysis.

Test your project thoroughly
It is important to test the essential components of your project before moving it into production. Try creating a few test records and entering some data for each to ensure that your data collection instruments look and behave how you expect, especially branching logic and calculations. Then review your test data by creating reports and exporting your data to view in Excel or a statistical analysis package. If you have surveys, complete the surveys as if you were a participant by using the Public Survey Link or Participant List by sending a survey invitation to yourself. If other project modules will be used regularly, test them out a bit too. The best way to test your project is to use it as if you were entering real production data, and it is always helpful to have colleagues (especially team members) take a look at your project to get a fresh set of eyes looking at it.
**Move your project to production status**

Move the project to production status so that real data may be collected. Once in production, you will not be able to edit the project fields in real time anymore. However, you can make edits in Draft Mode, which will be auto-approved or else might need to be approved by a REDCap administrator before taking effect.

Go to **Move project to production**

---

**Move Project To Production Status?**

Are you sure you wish to leave the DEVELOPMENT stage? If you proceed, the project will be moved to PRODUCTION status so that real data may be collected. If you select the ‘Delete ALL data’ option below, all current collected data, calendar events, and uploaded documents will be deleted, otherwise all will remain untouched as the project is moved to production.

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

**Keep existing data or delete?**

- [ ] Keep ALL data saved so far.
- [ ] Delete ALL data, calendar events, documents uploaded for records/responses, survey responses (if applicable), and any logging events pertaining to data collection.

Once in production, you will not be able to edit the project fields in real time anymore. However, you can make edits in Draft Mode, which will be auto-approved or else might need to be approved by a REDCap administrator before taking effect.
QUESTIONS?
Using Data Exports, Reports and Stats
Exporting Data

- You can export the entire dataset or select forms/fields

Data Exports, Reports, and Stats

Create New Report  My Reports & Exports  Other Export Options

This module allows you to easily view reports of your data, inspect plots and descriptive statistics of your data, as well as export your data to Microsoft Excel, SAS, Stata, R, or SPSS for analysis (if you have such privileges). If you wish to export your *entire* data set or view it as a report, then Report A is the best and quickest way. However, if you want to view or export data from only specific instruments (or events) on the fly, then Report B is the best choice. You may also create your own custom reports below (if you have such privileges) in which you can filter the report to specific fields, records, or events using a vast array of filtering tools to make sure you get the exact data you want. Once you have created a report, you may view it as a webpage, export it out of REDCap in a specified format (Excel, SAS, Stata, SPSS, R), or view the plots and descriptive statistics for that report.

### My Reports & Exports

<table>
<thead>
<tr>
<th>Report name</th>
<th>View/Export Options</th>
<th>Management Options</th>
<th>Report ID (auto-generated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A  All data (all records and fields)</td>
<td>View Report  Export Data  Stats &amp; Charts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B  Selected instruments and/or events (all records)</td>
<td>Make custom selections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1  test (copy)</td>
<td>View Report  Export Data  Stats &amp; Charts</td>
<td>Edit  Copy  Delete</td>
<td>1322</td>
</tr>
<tr>
<td>2  frailty assessment</td>
<td>View Report  Export Data  Stats &amp; Charts</td>
<td>Edit  Copy  Delete</td>
<td>2</td>
</tr>
</tbody>
</table>
Exporting Data

Select your export settings, which includes the export format (Excel/CSV, SAS, SPSS, R, Stata) and if you wish to perform de-identification on the 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
- CDISC ODM (XML)

**De-identification options (optional)**
The options below allow you to limit the amount of sensitive information that you are exporting out of the project. Check all that apply.

**Known Identifiers:**
- Remove all tagged identifier fields (tagged in Data Dictionary)
- Hash the Record ID field (converts record name to an unrecognizable value)

**Free-form text:**
- Remove unvalidated Text fields (i.e. Text fields other than dates, numbers, etc.)
- Remove Notes/Essay box fields

**Date and datetime fields:**
- Remove all date and datetime fields
- OR —
  - Shift all dates by value between 0 and 364 days (shifted amount determined by algorithm for each record)
  - Also shift all survey completion timestamps by value between 0 and 364 days (shifted amount determined by algorithm for each record)

**Additional export options**
- Export Data Access Group name for each record (if record is in a group)?
- Export survey identifier field and survey timestamp field(s)?

[Export Data] [Cancel]
Setting Up Reports in REDCap

REDCap has many advanced features that can be used for exports and reports. This will be covered in the Data Report, Export and Import training.
Stats and Charts

**Gender**

<table>
<thead>
<tr>
<th>Total Count (N)</th>
<th>Missing</th>
<th>Unique</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Counts/frequency: Male (19, 63.3%), Female (11, 36.7%), Other (0, 0.0%)

**height < 150**

DISPLAY OPTIONS

Optional: Select a record to overlay onto the plots below

Viewing options: Show plots & stats, Show plots only, Show stats only

**Height**

<table>
<thead>
<tr>
<th>Total Count (N)</th>
<th>Missing</th>
<th>Unique</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>StDev</th>
<th>Sum</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0</td>
<td>8</td>
<td>120.00</td>
<td>140.00</td>
<td>135.70</td>
<td>10.13</td>
<td>1357.00</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>121.35</td>
<td>122.70</td>
<td>127.25</td>
<td>137.00</td>
<td>144.50</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>144.50</td>
<td>145.30</td>
<td>145.80</td>
<td></td>
<td></td>
<td>0.95</td>
</tr>
</tbody>
</table>

Lowest values: 120, 123, 125, 134, 134
Highest values: 140, 143, 145, 146
## Data Dictionary Codebook

- The Data Dictionary Codebook is a ‘human’ readable, read-only version of the project data dictionary.
- You can find the Codebook link on the left menu.

### Data Dictionary Codebook Table

<table>
<thead>
<tr>
<th>#</th>
<th>Variable / Field Name</th>
<th>Field Label</th>
<th>Field Attributes (Field Type, Validation, Choices, Calculations, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>subj</td>
<td>Subject ID</td>
<td>text (integer, Min: 8000, Max: 8999), Required</td>
</tr>
<tr>
<td>2</td>
<td>demo_date</td>
<td>Date Completed Demographics Form</td>
<td>text (date, mdy), Required</td>
</tr>
<tr>
<td>3</td>
<td>demo_init</td>
<td>Staff Initial</td>
<td>text, Required</td>
</tr>
<tr>
<td>4</td>
<td>age</td>
<td>Section Header: Demographics Form</td>
<td>text (integer, Min: 40), Required</td>
</tr>
<tr>
<td>5</td>
<td>sex</td>
<td>Gender</td>
<td>radio, Required</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 Male</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 Female</td>
</tr>
<tr>
<td>6</td>
<td>ethnic</td>
<td>Ethnicity</td>
<td>radio, Required</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 Hispanic or Latino</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Not Hispanic or Latino</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 Declined to answer</td>
</tr>
<tr>
<td>7</td>
<td>race</td>
<td>Race</td>
<td>radio, Required</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 American Indian or Alaskan Native</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 Asian</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 Black or African American</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 Native Hawaiian or Pacific Islander</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 White</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 Mixed race</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7 Unknown</td>
</tr>
</tbody>
</table>
QUESTIONS?
New Features in Recent Upgrades
Alerts & Notifications

- Allows you to construct alerts and send customized email notifications
- Notifications may be sent to one or more recipients (a user on the project, a survey respondent or someone else)
- Can be triggered or scheduled when a form/survey is saved and/or based on conditional logic whenever data is saved or imported.
- To set up alert:
  - set how the alert gets triggered
  - define when the notification should be sent (including how many times)
  - specify the recipient, sender, message text, and other settings for the notification.
Alerts & Notifications

**STEP 1: Triggering the Alert**

How will this alert be triggered?
- When a record is saved on a specific form/survey*
- When a record is saved on a specific form/survey with conditional logic*
- Using conditional logic during a data import or data entry

Trigger the alert...
- When -- choose an instrument/survey -- is saved with any form status (excludes data imports)

* The alert will not be re-triggered if the form/survey is saved again, unless it is set to send "Every time" in Step 2 below.

**STEP 2: Set the Alert Schedule**

When to send the alert?
- Send Immediately
- Send on next at time
- Send after lapse of time: days hours minutes
- Send at exact date/time: MM/DD/YYYY HH:MM

Send it how many times?
- Just once (once per event - note: will send on every instance for repeating instruments/events)
- Every time the form/survey in Step 1 is saved (excludes data imports)
- Multiple times: Send every days after initially being sent
Alerts & Notifications

**Email From:**
* must provide value

**Email To:**
* must provide value

**Subject:**
* must provide value

**Message:**
* must provide value

- Prevent piping of data for Identifier fields

**Add attachments**

**Optional**

**Alert expiration:**

This alert will be auto-deactivated at the specified date/time above. Note: This will cause any already-scheduled notifications not to be sent after the expiration time.
Alerts & Notifications

Alert #1: Training sign up reminder

- When the instrument "REDCap Training Sign Up Form" is saved and has a complete status.
- Schedule to send on 12/13/2019 10:00am
- Send one time

Activity:
- No alerts scheduled yet
- 1 record was alerted (view list)
- Last sent: 10/28/2019 3:22pm

Email

From: redcap@yale.edu
To: [email]
Subject: REDCap Training 101 Reminder
Message: Dear [fname], This is a friendly reminder th...

My Alerts  Notification Log

Notification Log
(in ascending order by time sent)

View past notifications
View future notifications

Begin time: [ ]  End time: 10/30/2019 14:19 (M/D/Y H:M)
Display: All alerts
Display: All records

<table>
<thead>
<tr>
<th>Notification send time</th>
<th>Alert</th>
<th>View Notification</th>
<th>Record</th>
<th>Recipient</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/28/2019 3:20pm</td>
<td>#1</td>
<td></td>
<td>1</td>
<td><a href="mailto:sui.tsang@yale.edu">sui.tsang@yale.edu</a></td>
<td>REDCap Training 101 Reminder</td>
</tr>
</tbody>
</table>
Rich text editor for field labels and section headers

Please enter these test results:

1. **Test A**: Only the test result before enrollment
2. **Test B**: Only the test result on day of enrollment

Refer to this website for more information: REDCap@Yale

Please enter these test results:

1. **Test A**: Only the test result before enrollment
2. **Test B**: Only the test result on day of enrollment

Refer to this website for more information: REDCap@Yale
Utilize the Google reCAPTCHA functionality to help protect public surveys from abuse from “bots”, which are automated software programs that might enter trash data into surveys.

You can choose to enable the Google reCAPTCHA functionality on the Public Survey page in your project.

When enabled, the public survey will display the reCAPTCHA checkbox and “I’m not a robot” text on a survey page prior to allowing the participant to view the public survey.

Not employed on any private survey links because those are unique to a record and thus would never be made publicly available like a public survey link would.
Survey

To proceed to the survey, please check off the box and click the button below.

I'm not a robot

Begin survey
New report option for checkbox

Report setting:

- Additional report options (optional)
- Include the Data Access Group name for each record (if record is in a group)?
- Include the survey identifier field and survey timestamp field(s)?
- Combine checkbox options into single column of only the checked-off options (will be formatted as a text field when exported to stats packages)

Combine checkbox options into single column option checked:

<table>
<thead>
<tr>
<th>Record ID</th>
<th>Event Name</th>
<th>test3</th>
</tr>
</thead>
<tbody>
<tr>
<td>record_id</td>
<td>redcap_event_name</td>
<td>test3</td>
</tr>
<tr>
<td>1</td>
<td>Event 1</td>
<td>A, B, C (1, 2, 3)</td>
</tr>
</tbody>
</table>

Combine checkbox options into single column option unchecked:

<table>
<thead>
<tr>
<th>Record ID</th>
<th>Event Name</th>
<th>test3</th>
<th>Refused</th>
<th>Non of the above</th>
</tr>
</thead>
<tbody>
<tr>
<td>record_id</td>
<td>redcap_event_name</td>
<td>test3</td>
<td>test3</td>
<td>test3</td>
</tr>
<tr>
<td>1</td>
<td>Event 1</td>
<td>Checked (1)</td>
<td>Checked (1)</td>
<td>Unchecked (0)</td>
</tr>
</tbody>
</table>

<REDCap logo>
New report option for checkbox

Data Export:

Combine checkbox options into single column option checked:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 record_id</td>
<td>recap_event_name</td>
<td>test3</td>
</tr>
<tr>
<td>2 1</td>
<td>event_1_arm_1</td>
<td>1,2,3</td>
</tr>
</tbody>
</table>

Combine checkbox options into single column option unchecked:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 record_id</td>
<td>recap_event_name</td>
<td>test3___1</td>
<td>test3___2</td>
<td>test3___3</td>
<td>test3___8</td>
<td>test3___9</td>
</tr>
<tr>
<td>2</td>
<td>event_1_arm_1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Other New Features

• **Sticky matrix header**
  – Matrix headers to float and stick to the top of a page on either a survey or data entry form so that the matrix headers are always visible

• **Expand and Collapse buttons for each instrument listed on the Codebook page in a project**

• **Report Folders**
  – Organize reports into folders

• **“Edit Access” for reports**
  – Control who can edit, copy or delete the report

• **Report search function**
  – allow users to search within the title of that project’s reports to help them navigate to a report very quickly
QUESTIONS?
Thank You!

Further Questions: Contact us at REDCap@yale.edu