User Guide For Women's College Hospital End Users

Compiled, developed & written by Chris Battiston, REDCap Administrator, Women's College Hospital with extensive assistance from various admins within the REDCap Community

Version 1.0 (Date October 26, 2022)
REDCap Version 12.5.14 Standard

76 Grenville Street, Toronto ON M5S 1B2
T 416.323.6400
www.womenscollegehospital.ca
FULLY AFFILIATED WITH THE UNIVERSITY OF TORONTO

Version Number	Date	Comments	Reviewed by
0.1	September 17, 2022	Preliminary Draft completed	C. Battiston
0.1.1	September 20, 2022	Initial review and revisions made	C. Battiston
0.1.2	September 28, 2022	Additional content added	C. Battiston
0.1.3	October 13, 2022	Final additions and revisions made to the preliminary draft.	C. Battiston
0.1.3.1	October 16, 2022	Additional revisions made	C. Battiston
0.1.3.2	October 20, 2022	Final Revisions made and submitted to Director	C. Battiston
1.0.0	October 26, 2022	Version reviewed and approved	C. Battiston

1 Contents

76 Grenville Street, Toronto ON M5S 1B2
T 416.323.6400
www.womenscollegehospital.ca
FULLY AFFILIATED WITH THE UNIVERSITY OF TORONTO

76 Grenville Street, Toronto ON M5S 1B2
T 416.323.6400
www.womenscollegehospital.ca
FULLY AFFILIATED WITH THE UNIVERSITY OF TORONTO

76 Grenville Street, Toronto ON M5S 1B2
T 416.323.6400
www.womenscollegehospital.ca
FULLY AFFILIATED WITH THE UNIVERSITY OF TORONTO

76 Grenville Street, Toronto ON M5S 1B2
T 416.323.6400
www.womenscollegehospital.ca
FULLY AFFILIATED WITH THE UNIVERSITY OF TORONTO

A NOTE ABOUT THIS USER GUIDE:

This guide outlines and describes how to use REDCap functionality as approved for use at Women's College Hospital (WCH). It does not assume that the reader has been granted a certain level of access, or has a WCH REDCap User Account. This document is a guide on specific features that may be available to a Super User / Project Administrator during the development of their projects, or to a project that is built by the REDCap Administrator. Any questions regarding user rights or permissions to certain features must be discussed at one of the Drop-in Sessions detailed below.

How to navigate this User Guide

- You can use Ctrl+F to search for a keyword within this User Guide
- There are embedded hyperlinks, referencing other sections of the User Guide Clicking on the links will bring you to the relevant section of the User Guide.

Finding the latest version of this User Guide

This User Guide is regularly updated. If you have suggestions or corrections for this guide, please contact redcap@wchospital.ca.

1 REDCap Overview

For a technical overview of REDCap, see this document.

1.1 Definition

REDCap = **R**esearch **E**lectronic **D**ata **Cap**ture
REDCap is a secure, web-based application for building and managing online surveys and database. You can think of it as a tool to collect and disseminate data.
For a brief video overview of REDCap, see this link. It is 4 minutes in length. You can access the video from the Home or My Projects tab by clicking on Training Videos. If you are in a REDCap project, look on the left-hand navigation bar under the Help & Information section at the bottom of the navigation bar.
A more detailed video overview of REDCap can be found here. It is 14 minutes in length.

1.2 Helpful Terms

Data Collection Instrument – a form or survey created for capturing data. Similar to a sheet or tab within an Excel Workbook.
Record - Similar to a row in an Excel sheet.
Record ID – a unique identifier for each record in your database.
Record Status Dashboard – a table that lists all existing records and their status for every data collection instrument
Data Dictionary – a spreadsheet containing the data entry fields for your project
Variable – the name of the field or answer choice that is stored in the database
User – a person who is given access to a REDCap project (e.g. can login to REDCap and go into the project.) If you are the creator of a REDCap project, you are a user on that project. Anyone else you add to the project is a user on the project.
Participant – a person who completes a survey. This person does not see other participants' survey results because they are not logging into REDCap to enter their results.

Survey – data collection instrument that can be completed by someone who is not a user on a REDCap project.
Project - Similar to an Excel workbook. Contains the instruments that will capture your data. All instruments within a project are tied together.
Field Comment - Users with access to data entry forms may leave one or more comments on any field on a data collection instrument by clicking on the field comment, after which the balloon icon will stay lit up to signify that comments exist for that field for this record.

1.3 Level of Support

☐ **Option A** – Full Build by WCH REDCap Adminstrator (at Cost)	• This option allows WCH Researchers access to a trained REDCap Administrator to build their databases and surveys to the specifications required. • This is particularly suitable for projects with complex study design requiring custom functions. • WCH will provide an estimated cost of the build based on the information provided in this document. Any changes to the database build specification may necessitate a change to the estimated build cost.
☐ **Option B** – Build by Super Users (no cost)	• WCH will provide access to an empty project at no cost to the WCH Researchers upon request to the REDCap Super Users who have completed required training. • WCH REDCap will review project requirement for appropriateness of the build and confirm feasibility. WCHRI reserves the right to require the build by its REDCap administrator based on the assessment of the project complexity in order to minimize risk to the platform. • WCH will be responsible for REDCap system administration (e.g. system upgrades, periodic threat risk assessments, system validation, and user account management). • In addition to the documented training and bi-weekly drop-in sessions.

Individualized support

The WCH REDCap Team will not meet with a study team unless it is deemed necessary by the REDCap Administrator. WCH can provide individualized support for your projects in 2 ways:

Via drop-in session
Due to extremely limited capacity, support for projects being developed by study teams will only be provided by the bi-weekly Drop In Sessions.
Via email
For projects being developed by the REDCap Administrator, all communications will be maintained through email (REDCap@wchospital.ca) to ensure the communication is documented.

Project Management Tip: Allow plenty of time for project development and testing
The WCH REDCap team is responsible for and manages all aspects of REDCap, including system administration, server maintenance, and project support. Help us help you by allowing plenty of time for testing and deployment. We strongly recommend budgeting a minimum of two (2) weeks for testing if it is built by someone on your team. For projects built by the WCH REDCap team, please ensure the proposed timelines will meet your project requirements. This will give you time to seek out our help if you have any problems.

1.4 Fee for service support

Forms development, special programming and other custom services may be available on a fee-for-service basis on an ad-hoc basis pending resource availability, please email redcap@wchospital.ca.

1.5 Post-Production Changes

Once a project has been moved to production, only the REDCap Administrator can make changes. This is to ensure that the integrity of the project and the data remains intact. As a result, there are two levels of changes:

- Major changes: any changes impacting existing data or a result of poor UAT or urgent requests that is not critical functionality or at the discretion of WCH REDCap Services. Any efforts required by WCH REDCap Services will be billed at the rate of $100/hour.
- Minor changes: any changes that do not impact existing data and not requiring REB amendment and at the discretion of WCH REDCap Services. Any efforts required by WCH REDCap Services will be provided at no cost.

1.6 Logging into REDCap

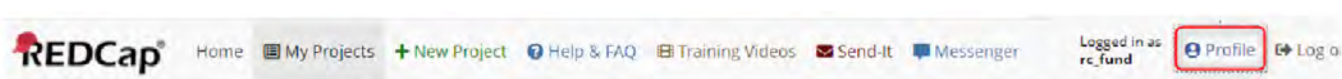
On any web browser go to https://redcap.wchospital.ca (WCH only, requires VPN or on-site access) or https://wcredcap.wchospital.ca (Externally-facing, for multi-site projects / surveys etc.).

Local User Accounts

All user accounts are approved and created by the REDCap Team. In extremely specific circumstances, a Sponsor may be designated to administer the users for a particular project; this would still require the Admin to create the account however.

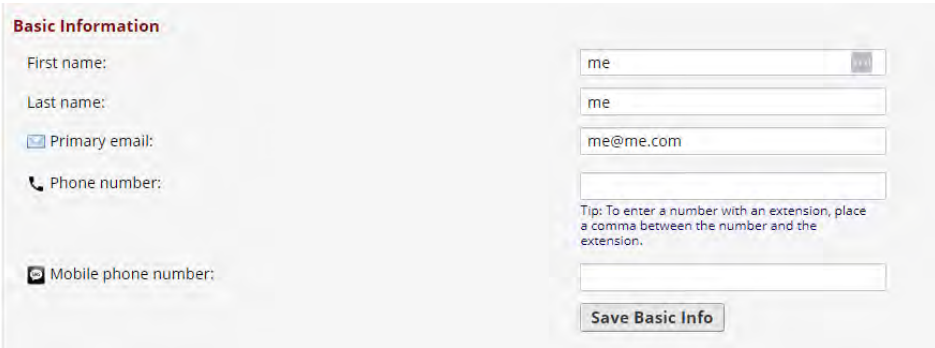
1.7 Profile

When you are first logged into REDCap and outside of a project, you will have access to a navigation bar across thetop of the page. On that bar you will see an icon for “Profile”:



1.8 Profile Basic Information

The Basic Information section of Profile has these fields:



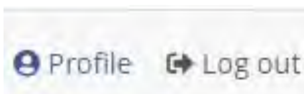
Profile Additional Options/Associating another email address with your REDCap account

If you are sending survey invitations or using the Alerts & Notification application to send emails, you can set the email to originate from any email address associated with any of the users in the project.

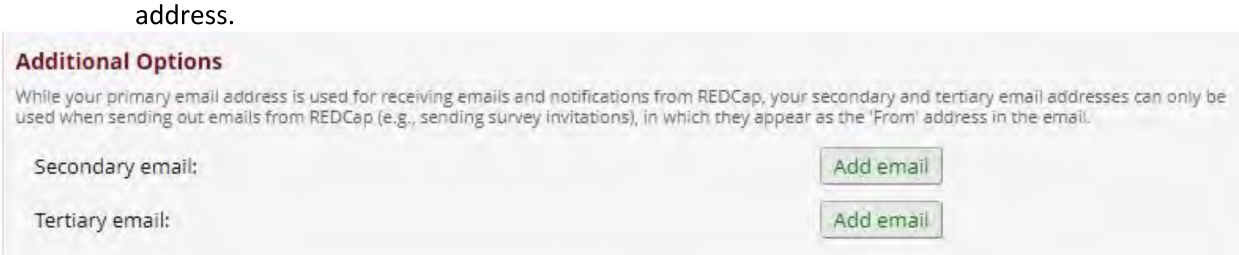
There are occasions when you might not want the email to originate from your work email address, however. In such instances, another email address (e.g. a generic email address for your team) can be added to your REDCap account. Once added, you can designate that email address as the one from which emails are sent.

To associate another email address with your REDCap account:

1. Log into REDCap and click on Profile (it appears in the upper right-hand corner on the toolbar)



2. Look in the Additional Options section. That's where you can add another email address.



After the email address has been added, you must go through a verification process. REDCap will send an automatic email to that email address and ask you to confirm that it's ok to associate that email address with your REDCap account. You will need to go to the inbox of that email account and respond to the email from REDCap. Once verified, that email address will show up in the drop-down list in the 'from' section of survey invitations and/or Step 3 of alerts (if applicable).

To be clear: the secondary or tertiary email address needs to be an email address that actually exists. You are not able to simply enter no-reply@wchospital.ca, for example. It has to be an email account whose inbox you can access for the verification process.

Please note: this is an account-wide setting. That means you will be able to use that email address to send survey invitations for ANY of your REDCap projects. It is not project specific. If you have already set up the second and third email addresses for your profile and require additional ones for other projects, please attend a Drop In Session or discuss with the REDCap Admin during your preliminary meeting.

Profile User Preferences

In this section of Profile you have the ability to change date and time format, number format – decimal character and number format thousands separator.

1.9 Requesting an external user account

To request an external user account (for someone not affiliated with Women's College Hospital), the study coordinator will need to follow the project-specific process (End User Agreement, etc.). This will be set up and discussed with the REDCap Administrator during project development.

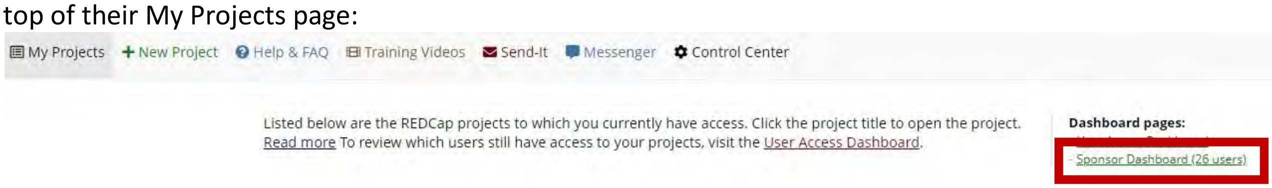
Each user will be sent their login information separately and added to the corresponding project(s). We will also send you (the person who sent the request) a list of their usernames. If there is a project Sponsor they will be able to administer the user from this point on.

Please note:

- external collaborators do not have the ability to create a new project. They can only access projects to which they are added by the WCH REDCap Admin.
- Unless otherwise indicated in the request, the requestor (not the PI) will be listed as the sponsor for the external user. That person will have the ability/responsibility of performing tasks listed in the Sponsor Dashboard section below.
- You (the project owner) have the responsibility of contacting the Admin if there's an issue. If there is not a project sponsor, the Admin will need to know a minimum of 2 weeks in advance to extend an account.
- If there is no sponsor, password resets will be done when the REDCap Admin has capacity.

1.10 Sponsor Dashboard

If you are listed as the Project's sponsor, you will be the person who administers the users' access to projects. Additionally, the sponsor will see a Sponsor Dashboard at the top of their My Projects page:



Once in the Sponsor Dashboard, the sponsor will see a list of all external users for whom he/she is a sponsor. From this page, the sponsor can:

- Trigger the REDCap account creation email to be re-sent to the external user
- Trigger a password reset link for the external user
- Set the account expiration date for the external user
- Extend the account expiration for the external user
- Un-suspend the external user
- Suspend the external user

This is a useful tool if you need to perform one of those actions for many users at the same time. In most cases a PI will not be managing the above tasks, which is why the sponsor is typically someone other than the PI.

1.11 External User account expiration notifications

Most external user accounts are set to expire after one year. Two weeks prior to this account expiration, the external user and the sponsor will receive an email notifying them of this fact. The sponsor has the right to request that the account be extended. The sponsor can make that request by replying to the expiration notification email or via the Sponsor Dashboard (see above.)

Project Management tip: pre-emptively extend external user's account expiration

If you are a sponsor and have many external user accounts which might expire around the same time (because you requested the account creations around the same time), you will get multiple account expiration notification emails – one per external user. You can pre-empt the account expiration notification process by going to the Sponsor Dashboard, sort by expiration date and look for the users whose accounts will expire soon. If you want to extend any of them, you can bulk select them and click the Extend account expiration button. A REDCap administrator will finalize the request and you will therefore avoid you and your external users receiving the account expiration notification emails.

Account access vs. Project access

A local user (WCH employee or affiliate) will have access to their **account** and **projects** as long as they are employed or an active student at Women's College Hospital who has been appropriately onboarded and approved by the REB / APQIP or the in the case of operational support projects, the Project Owner.

External users are given a limited time period during which they have a REDCap **account** (to a maximum of one year, at which time they'll need to be re-approved).

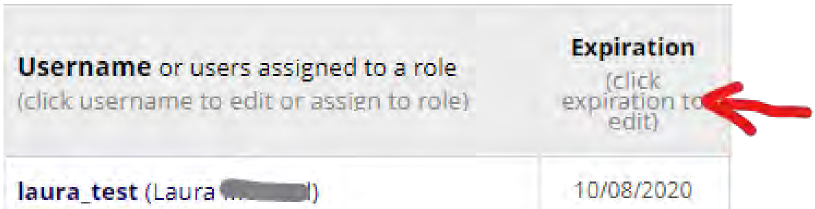
The sponsor of the external user is given the opportunity to extend the REDCap **account**. They can make that request via email or via the Sponsor Dashboard.

1.12 Project Access

The project creator can set an expiration date for how long any person (internal or external user) has access to their **project**. The project creator sets that via the User Rights application within the project:

A user's project access expiration date is reflected on the Project Home and User Rights pages.

REDCap administrators do not set expiration dates on a **project**. The project owner is responsible for that. And the project owner can change/extend the project expiration date on the User Rights page of the project.



If a user's access to a project has expired, this is the message they will see:

ACCESS DENIED!

Your access to this particular REDCap project has expired. In order to gain access again, you will need someone to remove or change the expiration date of your user account for this project on the User Rights page.

You have no access rights to this page. Please see the project owner for more information.

Return to My Projects page

1.13 Passwords

For users on the Internal (local only) REDCap, their passwords do not expire. For users on the External REDCap, their passwords expire every 30 days. Both instances have the requirement that the last 5 passwords cannot be re-used and that after the 5th failed login attempt, the account is locked for 2 hours. PLEASE NOTE that if your account is locked, you MUST wait the full two hours – the REDCap Admin cannot unlock your account for you.

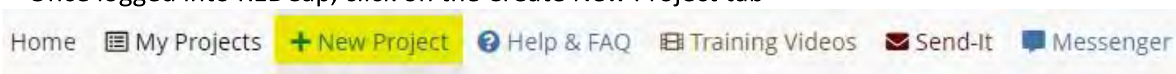
The sponsor has the ability to reset the password via the Sponsor Dashboard on their My Projects page. For further information on the Sponsor Dashboard, please see this section of this User Guide.

2 REDCap Projects

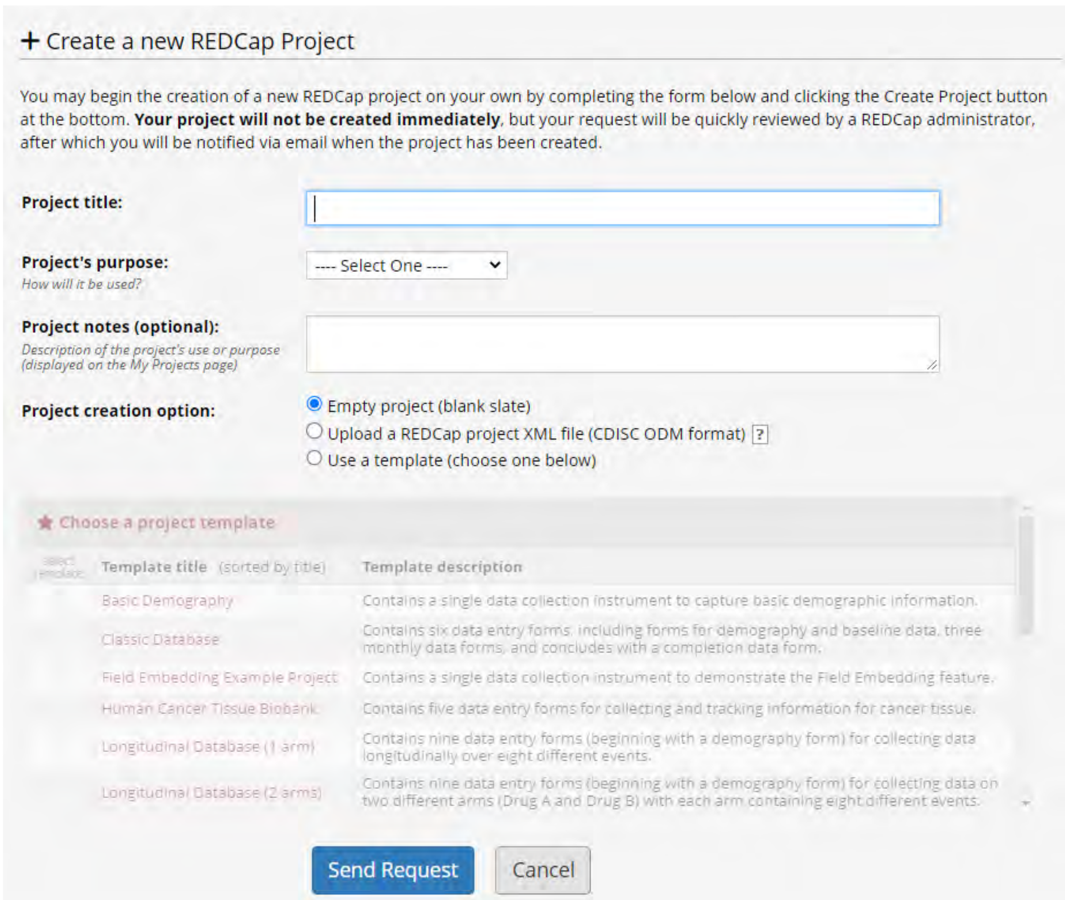
You can think of a REDCap project as being analogous to a project database file from Microsoft Access: the terms ‘project’ and ‘database’ are essentially synonymous. Similarly, an Excel Workbook is analogous to a REDCap project, with the different instruments within a REDCap project being similar to the different tabs or sheets within an Excel workbook.

2.1 Create a New REDCap Project

Once logged into REDCap, click on the Create New Project tab



You will then see this:



2.1.1 Project Title

Enter a short and descriptive title for your project, including Project Acronym. This can be changed later, if needed.

2.1.2 Purpose of this project

Use the drop down and select the purpose:

- **Practice/Just for Fun** – use this if you are creating a practice project

76 Grenville Street, Toronto ON M5S 1B2
T 416.323.6400
www.womenscollegehospital.ca
FULLY AFFILIATED WITH THE UNIVERSITY OF TORONTO

- **Operational Support** – use this for tracking specific department information processes
- **Research** – if this is an REB approved project, you must enter your PI information, your REB # (if you have it, otherwise this will be required before moving to production) and specify the type of research you are doing
- **Quality Improvement** – use this for any projects that help with goals and performance improvement
- **Other** – if you choose this option, please specify the purpose

For a video overview of the different project types, please see this link. It is 3 minutes in length. You can access the video from the Home or My Projects tab by clicking on Training Videos. If you are in a REDCap project, look on the left-hand navigation bar under the Help & Information section at the bottom of the navigation bar.

2.1.3 Project notes

Use this field to provide the Project Owner / Principal Investigator and the Primary Contact Person / Study Coordinator or Manager.

2.1.4 Start project from scratch or begin with a template

By default, the project will be created as a blank slate (similar to creating a new blank document in Word). You can change that selection to 'template' and then scroll through that list. If one of the templates appears to match the type of work you are doing, select it from the list. You will be able to customize and make any changes you wish. To follow along with this user guide, select "Create an empty project (blank state)". Once ready, click Create Project.

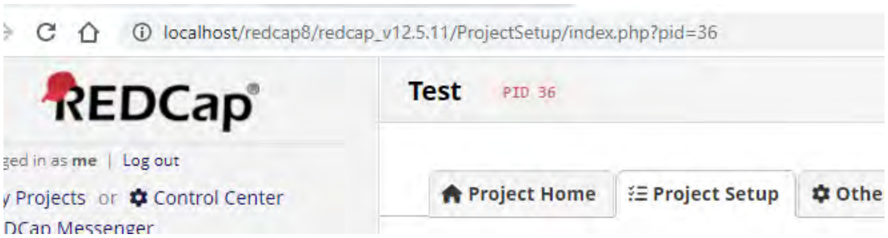
2.1.5 Contacting your REDCap Administrator

From within your project, you will see a blue button on the left-hand navigation bar:

Clicking on that button will generate an email from your email client (like Outlook). That email will be pre-populated with your Project ID and your User ID. So you can click on that button and type your question into the body of that email.

2.1.6 Your Project's unique ID

Each project has a project ID number (PID.) When you are within a project, you can see pid=xxxx in the URL (xxxx being your project's unique id) as well as next to your project title.



When you are corresponding with your REDCap administrator, it is very helpful to provide your Project ID so that they can give you tailored assistance.

2.1.7 Navigating from within a Project

Once you are in a REDCap project, you will notice that the screen is divided into two parts:

1. The left-hand navigation menu, which you will always have access to when you are within a project
2. Your workspace, which is the area on the right. This is where you will be designing your project, entering data, viewing data, etc.

Your project itself is a series of webpages, made up of the different components of the left-hand navigation bar and your workspace. All of these pages are tied together via that unique PID.

You can click any of the buttons on the left-hand navigation bar or on your workspace and stay within the project. The only exceptions are:

My Projects – this button is essentially like hitting the escape key. It will take you out of your project to the page that lists all of your projects (the tab called "My Projects")

The REDCap logo – this button will take you out of your project to the My Projects tab

You will notice that as you click on any of the buttons on the left-hand navigation menu or do any work in your workspace, your PID will be somewhere in the URL. **You can right-click on any of the links within your project and open that page on a new tab.**

2.1.8 Project Access

By default, a project is private. No one can access your project unless you add them as a user to the project.

Access to individual projects is requested by the Project Coordinator and reviewed and approved by **the REDCap Administrator.**

2.2 Quick Guide to Project Creation

The following steps will allow you to create a classic (not longitudinal) project with one instrument:

1. Click on New Project
2. Enter a title
3. Select a purpose
4. Leave the default selection of 'create an empty project (blank slate)
5. Click on the Designer button
6. For the Instrument 'My First Instrument', click on the 'choose action' button.
7. Rename the instrument to something that aligns with the data you are collecting.
8. Click on the instrument name and begin adding your fields.
   a. For guidance on instrument design see "Quick Guide to Instrument Design".

If you want your instrument to be a survey, follow the steps for “Quick Guide to Survey Setup”.

2.2.1 Project Status

A REDCap project can exist in one of four status categories at any given time:

1. *Development*

   A project in Development is in the design, setup and testing phase. No real data is entered, and any data will be purged every other Friday. If data is needed to be retained for testing purposes please contact the REDCap Admin. By default, a project is in Development mode when it is created. When a project is in Development mode, you can move it to Production or mark the project as Complete.

2. *Production*

   A project in Production is one that is collecting real (not test) data. You can still make changes to the project design but you will have to enter a draft mode and submit changes for approval. A project is in Production mode only when a user on the project moves it to production. **To move your project to Production, go to the Project Setup page, scroll down to the bottom and click on the ‘Move Project to Production’ button.** You will then be prompted with a screen asking if you want to keep or delete the test data (all data MUST be deleted) and then click the *Yes, Request Admin to Move to Production Status* button.

3. *Analysis/Cleanup*

   You can move your project to Analysis/Cleanup status if data collection is complete. This will disable most project functionality, although all collected data will remain intact. Once in Analysis/Cleanup status, the project can be moved back to production status at any time.

   To move a project to Analysis/Cleanup status, your project must be in Production. While in Production, you would go to the Project Setup page, click on the other Functionality tab and click on the ‘Move to Analysis/Cleanup status’ button.

   After it is in Analysis/Cleanup status:
   It is assumed that formal data collection has ended, except for cleaning and analyzing the data already collected. While in this status, many features are disabled, such as surveys, Alerts & Notifications, Automated Survey Invitations, and other features typically used during data collection. Also, no new records can be created while in this status.

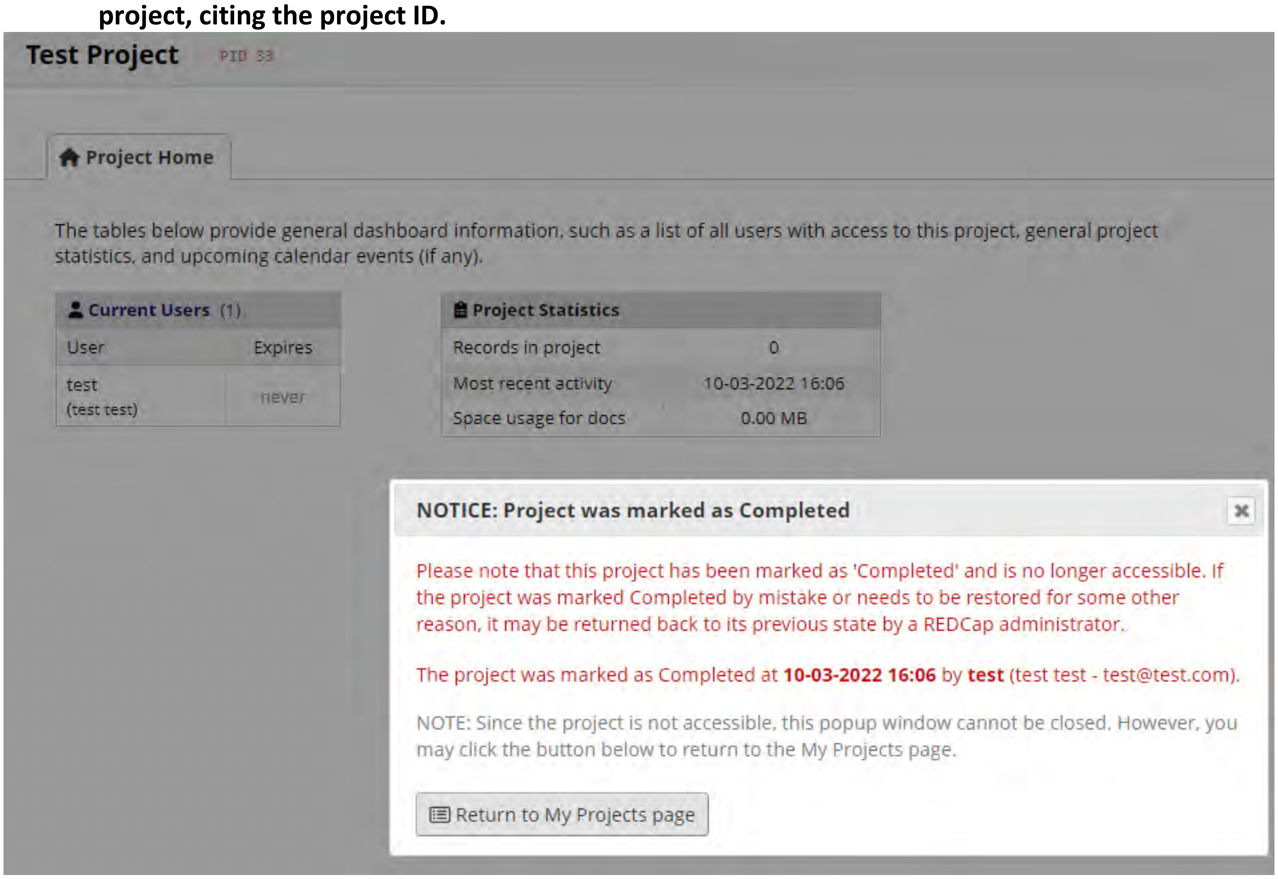
   While the project is in Analysis/Cleanup status, you may set the data in the project to be either 1) Editable (existing records only), or 2) Read-only/Locked. If set to Read-only/Locked mode, then no data in the project will be able to be modified in any way.

4. *Completed*

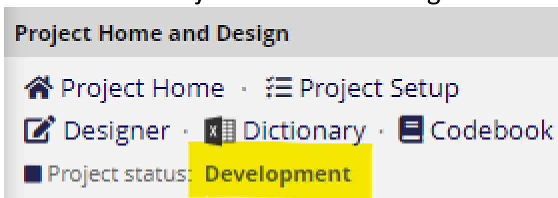
   What it means: If you are finished with a project and wish to make it completely inaccessible, you may mark the project as 'Completed'. Doing so will take it offline and remove it from the My Project list of all users on the project.

Why you might mark a project as complete: Marking a project as completed is typically only done when you are sure that no one needs to access the project anymore, and you want to ensure that the project and its data remain intact for a certain amount of time.
How to mark it: To mark a project as complete, go to Project Setup and then click on the Other Functionality tab. Then click the 'Mark project as Completed' button.
Where it goes: After marking a project complete, the project can only be seen again by clicking the *Show Completed Projects* link at the bottom of the *My Projects* page. (underneath the Public Projects list). When you do that, the projects will appear in your My Projects list with red text next to it that reads 'Completed'.

Accessing it again: No one in the project (except for REDCap administrators) can access the project. And only administrators may undo the Completion and return it back to an accessible state for all project users. **To request access to the project, click on the project name and make note of the project ID (highlighted as an example in the screenshot below). Ask your REDCap administrator to restore the project, citing the project ID.**



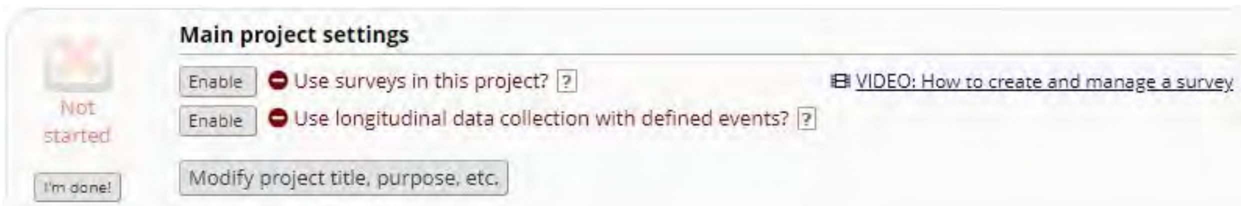
If a project is in Development, Production or Analysis/Cleanup mode, you can find its status in the Project Home and Design section of the left-hand navigation bar:



Project Setup

You must have Project Design & Setup permissions to perform actions on the Project Setup page. Permissions are set in the User Rights of the project and is unique to each user on the project.

2.3 Step 1 on the Project Setup page: Main project settings

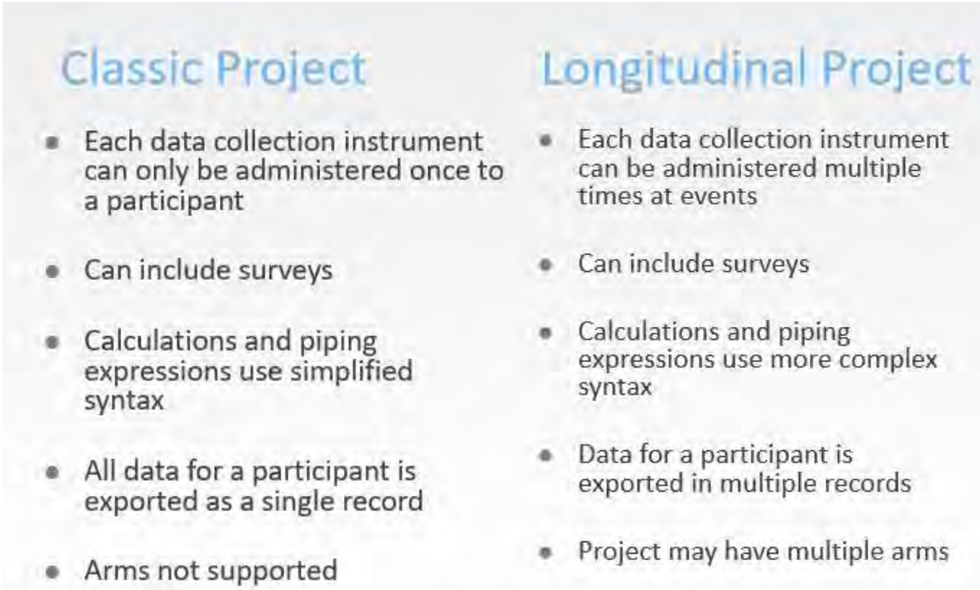


Use surveys in this project

Found on the Project Setup page in the Main project settings section is the option to 'use surveys in this project'. Click Enable if your project will contain surveys. {Reminder – per the Helpful Terms above, you would enable surveys if the person entering the data is someone who is not a user on the project. For instance, if a research participant is entering the data about themselves.}

Use longitudinal data collection

By default, a project created by empty slate (not a template) is a classic data collection project. If you wish it to be configured to collect data longitudinally, you could click the enable button in this first section on the Project Setup page. To determine if you project should be classic or longitudinal, consider this comparison:



Modify project title, purpose, etc.

Click this icon if you would like to change your project title or purpose.

2.4 Step 2 on the Project Setup page: Design your data collection instruments

There are a few choices in building your Data Collection instruments. You can use the Online Designer, Data Dictionary or import an instrument from the REDCap Shared Library.

2.4.1 Data Collection Instruments

The term “instrument” is synonymous with “form” in referring to a discrete page on which data is entered and viewed in fields. In this context the terms “field” and “variable” are also essentially synonymous.

Online Designer: Click Online Designer to start building your data collection instrument(s)

Data Dictionary: Alternatively, you may upload your data dictionary via an Excel csv file in order to build your data collection instruments. **Note:** This is considered an advanced step and should not be used unless you are an experienced user.

2.4.2 REDCap Shared Library

The REDCap Shared Library is a repository of validated data collection instruments that can be downloaded and used in your REDCap projects.

To access the REDCap Shared Library your project must be in Development (not Production) mode. You can access the library via two locations:

1. The Project Setup tab – see the Design your data collections instruments section
2. The Online Designer page – there is a button to import button

You can download any instrument from the library into your REDCap project.

If your project is in production status, you can also upload data collection instruments that you have created to the Shared Library. They will then be available for download by other REDCap users around the world.

Note: Do not share copyrighted material unless you are the owner.

2.5 Navigating to Online Designer

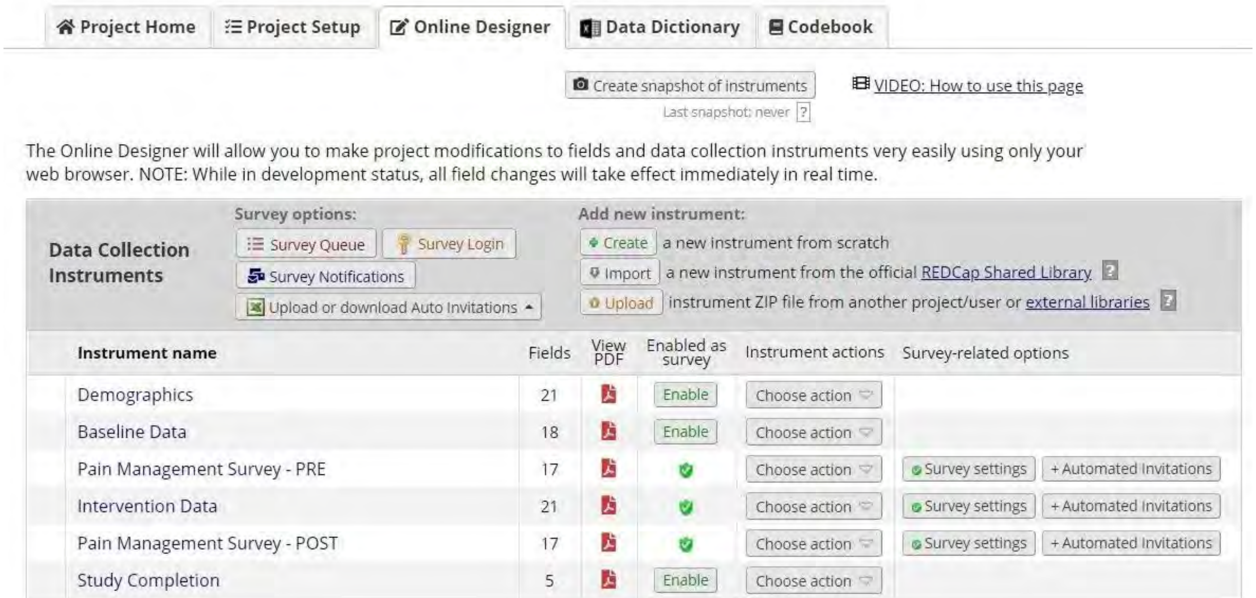
You can access the Online Designer via the Designer link on the left-hand navigation bar under Project Home and Design:

2.5.1 Instrument Design

For a video introduction to Instrument Development, please see this link. It is 6 ½ minutes in length. You can access the video from the Home or My Projects tab by clicking on Training Videos. If you are in a REDCap project, look on the left-hand navigation bar under the Help & Information section at the bottom of the navigation bar.

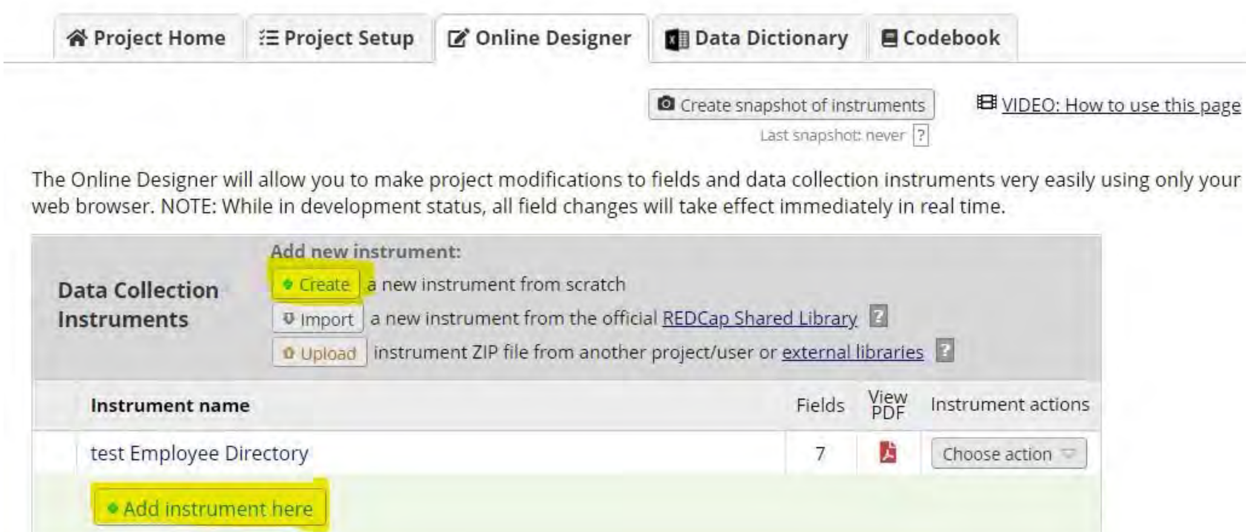
2.5.2 Online Designer

The Online Designer lists the instruments that exist in a project and provides functions for manipulating them at the instrument level (as opposed to the manipulation of items within an instrument). You can access Online Designer by clicking on the word 'Designer' on the left-hand navigation bar (under Project Home and Design' or by clicking on the Online Designer button on the Project Setup page.



Create a New Form

1. Click **Create**
2. Click **Add instrument here** in the position in the list where the new form is to be created (this can be [changed](#) later)
3. Assign a name and click **Create**
4. Add variables to the form. The new form will NOT be saved until at least one variable has been added.



Delete a Form (in Online Designer)

1. Click the **Delete** button (under Actions) for the relevant form
2. Confirm the deletion. The form will be removed along with all of its variables

Reorder Forms (Move instruments) in Online Designer

1. Position your mouse cursor over the left-hand end of the form’s row
2. Click and drag the row to a new position

Caution on moving instruments

If you have surveys in your project and wish to use the public survey link, your survey needs to be the first instrument in the project, as seen in the image below:

Instrument name	Fields	View PDF	Enabled as survey	Instrument a
Demographics Survey	5			Choose acti
Data Entry Form	0		Enable	Choose acti

If the data entry form is first, as in the image below…

Instrument name	Fields	View PDF	Enabled as survey	Instrument a
Data Entry Form	1		Enable	Choose actic
Demographics Survey	4			Choose actic

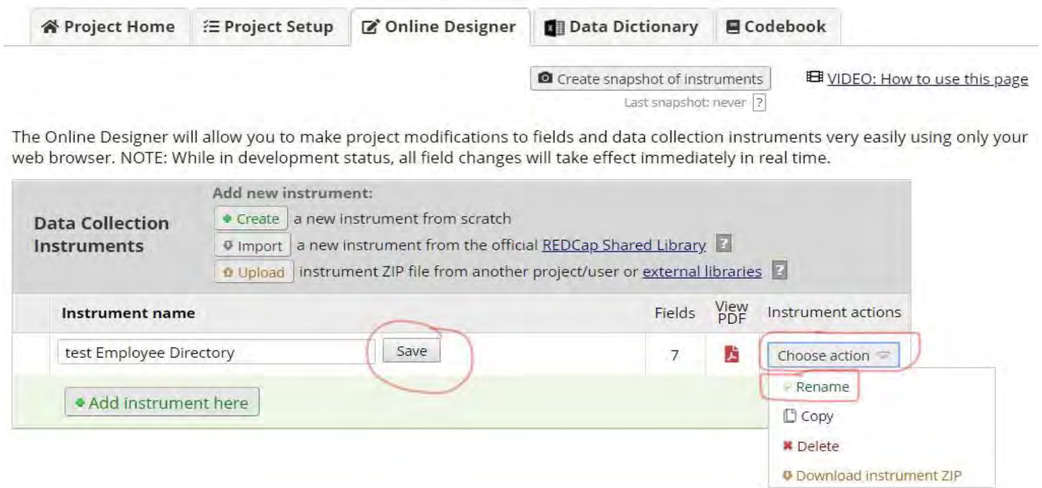
…your public survey link will be disabled.
Also keep in mind branching logic, piping and calculations when moving instruments. For instance, say you plan on entering data into Data Entry Form A, positioned as the first instrument within your project, which will then be piped into Data Entry Form B, positioned as the second instrument within your project. If you move Data Entry Form B to be the first instrument and enter the data into that form first, the field into which your piping should be seen on Data Entry Form A will not have a value.
Additionally, if you have a survey queue or auto-continue enabled, check to see how re-ordering the instruments impacts those features.
Finally, it’s a good idea to check the Survey Settings to see if you need to adjust the wording of the survey instructions and/or confirmation emails (if you have that enabled.)
To get to Survey Settings, click on Designer on the left-hand navigation bar under Project Home and Design.
Please note that if you change the first survey (e.g. move survey B to come before Survey A), that changes the public survey link. If you had created a custom public survey link before moving the survey, that custom public survey link will no longer be valid. Any participant who clicks on the old survey link will get the message: **Thank you for your interest, but you are not a participant for this survey.** To solve this problem, delete the custom public survey link and then create it again.

Rename a Form in Online Designer

REDCap will begin your project with a data collection instrument titled “Form 1”. You will want to change the title so that it is reflective of the data you are collecting in it.

1. Click the ‘Choose action’ but and select **Rename** button.
2. Enter the new name and click **Save**

76 Grenville Street, Toronto ON M5S 1B2
T 416.323.6400
www.womenscollegehospital.ca
FULLY AFFILIATED WITH THE UNIVERSITY OF TORONTO



Designing within an instrument

To begin building your data collection instrument, click on the instrument name.

2.5.3 Quick Guide to Instrument Design via Online Designer

These instructions are for a Classic project created from scratch (not a template).

1. Click on **Designer** (on the left-hand navigation bar)
2. Click on **Choose Action** and select '**rename'**
   a. give the instrument a name specific to its purpose (rather than leaving it the default 'Form 1'.
3. Click on the '**add field'** button
   a. Decide on the field type from the drop-down list. The type of data you are collecting determines which field type to choose.
      i. If choosing 'text box', consider using the validation drop-down to restrict how the data is entered (e.g. for an email address, date, postal code, etc)
   b. In the box 'Field label' type the question as you wish it to appear to the person who is filling out the form/survey
   c. In the variable name box, put a short 'nickname' for your question
   d. If your question involves choices, enter 1 choice per line in the choices box
      i. Yes/no and true/false questions come with the choices pre-set
   e. If you are collecting protected health information, you can mark the field as an identifier
   f. If you want the person completing the form to not be able to save/submit without answering the question, mark the field as required
4. Repeat the above steps until you have all the questions in the instrument 5. If your instrument needs to be a survey, follow the [Quick Guide for Survey Setup](#).
5.

Design tip: add test records as you are designing your instrument.

This helps ensure that the instrument is coming along as you wish it to. Because your REDCap project is a series of webpages, you can have the Online Designer open on one browser tab, and then have the Add/Edit records open on another browser tab. Simply toggle back and forth between the two tabs to switch from design to adding test data.

Design Tip: Participant-Identifying Data

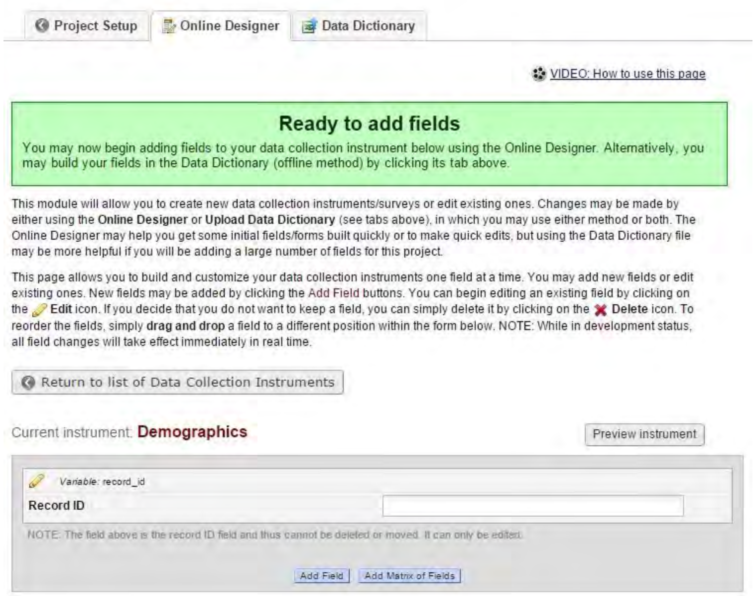
Think very carefully about exactly what confidential, participant-identifying data is required in your project. It is recommended that identifying information be kept separate from other project data, which can be done – in descending order of security by ensuring all identifying fields (see Check For Identifiers) are on separate forms to other data, and that access to these forms is restricted to the minimum set of users.

Record Identifier

As in any database, your project records must be uniquely identifiable. REDCap projects must all define a "record identifier" field as the first field on the first form
In any changes you make to your project's data collection forms it is essential that the record identifier field remain the first field of the first form.
The record identifier field cannot be deleted; however, you may rename this field by clicking on the pencil icon.

2.6 User-generated record identifier or auto-numbered identifier

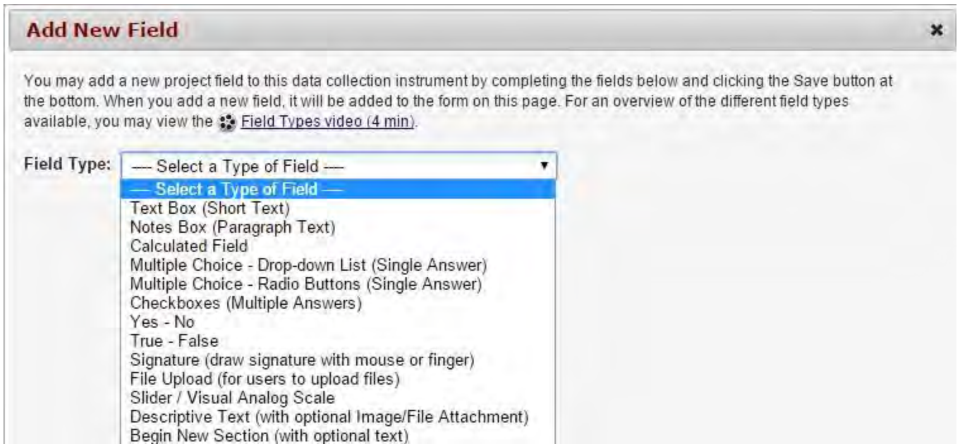
The record identifiers can be automatically sequentially- generated (auto-numbered) or user-entered.
A good example of a user-entered identifier would be the patient's MRN. That's because an MRN is unique, and the record identifier needs to be unique. A bad example would be a participant's last name since there can be several individuals with the same last name (e.g. Smith, Jones, etc.).



Add Fields to Your Data Collection Instruments (add questions to your data collection instruments) via Online Designer

1. Click **Add Field Here** 

2. The **Add New Field** dialog opens
3. Select one of the several field types available:



4. Enter your field elements (see further info below)

5. Click the save button

2.7 Field Elements

Once you have selected your field type, these are <u>some</u> of the elements available to you:

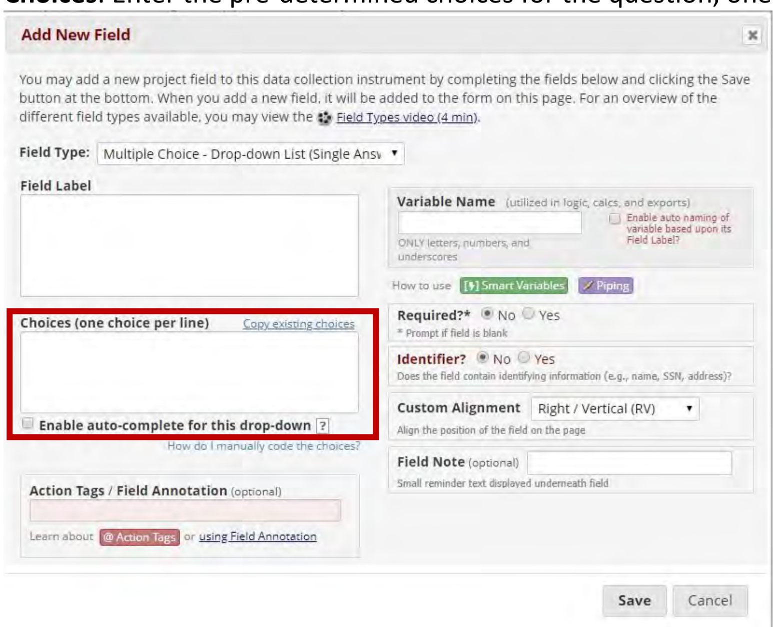
- **Field Label:** This is where you would format your question or data field.
- **Field Annotation:** This is primarily used for you to enter action tags and explanatory notes. These notes will not appear on your data collection instrument or survey.
- **Variable Name:** This is the name of your Field Label that is stored in the database and can be used in reports, exports and analysis. The variable names may contain letters, numbers and underscores but no spaces or special characters. If you decide to change the name of a variable prior to moving your project into production, you must change it everywhere that it is being used such as calculations, branching logic, etc.
- **Required:** Indicate if your field is going to be required. The default setting for all fields is set to No.
- **Identifier:** Indicate if your field is an identifier. All fields that could potentially identify a person should be marked as an identifier, regardless of who will be accessing your data. Especially for Research projects, you will want to mark identifying fields appropriately. This way, if you need to de-identify data, you can do so easily.
    - o To be PHIPAA-compliant there are 18 pieces of information that must be marked as *Identifiers* in a project.
        - Name
        - Fax number
        - Phone number
        - E-mail address
        - Account numbers
        - Social Security number
        - Medical Record number
        - Health Plan number
        - Certificate/license numbers
        - URL
        - IP address
        - Vehicle identifiers

- Device ID
- Biometric ID
- Full face/identifying photo
- Other unique identifying number, characteristic, or code
- Postal address (geographic subdivisions smaller than state)
- Date precision beyond year

- **Custom Alignment:** Select the alignment for your field. The default setting is Right/Vertical.
- **Field Note:** Use this field to enter any notes, reminders or instructions for the person entering data.

2.8 Multiple choice fields additional element:

Choices: Enter the pre-determined choices for the question, one per line:



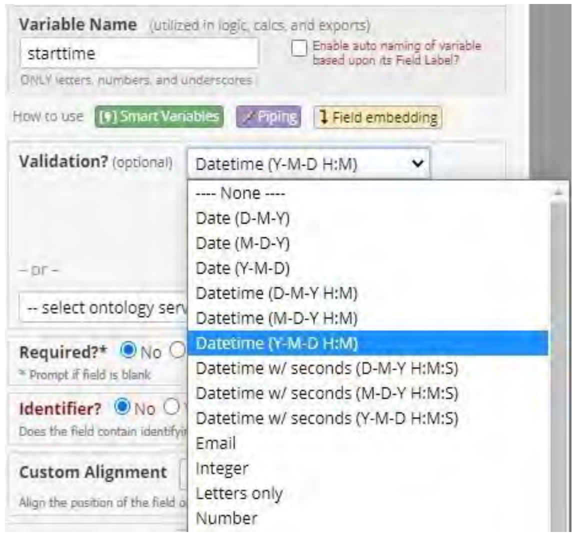
2.9 Choosing a field type

In general, it is best to select a field type that will collect data in a quantitative manner. For instance, select one of the multiple choice field type options and provide a list of choices rather than selecting the text box or notes box field type and letting the person enter their own text. This prevents typos and ensures consistent data collection. Quantitative questions will yield graphical and statistical results.

If collecting alpha-numeric text, add validation when possible to restrict the type of text entered.

Validation

For the field type Text Box (Short Text) you have the opportunity to select a validation. If you would like to indicate how data in this field should be entered, use the drop down and select an option.



Design Tip re: variable names

Variable names must be unique across your project. A best practice is to name your variables descriptively. For example, if you collect multiple dates in a project, provide each with a variable name to identify how the date relates to the project (visit date, screen date). This enables data exports (which utilize variable names) to have clear identifying information, differentiating variables from each other. Given REDCap recommends limiting variable names to 26 characters (to avoid being truncated by some statistical software), the following format has been found to be extremely useful:

Form_section_variable

So for example, if you have a Baseline form with a number of questions about pregnancy, you might have:

base_preg_duration1 (for the duration of the first pregnancy)
base_preg_complic1 (for complications during the first pregnancy)

and so on.

2.9.1 Examples of field types

Design Tip: Selecting the Field Type

In order to determine which field type you want, think about the type of data you wish to collect. In general, data is more actionable if it can be captured quantitatively vs. qualitatively. Think of it as better to ask close-ended questions vs. open-ended questions. So, think about the question you are asking and see if it can be structured in a way that is close-ended. For example, if you are creating an employee directory, you could have a field in the directory that asks who the employee's supervisor is. Technically you could leave that as an open-ended question. But if it's a short list of supervisors, it would be better to make it a multiple-choice question and list all the potential supervisors as the choices for that question.

2.9.2 Collecting Alphanumeric text

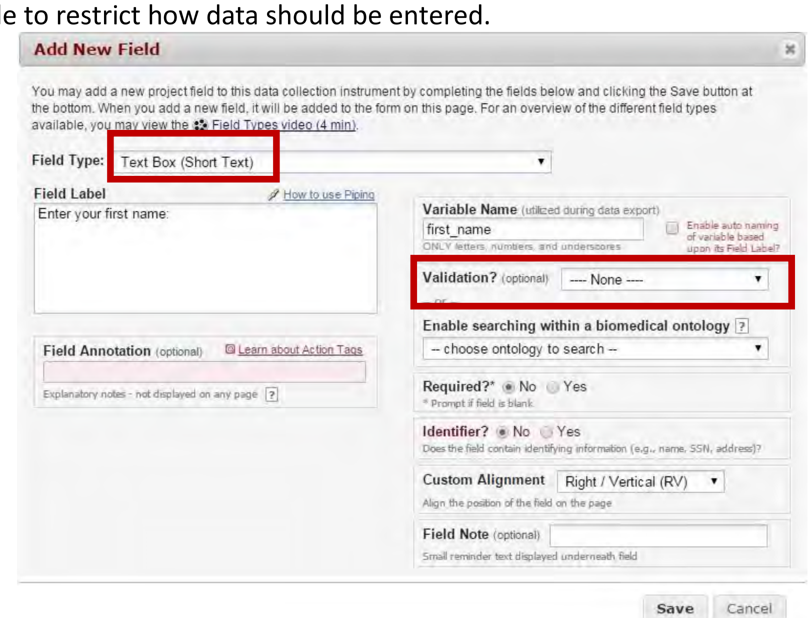
If you need the person entering data to enter alphanumeric text (rather than selecting from a predetermined choice), you can select either the Text Box or Notes box as your field type.
If the text that will be entered is brief, select text box. If you want to allow more room for a response, select the notes box. You'll see that the two options look different on the data entry form or survey because the Notes box is bigger. Changing the alignment (right versus left) also makes a difference, especially for the Notes box, as it allows the filled to be significantly bigger. Although it doesn't change the actual amount of information that can be entered, it changes the perception of the field. This may be something you want to take into consideration when designing the form.
If you want the text to fit a certain format (like a date, email address, phone number, etc.) choose the Text Box field type. This will allow you to add validation, forcing the person entering data to enter data in the prescribed format.

Design tip re: collecting names

When collecting a person's name, it is best to create two separate text box fields: one for first name and one for last name. This helps with sorting records.

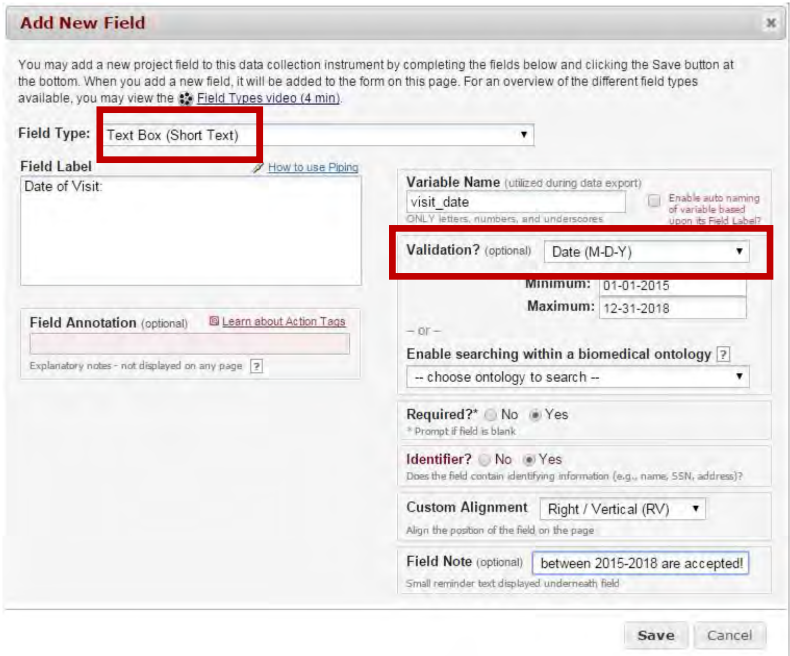
2.9.3 Text Box (Short Text)

This field can be used to capture alphanumeric text. Use the Validation drop down whenever possible to restrict how data should be entered.



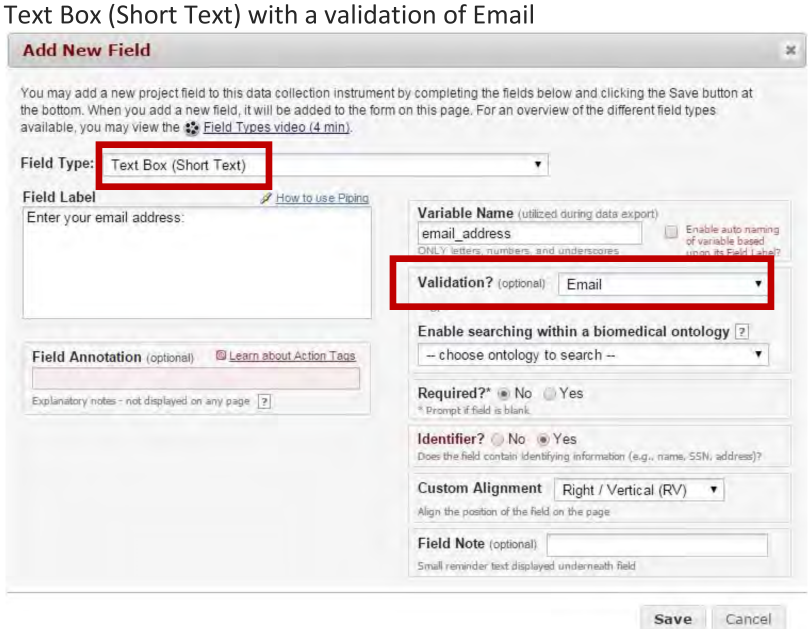
Validation Types

Text Box (Short Text) with a validation of Date (M-D-Y)
The below example is a text box field with range checks (minimum and maximum fields).
How it appears in Online Designer:

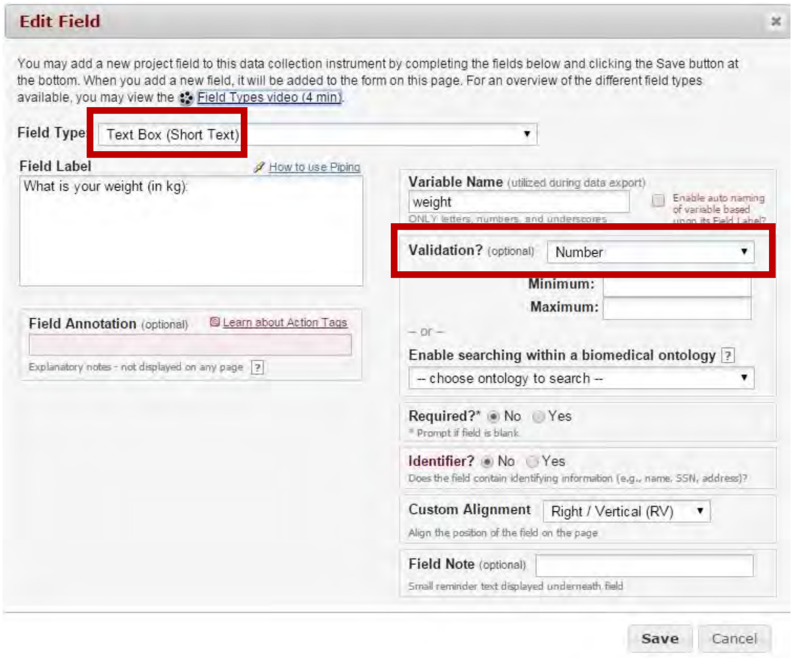


How it appears to person entering data:

Text Box (Short Text) with a validation of Email

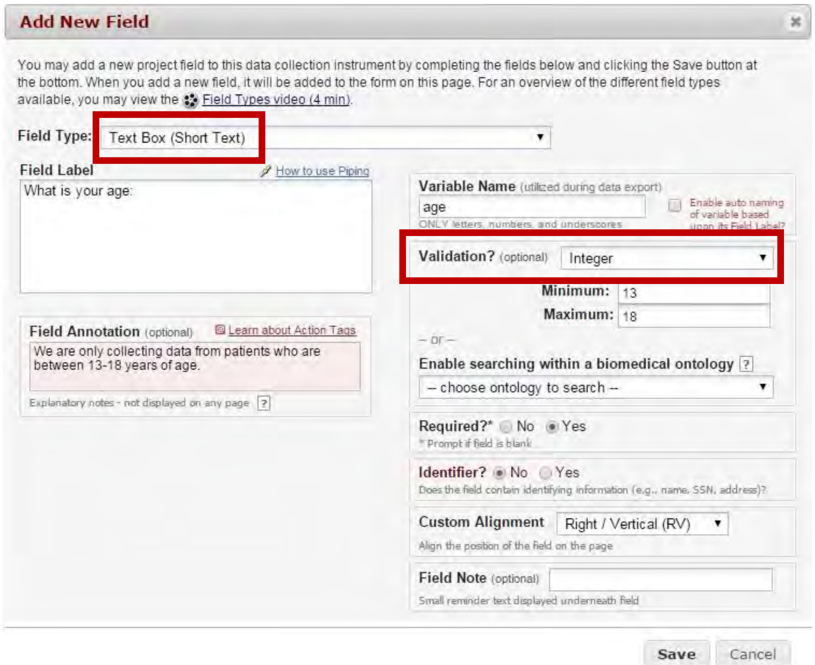


Text Box (Short Text) with a validation of Number (allows decimals)



As a general rule, it is helpful to specify a range when using number validation.

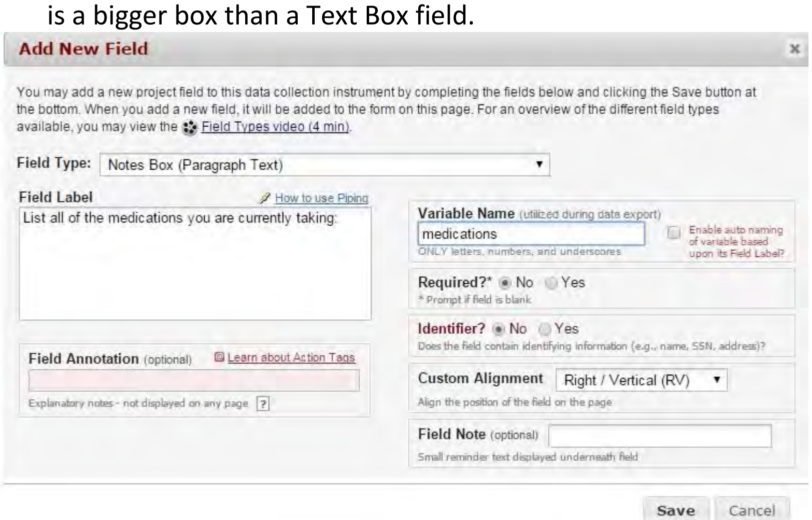
Text Box (Short Text) with a validation of Integer (a whole number)
This field has range checks (minimum and maximum fields), is marked as required and includes a field annotation.



As a general rule, it is helpful to specify a range when using integer validation.

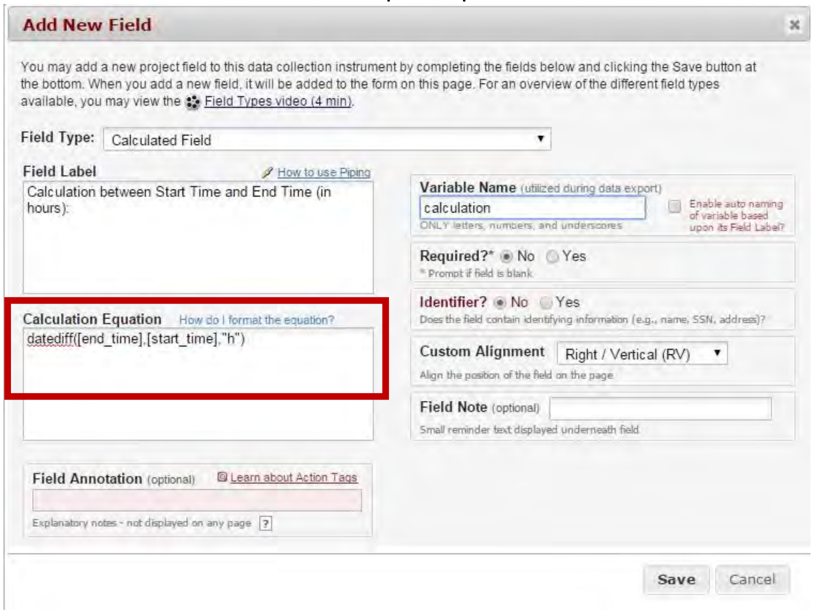
2.9.4 Notes Box (Paragraph Text)

This kind of field is helpful when you want to capture qualitative data and want the person entering the data to have a good bit of space in which to enter it. You'll see that it is a bigger box than a Text Box field.



2.10 Calculated Field

This field can perform real-time calculations based on the data from other fields. For an example, you could create a calculation based off of the birth date field and visit date field in order to find out how old the participant was at the time of visit.



So, to make use of a calculated field, you must have two or more other fields created, from which the calculated field will make its calculations. The fields from which the calculated field pulls must be text box fields validated as a number, integer or date. **Calculation results must be numeric**, not text, Boolean or date/datetime. If you wish the output to be text, use the Action Tag @CALCTEXT. If you wish the output to be a date, use the Action Tag
@CALCDATE. For more information on Action Tags, click the red Action Tag button that you see when editing a field.

It is strongly recommended that you do not use "today" in calculated fields for age. *This is because every time you access and save the instrument, the calculation will run. So if you calculate age as of today, a year later when you access the instrument to review or make updates, the age as of "today" will also be updated (+1 yr). A best practice is to calculate age utilizing a field collected in the course of the study (e.g. a fixed date such as screening date, enrollment date).*

2.10.1 Build My Calc

If you need help writing your calculations, go to this link and provide the information requested. That link is an online, interactive tutorial designed to help you build your REDCap calculation one step at a time. The framework of the calculation is provided, and you fill in the blanks. How many blanks, and what kind of information is needed will depend on the calculation you want to build. As you specify the different elements, you can see them being added to the calculation in real time at the bottom of the page.

Design Tip: calculated field

When entering calculations, the syntax in your formula is very important. Note the difference between using square brackets -- used to designate REDCap variables and event names --

and round brackets or parentheses, which are used to group mathematical expressions. Variable names in the project can be used as variables in the equation, but you must place **[ ]** square brackets around each variable. Be sure that you follow the mathematical order of operations when constructing equations. Pay attention to open and closed quotation marks and brackets and parentheses.

2.11 Multiple Choice

Design tip: drop-down list or radio buttons?

Resolving this question comes down partly to personal preference but consider also who and how the data entry forms are used. As a suggestion:

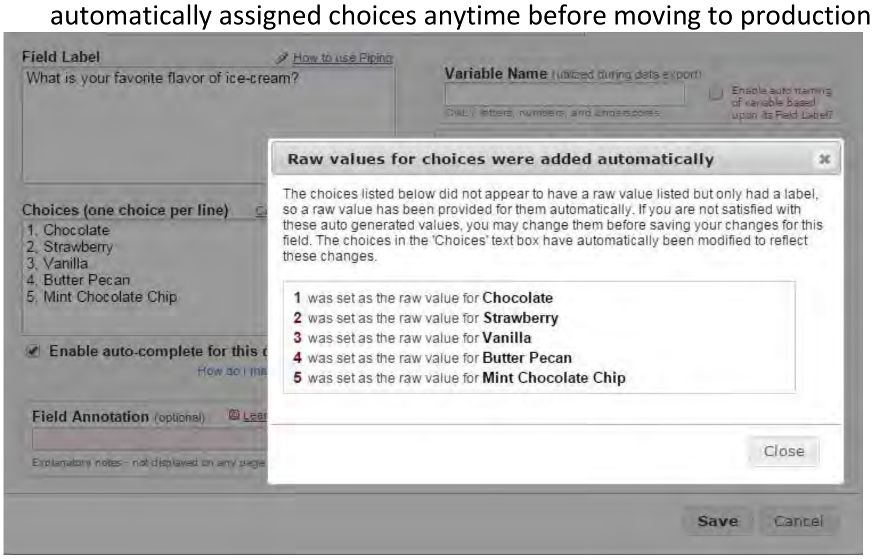
- Radio groups are best for survey forms, or on data entry forms for infrequent data entry users, because all potential choices are displayed on the form
- Drop-down lists are preferred for data entry forms because you can tab to/through fields and select options using keyboard input (e.g. y/n if your labels are "Yes" / "No") or numeric keypad (e.g. 1/0 if your labels are "1 Yes" / "0 No")

There can also be an argument for using radio buttons where data entry users are inexperienced (i.e. mouse- heavy): selecting an option from a radio group is one click with a mouse, rather than the two clicks (or press- select-release) for a drop-down list. But experienced computer / data entry users are likely to prefer the mouse-free usage afforded by drop-down lists. It should be noted that the intended audience needs to be taken into consideration. Drop downs, especially when it's a long list, do not always work well on mobile devices (especially phones). There has also been some issues with dropdowns on older browsers, so if the survey will be filled in by a group likely to use mobile devices or older browsers, radio buttons should be considered standard.

2.11.1 Multiple Choice Drop Down List (Single Answer)

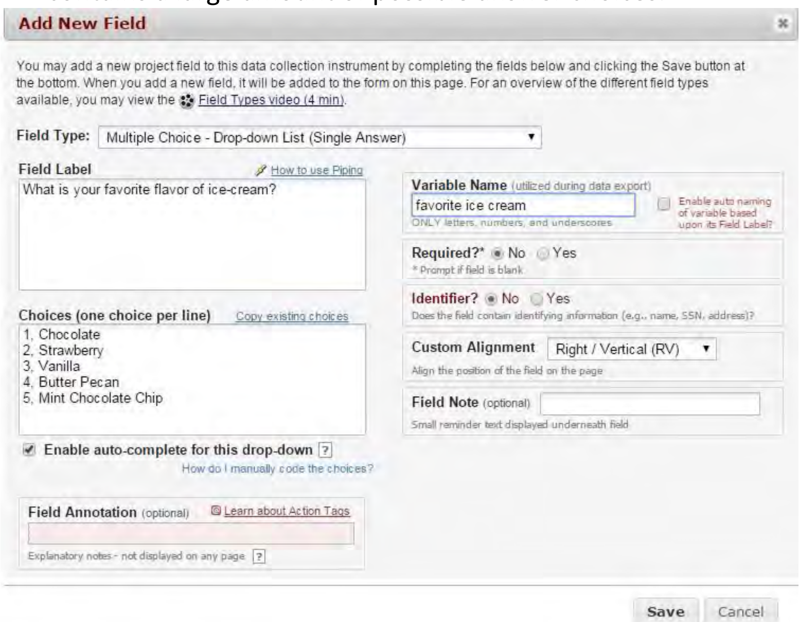
This field will display your answer choices as a drop-down list. This is helpful when you have a long list of choices and want to save screen space.

When a field contains multiple answer choices, you can give each answer choice a raw value. If you do not, REDCap will automatically assign them for you. You can also edit the automatically assigned choices anytime before moving to production.



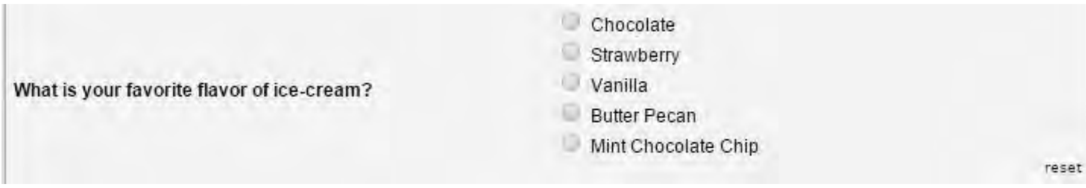
Auto-complete for drop-down choice

REDCap has an auto-complete feature for drop-down fields. When this is enabled, it allows the participant or data entry person to type in a couple of the characters of the answer choice and a list of matching options will appear. For an example, if I typed in Van, Vanilla would automatically appear. This is very helpful when you have a drop-down field that contains a large amount of possible answer choices.



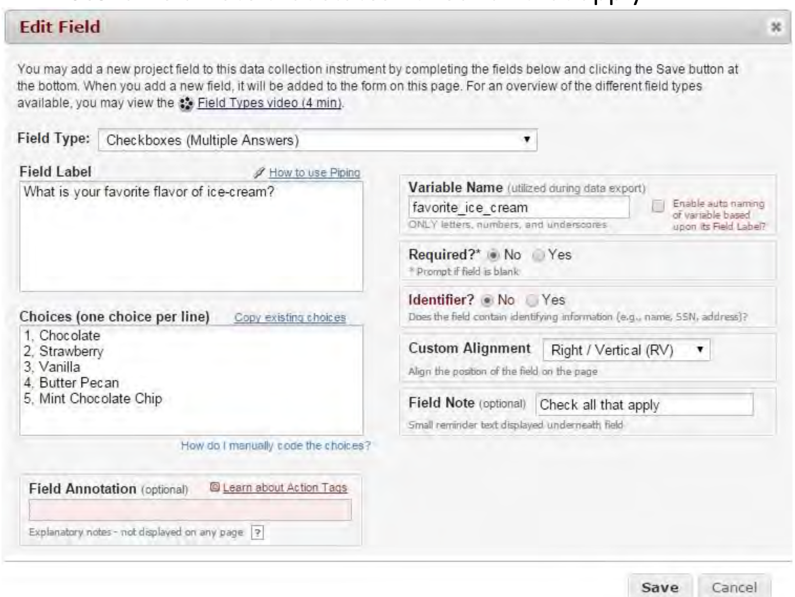
2.11.2 Multiple Choice – Radio Buttons (Single Answer)

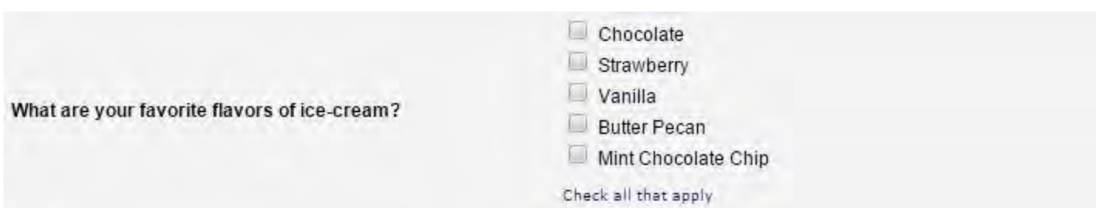
This field will display your answer choices as radio buttons. This means that all the answers are visible on the screen. This option is good if your list of potential answers is short.



2.11.3 Multiple Choice Checkboxes (Multiple Answers)

This field will display your answer choices as check boxes and will allow more than one answer.
Note: a field note that states “Check all that apply”.





Coding Suggestions for Multiple Choice questions Unknown/Missing value

Code responses that represent an unknown type value with a number that is obviously out of normal range for any variable code or text response that makes sense or is missing.
Example: What is your favourite ice cream topping?

1, Sprinkles
2, Chocolate Sauce
3, Nuts
4, Cherry
0, None
555, Not applicable/Unacknowledged
666, Other
777, Don’t know
888, Refused
999, Missing

Using the three digit codes for missing / unknown allows for additional options to be added without needing to recode, and makes it easier for branching logic to be written (not having to constantly go back and see what an option was coded as).

Reverse Coding

If questions have reverse scoring, code the selections according to the value unless otherwise specified. Here is an example, where #4 is coded normally and #5 is reversed:

4. Made me need someone to reposition me.
    - 0, Never true for me
    - 1, Rarely true for me
    - 2, Sometimes true for me
    - 3, Often true for me
    - 4, Very often true for me
5. Helped me keep my muscles exercised.
    - 4, Never true for me
    - 3, Rarely true for me
    - 2, Sometimes true for me
    - 1, Often true for me
    - 0, Very often true for me

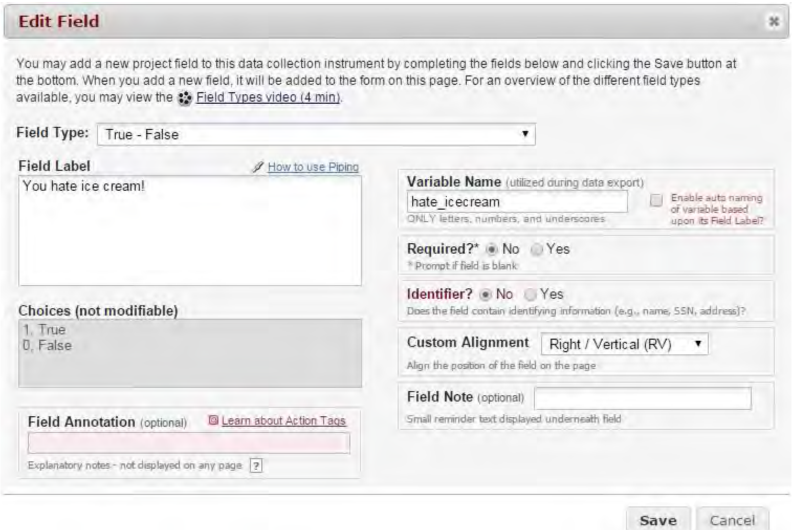
2.11.4 Yes – No

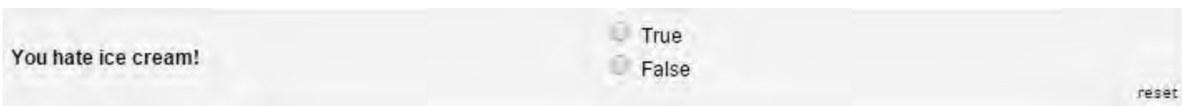
This field will display Yes and No as radio button answer choices. Those are pre-populated by REDCap and cannot be altered.

Note: the default setting for Yes/No questions is ‘1’ for the choice ‘yes’ and ‘0’ for the choice no. If you have other fields in your project that contain yes or no choices, you will want the choices to align the same. For instance, if you have a question with the choices yes, no, maybe, you would want the choice labels to be 1, 0, 2 to be consistent. Your statistician will thank you!

2.11.5 True – False

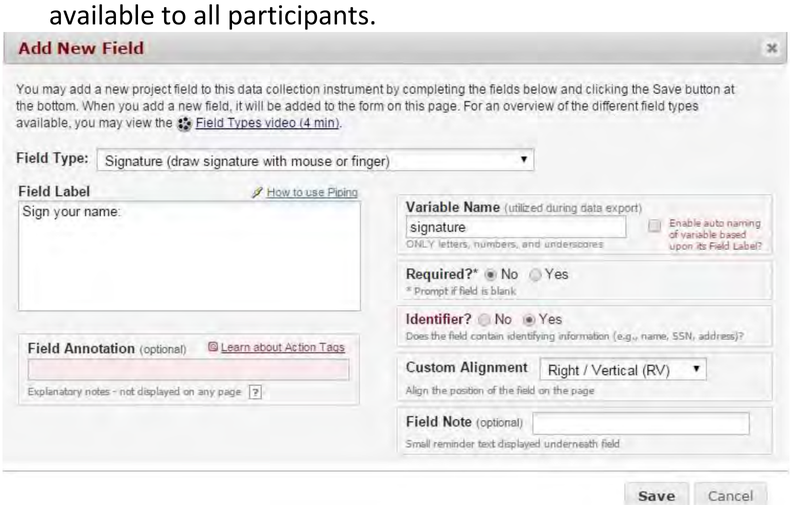
This field will display True and False as radio button answer choices.

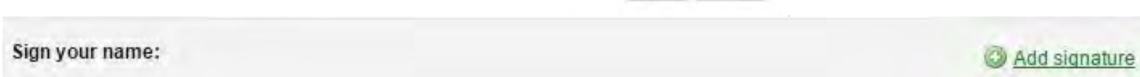




2.12 Signature (draw signature with mouse or finger)

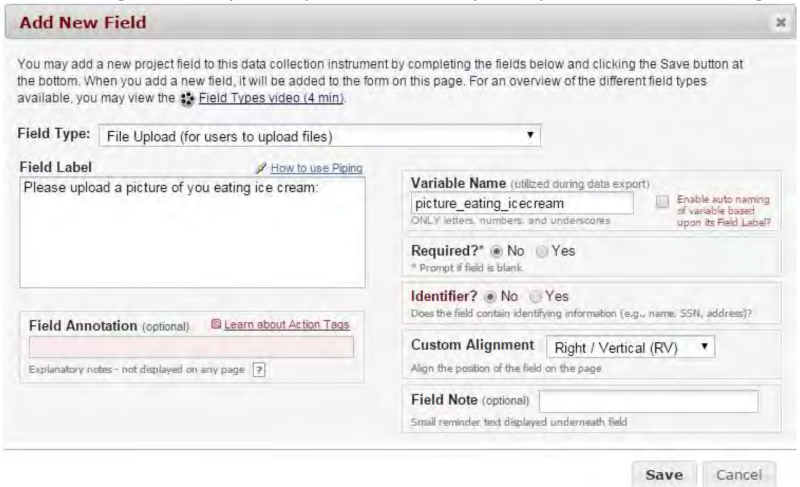
This field will allow the participant to add their signature digitally using their mouse or the finger (if using a tablet or touch screen device). It is sometimes called a digital signature or e-signature. It should be noted here that if this field type is going to be used for the purposes of a participant signing off on something, whether it's a consent form or something else, alternatives must be provided to ensure the survey / form is accessible and available to all participants.

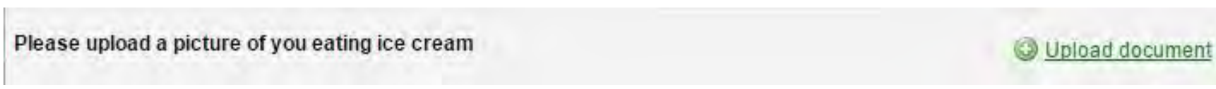




2.13 File Upload (for users to upload files)

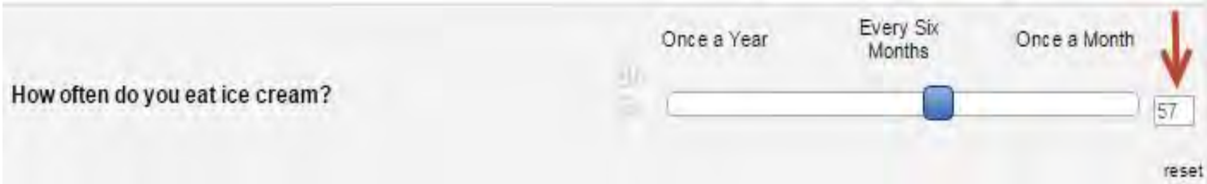
This field gives the participant the ability to upload a file or image with the max size of 32 MB.





2.14 Slider Visual Analog Scale

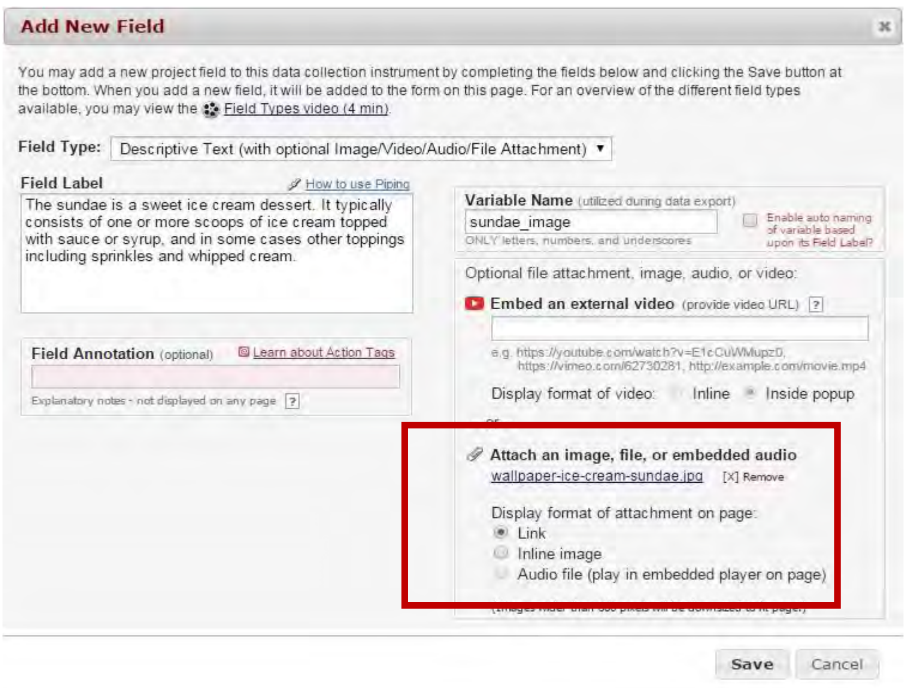
This field gives you a scale with three answer choices. If you select “Display number value (0-100)”, it will code the answer given.



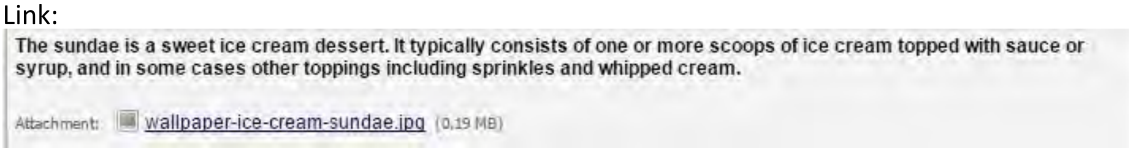
Be sure to test how your data results look when using this field type. Even if you set a number for the labels, those are not the values assigned to the data entered. All data is on a 1-100 scale.

2.15 Descriptive Text (with optional Image/File Attachment)

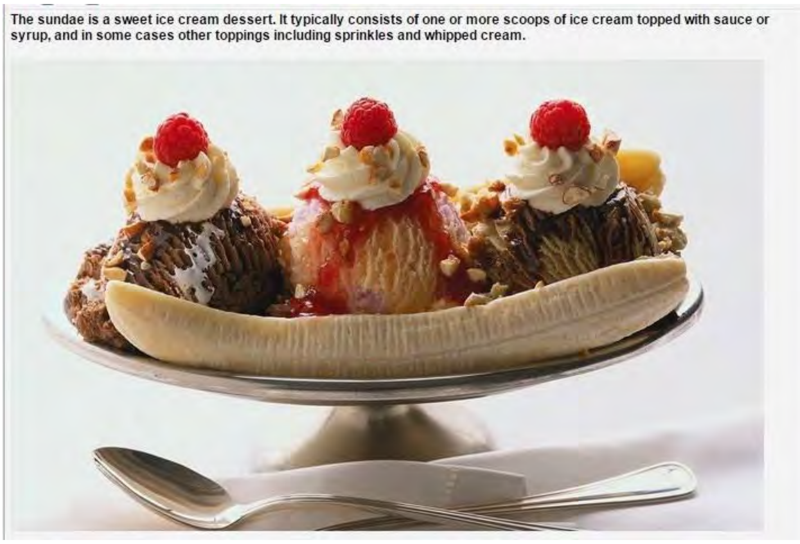
This field will allow you to add text such as instructions or additional information. It also gives you the option to add a file. If you upload an image, you can choose to display it as as a link or as an inline image. The maximum file size is 50 MB.



Link:



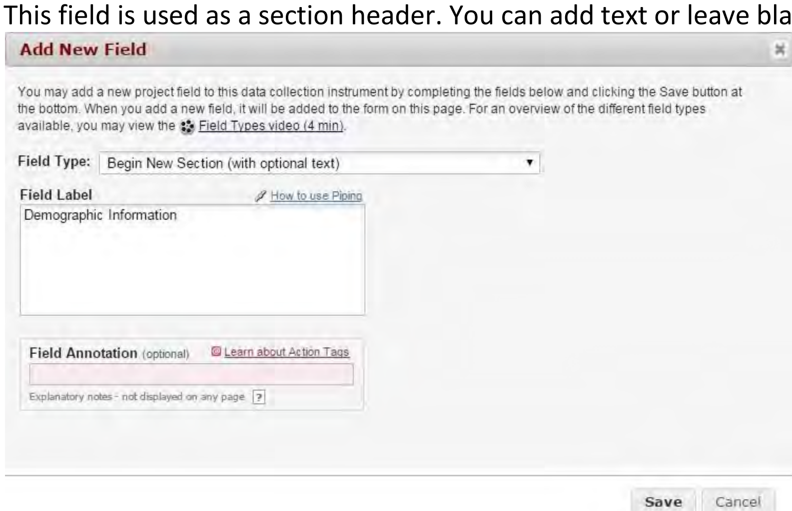
Inline Image:



Because the content of a descriptive text field takes up the entire horizontal space, it makes a nice divider on the page. You can use that as an alternative to the 'Begin New Section' option, if you wish.

2.16 Begin New Section (with optional text)

This field is used as a section header. You can add text or leave blank.



As a general rule, it is helpful to provide instructional text in headers. Example: *Headache Disability: The following questions try to assess how much the headaches are affecting day-to- day activity. Your answers should be based on the last three months. There are no "right", or "wrong" answers so please put down your best guess.*

Cautions/advice when adding 'Begin New Section'

- You cannot have two 'begin new section' field types in a row.
- You cannot have 'begin new section' as the last field of an instrument
- REDCap will automatically merge 'begin new section' with a matrix if the matrix follows the begin new section field.
- When building an instrument that will have a lot of section headers, add a dummy field first, so that the section headers aren't last

Design Tip: When it is useful to add a "Begin New Section" field

if the instrument is a survey and you want to break the survey up into several pages, you need to insert "Begin New Section" so that REDCap knows where to end/start a new page. Having a survey on multiple pages helps to break up the survey and prevents the participant from having to scroll down a long page to submit. NOTE: Using this functionality needs to be done carefully and taking into consideration the Consent Form and the audience, particularly if this is a marginalized group or otherwise sensitive data collection, as the data **will be saved when the person clicks Next Page, not just when they click SUBMIT.** If the person closes the survey before clicking Submit, their responses will need to be handled appropriately (withdraw from the survey, partial responses included in the data analysis, contact and follow up, etc.).

2.17 Action Tags

Action Tags are an excellent way to customize the data entry experience for surveys and forms. They are special terms that begin with the '@' sign that can be placed inside a field's Field Annotation when adding or editing a field. Each action tag has a corresponding action that is performed for the field when displayed on data entry forms and survey pages. You can use as many as you want for a single field, but if you do use more than one tag for a field, make sure to put a space or line break between them. Because the action tags are used as part of the Field Annotation, they are not displayed anywhere on the page. To start using Action Tags, navigate to the Online Designer in a project, and when adding or editing a field, add the tag into the Action Tag/Field Annotation text box in the Edit Field popup.

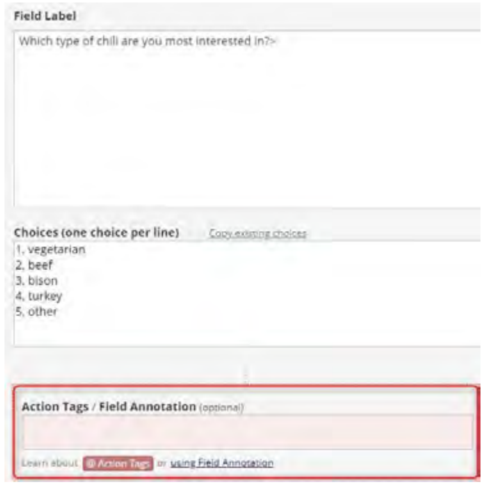
For a list and definition of all action tags go to the Project Setup page and look for the red Action Tags button in the 'Design your data collection instruments' section. You can also take an online tutorial at this link: https://redcap.link/ActionTagDemo

2.17.1 Action Tag formatting

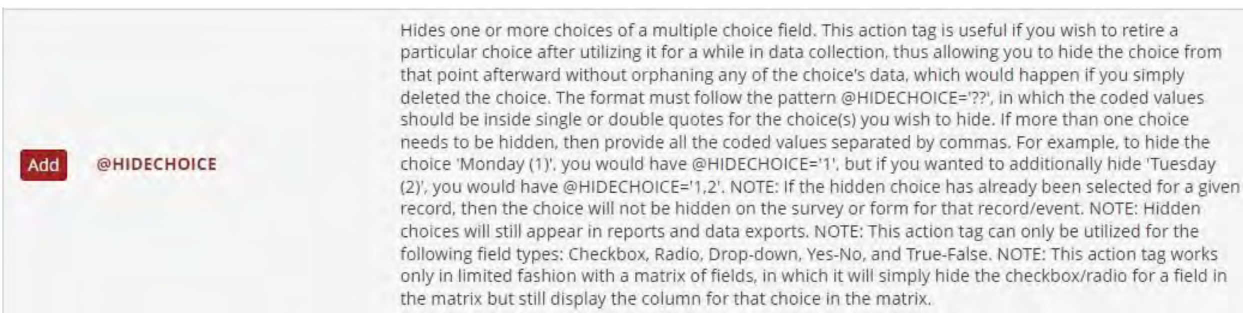
Please note that Action Tags are case-sensitive. If you choose to manually type the action tag into the Action Tag box (rather than clicking on the Action Tag link and clicking on the 'add' button), you'll want to write the Action Tag in all caps. If you were to type @hidden-survey, for instance, REDCap would not recognize that syntax. It needs to be @HIDDEN-SURVEY. Likewise, if you are referencing a variable name in an action tag (like you might when using the Default action tag), you need to make sure the variable name is in all lower-case. Additionally, if using more than one action tag, be sure to have a space or line break between them.

Applying the @HIDECHOICE action tag to a project in production

1. Go to Designer (via the left-hand navigation bar in the Project Home and Design section)
2. Click 'enter draft mode'
3. Click on the instrument name so that you are inside the instrument and can make edits
4. Click on the pencil icon for the field you wish to edit
5. Below the choices box there is an Action Tags/Field Annotation box. In that section you'll note that there is a red button that reads @Action Tags:



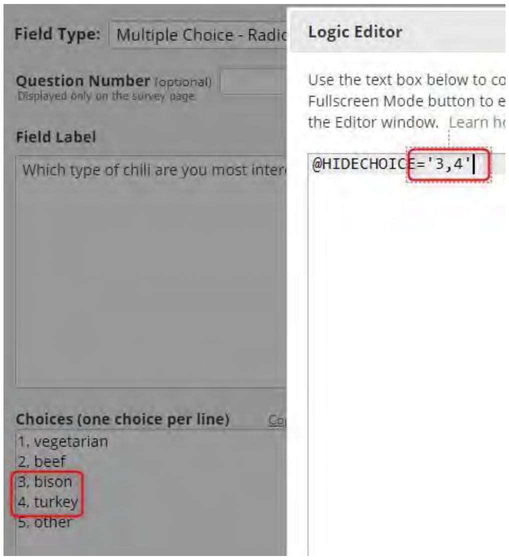
6. Click on that red @Action Tags button to see a list of all action tags. You can scroll down to find the HIDECHOICE action tag and its description. That will tell you how it can be used and how to configure it:



7. Click on the 'add' button to bring that action tag into your Action Tags box. Click close.
8. To configure the action tag (tell REDCap which choices you wish to hide), click on the Action Tags box – that will pull up the editor:

76 Grenville Street, Toronto ON M5S 1B2
T 416.323.6400
www.womenscollegehospital.ca
FULLY AFFILIATED WITH THE UNIVERSITY OF TORONTO

9. Enter the choice numbers you wish to hide. You put the choice numbers in single quotes separated by commas. In my example, I want the choices bison and turkey hidden. Their choice numbers are 3 and 4.

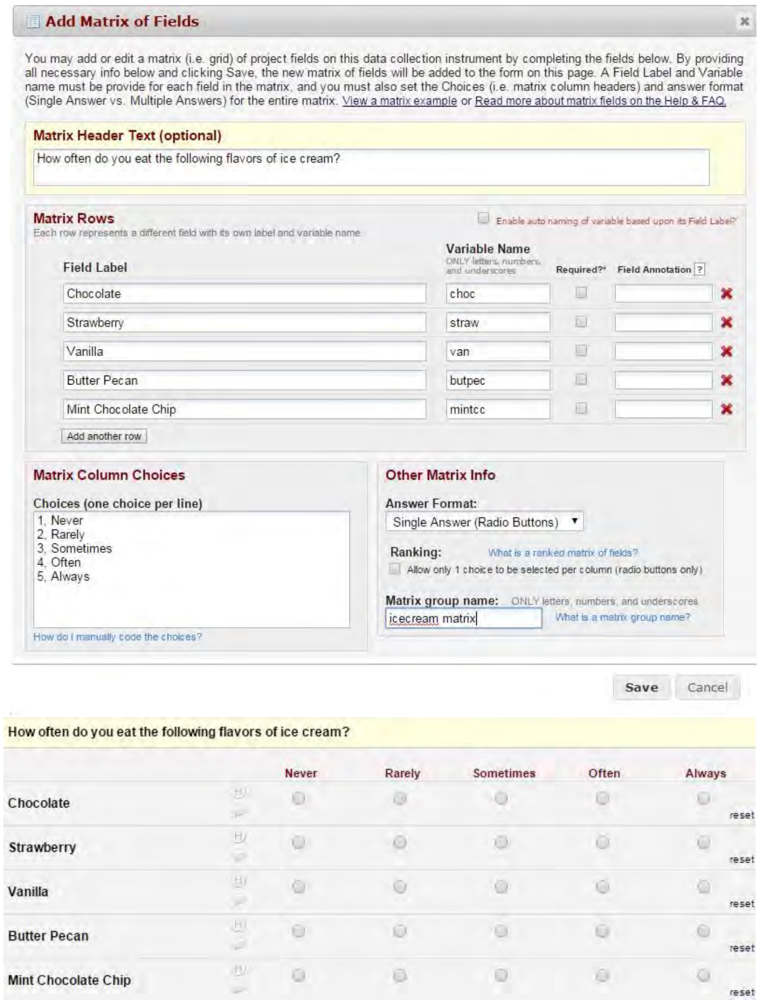


You'll see that there is an equal sign after the @HIDECHOICE action tag. There is then a single quote, the numbers that need to be hidden separated by commas and then a single quote.

10. Click 'update and close editor' 11. Click the save button.
12. Do this for each field that has choices you wish to hide.
13. Scroll up to the top of the page and click on 'submit changes for review'.

2.18 Matrix of Fields

If you have a group of questions that all have the same answer choices, you can create a Matrix of Fields. Instead of clicking Add Field, you would click Add Matrix of Fields. You would add an optional header, your field labels and variable names, indicate which fields are required, add your answer choices and select whether these fields should be a single answer (radio button) or multiple answers (checkboxes). If you would like only one answer choice to be selected per column, enable ranking. You must also give your matrix a group name.



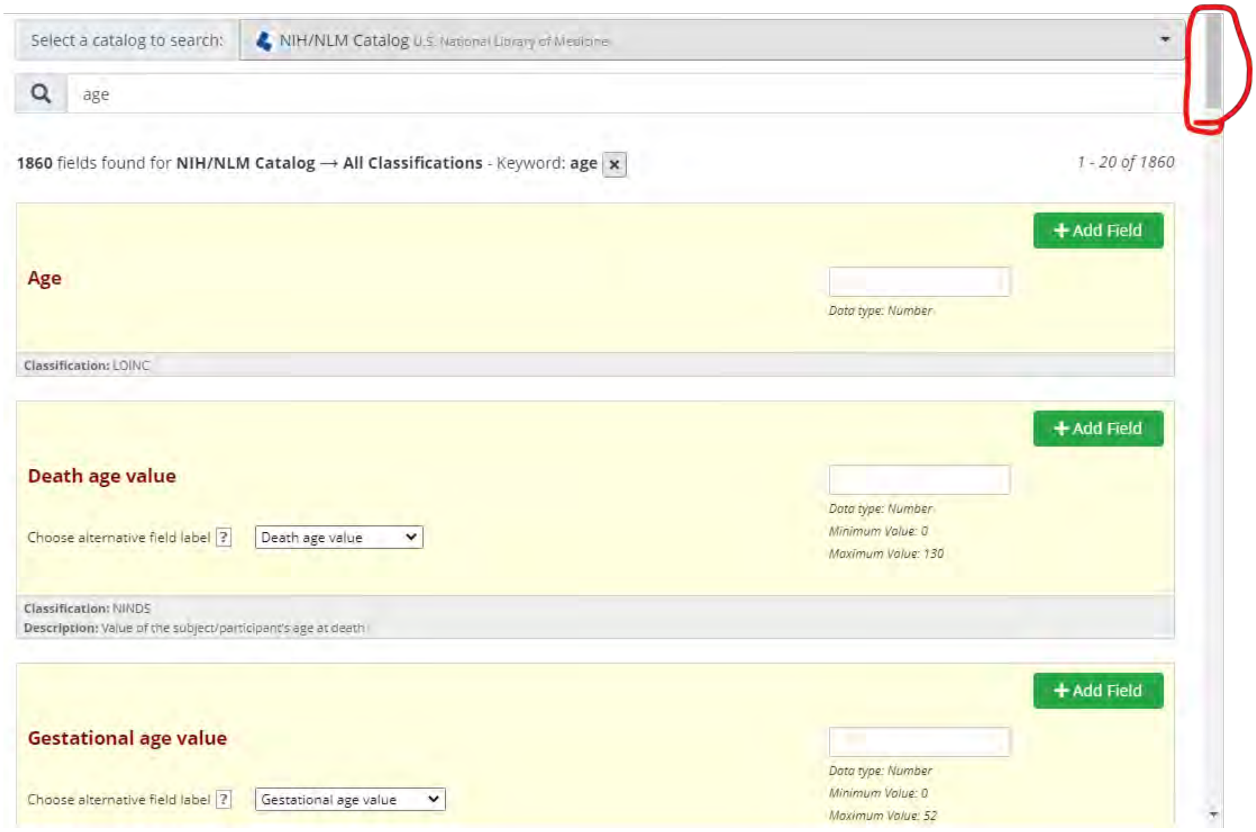
Enter the configuration information for your matrix:

- **Matrix Header Text**: a section header to appear above the matrix
- **Matrix Rows**: these are the fields that are incorporated within the matrix
- **Matrix Column Choices**: the response values and labels shared by each field in the matrix
- **Answer Format**: radio buttons or check boxes?
- **Ranking**: with a radio button matrix you may opt for ranking. Ranking ensures no two fields in the matrix can have the same selected value for a column.
- **Matrix Group Name**: a unique reference for the matrix

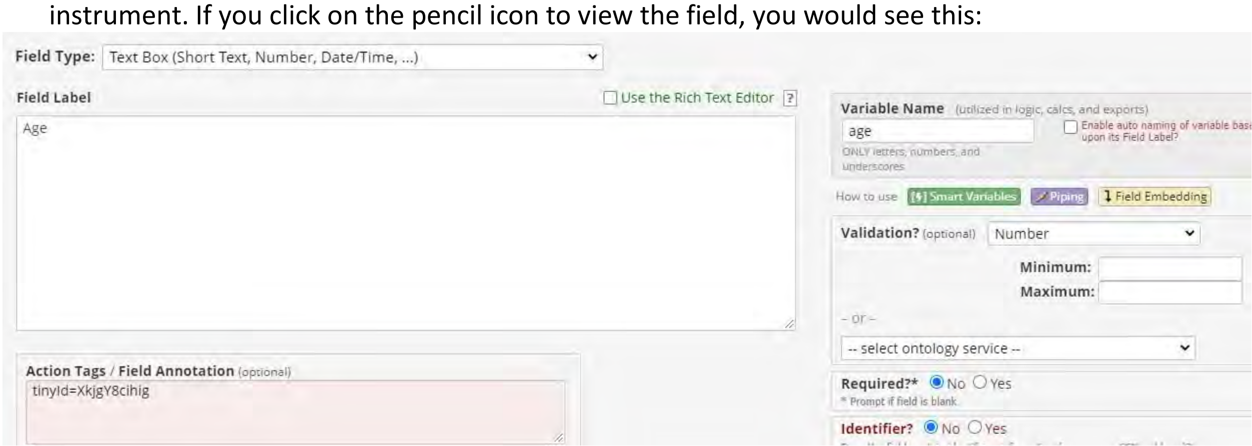
You'll notice that when adding a matrix field via Online Designer, you do not see the option for adding a Field Note, like you would for a regular field. What you can do is download the data dictionary of your project and add your field note into column G, which is the column for Field Note.

2.19 Add field from Field Bank (Import from Field Bank)

When in an instrument via Designer, you can click on the 'Import from Field Bank' button to see a list of fields derived from the NIH/National Library of Medicine catalog. You can enter a keyword to see the list of options for that topic. Once you find the field you want, you can click the green 'Add Field' button and it will be added to your instrument.
As an example, you could type the word 'Age' into the search box and see results like this:



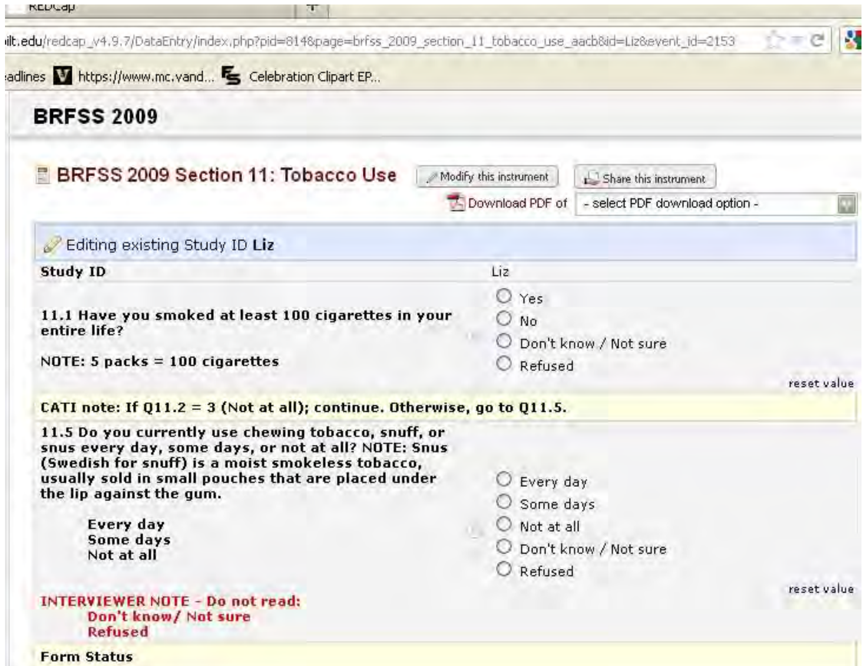
You can tell from the scroll bar that there are still many other fields related to age. If you click on the 'add field' button for the first option, that field will get added to your instrument. If you click on the pencil icon to view the field, you would see this:



Note that the field label, variable name and validation have already been assigned for you. Additionally, there is some text in the Action Tags/Field Annotation box. That's simply an identifier to show where the field came from. You can delete that text, if you wish.

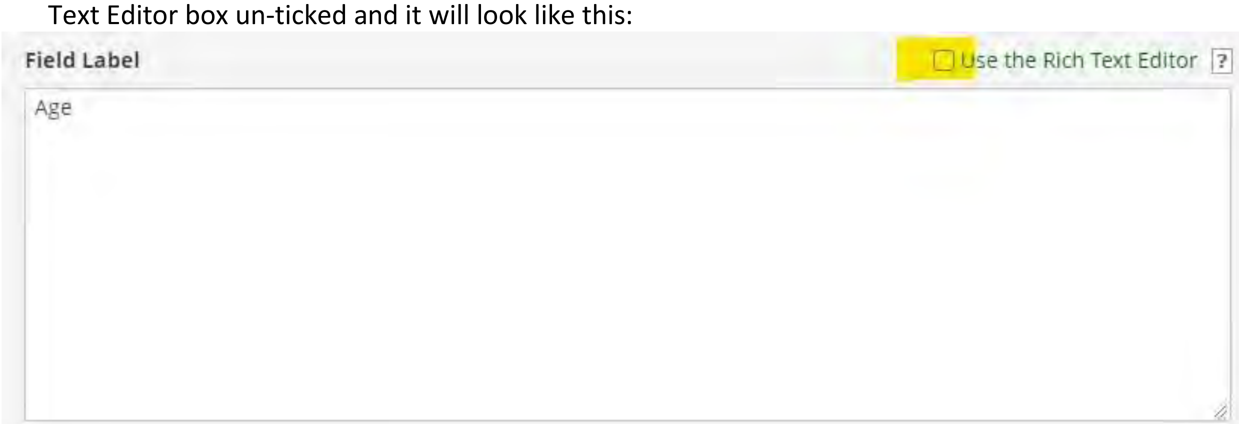
2.20 Customizing Field Labels

Simple HTML may be implemented in field labels. It may also be used to clarify or highlight information. Examples: <u>text</u> for underline, <i>text</i> for italicize, <div><span style='colour:red;'>text</div> to colour red and highlight the interviewer instructions.

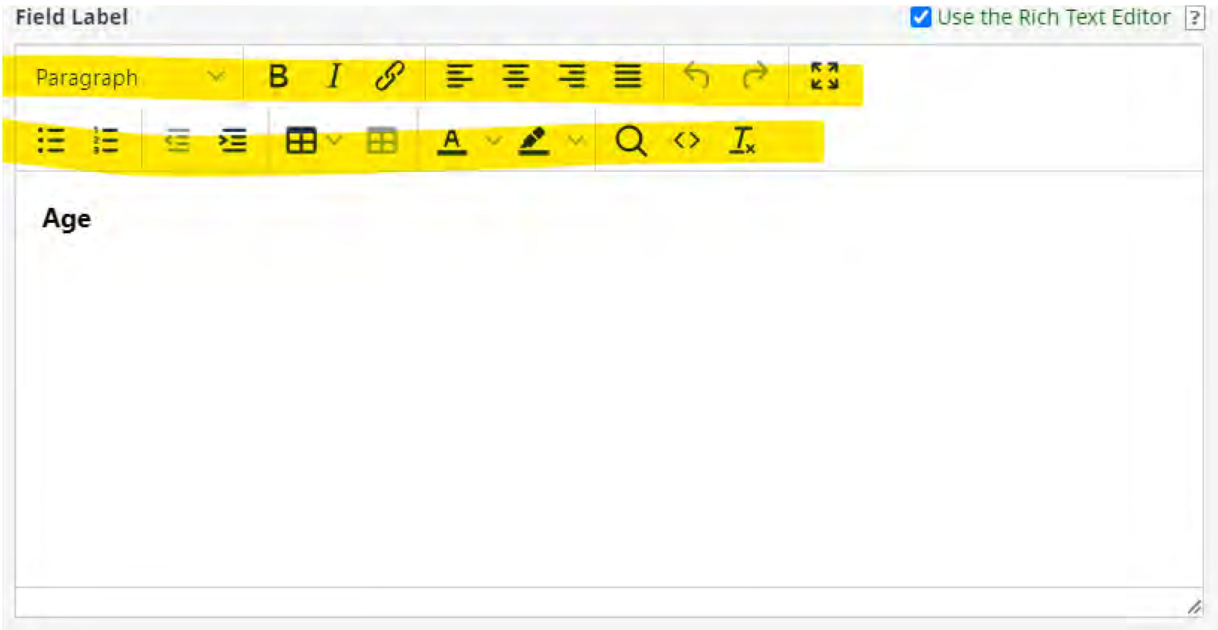


To learn more about HTML formats, [see this link](). It is an interactive online survey that provides information using HTML in REDCap.

You can also tick the option to use the Rich Text Editor. By default, a field will have the Rich Text Editor box un-ticked and it will look like this:



But if you tick the Rich Text Editor box it will look like this:



You can click on any of those icons to add styling (rather than relying on manual html coding).

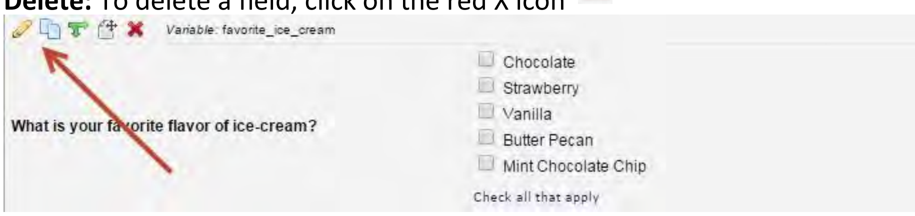
Edit/Copy/Move/Delete a Field

Edit: To edit a field, click on the pencil icon 

Copy: To copy a field, click on the double paper icon 

Move: To move a field, click on the paper with pointer icon 

Delete: To delete a field, click on the red X icon 



2.21 Stop Actions for Survey

When an instrument is enabled as a survey, an additional option is included in the toolbar at the top of the field: the Stop Actions for Survey button, which appears as a stop sign. This feature allows you to prevent a participant from moving forward with a survey, based on how they answer a question. For instructions on how to set up Stop Actions for Surveys, please see this section of this User Guide.

2.22 Special Functions

REDCap logic can be used in a variety of places, such as Branching Logic, Calculations, Report filtering, Data Quality Module, Automated Survey Invitations, and more. Special functions can be used in the logic, if desired. A complete list of ALL available functions is listed below. Listed below are some examples of common use cases where these functions might be used.

NOTICE: Please be advised that it is not possible to pipe the choice label of a multiple choice field into any of the special functions listed below. In other words, you cannot use the ':label' option, such as *[my_field:label], to output the text label into a function.* ***The special functions only utilize the value of a field, never its label.***

Practical examples for common use cases

1. Calculate the number of days separating today's date and a date/datetime field's value in the past or future. datediff([date1], 'today', 'd')
2. Calculate a person's age based on date of birth. rounddown(datediff([date_of_birth], 'today', 'y'))
3. Calculate a person's BMI (in metric units of 'cm' and 'kg') and rounding to the first decimal place.
   round(([weight]*10000)/(([height])^(2)), 1)
4. Calculate a person's BMI (in English units of 'lb' and 'in') and rounding to the first decimal place.
   round(([weight]/(([height])^(2))*703), 1)
5. Remove a prefix and dash from the beginning of a record name (e.g., convert '4890-2318' to '2318').
   mid([record-name], find('-', [record-name])+1, length([record-name])-find('-', [record-name])+1)
6. Convert a person's first and last name into a username-looking format (e.g., convert 'John' and 'Doe' to 'john_doe'). We may want to trim the values just in case there were spaces accidentally entered. lower(concat(trim([first_name]), '_', trim([last_name])))
7. Add leading zeros to an integer, in which the number near the end of the equation represents the maximum length of the result after adding the leading zeros (i.e., converts '7' to '007'). Note: The amount of 0s listed in '00' should be at least one less than the value of the number near the end (e.g., if '4', then we need '000'; if '3', then '00'). right(concat('00', [my_integer]), 3)

See the next several pages for further examples.

2.22.1 Special Functions List 1

Function	Name/Type of Function	Notes / Examples
if (CONDITION, VALUE if condition is TRUE, VALUE if condition is FALSE)	If/Then/Else conditional logic	Return a value based upon a condition. If CONDITION evaluates as a true statement, then it returns the first VALUE, and if false, it returns the second VALUE. E.g. if([weight] > 100, 44, 11) will return 44 if "weight" is greater than 100, otherwise it will return 11.
datediff ([date1], [date2], "units", returnSignedValue)	Datediff	Calculate the difference between two dates or datetimes. Options for 'units': 'y' (years, 1 year = 365.2425 days), 'M' (months, 1 month = 30.44 days), 'd' (days), 'h' (hours), 'm' (minutes), 's' (seconds). The parameter 'returnSignedValue' must be either TRUE or FALSE and denotes whether you want the returned result to be either signed (have a minus in front if negative) or unsigned (absolute value), in which the default value is FALSE, which returns the absolute value of the difference. For example, if [date1] is larger than [date2], then the result will be negative if returnSignedValue is set to TRUE. If returnSignedValue is not set or is set to FALSE, then the result will ALWAYS be a positive number. If returnSignedValue is set to FALSE or not set, then the order of the dates in the equation does not matter because the resulting value will always be positive (although the + sign is not displayed but implied).
isblankormissingcode (value)	Is a field's value blank/null or is it a Missing Data Code?	Returns a boolean (true or false) if the field value is blank/null/'' or if the value is a Missing Data Code, in which Missing Data Codes have been explicitly defined in the project on the Project Setup page under Additional Customizations. E.g. isblankormissingcode([age]), in which if 'age' has a value of 'UNK' (which might be a Missing Data Code in a project), then it will return TRUE. And if the field has any nonblank/non-null value that is also not a Missing Data Code, it will return FALSE.

2.22.2 Special Functions to use with Numbers

Function	**Name/Type of Function**	**Notes / Examples**
round (number, decimal places)	Round	If the "decimal places" parameter is not provided, it defaults to 0. E.g. To round 14.384 to one decimal place: round(14.384,1) will yield 14.4
roundup (number,decimal places)	Round Up	If the "decimal places" parameter is not provided, it defaults to 0. E.g. To round up 14.384 to one decimal place: roundup(14.384,1) will yield 14.4
rounddown (number,decimal places)	Round Down	If the "decimal places" parameter is not provided, it defaults to 0. E.g. To round down 14.384 to one decimal place: rounddown(14.384,1) will yield 14.3
sqrt (number)	Square Root	E.g. sqrt([height]) or sqrt(([value1]*34)/98.3)
(number)^(exponent)	Exponents	Use caret ^ character and place both the number and its exponent inside parentheses. NOTE: The surrounding parentheses are VERY important, as it wil not function correctly without them. For example, (4)^(3) or ([weight]+43)^(2)
abs (number)	Absolute Value	Returns the absolute value (i.e. the magnitude of a real number without regard to its sign). E.g. abs(-7.1) will return 7.1 and abs(45) will return 45.
min (number,number,...)	Minimum	Returns the minimum value of a set of values in the format min([num1],[num2],[num3],...). NOTE: All blank values will be ignored and thus will only return the lowest numerical value. There is no limit to the amount of numbers used in this function.

Function	Name/Type of Function	Notes / Examples
max (number,number,...)	Maximum	Returns the maximum value of a set of values in the format max([num1],[num2],[num3],...). NOTE: All blank values will be ignored and thus will only return the highest numerical value. There is no limit to the amount of numbers used in this function.
mean (number,number,...)	Mean	Returns the mean (i.e. average) value of a set of values in the format mean([num1],[num2],[num3],...). NOTE: All blank values will be ignored and thus will only return the mean value computed from all numerical, non-blank values. There is no limit to the amount of numbers used in this function.
median (number,number,...)	Median	Returns the median value of a set of values in the format median([num1],[num2],[num3],...). NOTE: All blank values will be ignored and thus will only return the median value computed from all numerical, non-blank values. There is no limit to the amount of numbers used in this function.
sum (number,number,...)	Sum	Returns the sum total of a set of values in the format sum([num1],[num2],[num3],...). NOTE: All blank values will be ignored and thus will only return the sum total computed from all numerical, non-blank values. There is no limit to the amount of numbers used in this function.
stdev (number,number,...)	Standard Deviation	Returns the standard deviation of a set of values in the format stdev([num1],[num2],[num3],...). NOTE: All blank values will be ignored and thus will only return the standard deviation computed from all numerical, non-blank values. There is no limit to the amount of numbers used in this function.
log (number, base)	Logarithm	Returns the logarithm of the number provided for a specified base (e.g. base 10, base "e"). If base is not provided or is not numeric, it defaults to base "e" (natural log).
isnumber (value)	Is value a number?	Returns a boolean (true or false) for if the value is an integer OR floating point decimal number.
isinteger (value)	Is value an integer?	Returns a boolean (true or false) for if the value is an integer (whole number without decimals).

2.22.3 Special Functions to use with Text values

Function	Name/Type of Function	Notes / Examples
contains (haystack, needle)	Does text CONTAIN another text string?	Returns a boolean (true or false) for if "needle" exists inside (is a substring of) the text string "haystack". Is case insensitive. E.g. contains("Rob Taylor", "TAYLOR") will return as TRUE and contains("Rob Taylor", "paul") returns FALSE. NOTE: This function will *not* work for calculated fields but *will* work in all other places (Data Quality, report filters, Survey Queue, etc.).
not_contain (haystack, needle)	Does text NOT CONTAIN another text string?	The opposite of contains(). Returns a boolean (true or false) for if "needle" DOES NOT exist inside (is a substring of) the text string "haystack". Is case insensitive. E.g. not_contain("Rob Taylor", "TAYLOR") will return as FALSE and not_contain("Rob Taylor", "paul") returns TRUE. NOTE: This function will *not* work for calculated fields but *will* work in all other places (Data Quality, report filters, Survey Queue, etc.).
starts_with (haystack, needle)	Does text START WITH another text string?	Returns a boolean (true or false) if the text string "haystack" begins with the text string "needle". Is case insensitive. E.g. starts_with("Rob Taylor", "rob") will return as TRUE and starts_with("Rob Taylor", "Tay") returns FALSE. NOTE: This function will *not* work for calculated fields but *will* work in all other places (Data Quality, report filters, Survey Queue, etc.).
ends_with (haystack, needle)	Does text END WITH another text string?	Returns a boolean (true or false) if the text string "haystack" ends with the text string "needle". Is case insensitive. E.g. ends_with("Rob Taylor", "Lor") will return as TRUE and ends_with("Rob Taylor", "Tay") returns FALSE. NOTE: This function will *not* work for calculated fields but *will* work in all other places (Data Quality, report filters, Survey Queue, etc.).
left (text, number of characters)	Returns the leftmost characters	Returns the leftmost characters from a text value. For example, left([last_name], 3) would return 'Tay' if the value of [last_name] is 'Taylor'.

Function	Name/Type of Function	Notes / Examples
right (text, number of characters)	Returns the rightmost characters	Returns the rightmost characters from a text value. For example, right([last_name], 4) would return 'ylor' if the value of [last_name] is 'Taylor'.
length (text)	Returns the number of characters	Returns the number of characters in a text string. For example, length([last_name]) would return '6' if the value of [last_name] is 'Taylor'.
find (needle, haystack)	Finds one text value within another	Finds one text value within another. Is case insensitive. The "needle" may be one or more characters long. For example, find('y', [last_name']) would return '3' if the value of [last_name] is 'Taylor'. The value '0' will be returned if "needle" is not found within "haystack".
mid (text, start position, number of characters)	Returns characters from a text string starting at a position	Returns a specific number of characters from a text string starting at the position you specify. The second parameter denotes the starting position, in which the beginning of the text value would be '1'. The third parameter represents how many characters to return. For example, mid([last_name], 2, 3) would return 'AYL' if the value of [last_name] is 'TAYLOR'.
concat (text,text,...)	Combines the text from multiple text strings	Combines/concatenates the text from multiple text strings into a single text value. For example, concat([first_name], ' ', [last_name]) would return something like 'Rob Taylor'. Each item inside the function must be separated by commas. Each item might be static text (wrapped in single quotes or double quotes), a field variable, or a Smart Variable.
upper (text)	Converts text to uppercase	Converts text to uppercase. For example, upper('John Doe') will return 'JOHN DOE'.
lower (text)	Converts text to lowercase	Converts text to lowercase. For example, lower('John Doe') will return 'john doe'.
trim (text)	Removes spaces from the beginning and end of text	Removes any spaces from both the beginning and end of a text value. For example, trim(' Sentence with spaces on end. ') will return 'Sentence with spaces on end.'.

2.23 Field Embedding

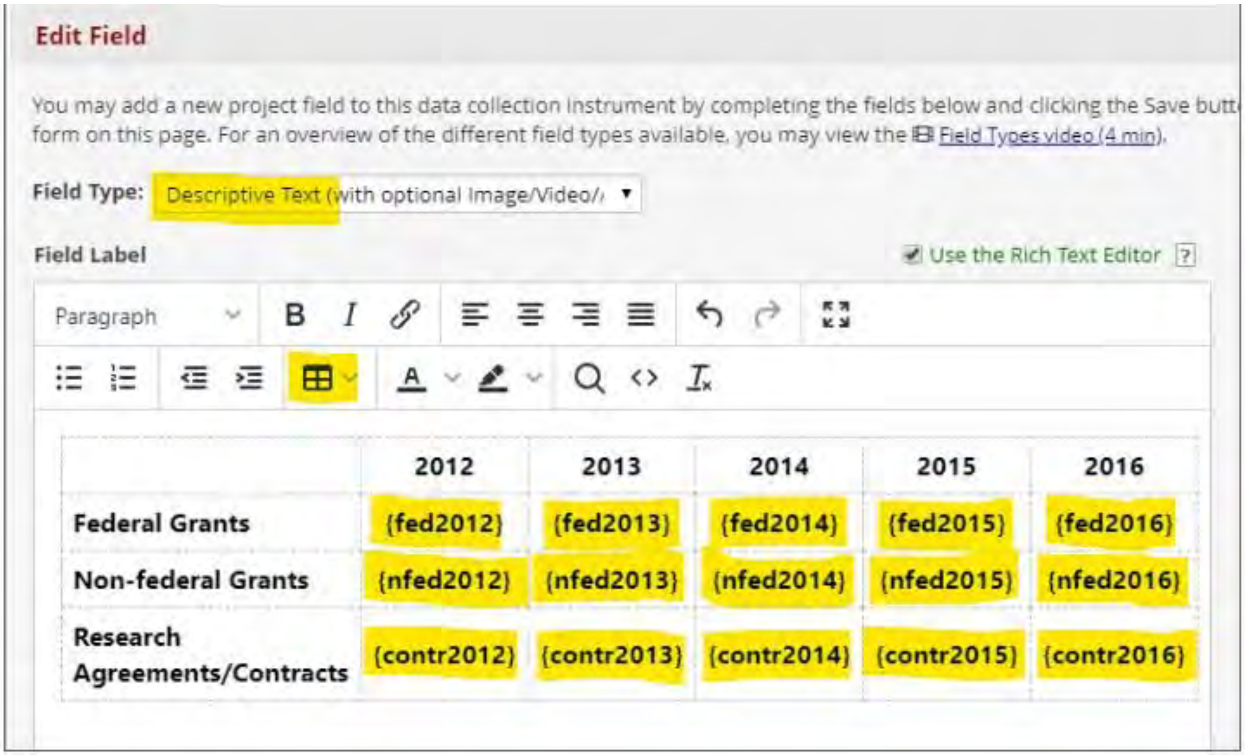
By default when you add fields (questions) to your instrument, they appear sequentially, one field per line. The 'Field Embedding' feature in REDCap allows you to have more than one question appear on a line. For example, you may place fields in a grid/table for a more compact user-friendly page, or you can position some fields close together in a group if they are related.

2.23.1 How to Embed A Field

1. First, create the field. **The field must exist first before it can be embedded elsewhere.** Note: You do not necessarily have to add a Field Label to the field because that label will ultimately be hidden when the field gets relocated elsewhere on the page.
2. Place the REDCap variable name of the field you wish to embed **inside curly brackets** – e.g., {date_of_birth} – and place it in the Field Label, Field Note, Section Header, or Choice Label of another field on that same instrument. Field embedding will not work across instruments but only on the current instrument/survey being viewed. If on a multipage survey, then the embedded field must be on the same survey page as its host field. **We encourage you to utilize the rich text editor heavily to get the field to look exactly how you want.**
3. Test it. Create a test record, and view the instrument to check that the embedded field looks like you wanted. If not, keep tweaking it using the rich text editor. **If you expect participants to enter data on a mobile device, test it on a mobile device** to make sure it displays exactly as you want. This is especially important if you are using tables/grids/matrices as they may take up more screen space on a mobile device than you anticipate.

Examples of embedded fields

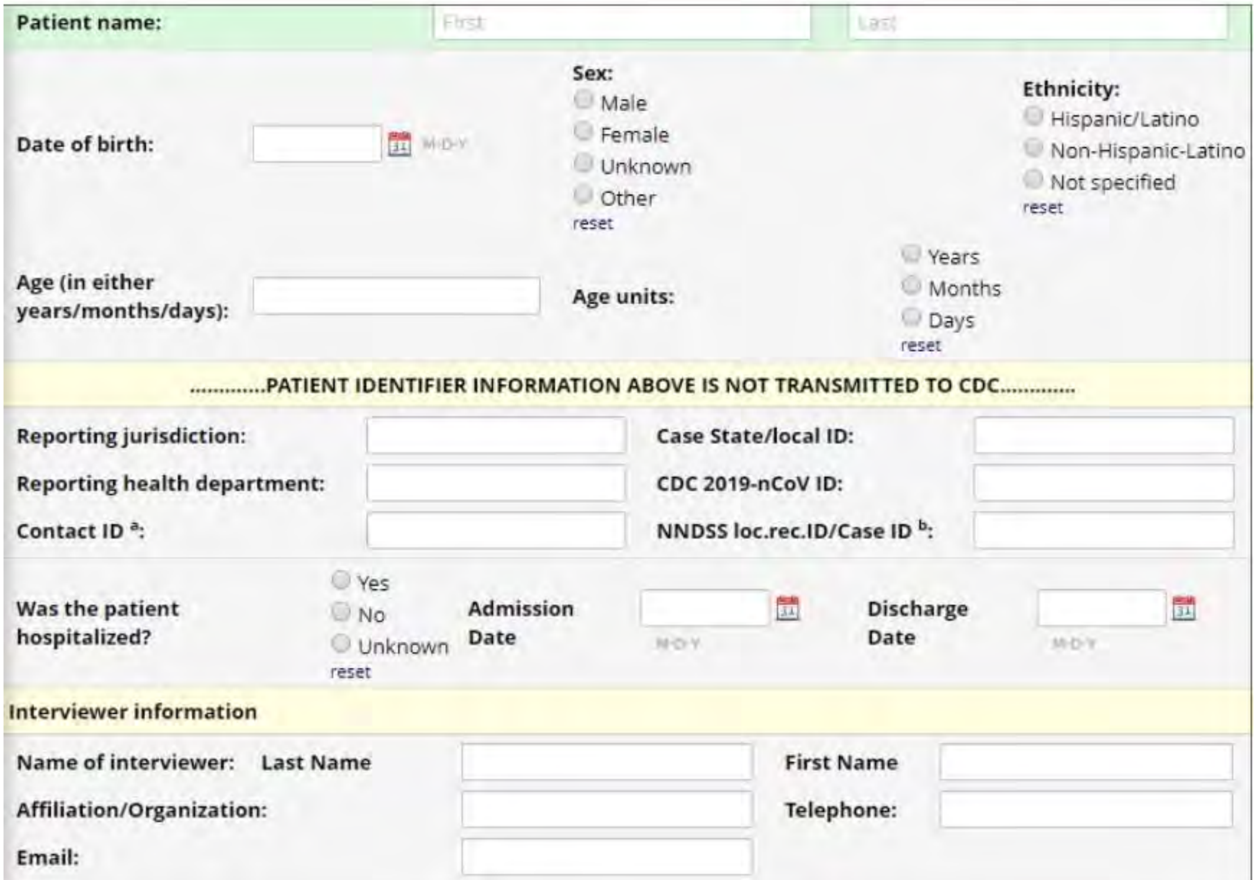
In the below example, there are individual fields for Federal Grants, non-federal Grants and Research
Agreements/Contracts for calendar years 2012 – 2016 within the project. Those individual fields are referenced in the curly brackets inside the table that was inserted in a Descriptive Text field. This is the view of the embedded fields while in Online Designer mode:



When viewing that instrument in data entry mode, here is what it would look like:

You'll note that there are essentially 15 fields that are compacted into 3 rows. So now the person adding data can now enter their answers in a much more compact space.

The below is a good example of when you might have an existing paper form that you'd like to translate into an electronic instrument. Using field embedding, you can mimic the placement of fields as they appear on the paper version of the form:



What to keep in mind when using embedded fields

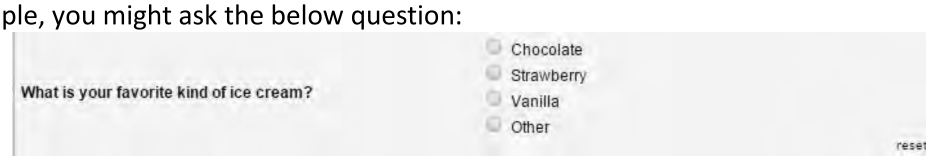
- For field embedding to work, you must **place the variable name in curly brackets { }** - e.g., {date_of_birth}. This is different from piping, which uses square brackets [ ].
- **The most common place to embed a field is in the Field Label of a Descriptive field.** Descriptive fields are merely blocks of text, so they are excellent for using the rich text editor to build tables or complex structures for placing your text and embedded fields.
- **Adding the field icons:** The usual icons pertaining to a field's Data History, Field Comments, and (if enabled) Missing Data Codes can be displayed on a data entry form (but not on a survey) next to the embedded field's new location by **appending :icons to the variable name inside the curly brackets** - e.g., {last_name:icons}. The icons do not appear by default but only when the ':icons' signifier is attached.
- Field embedding will only relocate the actual input element (e.g., the text box, radio buttons). **It will not relocate the field label or field note**, although it *will* relocate the choice label for radio/checkbox fields so that the radio/checkbox choices maintain their labels. Additionally, **the original location of the field being embedded will be completely hidden after it is relocated**, which means that the field's true field label, field note, etc. will never actually be seen on the survey/instrument. It is recommended to add a Field Label even if the field is being embedded because the label will still be needed when viewing a report.
- A field cannot be embedded inside itself (i.e., in its own Field Label), and a field cannot be embedded in another field's Field Label or Field Note if that field is also embedded

elsewhere. If these are done, an error message will appear when viewing the instrument. A field *can* be embedded into a Choice Label of a multiple choice field (with the exception of drop-down fields) that is also embedded elsewhere; this would be considered compound embedding.

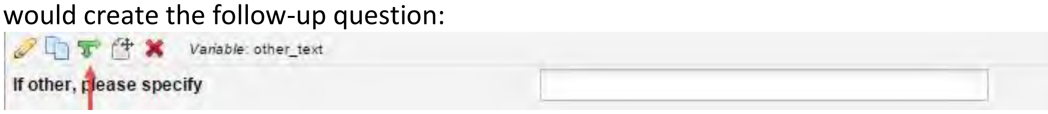
- **Fields may be embedded only in the following places:**
  - o the Field Label
  - o Field Note
  - o Section Header
  - o Choice Label of another field <u>on the same instrument</u>, or if on a multi-page survey, the embedded field must be on the same survey page as its host field.
  - o Note: Fields cannot be embedded into drop-down labels, survey instructions, survey acknowledgment text, survey queue text, or into any outgoing emails/invitations/alerts.
- **Field embedding does not work in the REDCap Mobile App**. If a project with embedded fields is loaded into
the mobile app, it will not look how it does on a REDCap survey/instrument webpage.
- **Branching logic:** If a field is embedded, its own branching logic (if any) will not be applied to itself, but instead the embedded field will be subject to the branching logic of the host field in which it is embedded. So if the host field contains branching logic that causes it to be hidden, then all fields embedded within it will be hidden as well (since they are considered part of the host field). Also, when the host field is being hidden, if any of the embedded fields inside the host field have a value, then the user viewing the data entry form (surveys are excluded) will be given the 'Erase current value of the field?' prompt for each embedded field. And in this case, if the user responds to the prompt with 'Cancel' in regard to erasing the value of *any* of the embedded fields, then the host field will not be hidden but will remain visible. For a video tutorial of field embedding, click on this link.

2.24 Add Branching Logic

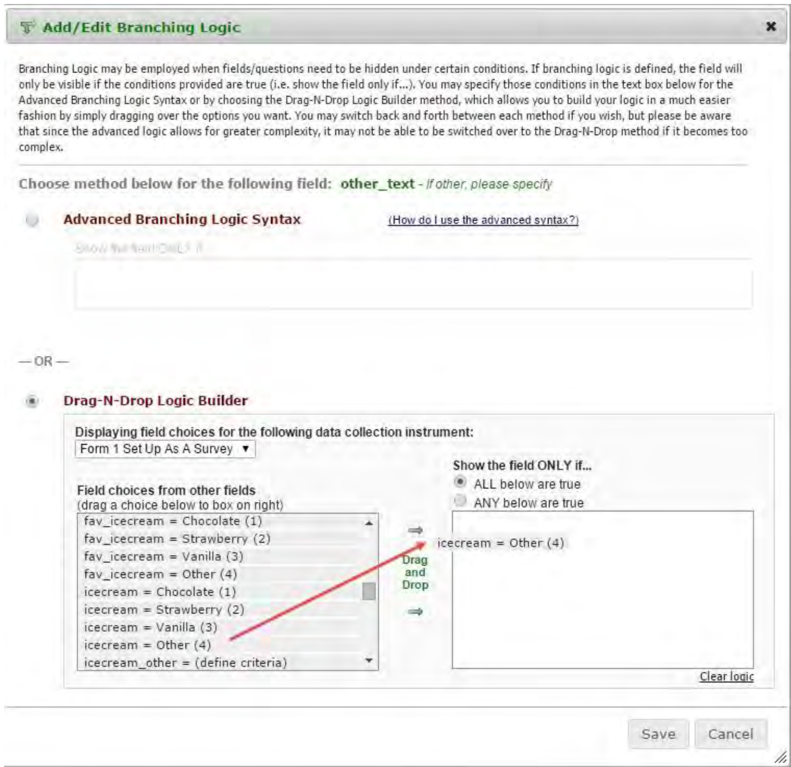
Branching logic is used when you have a field/question that you only want to be visible when a specific answer is given to a previous question. So it is a way to hide a question from appearing on the screen, until certain conditions are met. This is a great data quality feature because it means that questions are only answered when applicable. So, fewer questions for the person completing the form/survey and data only gets collected when necessary.
For an example, you might ask the below question:



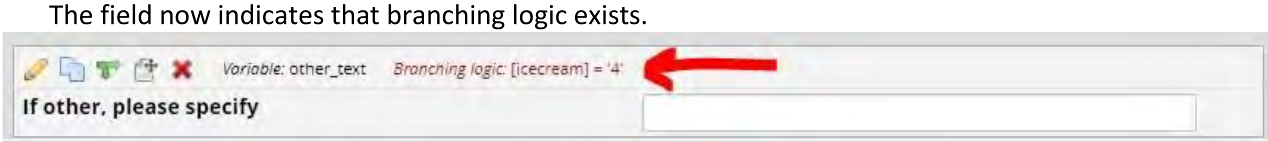
You'll note that one of the choices is 'other.' If someone makes the choice 'other', you might want to ask a follow-up question to find out what this other ice cream flavour is. But you only want the follow-up question to appear if the answer to the previous question is the choice "Other". To do this, you would create the follow-up question:



You would then, **on the follow-up question,** click on the double green arrows. You will now see this logic builder:



You would then click on the Drag-N-Drop Logic Building option and scroll through the list of field choices until you find the choice that should trigger this question (the follow-up question) to appear. In this example, you would select ‘icecream = Other (4)’. You then click on that choice and drag the field into the box on the right. Click Save once finished.
The field now indicates that branching logic exists.



This means that the question “If other, please specify’ will now appear to the person entering data only if they select the answer ‘other’ to the previous question.
You can have multiple elements to your branching logic. In other words, it could be a combination of answers to many different questions that can make a field appear.

To base branching logic on a blank value

The logic to indicate blankness, or a null value, is two quotation marks: “”. The operator to indicate ‘does not equal’ is <>.

- Show this follow-up field only if the initial field is blank:
  [initial_field] = “”
- Show this follow-up field only if the initial field is NOT blank:
  [initial_field <> “”

2.24.1 Testing your branching logic

Determining your branching logic can sometimes be tricky, especially if there are multiple fields that contribute to the branching logic. That’s why it is very important to test out your logic to make sure it is behaving the way you want it to.

To test your branching logic, add a test record (via Add/Edit Records on the left-hand navigation bar) and see if the questions appear/are hidden the way you wish them to. If you are using branching logic on a survey, open a survey and see if the questions appear/are hidden the way you wish. If the branching logic is on the first survey in your project, you can go to Survey Distribution Tools and click on Open public survey and enter test data there.

Caution on variable names in branching logic

While in development mode, you do have the ability to change a variable name. Please note that if that variable is used in branching logic elsewhere, REDCap will NOT automatically change the variable name in the branching logic.

Branching logic across instruments

As an example, let's say these are the questions in a project:

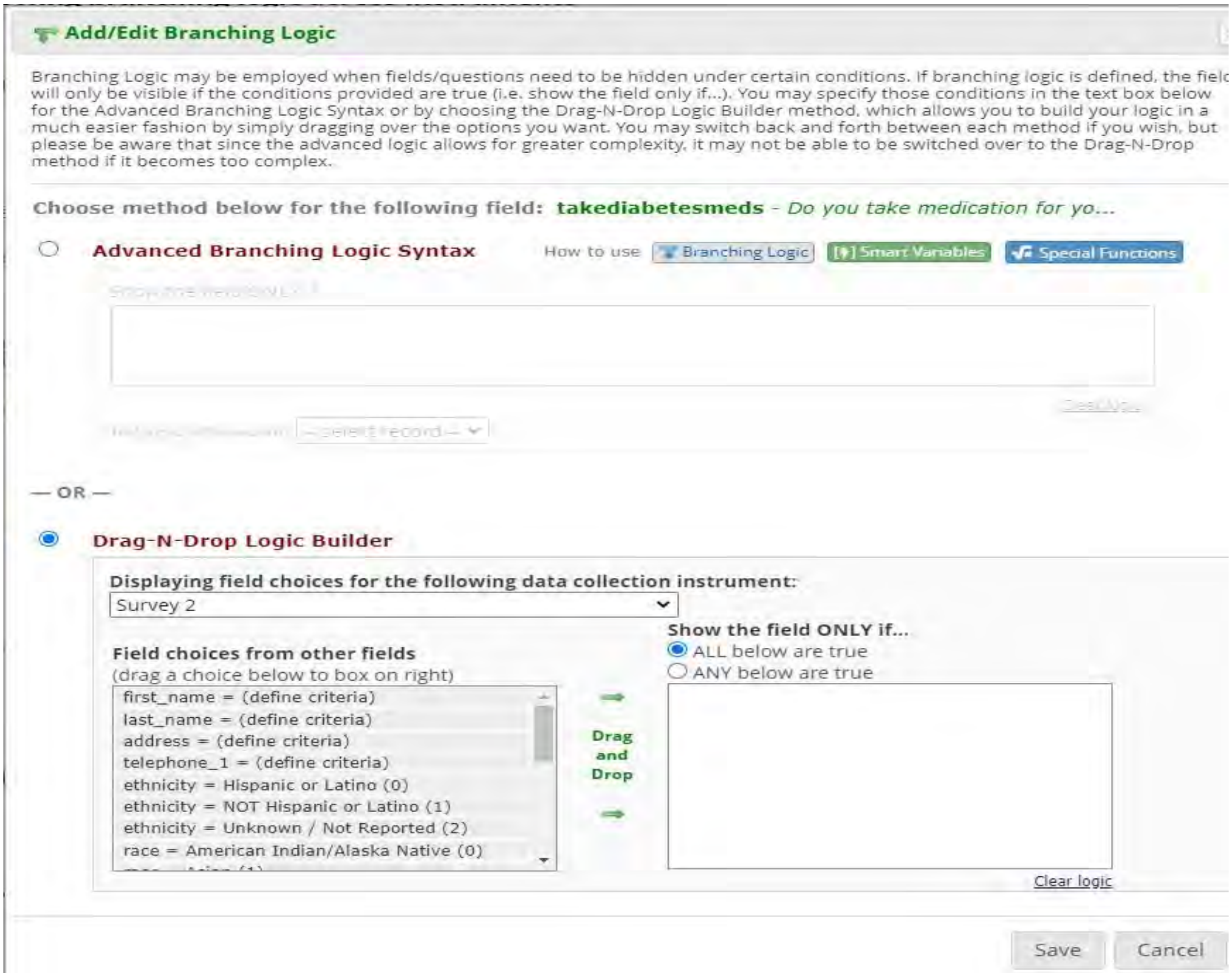
#	Variable / Field Name	Field Label *Field Note*	Field Attributes (Field Type, Validation, Choices, Calculations, etc.)
trument: **Survey 1** (survey_1) Enabled as survey			Collapse
1	participant_id	Participant ID	text
2	dob	Section Header: *Please fill out the information below.* Date of birth	text (date_ymd)
3	email	E-mail address	text (email), Identifier
4	type2diabetes	Do you have type 2 diabetes?	yesno 1 Yes 0 No
5	consent	By checking this box, I certify that I am at least 18 years old and that I give my consent freely to participate in this study.	checkbox 1 consent___1 I consent
6	survey_1_complete	Section Header: *Form Status* Complete?	dropdown 0 Incomplete 1 Unverified 2 Complete
trument: **Survey 2** (survey_2) Enabled as survey			Collapse
7	takediabetesmeds	Section Header: *As a participant in this study, please answer the questions below. Thank you!* Do you take medication for your diabetes?	yesno 1 Yes 0 No

The above image is taken from the Codebook of a project. The Codebook shows you all the instruments, fields and attributes of those fields in one place. You can find your Codebook on the left-hand navigation bar in the Project Home and Design section.

You'll note that a question is asked in survey 1 "Do you have type 2 diabetes?" This question has the variable name type2diabetes and the potential answers are yes or no. The raw value for yes is 1 and no is 0. Then there is survey 2 where the question is asked "Do you take medication for your diabetes?" The variable name is takediabetesmeds, the answers are yes or no and the raw value for yes is 1 and no is 0.

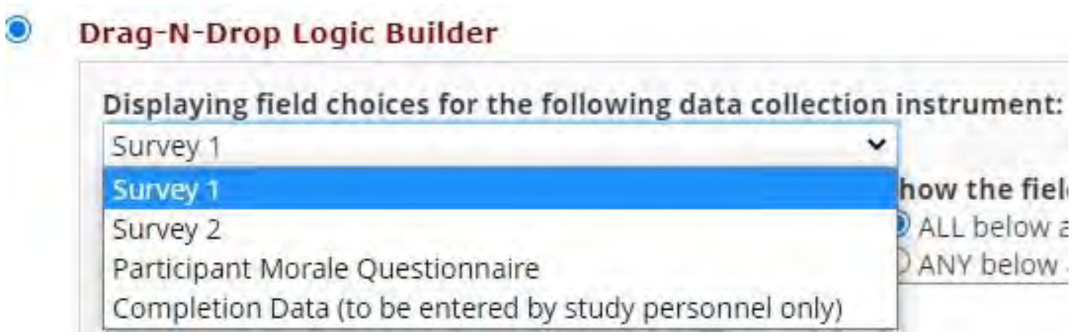
To set up branching logic so that the question "Do you take medication for your diabetes?" only appears in survey 2 when the person answers 'yes' to the question "Do you have type 2 diabetes?" in survey 1…

1. In Online Designer, click on Survey 2
2. Go to the field "Do you take medication for your diabetes?"
3. On that field, click on the green arrows to access the branching logic.
4. Click on the button next to Drag-N-Drop Logic Builder.

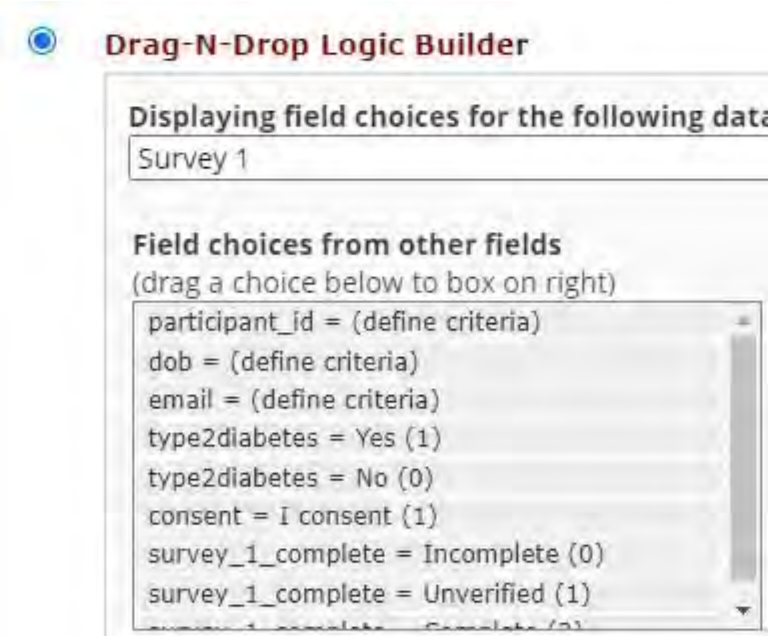


a. When you do that, you will see a drop-down box that lists all your instruments.

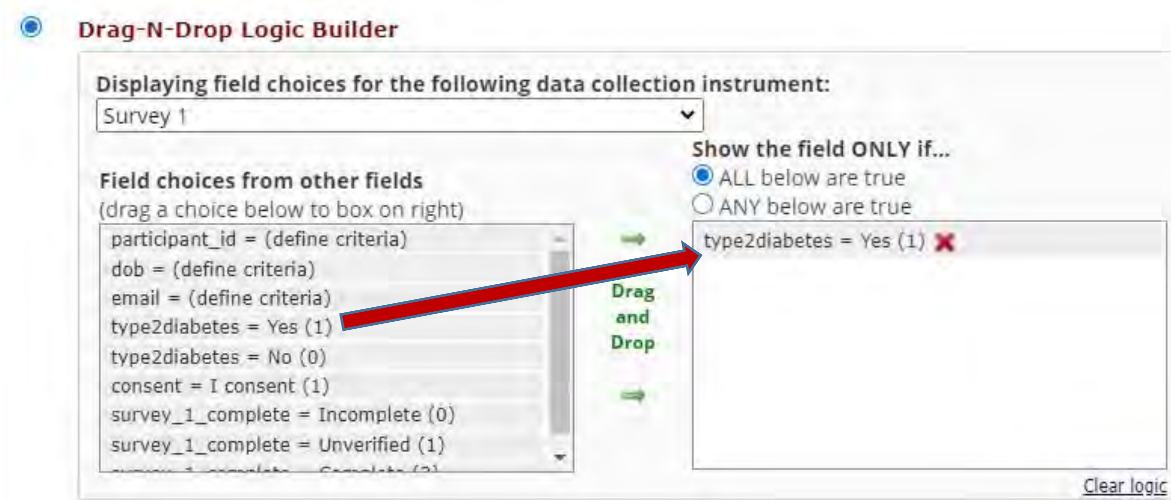
5. Select the instrument from which you want to base your branching logic. In our example, we want to access survey



a. You will now see all the variables (questions) that are in that instrument (in our example, survey 1):



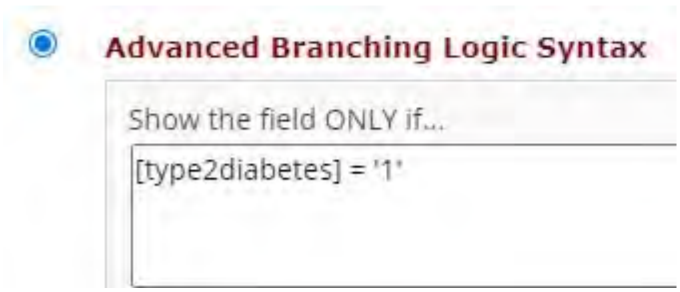
6. You can scroll until you see the question type2diabetes = Yes (1) and type2diabetes = No (0) in the list.
7. Click on type2diabetes = Yes (1) and drag it to the box on the right



8. Click save

You now have branching logic on the question “Do you take medication for your diabetes?”. It will now only appear in survey 2 if the person answers yes to the question “Do you have type 2 diabetes?” in the first survey.

Additionally, you will see the Boolean logic written in the upper portion of the Branching Logic box. This is what REDCap is writing behind the scenes to perform the function you indicated when you dragged that choice in the branching logic builder box.



If you wish to apply this same logic to several questions, you could always copy that logic and paste it into the branching logic box of other fields (rather than continually going through the drag-n-drop method).

2.24.2 Applying branching logic to multiple questions via the Data Dictionary

If you want to apply the same branching logic to multiple questions, it is sometimes easier and faster to use the Data Dictionary to accomplish this. Using the Data Dictionary allows you to copy and paste the branching logic into multiple fields very quickly.
To do this, you would:

1. Create the branching logic within one of the fields via Online Designer
2. Go to your Data Dictionary (when you are in Online Designer, scroll up to the top of your page to see the tab for Data Dictionary)
3. Download the current Data Dictionary
4. Save your data dictionary somewhere on your computer – be sure to note where you have saved the file
    a. Be sure to keep the data dictionary in .csv format – do not convert it to an Excel workbook!
5. Open the data dictionary and find the cell that contains your branching logic
6. Copy the branching logic and paste it into the branching logic cells of the other questions for which you wish to apply it to
7. Save your data dictionary
8. Go back to the Data Dictionary page within your REDCap project
9. Click on 'choose file' and find the file location of your updated data dictionary
10. Click on upload file

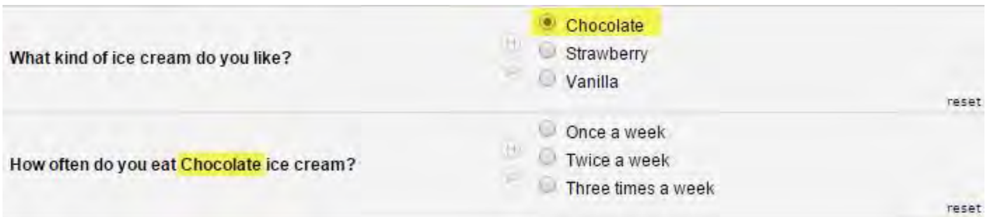
Note: if you are making these changes while in Production mode, you will need to enter draft mode first, perform the above steps and then click on the "Submit Changes for Review" on the Data Dictionary page.
For more information on how to use the Data Dictionary, go to this section of this User Guide.

2.24.3 Add Piping Logic

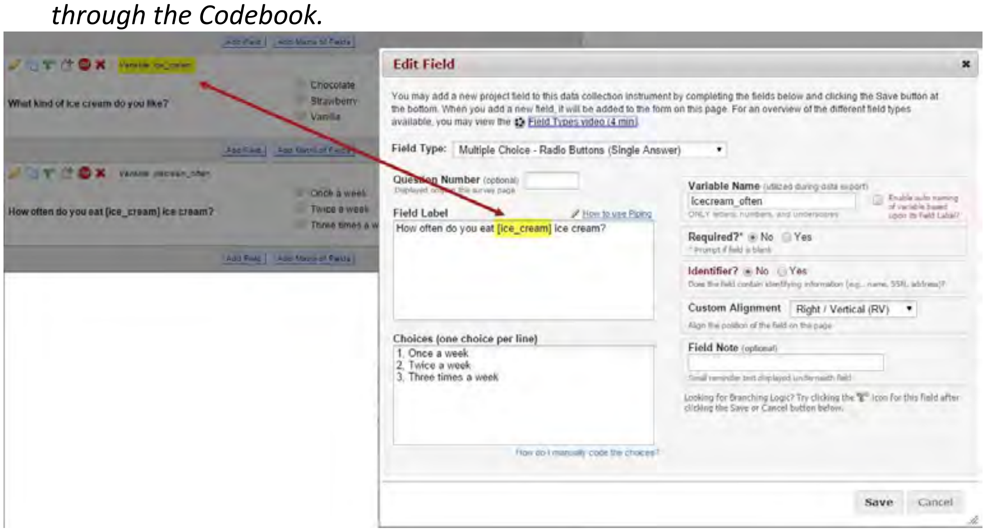
Piping gives you the ability to insert answers and place it in various places within REDCap.
In the below example there is a field that asks the participant "What kind of ice cream do you like?" Next is a field that asks the participant "How often do you eat ___ ice cream?" Piping logic is included in the second question so that it will insert the answer from the first question.
Before:

Once the participant answers the first question, the answer is then inserted into the next question.

After:



To add piping, add the variable name of the field you want to pipe in. The variable name must be inserted into square brackets [ ]. *Note: if the variable you want to use for piping is not adjacent, consider opening the [Codebook](#) on one tab and do your design on another tab. This way you can easily reference the variable name in the Codebook. You can use the ctrl+F function to search through the Codebook.*



Piping can be used in many different places in REDCap such as:

- Field Label
- Field Note
- Section Header
- Matrix field column headers
- Option labels for multiple choice fields (radio, drop-down, checkbox)
- Slider field labels (i.e. text displayed above slider bar)
- Survey instructions and acknowledgement Text
- Survey invitation emails sent via Participant List or Automated Invitations - both in the subject line and in the message body

Piping images to other locations

The ":inline" piping option can be used to pipe an image that's been uploaded to a File Upload field by a user/survey participant to other locations. Note: while a file upload field can accept any type of

file (Excel, Word, photo, etc) it's only PDF and image files (JPG, JPEG, GIF, PNG, TIF, BMP) that can be translated to appear inline.
To pipe an image from a file upload field to another place, use this formatting:
[fileuploadfieldname:inline]
Images can be piped to:

- Fields in a different instrument
- Survey completion screen
- Survey confirmation email
- An alert

Display an inline image of a file upload field within the same instrument

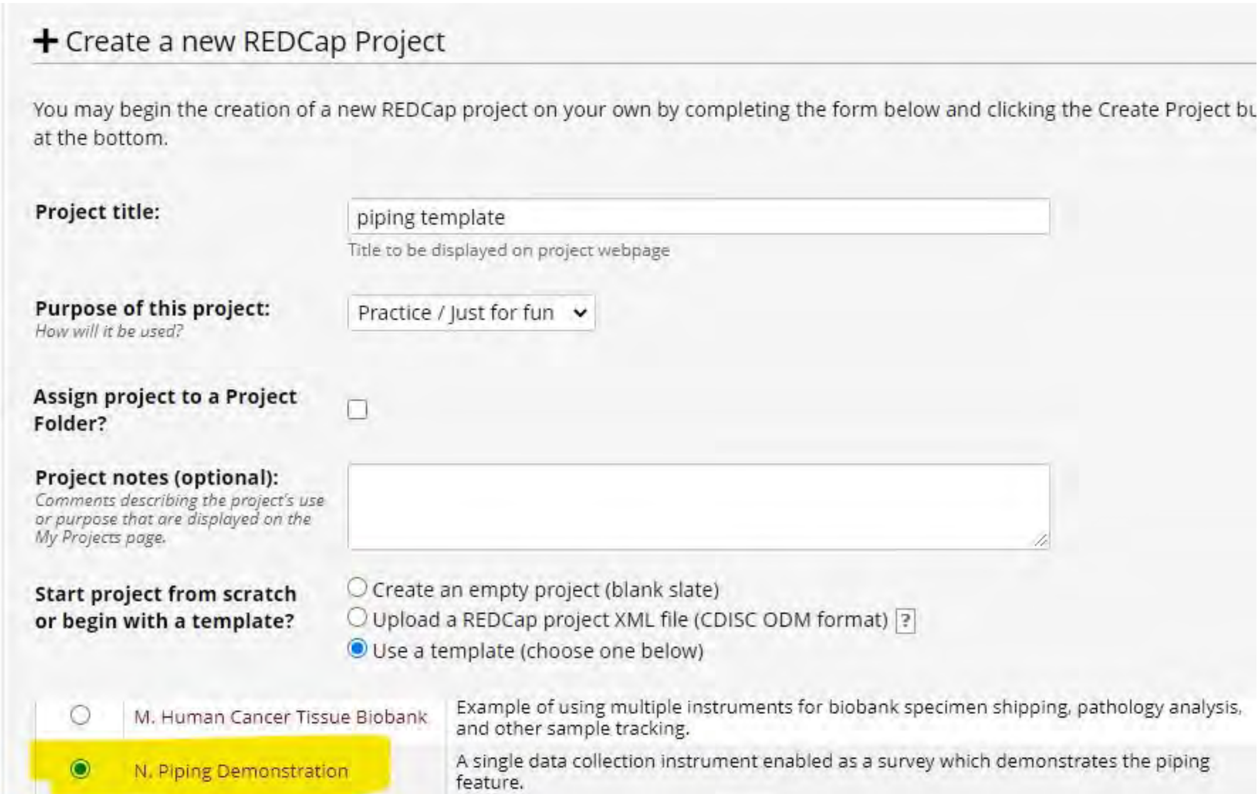
The @INLINE action tag can be used to display an inline image of an image uploaded to a file upload field. This is a nice way for the user/survey participant to verify that they have uploaded the correct file. Note that the file will only display inline on the page if the file is a **PDF or image** file (JPG, JPEG, GIF, PNG, TIF, BMP). While a file upload field can accept any type of file (Excel, Word, photo, etc) it's only PDF and image files that can be translated to appear inline.
To configure the size of the inline display, review the instructions included in the description of the action tag. (Hint:
aligning the destination field Left Horizontal creates the widest amount of space for the display of the image).

Note about Piping in Longitudinal projects

If your project is longitudinal and you want to pipe in data from an event *that is not the current event*, you need to pre-pend to the variable the appropriate unique event name also enclosed within square brackets, e.g. [unique_event_name][variable_name]. Unique event names can be found by going to Project Setup/Define My Events. You will see an events table, and the last column shows you the Unique event name, which is automatically generated by REDCap.

Piping tutorial

To see an online demonstration of piping, please click on this link: https://is.gd/PipingTutorial
You can also create a new REDCap project using the Piping Example template, which demonstrates piping:



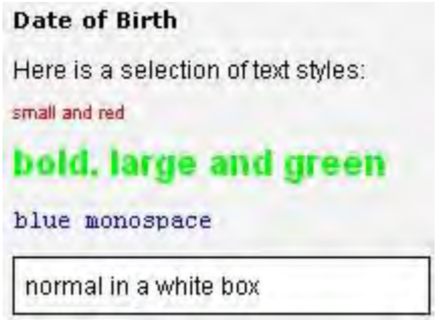
2.25 Add styling with HTML and CSS

Additional styling can be added to certain elements in your project using HTML tags with CSS styles. Examples include:

- Field labels
- Section headings and descriptive text fields
- Survey welcome and thank you messages
- Survey invitation emails

This guide will not become a web programming manual: you can find good references for HTML and CSS at w3schools.com, and Google is always your friend. Nevertheless, some examples of the types of formatting that can be applied are included below. First a section header, then two field labels:

	Demographics Information Confidential
	<div class="green">Full Name</div>
	Date of Birth



<p style="font-weight:normal;">Here is a selection of text styles:</p>
<p style="colour:red; font-size:75%;">small and red<p>
<p style="colour:green; font-weight:bold; font-size:150%;">bold, large and green</p>
<p style="colour:blue; font-family: monospace;">blue monospace</p>
<p style="display:block; padding:5px; border:1px black solid;

background-colour:white;

">normal in a white box</p>

To learn more about HTML formats, see this link. It is an interactive online survey that provides information using HTML in REDCap.

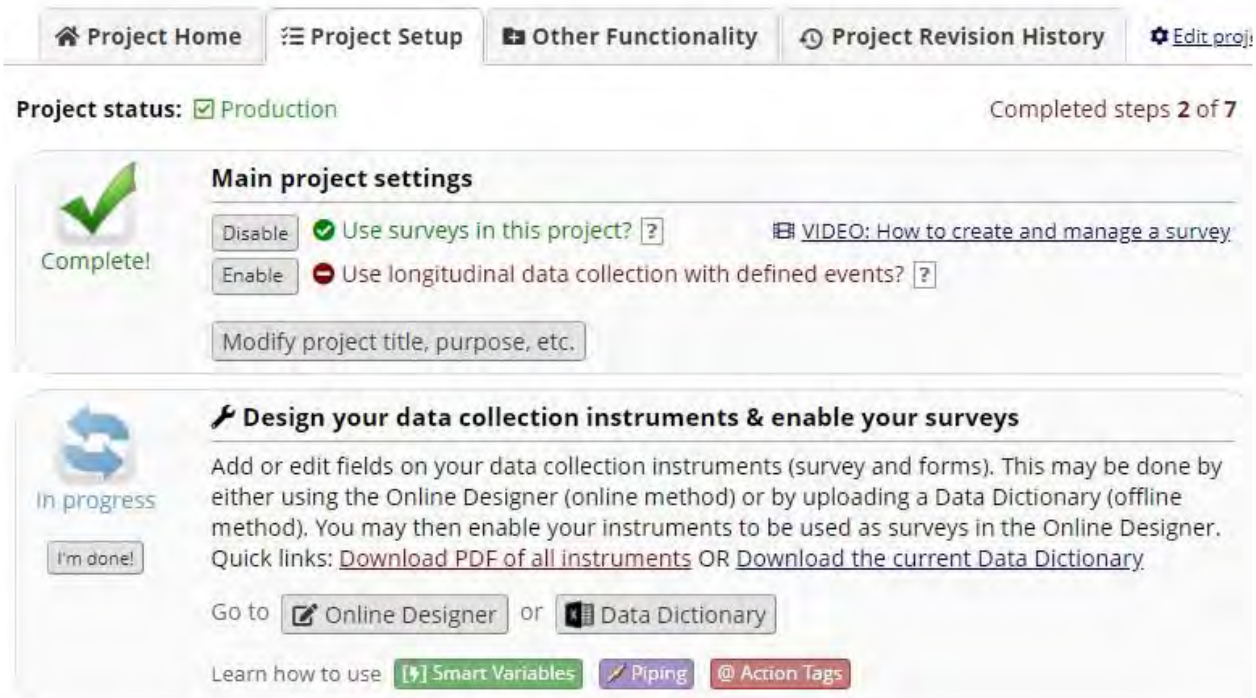
2.26 Smart Variables

Definition

In REDCap Field Notation, variable names always point to data fields in the project. However, another type of entity exists called 'Smart Variables' that allow you to reference information other than data fields. Smart Variables are context-aware and thus adapt to many different situations in which they can know who the current user is, what event is currently being viewed, whether or not an instrument is being viewed as a survey or data entry form, etc. In this way, Smart Variables are dynamic (and thus 'smart') because they adapt to the current context in which they are used. Smart Variables are easily distinguishable from field variable names because Smart Variables will have dashes and colons whereas field variable names cannot. Smart Variables can be used...

- On their own - e.g., *[record-dag-name]*
- In conjunction with field variables - e.g., *[previous-event-name][weight_measurement]*
- In conjunction with other Smart Variables - e.g., *[previous-event-name][survey-url:prescreening_survey]*

For more information on Smart Variables, go to the Project Setup page within any project and click on the Smart Variables button:



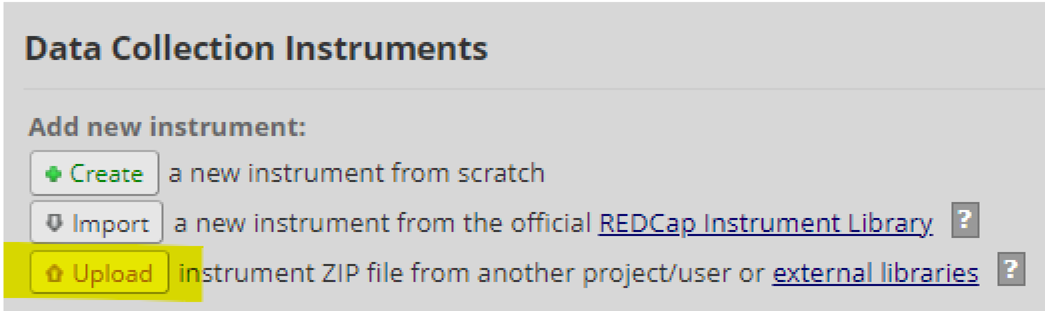
2.27 Copying/Downloading/Uploading an Instrument to another project

You may have a situation where you wish to copy or transfer an instrument from one project to another. Here is how you do that:

- Go to Designer on the project which has the instrument you wish to copy/transfer
- Click on the Choose action button and select Download instrument ZIP

In the above screenshot, the project is in Production mode and has surveys enabled on the project. If you project is in Development mode or does not have surveys enabled, you may see more/fewer options. But either way, you will see that 'Download instrument ZIP' option.

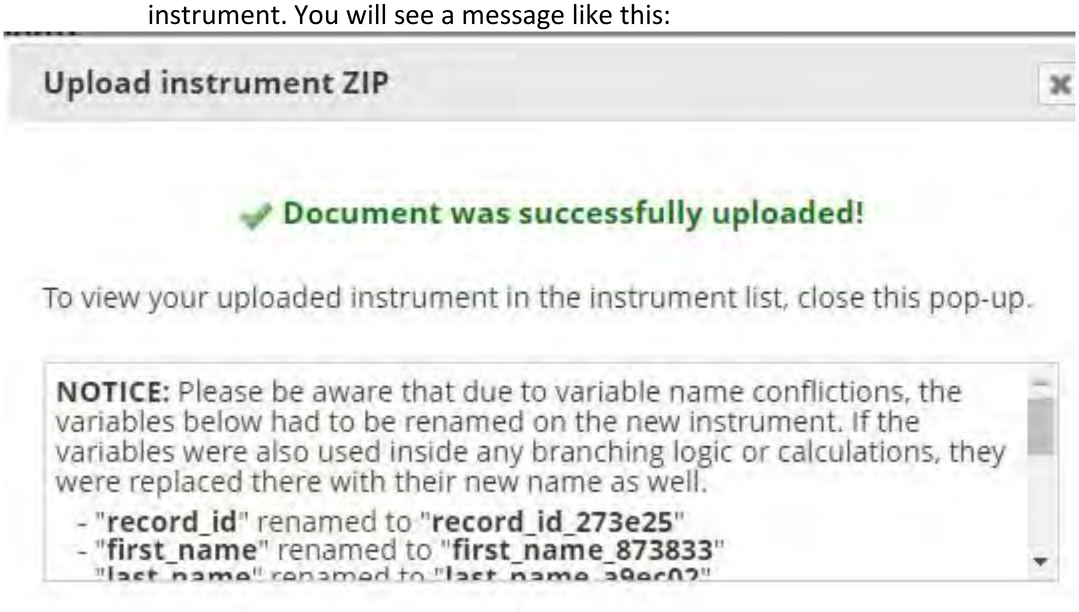
- Go to Designer of the project to which you wish to add the instrument.
- Click on the Upload button (if the project is in Production, you will need to enter Draft Mode
  first)



- Select the ZIP from that you downloaded from the first project.
- The instrument will now show up at the bottom of your instrument list. o You can easily move it by hovering your cursor to the left of the instrument name and then clicking and dragging up or down.

A couple notes:

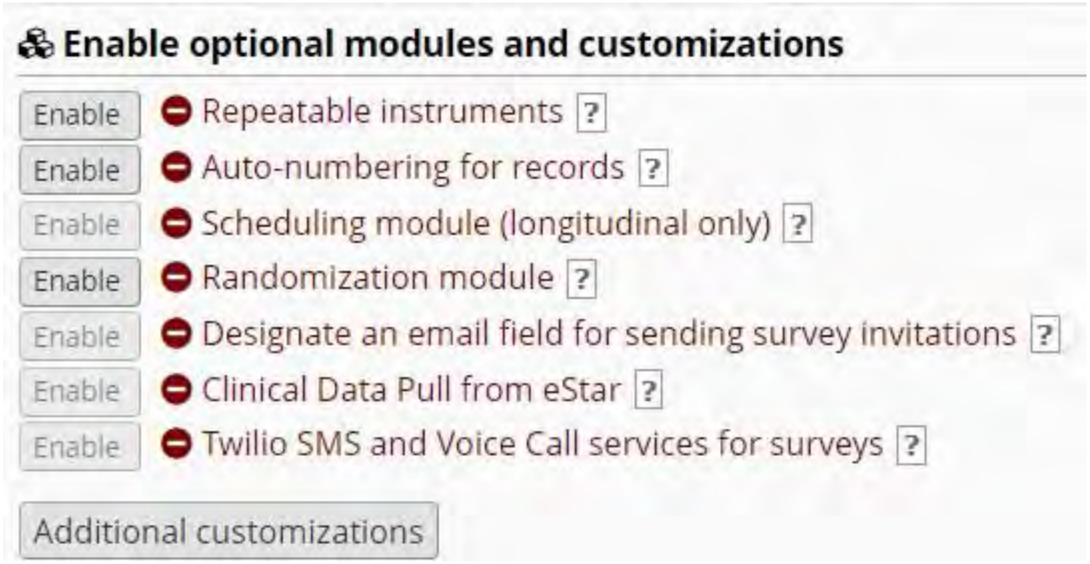
1. If the project into which you are importing the instrument already has fields with the same variable name, REDCap will automatically add a suffix to the variable names in the imported instrument. You will see a message like this:



2. Survey Settings do not get transferred over.

3 Step 3 on the Project Setup page: Enable Optional Modules and Customizations

The third box on the Project Setup page lists several optional modules that you can enable for your project:

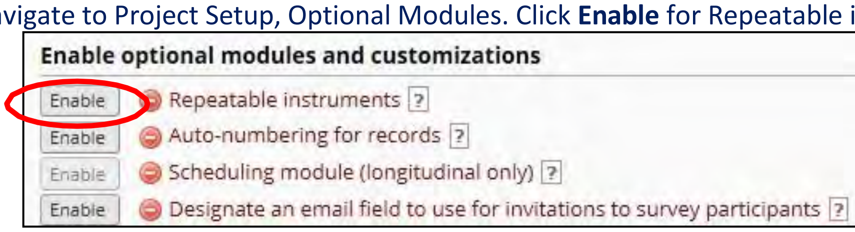


3.1 Repeatable or Repeating instruments

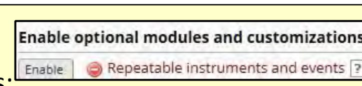
You can repeat a data collection instrument or a single predefined event dynamically and as often as you wish. This is useful when collecting data for multiple visits, concomitant medications, adverse events, or repetitive surveys (weekly, monthly, etc.) There is no need to pre-define a maximum number of repetitions, and the feature works in *either* classic or longitudinal projects. Classic projects (i.e., in which the longitudinal module is not enabled) can utilize repeating instruments as a simple way of enabling longitudinal data collection.

Enabling Repeatable Instruments

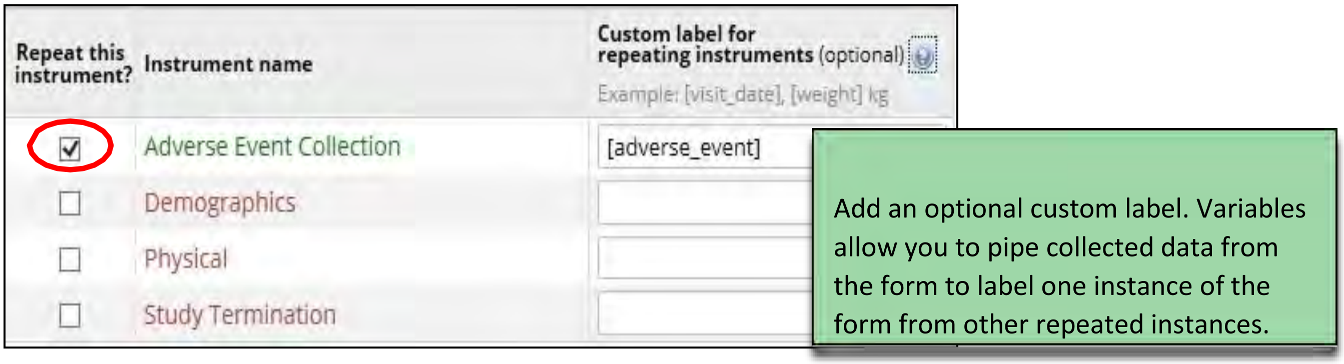
Navigate to Project Setup, Optional Modules. Click **Enable** for Repeatable instruments.



Tip: In *longitudinal* projects, you may repeat instruments and events:

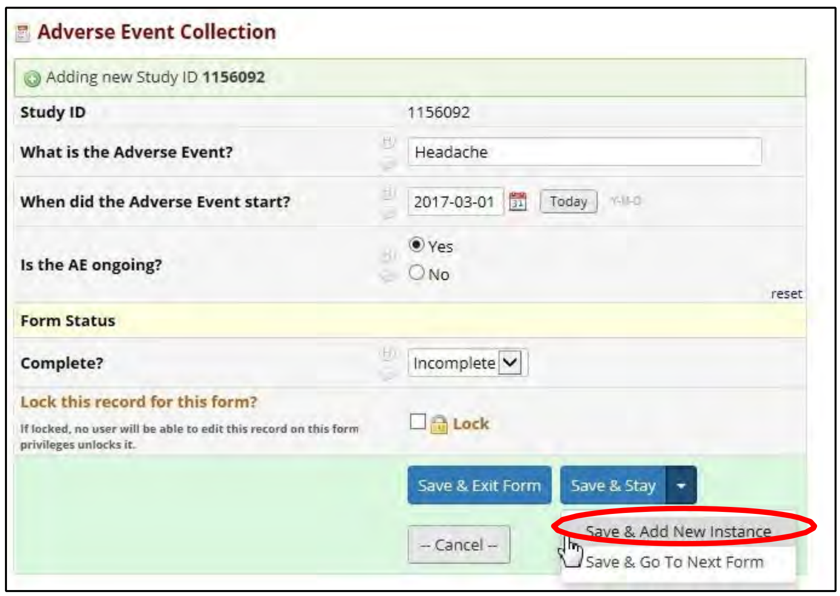


Use the checkbox to indicate which data collection instrument may be repeated.

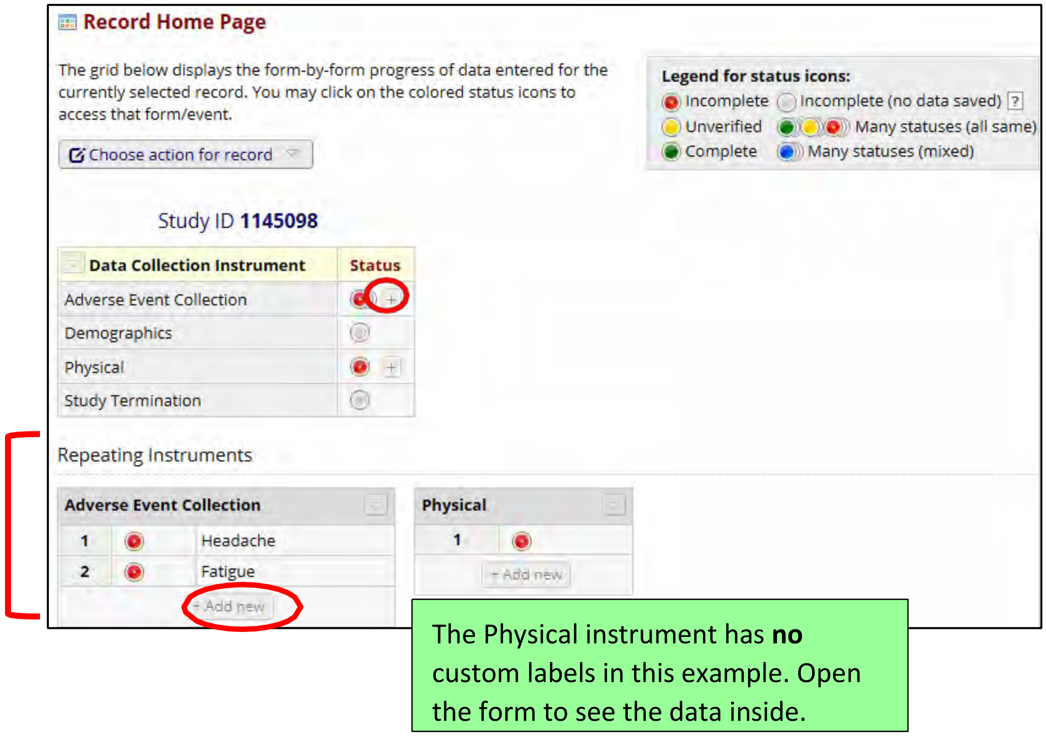


3.1.1 Data Entry for a Repeating Instrument

During Data Entry, click **Save & Add New Instance** to create another instance of the instrument immediately.



To add a new instance of the instrument *after data entry*, click the ***+ sign*** from Data Collection or on the Record Home Page beside the form you want to repeat. Only Repeating instruments display the + sign.



Vie wing Repeating Instrument Status Icons

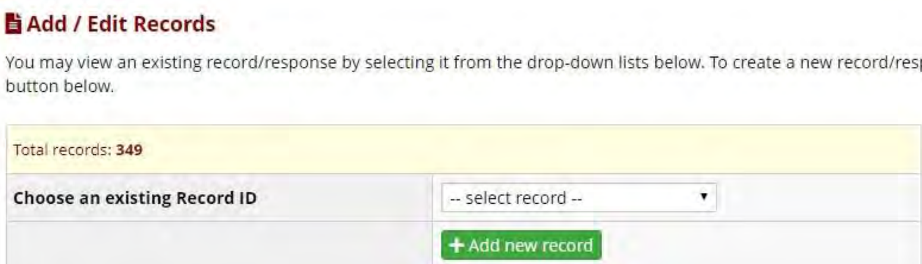
The Record Status Dashboard includes a legend specifying both individual instrument status icons, as well as icons for the repeating instances of an instrument. A single dot indicates a single instrument containing data. The “stacked” icons indicate multiple instances of the instrument.

Design Tip

Include variable names in your custom labels. This will pipe collected data into the label name, distinguishing one instance of an instrument from another.

3.2 Auto-numbering for records (on Project Setup page)

Auto-numbering will automatically be enabled for your project, unless you are using a project template that does not have it enabled. With auto-numbering enabled, you will see this when you navigate to the Add/Edit records page:



This option will remove the ability for users to name new records manually and will instead auto-generate a new unique record name, which will be numerical and will increment from the highest numerical record value in the project. If no records exist, it will begin with '1'.
If you want to create your own record identification, you may disable this feature and manually assign a record identifier.

Work-around for starting record numbering with a number other than 1

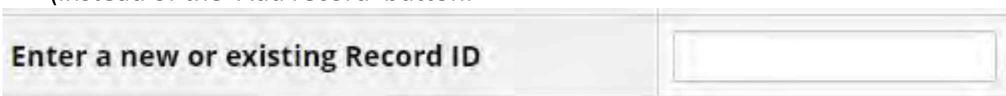
When using auto-numbering you can have your sequence begin with a number other than 1 using the following strategy:

1. With record auto-numbering **disabled via the Project Setup page**, create a dummy record with an identifier one less than your desired start number
2. Enable record auto-numbering on the Project Setup page
3. Create a new record – this will become your first record
4. Delete the dummy record

For example, if you want your first record to be numbered 1001, disable record auto-numbering, add a record with id=1000, enable record auto-numbering, create another new record (id=1001 will be assigned), then delete record 1000.

Manually assign a record identifier

To manually assign the record identifier for your project, go to **Project Setup** and in the section 'Enable optional modules and customizations', click on the Disable button next to 'Auto-numbering for records.' Now, when you go to Add/Edit records, you will see this (instead of the 'Add record' button:



Enter the identifier you wish to use for the record and hit 'enter.'

Please note: the disable button will not be clickable if you already have records in your project or if the first instrument in your project is a survey.

3.3 Scheduling module (longitudinal only)

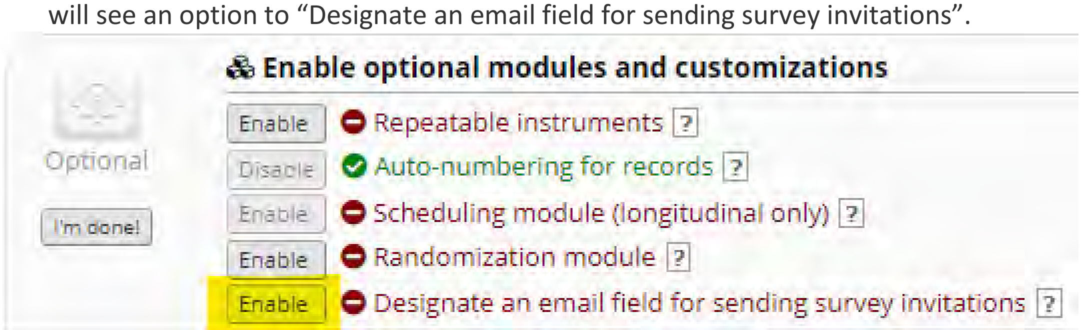
The scheduling module can generate schedules for your project calendar that are auto-generated from projectdefined events (e.g., visits, time-points). Scheduling is only available for projects using longitudinal data collection. To enable the scheduling module, your project needs to be enabled as a longitudinal project (under Step 1 on the Project Setup tab.) You can then click the enable button next to the Scheduling module in Step 3 of the Project Setup tab. For further information, see the Scheduling section of this User Guide. For further information, you can click on the question mark next to the module on the Project Setup page or search the Help & FAQ tab.

3.4 Randomization module

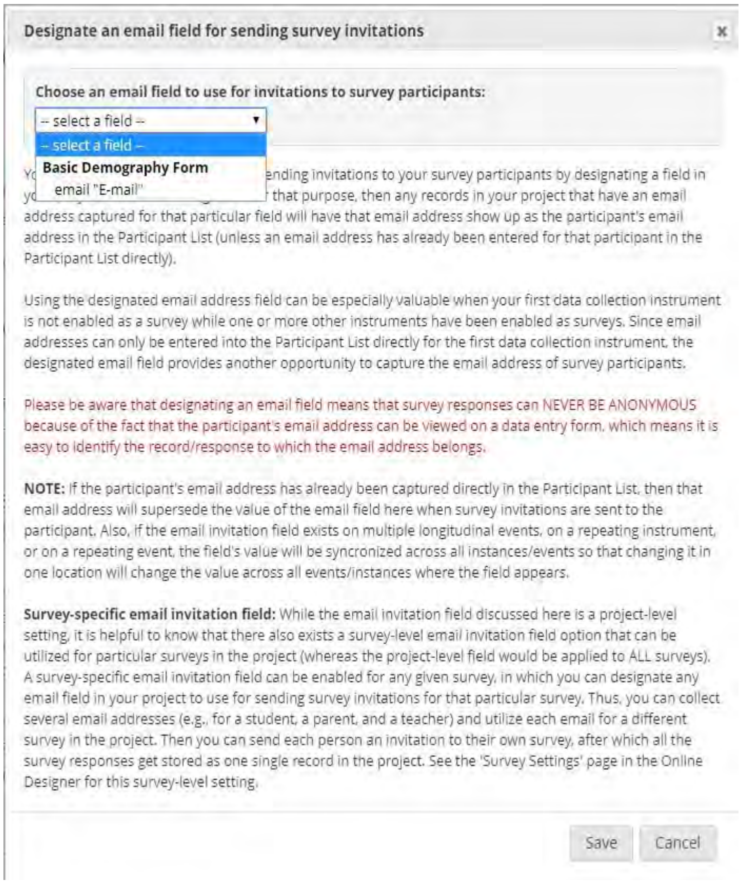
Randomization is a process that assigns participants/subjects by chance (rather than by choice) into specific groups, typically for clinical research and clinical trials. This is considered an advanced feature so no further instructions will be available here. For further information, you can click on the question mark next to the module on the Project Setup page or search the Help & FAQ tab.

3.5 Designate an email field for sending survey invitations

On the Project Setup page in the section named "Enable optional modules and customizations" you will see an option to "Designate an email field for sending survey invitations".



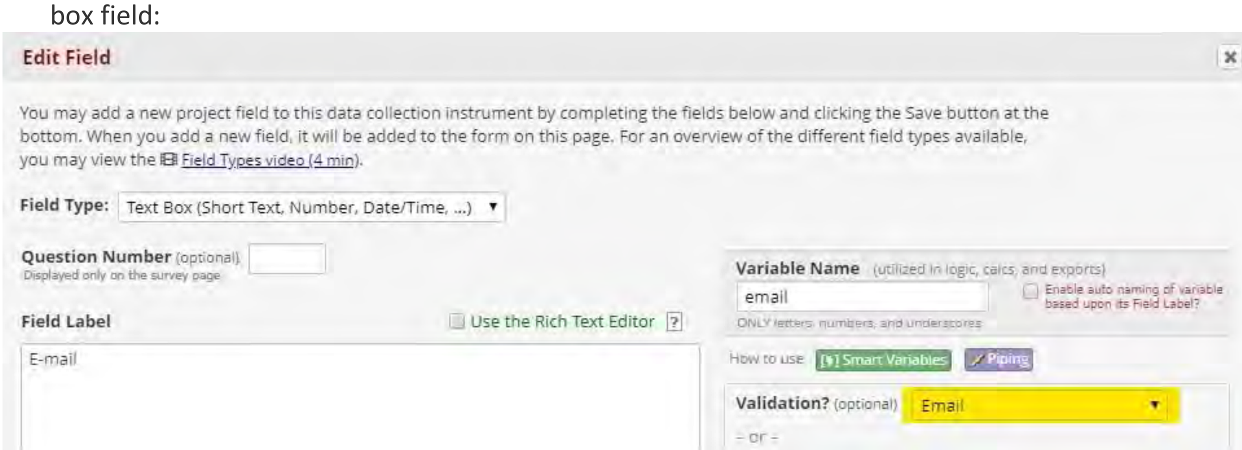
If you click the Enable button next to it, a dialog box will populate. It will contain a drop-down list of any e-mail validated text box fields in your project.



You can select any one email address field listed in that drop-down so that:

1. Survey invitations automatically get routed to the email address entered into that field
2. Survey confirmation emails automatically get sent to that email address (if you have enabled confirmation emails in the Survey Settings of an instrument)

If you are not seeing any email address fields listed in that drop-down, it is because you don't have an emailvalidated text box field in the project. Here is where you add that email validation in a text box field:



As an example of when you might use the 'designate an email field….' option, let's say you have a project with multiple surveys. If you want the first survey to be disseminated via a public survey link (e.g. you don't know the email addresses of the potential respondents) but then want to send the subsequent surveys to the same respondents, this feature will help you do that. It requires you to request the respondent's email address in the first survey. Then, when you use the 'designate an email field' module, you are telling REDCap that the email address captured in that initial survey is where you want to send the subsequent surveys. When participants complete the first survey, their email addresses will pre-populate the Participant Lists and will allow you to send additional surveys for the same record.

Enabling this feature also automates the sending of survey confirmation emails (rather than relying on the survey participant to enter their email address on the survey completion screen to receive the confirmation email.)

Note: This feature should only to be used if it is ok that survey responses are not anonymous.

3.6 Additional Customizations on the Project Setup page

3.6.1 Set a custom record label

This tool assists you in identifying what is contained in a record (most commonly, the name of the person to whom the record belongs) when looking at a list of records (e.g. from the list of records on Add/Edit records or the Record Status Dashboard.) For instance, if you collect a person's name in the project, you could set a custom record label to see that person's name next to the record identifier. This will be visible via the add/edit records and record status dashboard as well as at the top of the form/survey. That way, you don't have to open up the record to see who it belongs to.

To set a custom record label, go to the Project Setup page and under 'Enable Optional Modules and Customizations' click on "Additional Customizations".

You will see an option to add a custom record label:

Additional customizations

You may use the options below to make customizations to the project. When done, click Save to save your changes.

Set a Custom Record Label

You may append other data and/or static text to any record name (e.g., Study ID) as the record is displayed on your data collection instruments, such as inside the drop-down lists when choosing a record and at the top of the page after being selected. Simply provide the text you wish to display below, and place any variable names inside square brackets [ ], after which the data collected for those variables for that record will replace the variable in the text.

Custom Record Label: [fn] [ln]

Example: if ([last_name], [first_name]) where entered, then for record '102' it would display '102 (Doe, Jon)'.

Tick the box and then put the variable names in square brackets that you wish to see next to the record identifier. In the above example, the variable name 'fn' captures the first name and the variable name 'ln' captures the last name.

So instead of this:

Displaying: Instrument status only | Lock status only |

Record ID	Registration Survey	Internal form	Follow-up Survey	Internal form 2	Final survey
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

You will see this:

Record ID	Registration Survey	Internal form	Follow-up Survey	Internal form 2	Final survey
1 Bonnie Plunkett					
2 Kelly Kapoor					
3 Christy Plunkett					
4 Mindy Lahiri					
5 Sam Swarek					
6 Jake Peralta					
7 Shawn Spencer					
8 Andy McNally					
9 Gus Burton					
10 Danny Castellano					

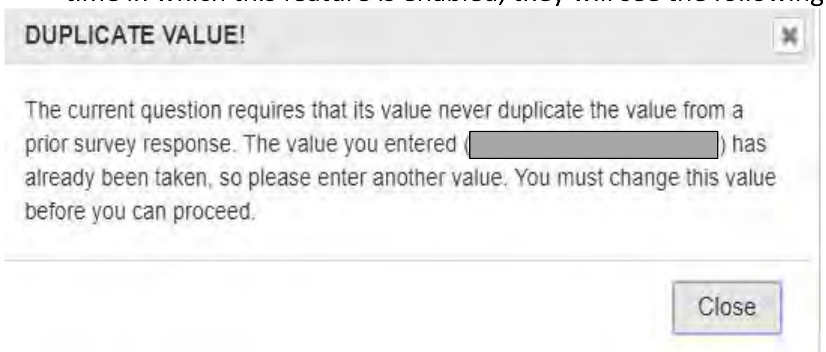
Design Tip: Reference the Codebook when setting the Custom Record Label

You may decide to set the custom record label sometime after you have designed the project, so you may not remember what you called the variable that you want to see in the record label. In those cases, you can check your Codebook to see what name you gave the variable. You can access your Codebook via the link on the left-hand navigation bar (under Project home and Design).

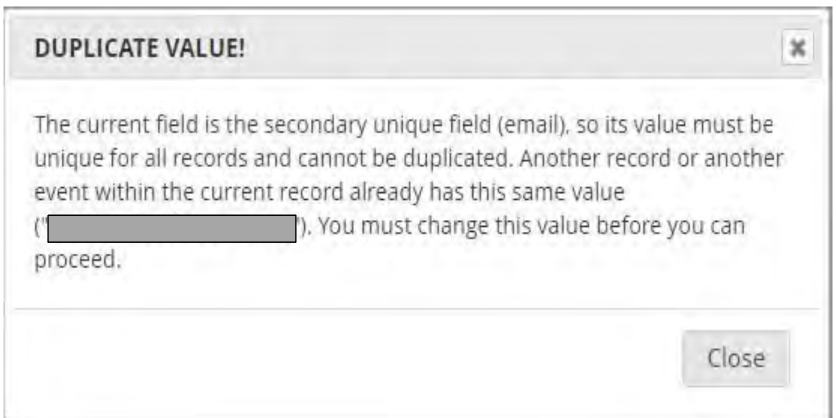
3.7 Designate a secondary unique field (in Additional Customizations on the Project Setup tab)

- A field in addition to the primary record identifier for which REDCap will ensure the uniqueness of all values
- Values will also be included alongside the primary record identifier in the record selection lists You may designate a **text** field to serve as a unique constraint whose value cannot be duplicated or shared by any other **record** in the project. When a value

is entered or imported for the secondary unique field, it will be checked in real time to ensure it is not shared by another record, and if so, it will ask the user to enter another value. This means that if a participant is completing a survey for a second time in which this feature is enabled, they will see the following pop-up box:

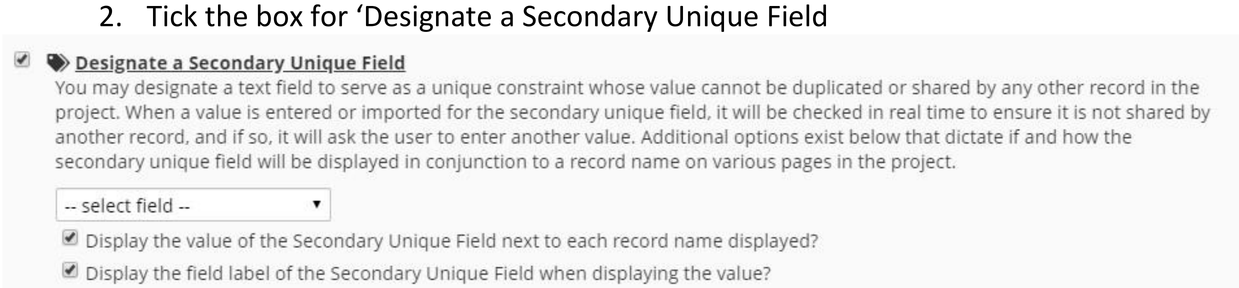


If it is a data entry form, the user will see this:



Note: this feature should be enabled **before** you start collecting real data. That is because if you are already collecting real data and there are duplicates in your project, you cannot enable this feature. It is not possible to specify that the combination of two or more fields be unique.
To add a secondary unique identifier:

1. On the Project Setup page, in the Enable Optional Modules and Customizations section, click on Additional Customizations
2. Tick the box for 'Designate a Secondary Unique Field



3. Click on the drop-down arrow for 'select field'. You will see a list of all field types in your project that are text box fields. Select a field and click on the save button

3.8 Order the records by another field (in Additional Customizations on the Project Setup tab)

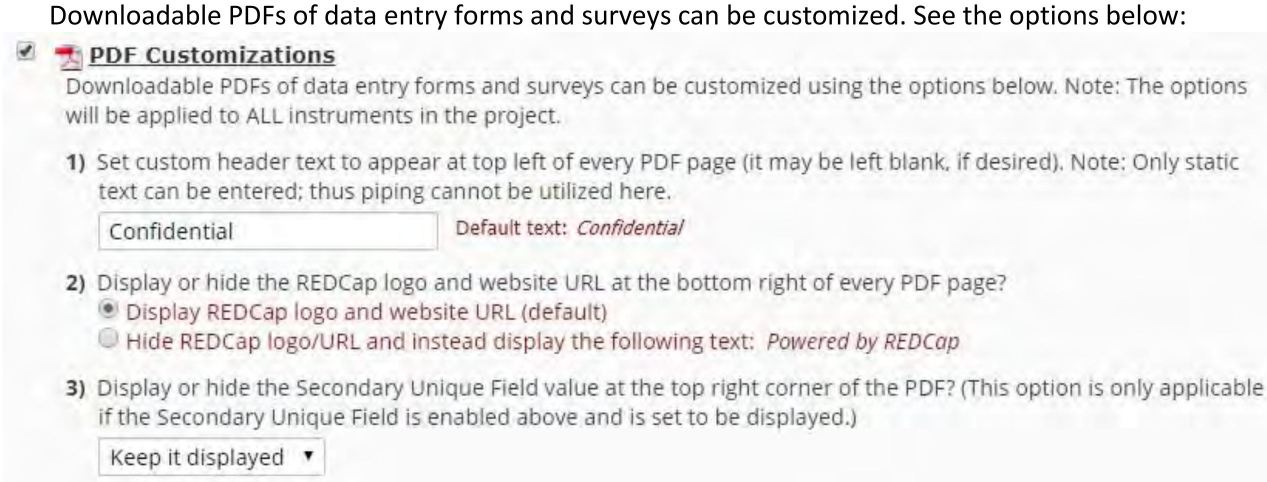
The default setup is that all records are ordered by their record name (e.g., Study ID) when displayed in the drop-
down lists on your data collection instruments, but you may alternatively order the drop-down lists by the values of another field in the project (e.g., last name), if desired. If you wish to order the records by another field, you can select the field by which you wish to order records via this customization.

3.9 Enable the Field Comment Log or Data Resolution Workflow (Data Queries) (in Additional Customizations on the Project Setup tab)

The Field Comment Log (enabled by default) allows users to leave comments for any given field on a data entry form by clicking the balloon icon next to the field.

3.10 PDF Customizations (in Additional Customizations on the Project Setup tab)

Downloadable PDFs of data entry forms and surveys can be customized. See the options below:


PDF Customizations

Downloadable PDFs of data entry forms and surveys can be customized using the options below. Note: The options will be applied to ALL instruments in the project.

1) Set custom header text to appear at top left of every PDF page (it may be left blank, if desired). Note: Only static text can be entered; thus piping cannot be utilized here.

Confidential — Default text: *Confidential*

2) Display or hide the REDCap logo and website URL at the bottom right of every PDF page?

- Display REDCap logo and website URL (default)
- Hide REDCap logo/URL and instead display the following text: *Powered by REDCap*

3) Display or hide the Secondary Unique Field value at the top right corner of the PDF? (This option is only applicable if the Secondary Unique Field is enabled above and is set to be displayed.)

Keep it displayed

3.11 Data Missingness (in Additional Customizations on the Project Setup tab)

Missing Data Codes: Set up your missing data codes for this project

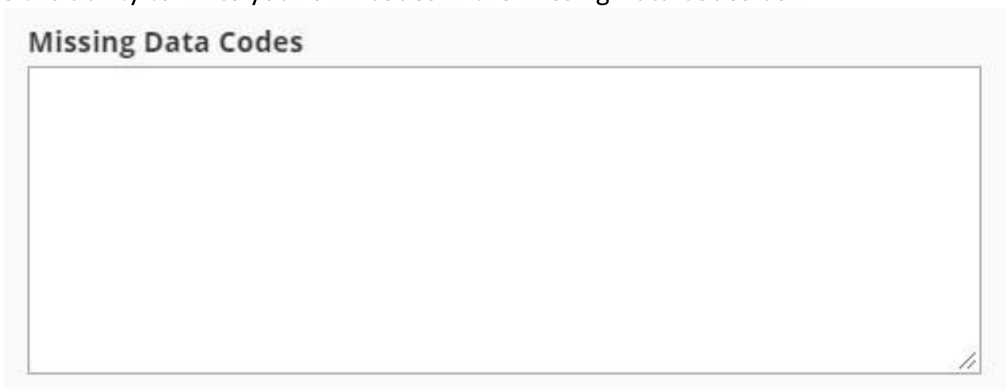
Fields that have a blank/missing value may be marked with a custom 'Missing Data Code' to note why the value is blank. These missing codes may be used to aid in data analysis by specifying why a field lacks a value. To enable this feature below, enter both the codes AND their labels for all the categories of missing data that you wish to use in this project. The missing codes should be coded just like the choices of a multiple choice field with *code + comma + label*, in which the codes can only have letters, numbers, dots, dashes, and underscores (e.g., '-999, Not asked' or 'UNK, Unknown'). If no codes are entered, this feature will remain disabled.

Additional instructions and notes:

- USAGE: After your missing data codes have been set up, you will see an 'M' icon next to each field when viewing a data entry form. Click the icon to open your list of missing data codes, and select one. Once selected, it will save the missing code as the literal data value for the field. Missing data codes can be used for any field type (e.g., date, slider, file upload fields). Since a missing data code is saved as the field value, this means that the field's missing data code can then be optionally exported in a data export or viewed in a report (if you so choose - this is an option when creating a report). Entering a missing data code must be done manually by a user via the user interface or through a data import (API or Data Import Tool), in which you may import the missing data codes as the fields' values in your data import file.
- TIP: When defining your missing data codes, please keep in mind to make sure that your missing code will never clash/overlap with a real value on a field in your project. For example, it you have an integer field where '-999' is a possible value, then you should not use -999 as a missing data code. This is because REDCap will not be able to know if this is a real value or if it is a missing code used to denote that the field is blank. Below to the right are some optional suggestions for missing data codes that you might consider using, but feel free to usage whatever missing data codes that you wish.
- NOTE: Behavior with branching logic - If a field should be hidden by branching logic, REDCap will typically ask the user (except on surveys) if they wish to delete the value of the field being hidden. But if the field has a missing data code saved for it, it will still hide the field but will not remove the missing data code as the field’s value. This allows a field to still be “blank” and have a missing code while being hidden by branching logic.
- LOGIC: Because missing data codes are stored as the literal field values, they may be used and referenced in logic throughout REDCap (i.e., logic for report filters, Data Quality rules, Survey Queue, Automated Survey Invitations, branching logic). For example, if you want to display a field on a form only if the previous field is blank and is marked with the missing data code 'NASK', your branching logic might be the folowing: [field] = 'NASK'. Additionally, a special function 'isblankormissingcode()' may be used in logic as a catch-all for determining if a field's value is truly blank or if it contains a missing data code. E.g. isblankormissingcode([age]), in which if age has a value of UNK (which might be a missing data code in a project), then it will return TRUE. And if the field has any non-blank/non-null value that is also not a missing data code, it will return FALSE.
- ACTION TAG: By default, the missing data code functionality is enabled for ALL fields in the project, but it can be disabled on a field-by-field basis by adding the action tag @NOMISSING for an individual field, in which this will hide the 'M' icon for the field on the data entry form and thus prevent usage of the missing data codes for the field.

- DATA EXPORTS: Please be aware that if you are exporting Missing Data Codes in your data into a statistical analysis package, the CSV data might not load correctly in this statistical analysis package and might throw an error. You might need to manually modify the syntax file before loading it into the stats package in order to allow your Missing Data Codes to be accepted for certain data types, such as date fields. Otherwise, you might want to try exporting your data without the Missing Data Codes.

You have the ability to write your own codes in the Missing Data Codes box:



Or you can select a code from a standardized list of missing data codes. It needs to be stressed here that a conversation with the statistician / analyst on the project must happen before implementing missing data codes. Many statisticians have their own preferences for handling / coding missing data and so their involvement at the design phase is critical. They should also sign off on the dummy data that is generated during testing to ensure the missing codes (and data in general) have been set up correctly.

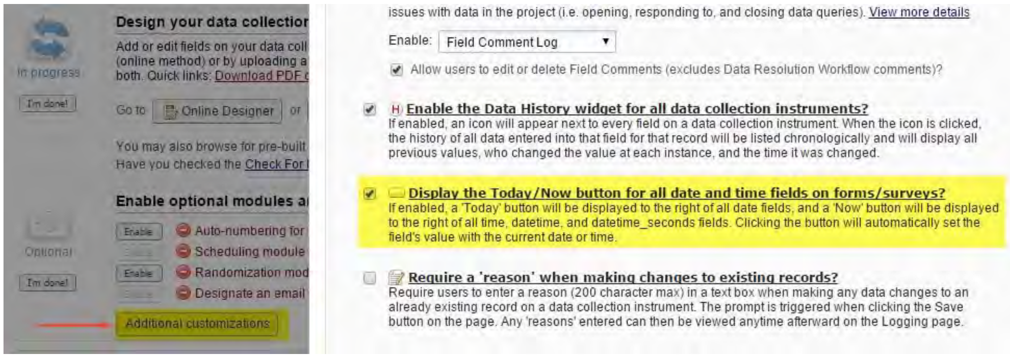
3.12 Enable the Data History widget for all data collection instruments (in Additional Customizations on the Project Setup tab)

When enabled, an icon will appear next to every field on a data collection instrument. When the icon is clicked, the history of all data entered into that field for that record will be listed chronologically and will display all previous values, who changed the value at each instance, and the time it was changed.

This setting is enabled by default. If you wish to disable the feature, go to Project Setup/Enable Optional Modules and Customizations, click on the Additional Customizations and un-tick the box (you will need to scroll down to see it):

3.13 Don't display the Today/Now button for all date and time fields on forms/surveys (in Additional Customizations on the Project Setup tab)

If you do not wish to have the Today icon appear next to your date fields, you may turn this setting off. Uncheck the box next to "Display the Today/Now button for all date and time fields on forms/surveys".



Note that this is a project-level setting. If you wish to set it for specific fields within the project, you would use the HIDEBUTTON action tag. For more information on Action Tags, please see this section of the User Guide.

3.14 Require a ‘reason’ when making changes to existing records? (in Additional Customizations on the Project Setup tab)

- With this option selected, the user must enter some text as a “reason for change” each time a form is saved – except when the record is initially created
- Users can find this intrusive for longitudinal or multi-form projects as the dialog box appears even when entering new data on a form that is not the first form (i.e. when the record is created)

4 Step 4 on the Project Setup page: Set up project bookmarks

Because your project is a series of webpages, you can technically bookmark any one of those webpages and have it appear on the left-hand navigation menu. This will allow you to get to that page with one click. So, if you find yourself navigating to a particular section of your project over and over again and it is not already on the left-hand navigation bar, you can make it a bookmark so you can get to it in one click. You can also add a bookmark to any other URL outside of REDCap.
To add a bookmark of a page within your project:

- Copy the URL of the page you wish to bookmark (click on the browser bar, select all and copy)
- Right-click on the Project Setup link on your left-hand navigation bar and open link in new tab
- Scroll down to “Set up project bookmarks (optional)” and click on “Add or edit bookmarks”
- Paste the URL into the “Link URL/Destination box”
- Enter the name of the URL into the Link Label box (for instance, Online Designer or Codebook)
- Tick the box “Opens new window”
- Click the “Add” button

Once you have created your first bookmark within your project, you can go to the bookmarks section of your navigation bar and click on the “Edit” button to get to your project bookmarks. It’s only when setting up your first one that you have to go to the Project Setup page to access Bookmarks.
Notes:

- Bookmarks can be re-ordered by clicking and dragging a bookmark record
- Edit buttons ( ) appear when you hover your mouse pointer over a bookmark's **Link Label** and **Link URL / Destination** values
- Use the delete button ( ) to remove a bookmark
- Link Type
    - **REDCap Project:** choose from the list of REDCap projects that you have permission to access
    - **Simple Link:** a simple URL to, for example, an external web page
    - **Advanced Link:** as with the Simple Link, a URL to, say, an external web page, but REDCap sends additional information (e.g. user and project info) to the target website as a means of verifying the identity of the REDCap user on that external site
- **User Access:** control which users of the current project can see the bookmark. Select either **All users** or select specific users individually by selecting **Selected users**

5 Step 5 on the Project Setup page: User Rights and Permissions

All accounts will be created by the WCH REDCap Administrator, who will also assign the user(s) to the approved projects. If requesting a new account, or modifications to an existing one, please email the REB / APQIP approval adding the person to the study, or if an Operational Support project, the approval from the Project Owner.

5.1 Data Access Groups

Like user accounts, Data Access Groups will be set up and administered by the REDCap Administrator. There are rare circumstances where a sponsor will be allowed to maintain these groups, but all requests will still be reviewed and approved by the Administrator. The information below is simply for information purposes.
A Data Access Group is an arbitrary entity that can be thought of as analogous to a study site. Individual users can be assigned to a single Data Access Group, as can project records. Records that a group user creates are automatically assigned to that group. **A user in a Data Access Group has access only to records that are also assigned to that Data Access Group.**

For example, you as the project owner create a Data Access Group called “Montreal Site”. Your collaborator from another institution has had a WCH REDCap account created for them by the REDCap administrator, and you assign her username to the Montreal Site group. The collaborator can view records that she creates or that you assign to Montreal Site, but not any records that are assigned to other groups, or that are unassigned to any group.
For more information on Data Access Group setup, see Create a Data Access Group under the Applications section of this User Guide.

6 Step 6 on the Project Setup page: Test Your Project Thoroughly

It is extremely important to test your project before moving it into production!

6.1 Purpose of Testing

The purpose of a database - and the function of database software - is to provide your data with structure and integrity that cannot be enforced using unstructured formats such as text files or spreadsheets.

The purpose of testing your database is to ensure that it has the structure and integrity checks that you expect and that it meets your requirements.

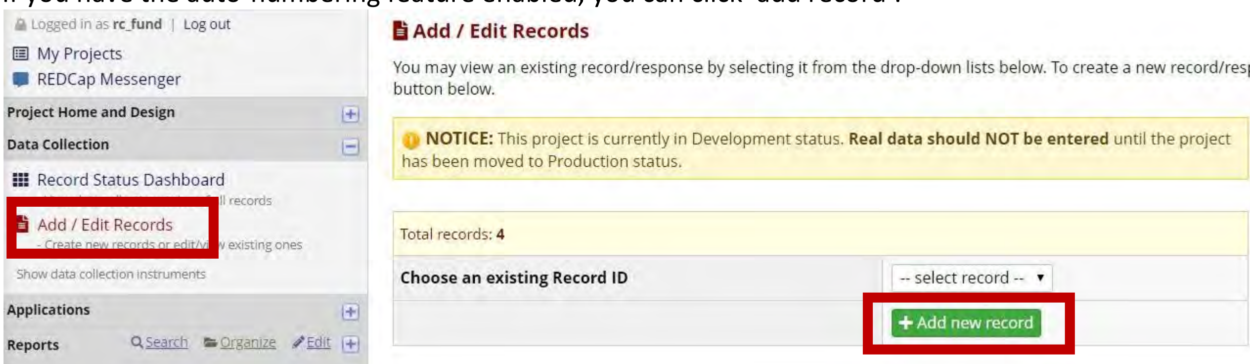
6.2 Quick Guide to adding test data

1. Add test record
    a. On the left-hand navigation bar click on '**Add/edit records'** and then click 'add new record'
        i. If it is a project where records are not auto-numbered, enter the record ID into the box to create a new record
    b. Fill out the form with test data; save and exit the form
    c. Repeat the above steps, answering the questions differently for each test record
2. View data
    a. On the left-hand navigation bar, click on 'Data Exports, Reports & Stats'
    b. Click on 'View Report' for report A – All Data
3. Export data
    a. If working with a statistician, consider exporting the test data and sending it to the statistician.
    b. If you might be sharing de-identified data, export the data, trying out the different de-identification options.
4. Have colleagues enter test data
    a. If data will be entered by colleagues via a data entry form…
        i. On the left-hand navigation bar click on User Rights.
        ii. Enter your colleagues' VUNet ID and click 'edit user privileges' iii. Give them access to the instrument iv. Ask them to login and add test data
    b. If data will be entered via survey…
        i. Click on Survey Distribution Tools
        ii. Click on the clipboard icon to copy the public survey url iii. Go to Outlook and paste the survey link into an email

6.2.1 Adding test data

Try creating a few test records and enter some data to ensure that your data collection instruments look and behave how you expect, especially branching logic and calculations. You can do this by clicking Add/Edit Records on the lefthand navigation bar.
If you do not have auto-numbering enabled, you will enter the unique for the new record:

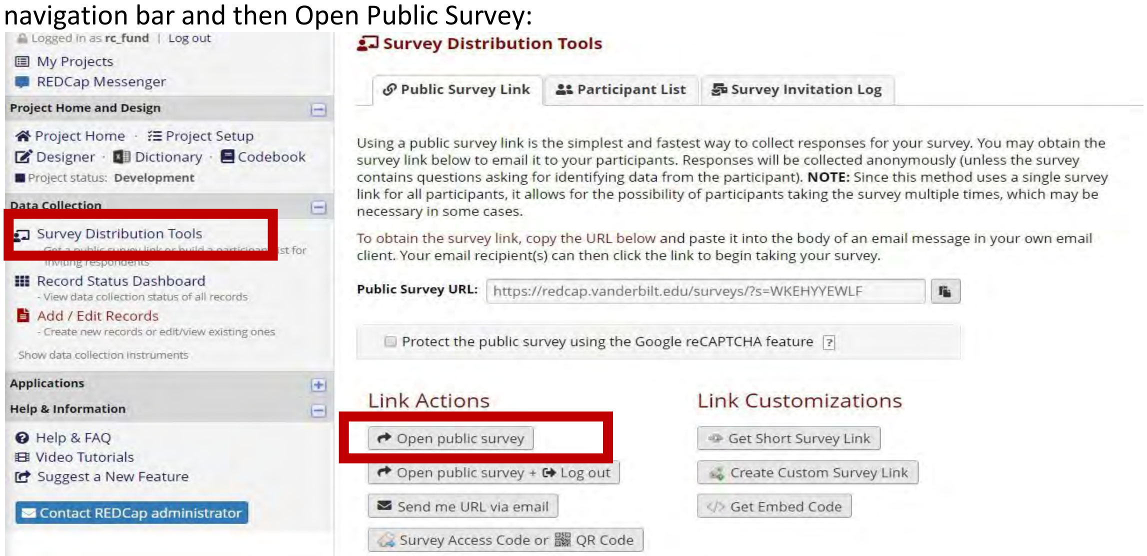
If you have the auto-numbering feature enabled, you can click 'add record':



Enter test data into the data entry form.

6.2.2 Adding test data for surveys

If you have surveys, complete the survey as if you were a participant by using the Public Survey Link. To access the public survey link, click on the Survey Distribution Tools link on the left-hand navigation bar and then Open Public Survey:



If you are not seeing the public survey link, that means you have either not enabled your first instrument as a survey or you have not set up your project to have surveys. You can enable surveys in your project in the first step listed on the Project Setup page. You can enable an instrument as a survey on the Online Designer page. (*You can get to the Online Designer by clicking on the Designer button on the left-hand navigation bar under Project Home and Design*.)

To share the public survey link with a colleague so that they can test the survey, click on the clipboard icon next to the Public Survey URL, paste the survey link into an email and send it to your colleague.

6.3 Specific things to check for when entering test data

- For continuous fields, such as dates and numbers, that have range validations, test around the boundaries by entering the minimum and maximum values (which should succeed) and then entering values just outside the valid range (which should trigger warnings). For example, if height should be 50 - 250 cm:
  ensure that 50 and 250 are accepted, and that 49 and 251 trigger a warning message.
- Test that your branching logic is working properly, skipping questions on pregnancy for male participants, for example.
- Check that required fields are marked as such.

Once you have some test records entered, review them by going to your Record Status Dashboard; create reports and export your data and view in Excel or one of the statistical analysis packages; review your Stats.

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 on it.

Design Tip: test on the type of device that your participants will be entering data

Designing a data entry form for use on a phone or tablet does not require many special considerations compared with data entry on a regular computer. Most important is to test your forms using the devices on which they will be used in the field. That way you can hope to identify any areas where you might wish to change.

One thing that can be worth considering is to use dropdown lists rather than text fields for entry of numbers. Even a lengthy dropdown list (one for weight, say, might have 20.0 kg up to 50.0 kg in 100g increments: 31 entries) might be easier for tablet users than a text box where they have to use the mobile keyboard.

Project Management Tip: Allow plenty of time for project development and testing

The WCH REDCap team is responsible for all aspects of REDCap – from server to project support and everything in between. We want to support our end users as much as possible, but we do have limits to the immediacy and type of support we can provide. Help us help you by allowing plenty of time for testing and deployment. If your project has a deadline by when it needs to be launched, be sure to start testing it at least two weeks in advance if it is built by someone on your team, and if it's built by the REDCap team, please ensure the proposed timelines will meet your project requirements. This will give you time to seek out our help if you have any problems.

7 Step 7 on the Project Setup page: Move Your Project to Production

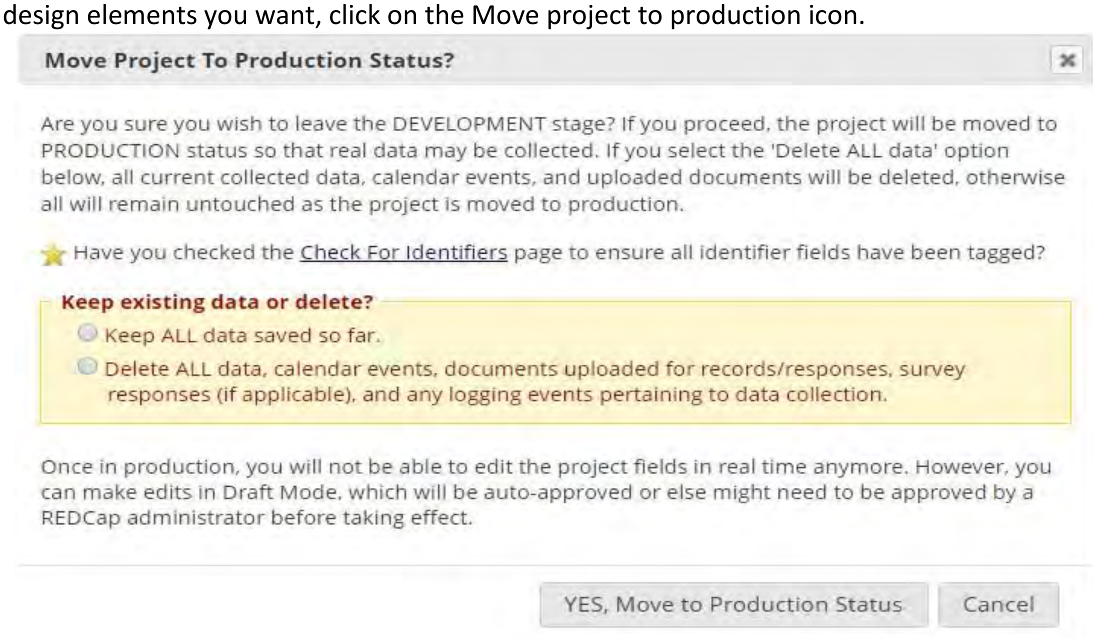
When a project is created, its default status is Development mode and any changes are deployed immediately, overwriting or deleting any existing data. This is fine because any data you are entering while in Development mode should only be test data, so it is ok if that data is damaged or deleted. Once you start collecting real data, however, it is always recommended that the project be in Production status.

Moving a project to Production status does three important things:
- It signals the data is real and important
- It makes the data recoverable in case of a data loss
- It creates a snapshot of the data dictionary so that when a database addition or edit is needed, any changes critical to the data are held until REDCap has the chance to review the impact of the change

You are strongly encouraged to test your project thoroughly before you move your project into Production.

7.1 How to move your project to Production mode

Once you have ensured your project is capturing all of the fields you need and has all of the design elements you want, click on the Move project to production icon.



You will have the option to delete all the test data you entered with one click. If you enter test data after you are already in production, you will have to manually delete each individual record.

7.2 Check For Identifiers

Also note the **Check for Identifiers** step. It is recommended that you perform the check for identifiers to ensure that all fields that contain participant identifiers – or indeed may contain any information that could potentially be used to identify a participant – are marked as identifying fields. This helps to protect confidential data from access by users that are not permitted to view it.
Once in production, you CANNOT make changes to your project – you will need to contact the REDCap Administrator who will review and categorise your requested change(s). All REB / APQIP approvals or acknowledgements for the change(s) need to be submitted before any

discussions can be had, and may require additional submissions depending on the change request.

- Major changes: any changes impacting existing data or a result of poor UAT or urgent requests that is not critical functionality or at the discretion of WCH REDCap Services. Any efforts required by WCH REDCap Services will be billed at the rate of $100/hour.
- Minor changes: any changes that do not impact existing data and not requiring REB amendment and at the discretion of WCH REDCap Services. Any efforts required by WCH REDCap Services will be provided at no cost.

7.3 Advantage of being in production mode

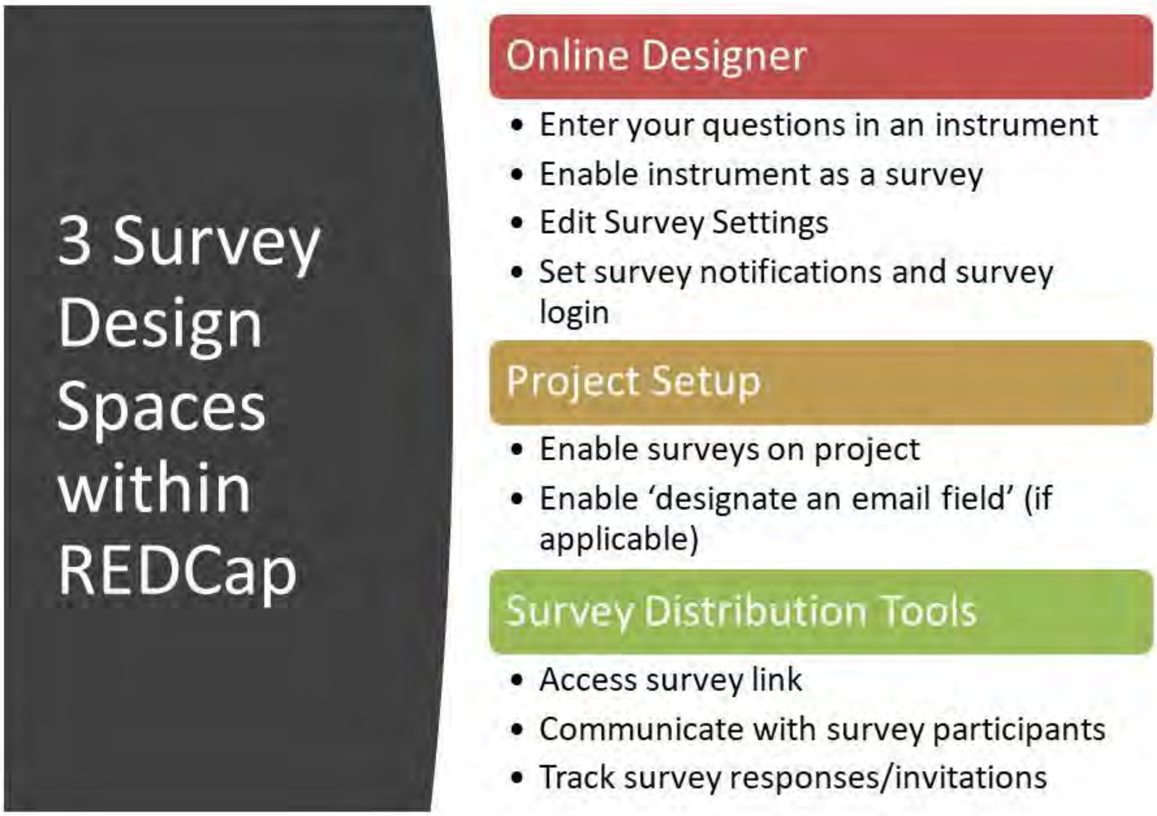
While in Production Mode you are able to collect and monitor live data. Please note that projects that are in development will regularly have their data purged unless specifically requested by the study team. If you want your test data retained, it is advised that you download the dataset on a regular basis to ensure that it's available.

7.4 Project status change

Once your project is in production your project status will indicate Production on the left-hand navigation menu. Similarly, when you are on your My Projects page, you will notice that the icon next to your project name is changed from a wrench (for development) to a green box with a checkmark (for production.)

8 Surveys

3 main spaces to design/manage your survey



8.1 Survey Wizard

For step-by-step guidance about setting up surveys, we highly recommend you use the Survey Wizard. It is an interactive online tool that addresses when to enable survey functionality, what to consider when choosing a survey model, and reviews survey setting options.

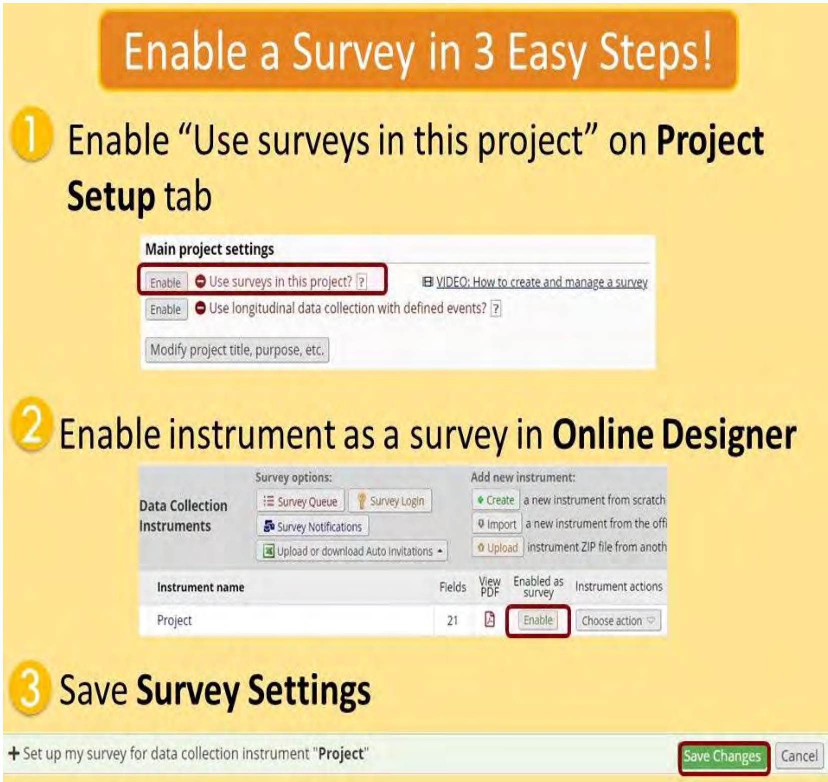
8.2 Quick Guide to Creating a Simple Survey

1. From the home screen or My Projects tab within REDCap, click on the New Project button.
2. Name your project, select a purpose, leave the default choice of creating an empty project (blank slate) and click Create project.
3. On the Project Setup page where you land, click the Enable button for "Use Surveys in this project?" (the first button on that page, under Main project settings).
4. In the next section of the Project Setup page, click on the Online Designer button.
5. Click the Choose action button and select 'rename'. Change the instrument name from 'Form 1' to whatever you want to name your survey.
6. Click on the instrument name to enter into the instrument. Click the 'add field' button to add questions to your survey. For more information on adding fields, see this section.

7. After adding all your questions, scroll to the top of the page and click on the blue button 'return to list of instruments'
8. Click the enable button under 'Enabled as survey'. You will be brought to the Survey Settings page.
9. Make any selections you'd like on the Survey Settings page. At minimum (even if you don't make any selections), click on the 'save changes' button. This finalizes the conversion of your instrument from a data entry form to a survey. See Survey Settings for more information.
10. On the left-hand navigation bar, click on Survey Distribution Tools (under Data Collection). Click on the "Open public survey" button to see how your survey looks.
11. Enter test data into the survey. See this for more information.
12. On the survey distribution tools page, click on the clipboard icon to copy your public survey link. Paste the link into an email and send it to your colleagues to enter test data.
13. Go to Data, Exports, Reports & Stats (under Applications on your left-hand navigation bar). Click on Report A to view all your data. See this for more information on reports.
14. If needed, click on the Designer button (under Project Home and Design on your left-hand navigation bar) and then click on your instrument name to make any adjustments to your survey.
15. After your survey is looking the way you want, click on Project Setup (on your left-hand navigation bar under Project Home and Design) and click on the last button on that page – Move project to Production. You can select the option to delete all the records (if all your records are test records). See here for more information.
16. Share you survey link. Click on Survey Distribution Tools (in the Data Collection section on the left-hand navigation bar) and click on the clipboard icon. You can then paste the url into an email, post on a website, etc. If you wish for participants to complete the survey only once, see Survey Delivery Options to learn about using the Participant List to create one-time use only links.

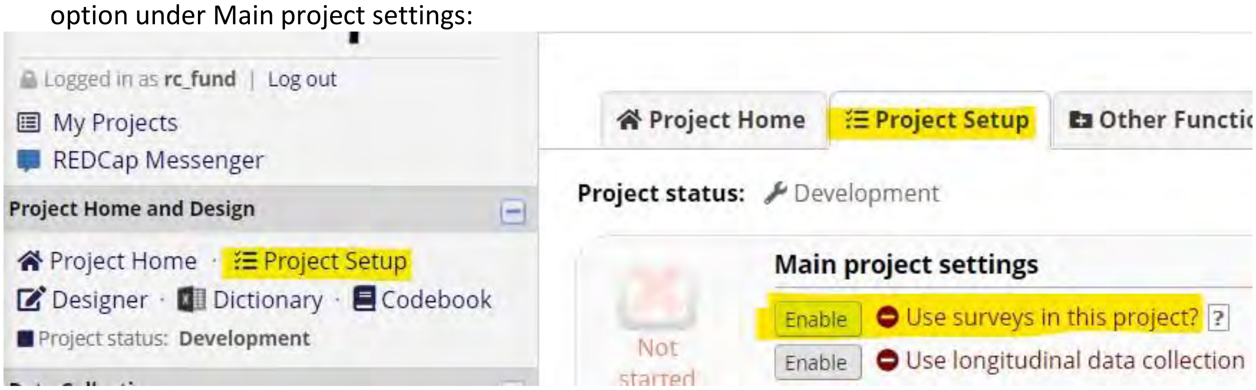
A video tutorial of creating a simple survey can be found at this link:
https://vimeo.com/435866091/bac2fc64bc

8.3 Quick Guide to Survey Setup

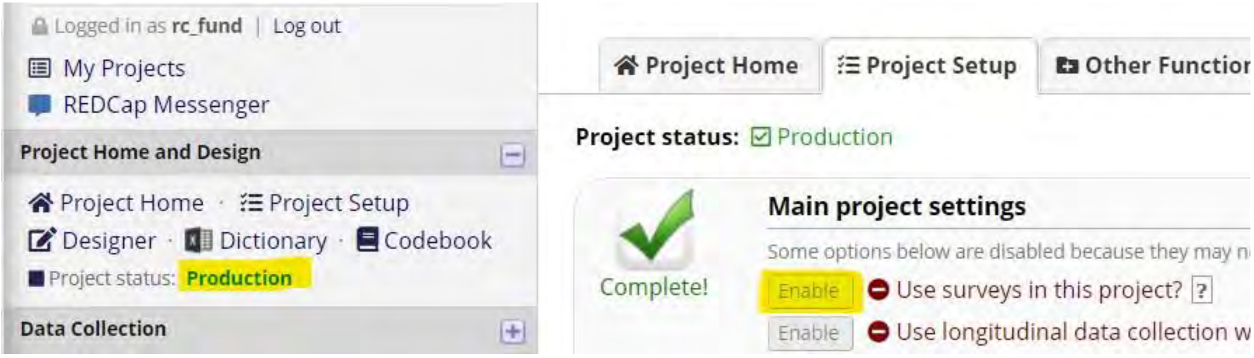


8.4 Enable Surveys within the project

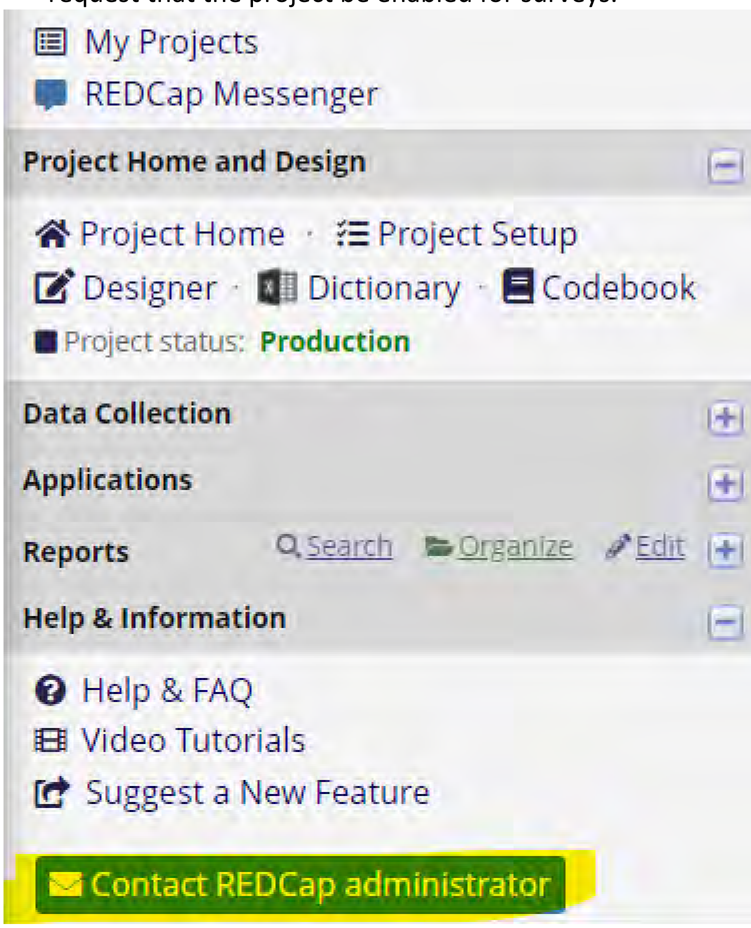
If you plan to use surveys in your project, you must go to the Project Setup page and click the first option under Main project settings:



If your project is in Production mode, the Enable button will be greyed out:

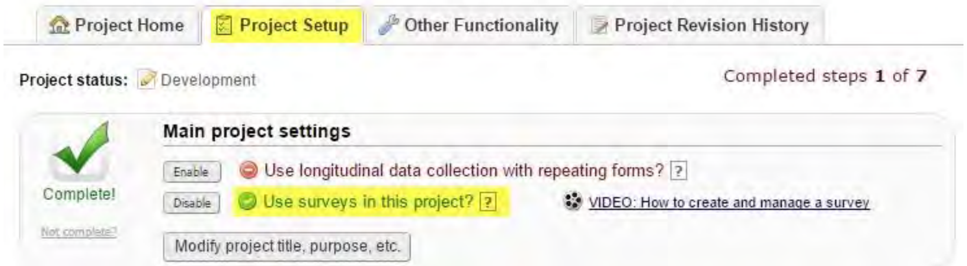


You will need to click on the ‘Contact REDCap administrator button’ from within your project and request that the project be enabled for surveys.

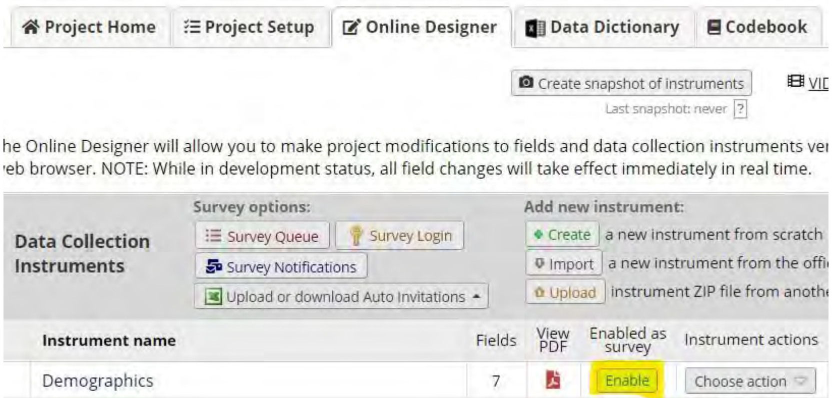


8.5 Enable Your Instrument as a Survey

Once you have enabled the “Use surveys in this project” setting under Project Setup…



… you will want to indicate which data collection instrument(s) will be used as survey(s). Under Online Designer, click 'Enable' next to the data collection instrument you want to use as a survey.



You will then automatically be brought to the page where you can setup Survey Settings. You can leave the default settings or make adjustments. But you must click the 'save changes' button in order for the instrument to convert to a survey. If you navigate away from the page and do not save changes, your instrument will remain a data entry form.

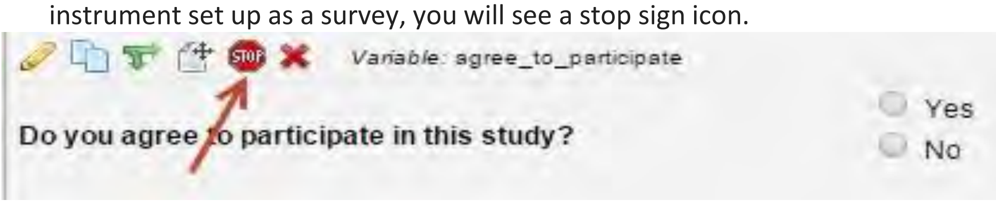
8.6 Field function in Surveys

Field in Online Designer	Survey Settings	Result
Begin New Section	One section per page	Survey split up into multiple pages
Choice question set with Stop Action		Survey will end for participant if they select the specified choice
Validated for email	Confirmation email set to 'yes'	Confirmation email will automatically get sent to participant
Radio buttons and checkboxes (drop-down lists aren't eligible)	Enhanced buttons	Mobile-friendly!
Branching logic	Questions will be custom-numbered	No question numbers next to survey questions
Numbering in field label	Question numbering set to custom	Will see question numbers next to survey questions

8.7 Stop Action

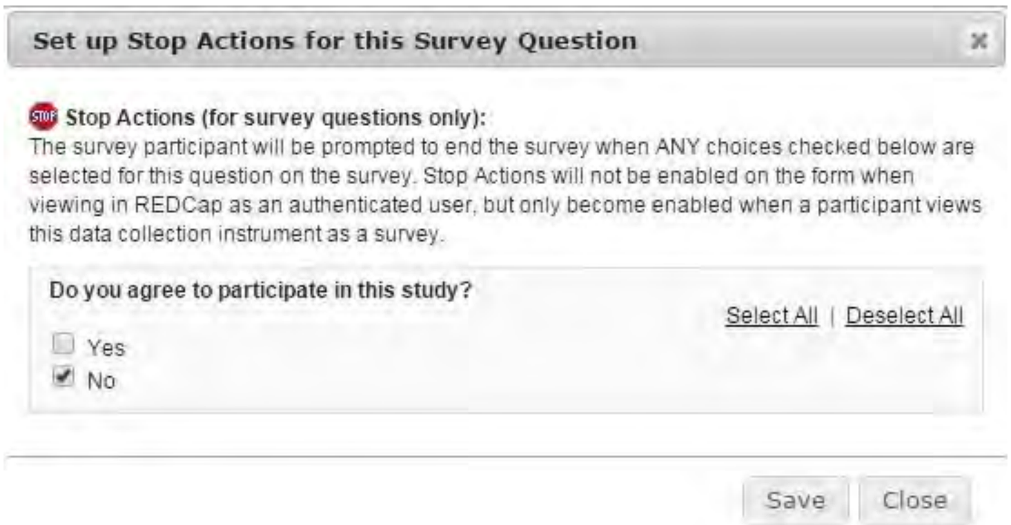
The Stop Survey action will prompt the survey participant to end the survey when a specific answer is given. The stop survey action is available on Drop-down List, Radio Buttons, Multiple Answers, Yes/No and True/False field types.

Once you have created one of the field types listed above and you have your data collection instrument set up as a survey, you will see a stop sign icon.

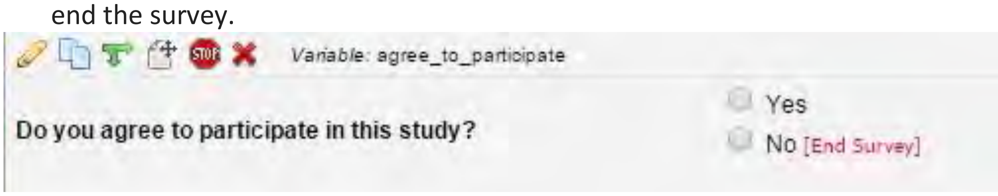


To add the Stop Survey logic, click on the stop sign icon. The Stop Survey logic box will appear. Select the answer choice that should prompt the survey participant to end the survey and click Save.

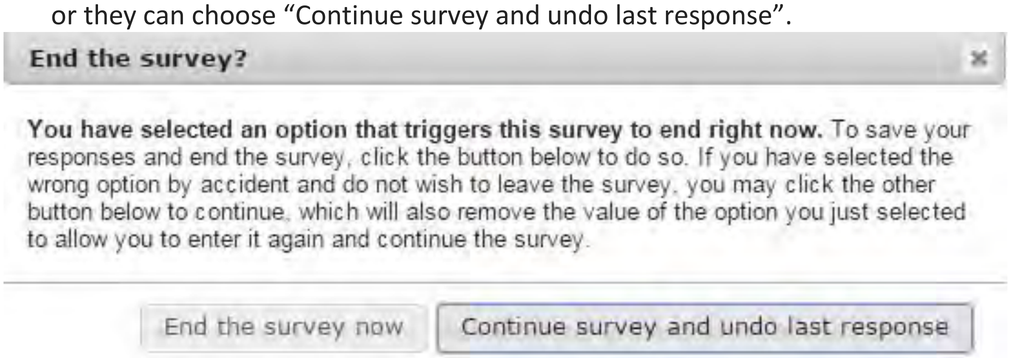
In this example, I want the survey participant to be prompted when they click No.



Notice that once the Stop Survey logic is setup, text appears next to the answer choice that will end the survey.



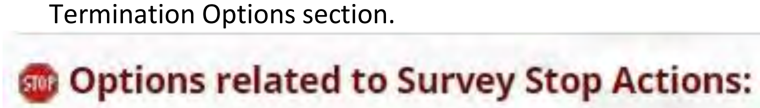
When the participant takes the survey and they answer No, they will receive the following message. The message is hard coded and cannot be changed. The participant can either choose to “End the survey now” which would take them to the Survey Acknowledgment text or they can choose “Continue survey and undo last response”.

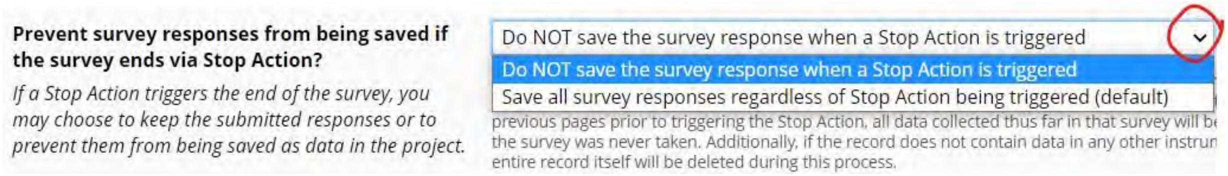


Please note: REDCap records the partial response as a completed response and saves the data. This is even if there are required questions on the survey that are not completed.

Prevent survey responses from being saved if the survey ends via a Stop Action

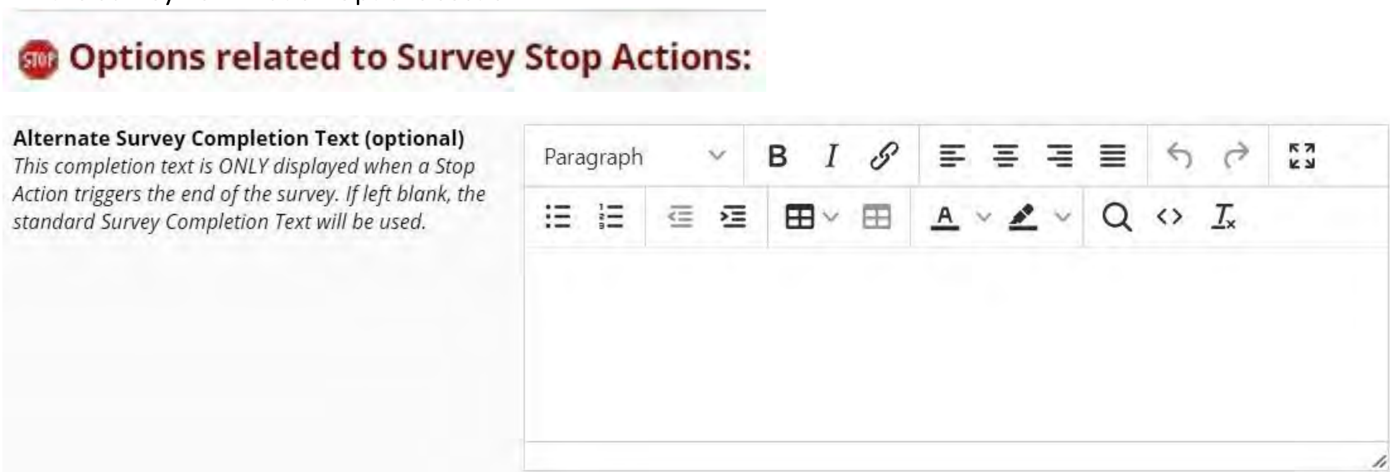
If desired, you can choose to prevent submitted responses from being saved in the project if the survey ends via a Stop Action on any field. This is useful if you do not wish to keep the data for ineligible participants, for example. This means that if a one-page public survey is started but ends via Stop Action, no data from that response will be saved into the project (i.e., no new record will be created). You can make this choice via Survey Settings in the Survey Termination Options section.





Alternate survey completion text if the survey ends via a Stop Action

You can set alternative survey completion text that is displayed in place of your standard survey completion text whenever a survey ends via a Stop Action on any field. For example, this could be useful if it doesn't make sense for ineligible participants to see the same survey completion text as those who completed the survey fully. You set this up via Survey Settings in the Survey Termination Options section.

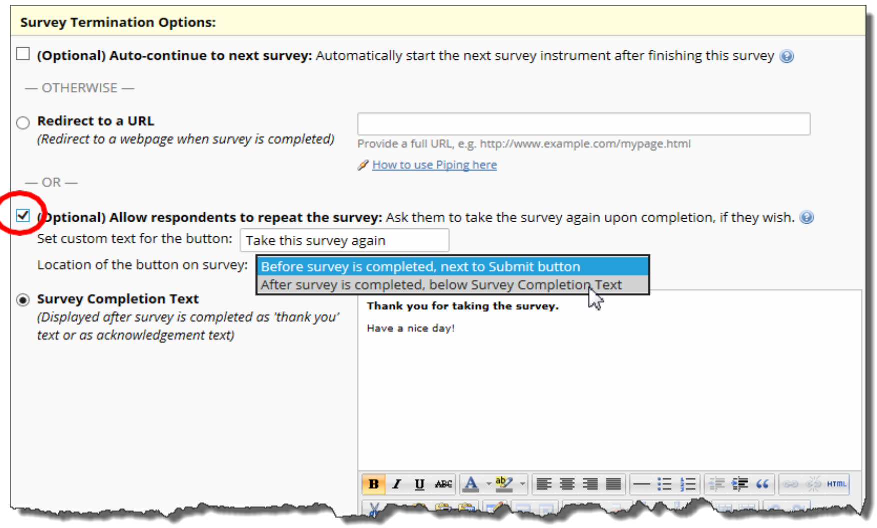


8.8 Enabling Repeating Instruments for a Survey Instrument

A Survey can be set up as a repeating instrument. You need to complete the steps largely in order, however.

- **Enable** Surveys for the Project
- **Build** the Instrument (at the very least, name it)
- From Project Setup, **Enable** Repeatable Instruments. Click **Modify** to select the Survey(s) to be Repeated
- From Online Designer, **Enable** the Instrument as a Survey, opening the Survey Settings page From Survey Settings, Survey Termination Options: o **Check the Checkbox** to Enable the Survey to be Repeated o Add optional custom text to the button o Select the location for the Repeat button to appear

- Click **Save**



You MUST check the box to enable the Repeating feature on the instrument.

For more information about Repeating Instruments, see this section of this User Guide.

Survey Design tip: Validation check error messages

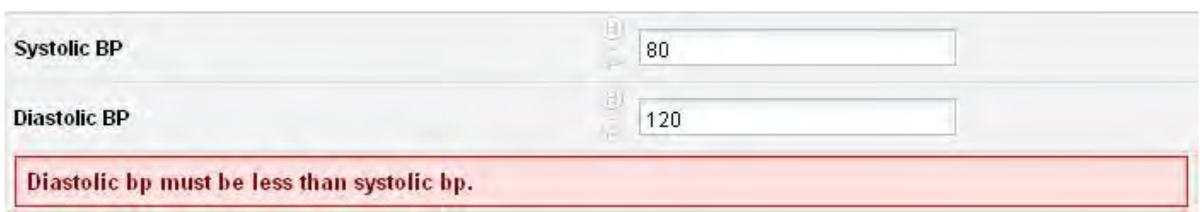
Descriptive Text fields can be useful for displaying an error message of a cross-field validation check. For example:

<div class="red" style="font-weight:bold;">Diastolic bp should be less than systolic bp</div>

Used with a branching logic expression along these lines:

[systolic_bp]<>'' and [diastolic_bp]<>'' and [diastolic_bp]>=[systolic_bp]

Produces an outcome like this:

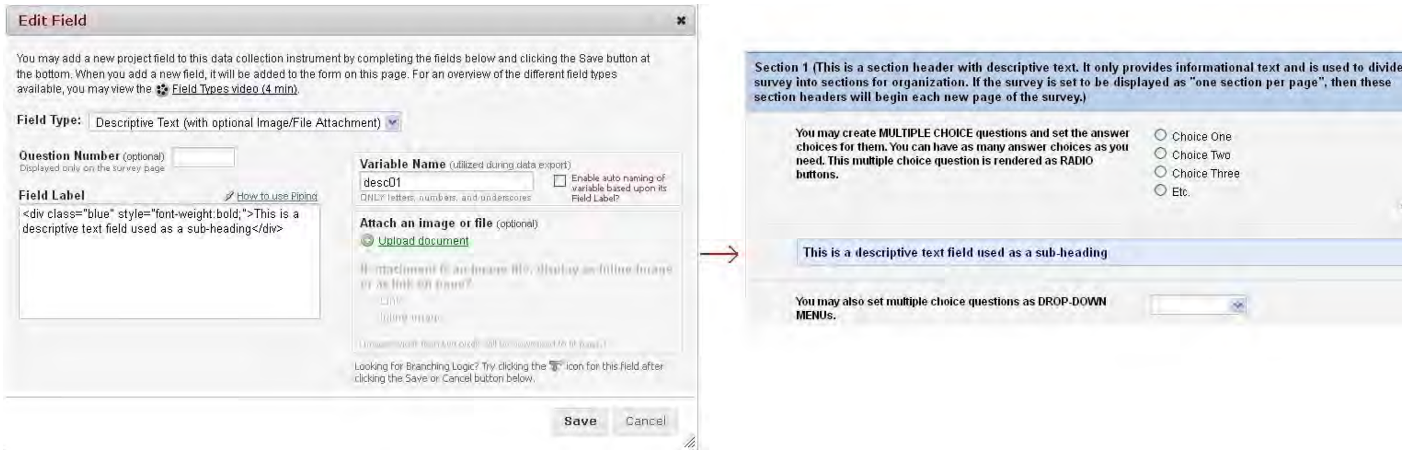


Survey Design Tip: Using Descriptive Text field as a section sub-heading

If you want to break up the content of the survey page but don't want the participant to have to go to a new page (which is what a 'Begin New Section' field type will cause), use the descriptive text field instead.

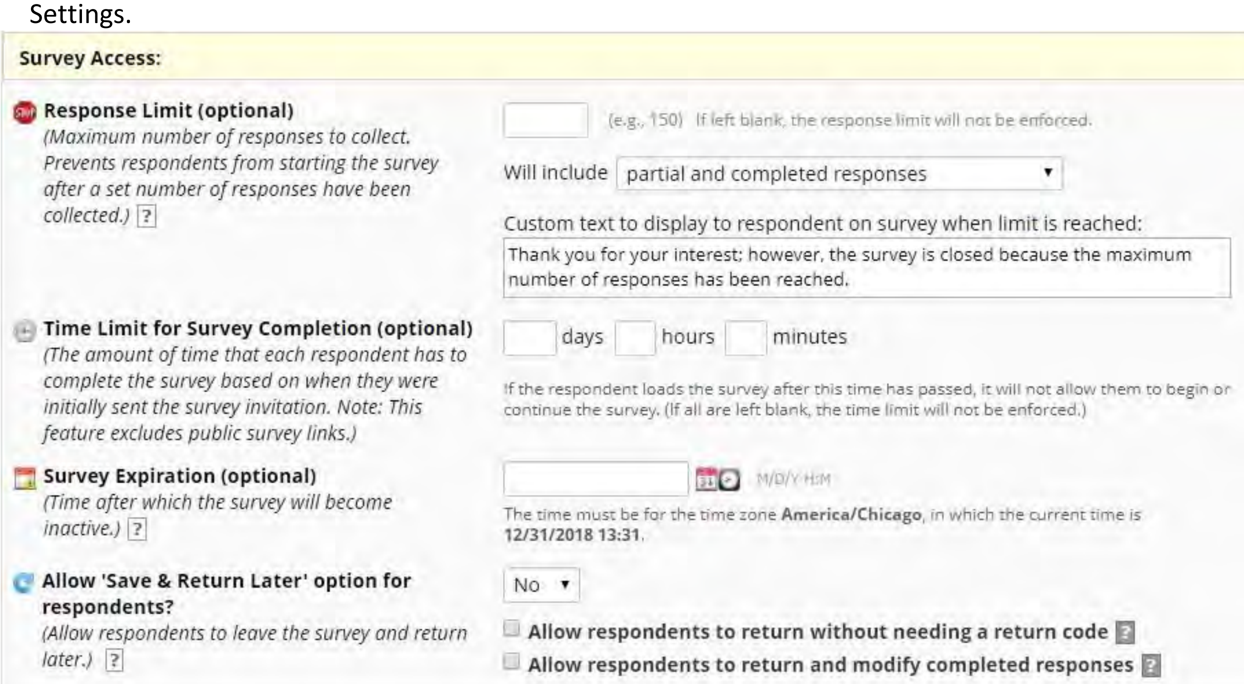
For example, using html coding you could type this as your field label:

<div class="blue" style="font-weight:bold;">A descriptive text field used as a subheading</div>



8.9 Survey Access in Survey Settings

How a survey participant accesses the survey can be set in the Survey Access section of Survey Settings.



8.9.1 Response Limit for a survey (optional): Default is blank

This setting prevents respondents from starting the survey after a set number of responses have been collected. You can specify if a response is only completed responses or partial/completed responses. You can also modify the stock language that is shown when the limit is reached.
For a comparison of how this differs from other survey expiration options, see this section of the User Guide.

8.9.2 Time Limit for Survey Completion

You can use this setting if you wish to limit the amount of time a respondent has to complete a survey after it was sent to them. This only works when you have a participant list – it will not work on public survey links. It's ideal if you want to keep a survey open but will have rotating

groups of people taking it. Note: the language displayed to the participant is not customizable.
For a comparison of how this differs from other survey expiration options, see this section of the User Guide.

8.9.3 Survey Expiration (optional):

You may enter a date/time you would like for your survey to expire. This saves you the trouble of going to survey settings and changing the survey status to inactive (especially helpful if you want the survey to go offline when you are not at work!) For a comparison of how this differs from other survey expiration options, see this section of the User Guide.

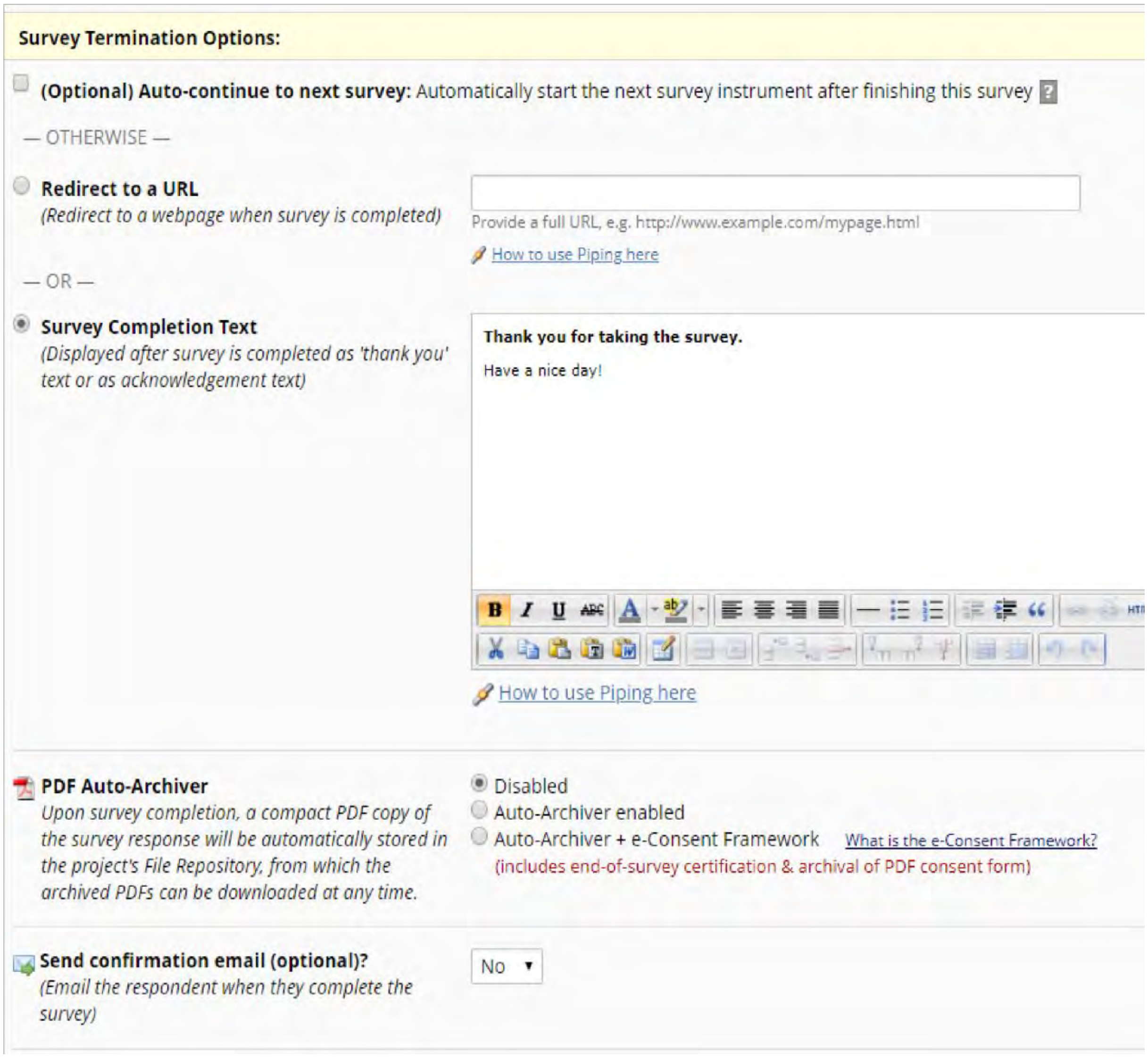
8.9.4 Allow 'Save & Return Later' (Save and Return Later) option for survey respondents:

You may enable this option if you would like your participants to be able to come back and finish taking their survey.
If enabled, the participant will receive a generated code they must enter in order to continue. If you want them to be able to return to the survey without needing a code, you can check that box. **NOTE: If you are collecting identifying information (e.g., PII, PHI), for privacy reasons it is HIGHLY recommended that you leave the option unchecked so as to enforce a return code.**
You may also indicate if you would like your participants to be able to return and modify their completed responses.

To set up Save and Return for a survey:

1. Go to Online Designer
2. Click on Survey Settings of the survey to which you want to apply this feature
    a. If you have multiple surveys in a project, you will need to perform these steps for each survey for which you wish to have this feature.
3. Scroll down to the Survey Access section
4. Change the 'Allow save and return later option for respondents?' answer to 'yes'.
5. If you want survey respondents to be able to return to the survey without a code, tick the corresponding box.
    a. If you don't tick the box, the survey respondent will be given a code on the screen that pops up once they hit the 'save' button. They will need to write down the code or provide their email address to have it emailed to them. Then when they return to the survey, they will need to enter that code to access the survey.
    b. If you do tick the box, the survey respondent will simply have to click on the survey link and will immediately have access to the survey
6. If you want survey respondents to be able to modify any answers they've already entered, tick the corresponding box.
7. Scroll down and click on the 'save changes' button.

Survey Termination Options in Survey Settings



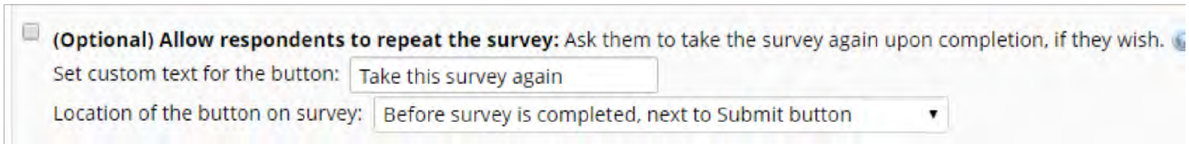
8.9.5 Auto-continue to next survey

Click this if you have more than one survey and you would like the next survey to automatically start as soon as this survey is completed. If you want the respondent to complete a subsequent survey at a later time or only if they answered questions with a specific answer, then you would not want to enable this feature. See Survey Invitations for further information. Note: if you have auto-continue enabled and then set up a Survey Queue, auto-continue is not automatically disabled. In fact, it will trump your Survey Queue settings.

8.9.6 Redirect to a URL

If you would like the participant to be redirected to another URL after they have completed their survey, enter the full URL. For instance, if a person is registering for an event and you have a website for your event, you could enter that website here.

8.9.7 Allow respondents to repeat the survey



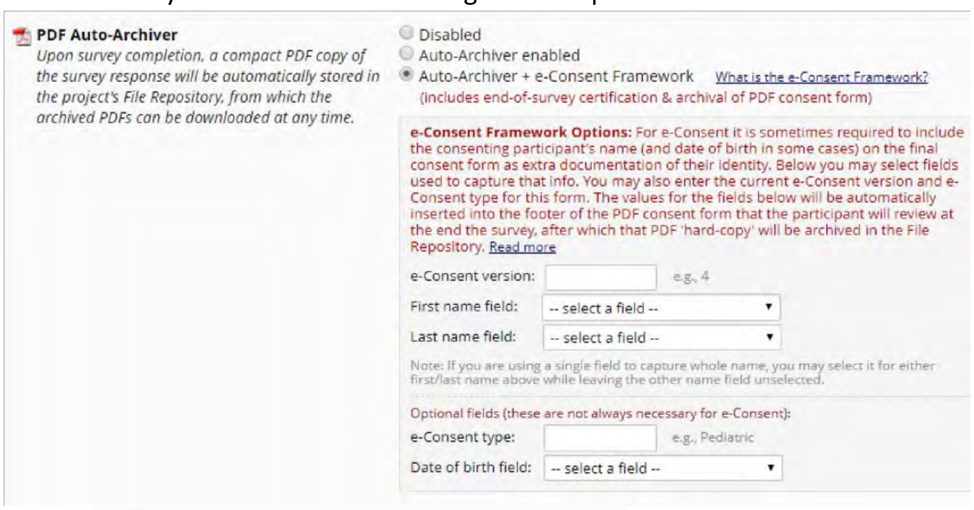
If the instrument is enabled as a repeating instrument, you will see these options in the Survey Settings.

8.9.8 Survey Completion Text

Enter any text you wish to display after the participant has finished taking your survey. The default text is "Thank you for taking the survey. Have a nice day!"

8.9.9 PDF Auto-archiver

With this setting enabled, upon survey completion, a compact PDF copy of the survey response will be automatically stored in the project's File Repository, from which the archived PDFs can be downloaded at any time. The default setting for this option is 'no'.



8.9.10 Auto-Archiver + eConsent Framework

This setting not only will save the version of the completed survey to the file repository, but it will provide a summary screen to
the respondent. The respondent has to review that summary screen before clicking submit.
Auto-Archiver + eConsent Framework

Per WCH Requirements, including eConsent in your project must be approved by the REB. This feature will be turned off if the Protocol or an amendment does not explicitly state the eConsent Framework will be used. For Operational Support Projects, use of the framework will be at the discretion of the Project Owner.

8.9.11 Send survey confirmation email in Survey Settings

If you would like the participant to receive a confirmation email once they have completed the survey, use the drop down and select Yes.

8.9.12 Setting who the email comes from

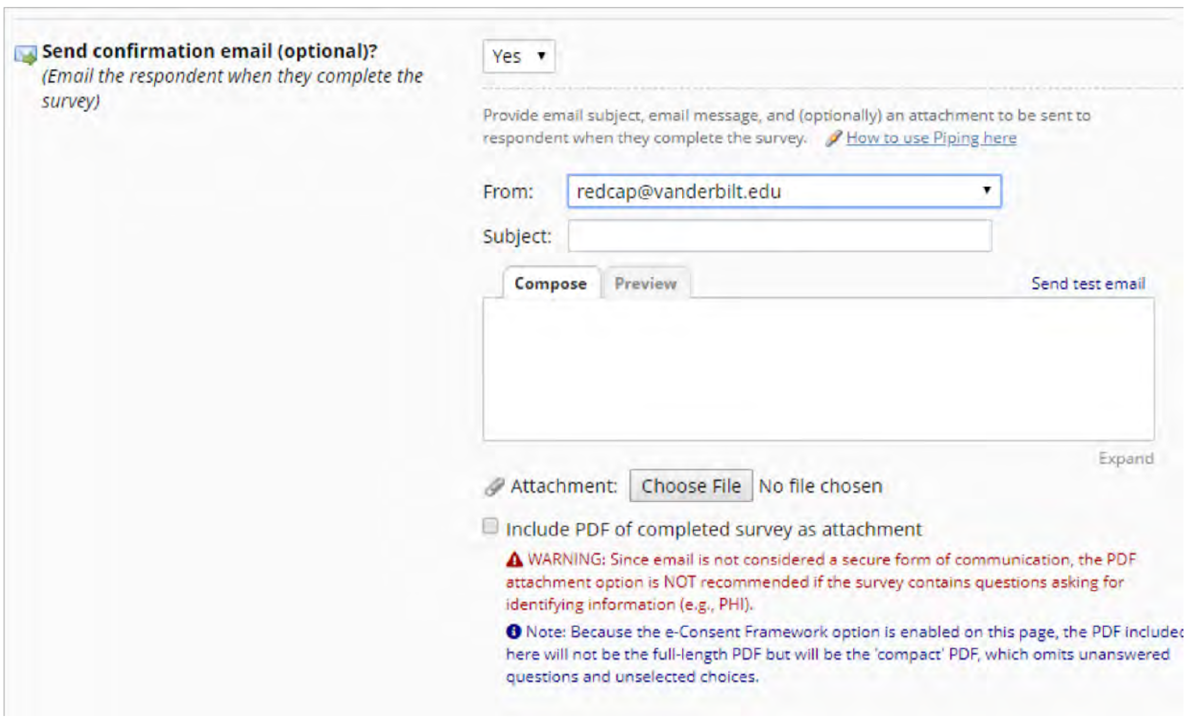
There is a drop-down arrow next to the ‘From’ box when setting your survey confirmation email. If you click on it, you will see the email addresses associated with any user on the project. If you want the email to come from an email address that is not listed in that drop-down list, see the instructions regarding Associating another email address.

Enter the subject and the body of the message.

You may also add an attachment to the email by clicking Choose File or automatically attach a PDF of the completed survey as an attachment. The PDF of the completed survey will show all the questions and choices in the survey – not just the questions and choices selected.

Since email is not considered a secure form of communication, the PDF attachment option is NOT recommended if the survey contains questions asking for identifying information (e.g., PHI).

If you send a confirmation email to the participant and you have the eConsent framework enabled, the participant will receive a compact version of the PDF of their survey responses. That means that they will only see the questions they answered (it will omit unanswered



questions and unselected choices.) You can use html coding in the confirmation email.

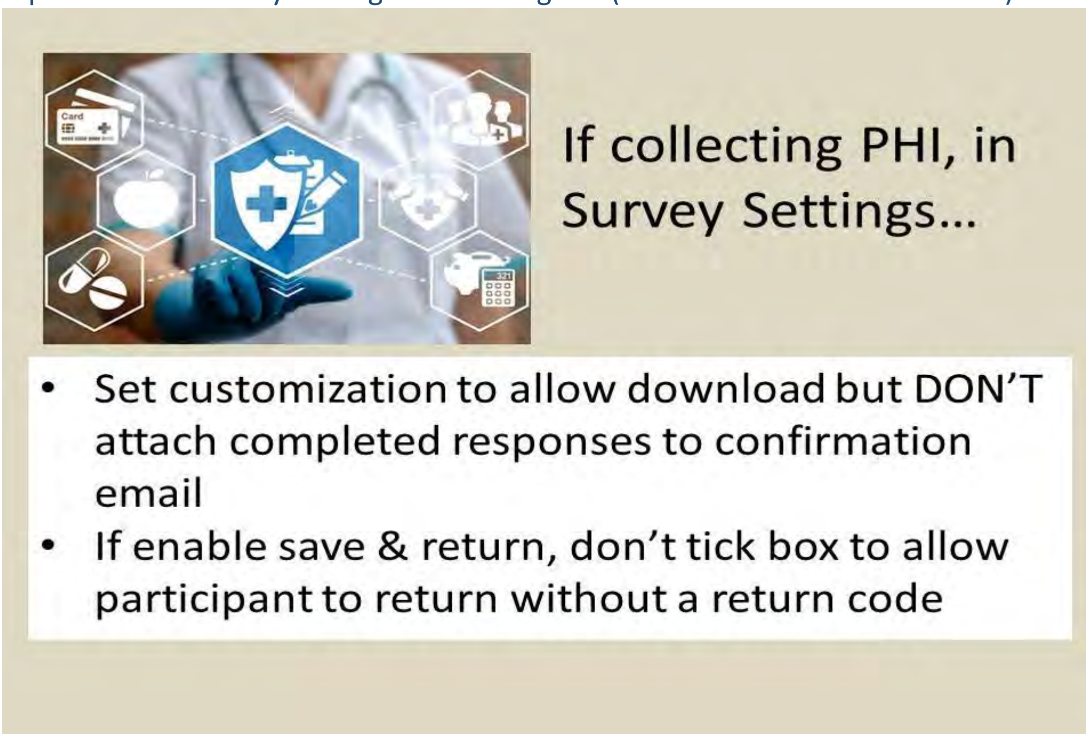
8.10 Inactive Survey Comparison

There are several ways a survey can be taken offline. Here is a side-by-side comparison to help you choose the one that best suits your needs:

	Survey Status	**Survey Expiration**	**Response limit**	**Time limit for survey completion**
Where to find	At the top of Survey Settings page	In the Survey Access section of Survey Settings	In the Survey Access section of Survey Settings	In the Survey Access section of Survey Settings
Manual/Automatic	Manual	Automatic	Automatic	Automatic

Who it affects	All survey participants	All survey participants	All survey participants	Individual participants, based on the survey send time
Timing	Not time-specific	Time-specific	Not time-specific	Time-specific
Participant list	Not required	Not required	Not required	Required

Best practices for Survey Settings if collecting PHI (Protected Health Information)



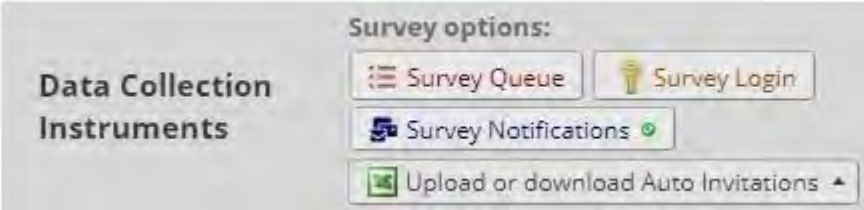
Survey Design tip re: User Access

In the User Rights application, you will notice that you can limit a user's access by instrument. So, when designing your project, you might think about breaking up the information that will be entered into separate instruments, in order to restrict access. For example, say you have an application where you collect an applicant's merits, demographics, and scholarship information via survey. If you have a committee reviewing the applications, you may not want them to consider the applicant's demographics or the fact of whether or not the applicant is requesting a scholarship. In this instance, you could have separate those questions into 3 different surveys. You could enable survey auto-continue, so that the applicant can complete all 3 surveys in one sitting. Then, behind the scenes the committee member would be added as a user to the project but only be given access to view the merits survey.

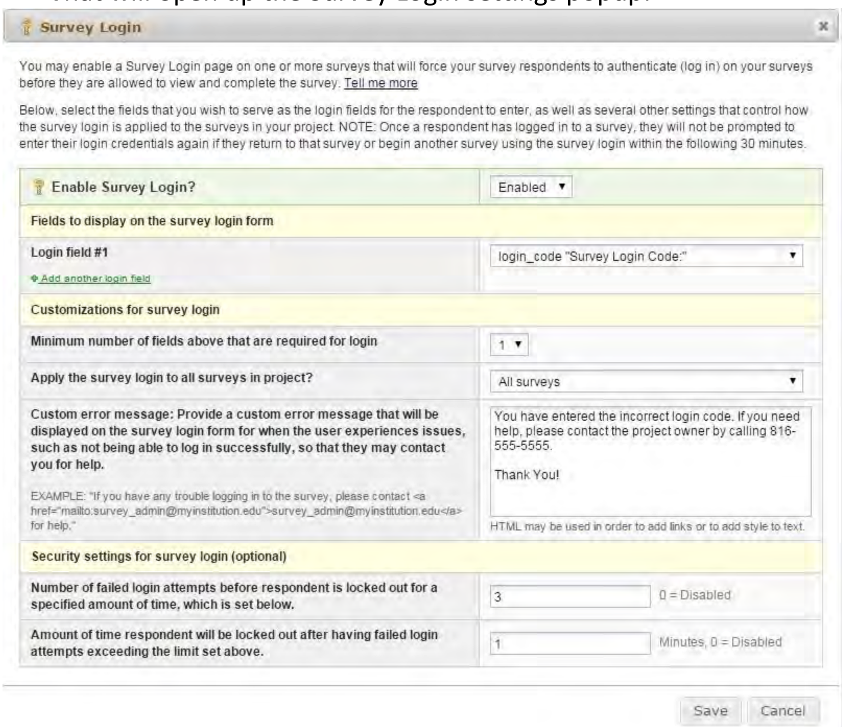
8.11 Survey Login

You can provide improved security for your surveys with a survey login form, in which respondents will be required to enter some login credentials – their date of birth, for example – in order to begin a survey or (if the "Save & Return Later" feature is enabled) to return to a previously entered survey response.

To enable the Survey Login feature,go to Online Designer and click the **Survey Login** button at the top of the instrument list.



That will open up the Survey Login settings popup:



Login Field # 1: Use the drop down and select a field from your project. If you would like to add another login field, click the Add another login field link.

Minimum number of fields above that are required for login: If you have more than one field that you are using as the login, indicate how many of the fields are required. For an example, you might have three fields but only two of them are required to be answered in order to log in.

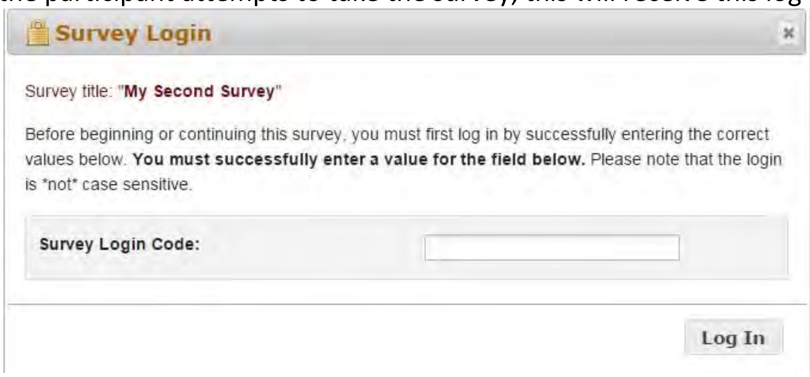
Apply the survey login to all surveys in this project: Use the drop down and indicate if the survey login should be used for all surveys or if you would like to specify the surveys this will be used for. If you would like to specify which surveys this will be used for, you will need to navigate to survey settings.

Custom error message: Enter a custom error message that will be displayed if the participant experiences difficulty logging in.

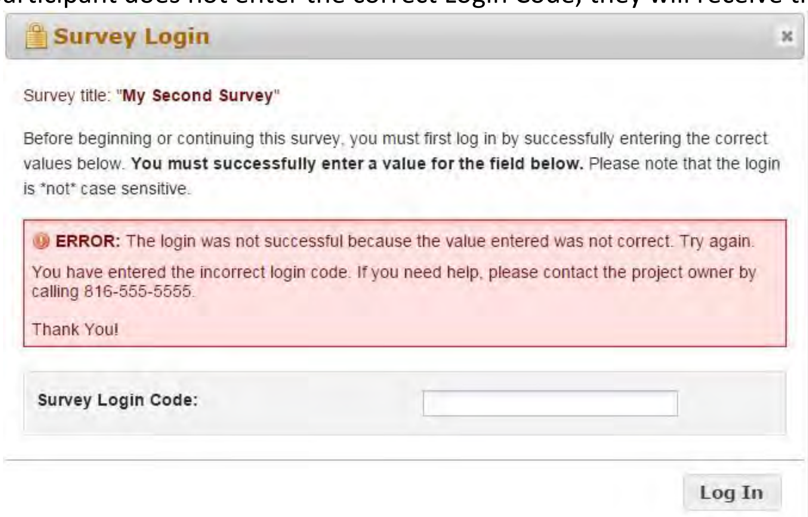
Number of failed login attempts: Enter the amount of login attempts you would like to grant to the participant. If you would like them to have unlimited attempts, enter 0.

Amount of time participant will be locked out: Enter the amount of time (in minutes) you would like to have the participant locked out for. If you do not wish to lock them out, enter 0.

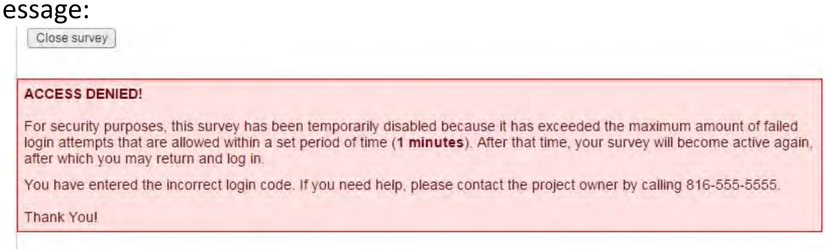
When the participant attempts to take the survey, this will receive this log in box:



If the participant does not enter the correct Login Code, they will receive this message:



If the participant reaches the maximum number of failed attempts you specified, they will receive this message:

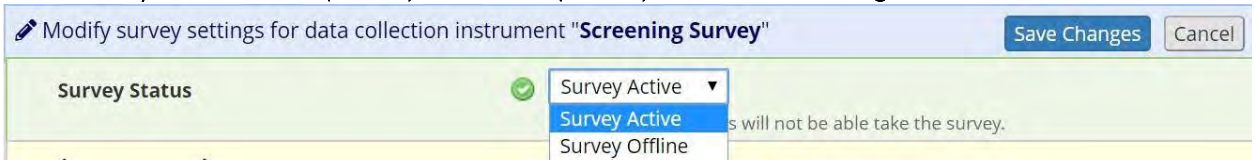


8.12 Survey Settings

Once you enable your data collection instrument as a survey, the “Survey Settings” page will appear.
You can make changes to Survey Settings at any time. To get to the Survey Settings click on the Designer link on the left-hand navigation bar under Project Home and Design. Then click on the Survey Settings button for the specific instrument.

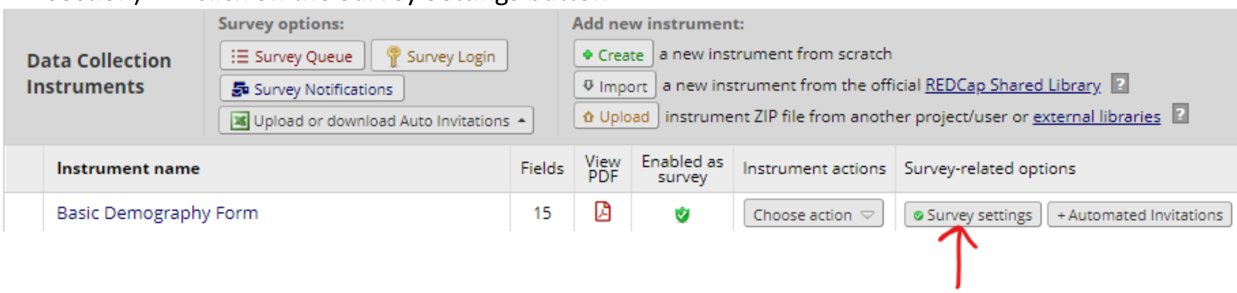
Survey Status

A survey can be Active (online) or Inactive (offline). The default setting is online

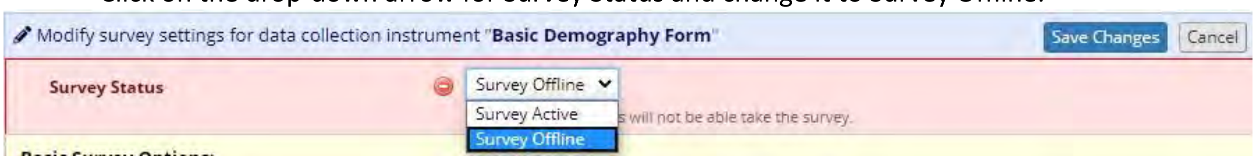


8.12.1 To take your survey offline (or to make your survey inactive):

- Click on Designer (on the left-hand navigation bar in the Project Home and Design section) • Click on the Survey Settings button



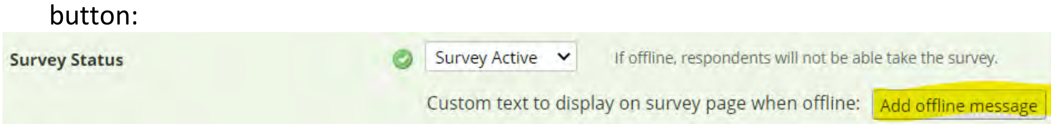
- Click on the drop-down arrow for Survey Status and change it to Survey Offline:



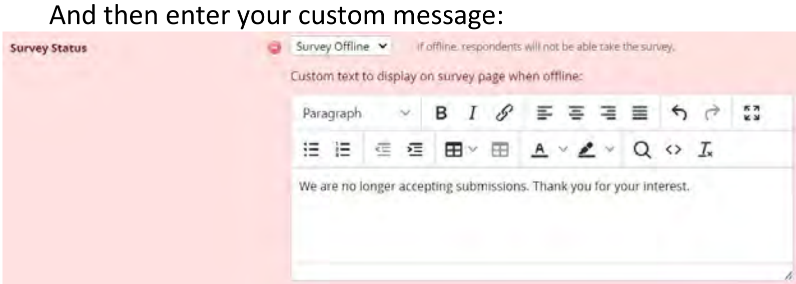
Be sure to click the 'save changes' button

8.12.2 Custom offline message for surveys in offline status

You can provide custom text that is displayed to participants only when the survey is offline. This text can be set at the top of the Survey Settings page. Click the 'add offline message' button:



And then enter your custom message:

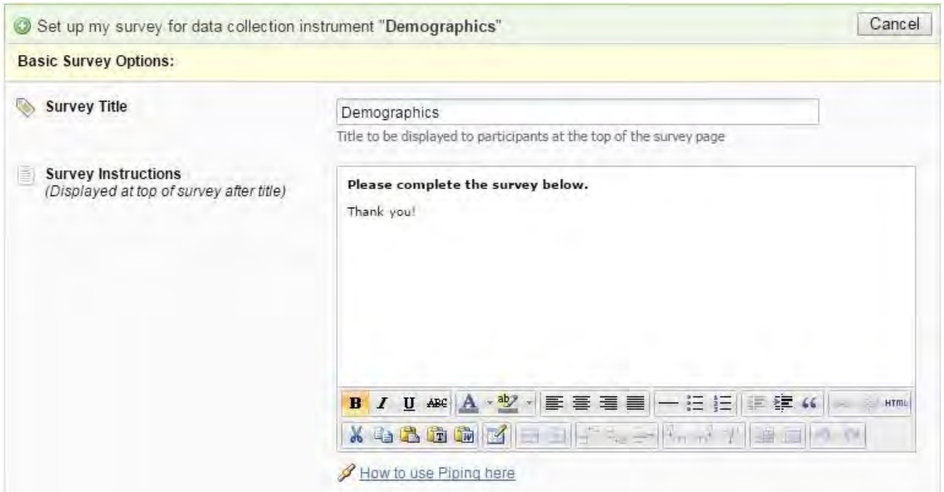


For a comparison of how this differs from other survey expiration options, see this section of the User Guide.

Basic Survey Options in Survey Settings

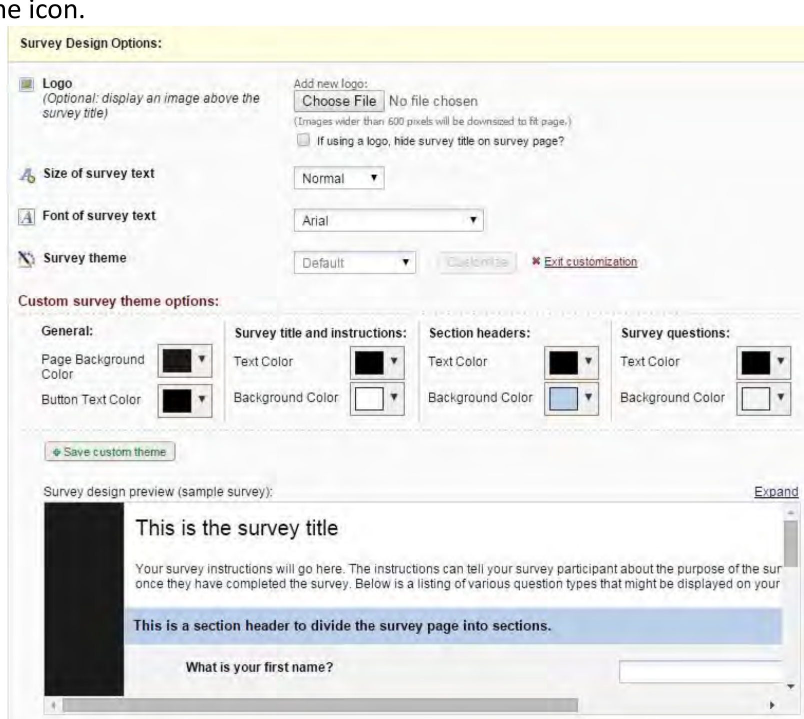
Survey Title: The default survey title is the name of the instrument. However, your survey title does not have to be the same name as your instrument. You can change the title here in Survey Settings.

Survey Instructions: Enter any instructions you wish to give to the participant. The default instructions are "Please complete the survey below. Thank You!" Oftentimes it is helpful to include a contact email address if the person has questions or the deadline by when you need them to complete the survey.

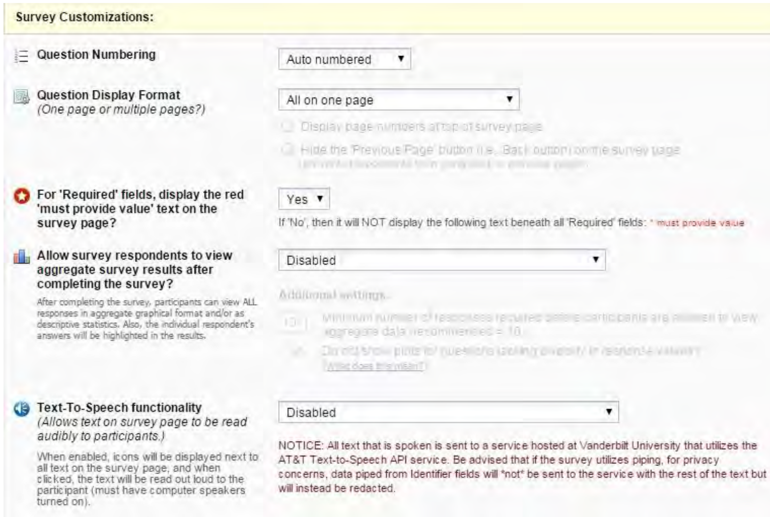


8.13 Survey Design Options

Logo: Click the Choose File icon and add a logo.
Size of survey text: Use the drop down and select Normal, Large or Very Large.
Font of survey text: Use the drop down and select the font family you would like to use.
Survey Theme: Use the drop down to select a saved survey theme, including a CMH survey theme. Otherwise you may click Customize and change the colour of your backgrounds, fonts and buttons. If you would like to use the same colour choices at a later date, click the Save custom theme icon.

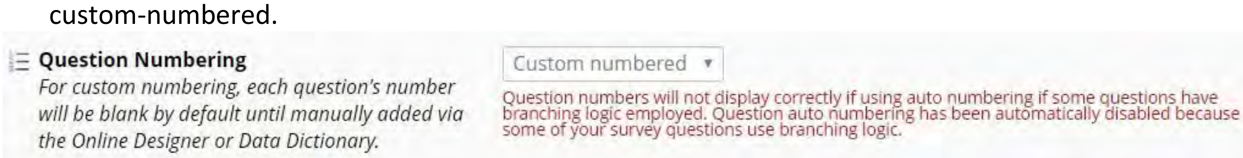


Survey Customizations in Survey Settings



8.13.1 Question Numbering

REDCap will by default auto number survey questions. The exception is if you have branching logic in your survey. In that case, auto-numbering is disabled and instead your questions are custom-numbered.



8.13.2 Custom numbering of questions in Survey

If you change the setting to custom numbering, question numbers will be removed. If you set your Survey Settings so that your questions are custom numbered, you will see a 'Question Number' box for each field of that survey in Online Designer:

You can enter your custom question number there (or leave it blank.)

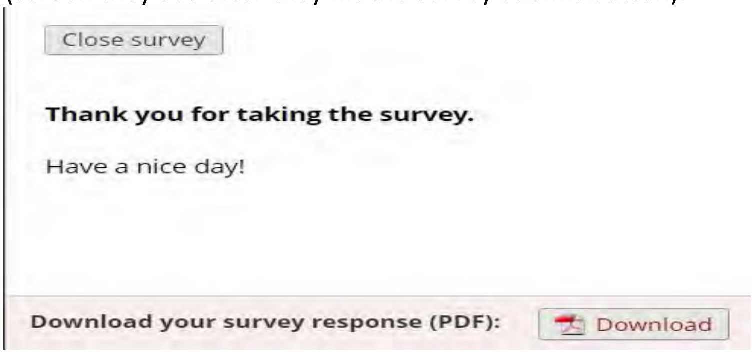
8.13.3 Question Display Format in Survey Settings

All on one page: Select this if you would like all of your questions placed on one page.

One section per page (multiple pages): Select this option if you would like to like to break your survey up into sections by your section headers (the yellow banner bars). If you select this option, you can display the page numbers at the top of the survey page and also hide the “Previous Page button”.

Allow participants to download a PDF of their responses at end of survey?

The default setting is no. The respondent will see a PDF button on the confirmation screen (screen they see after they hit the survey submit button).



All fields viewable to the survey respondent on the screen, regardless of whether or not they answered the question, are included in the PDF. This means that if a HIDDEN action tag is used on a field in the survey, that field will not be visible in the PDF.
Exceptions: This option is not available if the Survey Auto-continue feature is enabled or if the Survey queue autostart option is enabled.

Save a PDF of completed survey response to a File Upload field

The "Save Survey PDF to Field" feature allows you to automatically save a PDF copy of a participant's survey response to a File Upload field upon completion of the survey. This may be useful if you want to store the snapshot of the response immediately after being submitted, or it can be used to send the PDF of the response as an email attachment via Alerts & Notifications, among other things. This feature can be enabled on the Survey Settings page for any data collection instrument in the Online Designer.

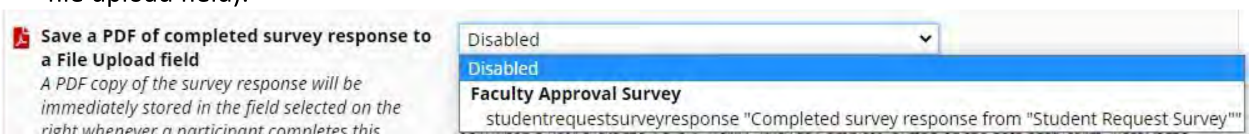
Example of Save a PDF of completed survey response

Let’s say you have a project with two instruments: the first is a survey that a student will complete and the second is a survey a Faculty member will complete in response to the student’s request:

Instrument name	Fields	View PDF	Enabled as survey
Student Request Survey	22		
Faculty Approval Survey	4		

In the Faculty Approval Survey is a file upload field:

You can go to the Survey Settings for **Student Request Survey** and enable the option for 'Save a PDF of completed survey response…". What you're seeing on the drop-down list is all the fields in your project that are the field type 'file upload' (in this example, there's only the one file upload field):



Be sure to scroll up or down and click the 'Save changes' button.
With that in place, any time a student completes the request survey, a PDF of their response will get saved to that second instrument, the Faculty Approval Survey. This can be really helpful if you want a second party (in this case, faculty) to see the responses given by someone else (the student). Otherwise, you would have to add the Faculty member to the project for them to be able to see the student's response. This way, you can trigger a survey invitation or alert to go to the Faculty member. When they click on their Faculty survey, they can see the student's response and enter their information in response to that request.
Bonus tip: to display the completed survey response inline (so that the file doesn't have to be downloaded, but instead displays on the page), add the action tag INLINE to the destination field (in the above example, the one named studentrequestsurveyresponse.)

8.13.4 Survey-specific email invitation field in Survey Settings

You may have a project with multiple surveys where different people are completing the survey for the same record. If you wish to designate which person should be sent the invitation for that specific survey, you would select that designated email field from the drop-down list. Note: only text box fields that have been validated as an email address show up on the drop-down list.

8.13.5 For "Required" fields, display the red 'must provide value' text on the survey page

The default setting is Yes. If you do not wish to have the 'must provide value' field display on your survey, use the drop down and select No.

8.13.6 Allow survey respondents to view aggregate survey results after completing the survey

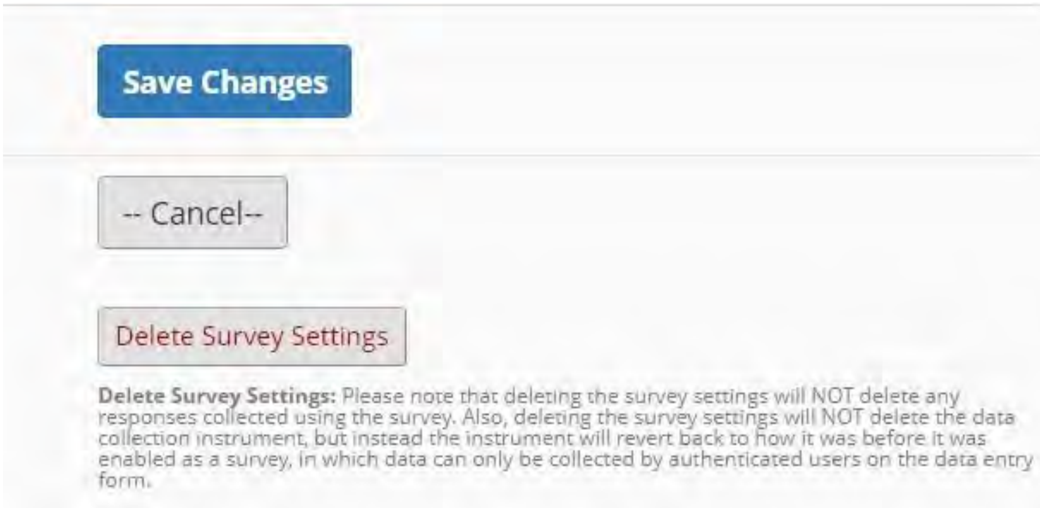
The default setting is disabled. Otherwise you may choose to display Graphical Plots, Descriptive Statistics or both plots and statistics. If you enable this setting, you can choose the minimum number of responses before participants are allowed to view the aggregate data.

8.13.7 Text-To-Speech functionality

The default settings is Disabled. When enabled, icons will be displayed next to each text that is listed on the survey. When clicked, the text will be read out loud to the participant. Note: Use of this feature must be approved by the REB and by Privacy as the text will be sent to the Vanderbilt REDCap Server, and depending on the study may be seen as a breach or potentially otherwise problematic. Please contact redcap@wchospital.ca if you have any questions.

8.14 To change an instrument from a survey back into a data entry form

If you have designed an instrument as a survey but want to change it back to a data entry form, go to Survey Settings (Project Setup/Online Designer) and click on the Delete Survey Settings button at the bottom of the page.



8.15 Survey Notifications (Survey notification emails)

If you would like REDCap to email you or a team member **every time** a survey is completed, you can turn on Survey Notifications. Go to Online Designer and you will see this:

Click on Survey Notifications. Listed are all the surveys in the project and under each survey is a list of email addresses associated with each user that has been granted access to the project. You can select which user should receive the survey notification email.

The email that is sent simply explains that the survey has been completed and provides a hyperlink to that particular survey response:

The user can click on the hyperlink, sign into REDCap and immediately see the survey result. No data from the survey is included in the email. This is intentional, since some survey responses may contain sensitive information.

If you have a lot of survey responses coming in at once, it can be overwhelming to receive a flurry of notification emails. If that is the case, you might want to turn off survey notifications and instead create a reverse chronological order report in your project and check that on a regular basis. For information on creating custom reports, see this section of this User Guide: Create Custom Report.

There are many examples of when you might prefer to receive an alert about a survey response (rather than a Survey Notification for all survey responses):

- If you only want to be notified if a particular response is marked in the survey
- if you want someone who is not a user on the project to be alerted
- if you want an attachment to be included with the email
- if you want to pipe in data from the survey response to the email o note: this is not recommended if the data is sensitive/confidential/contains Personal Health Information (PHI)

See the Alerts & Notifications section of this User Guide for instructions on how to set that up such an alert.

8.16 Embedding your survey on a webpage

If you have a website into which you want to embed your public survey so that it appears inline (and not just as a link):
Take the public survey link and set it as the src attribute inside an IFRAME html tag, such as below.
<iframe frameborder="0" src="https://wcredcap.wchospital.ca/surveys/?s=xxxxxx" style="height:800px; width:900px;"></iframe>
So you would replace the hyperlink in the above textstring with your public survey url. You could also adjust the height and width as you wish.

8.17 Survey Delivery options

There are many ways to deliver survey invitations. Outlined below are the delivery options and when you might want to use them.

Delivery Option	**Allows for future scheduling**	**Allows for conditional logic**
Manual (via public survey link or participant list found under Survey Distribution Tools)	Yes	No
Auto-continue (found in survey settings)	No	No
Survey queue (found on Online Designer page)	No	Yes
Automated Survey Invitations (found on Online Designer page)	Yes	Yes

8.17.1 Public survey link vs Private Survey Link

Public Survey Link	**Private Survey Link**
Only available if the first instrument in your project is a survey	Is only available if you know the email address of the participant
Only available for the first survey in your project (if you have follow-up surveys, there is no public survey link you can send for those)	Is created via the Participant List, Automated Invitation or Alerts & Notifications (using a smart variable)
Can be completed by the same person more than once	Can only be completed once

	Allows for automated reminders

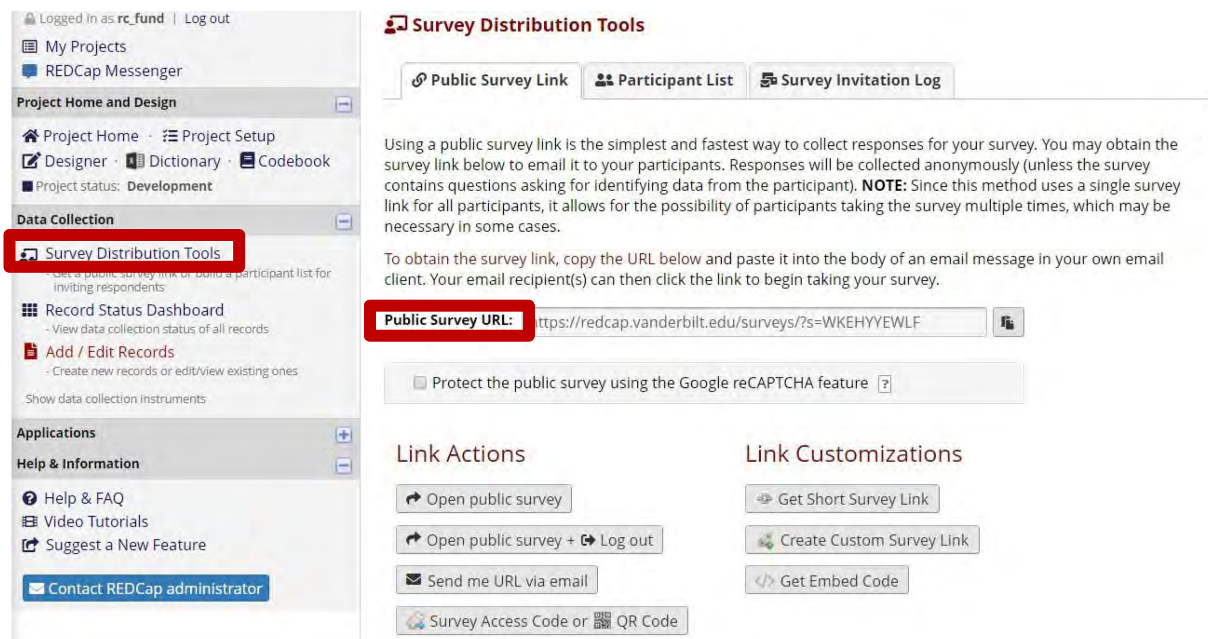
You can find additional information about those delivery options at the locations listed above. Below are some brief explanations.

8.17.2 Public Survey Link

Using a public survey link is the simplest and fastest way to collect responses for your survey. Responses are collected anonymously. Three things need to be in place for you to have a public survey link:

1. Your project must be enabled for surveys (1st step on the Project Setup page) while in Development mode.
   a. If a project is in Production, the use surveys in project' button is disabled on the Project Setup page. The project must be moved back into Development mode in order for that setting to work. You will need to contact your REDCap administrator to move your project back into Development mode. 2. You must have an instrument enabled as a survey within your project (set this in Online Designer)
3. The first instrument within your project must be a survey.

To access the public survey link, click on Survey Distribution Tools in the left-hand navigation menu:



There is the option to obtain a shorter, more easily typed link by clicking the **Get shorter survey link**. The link generated, when accessed, will redirect the user's browser to the regular public survey URL.

Project status re: survey link

Your public survey link remains the same when you move the project from Development mode to Production. If you created a short public survey link in development, it will carry through into Production – you won't see it at first on the Survey Distribution Tools page but when you click on the 'get short public survey url' button, it will generate the same short url that you had in Development.

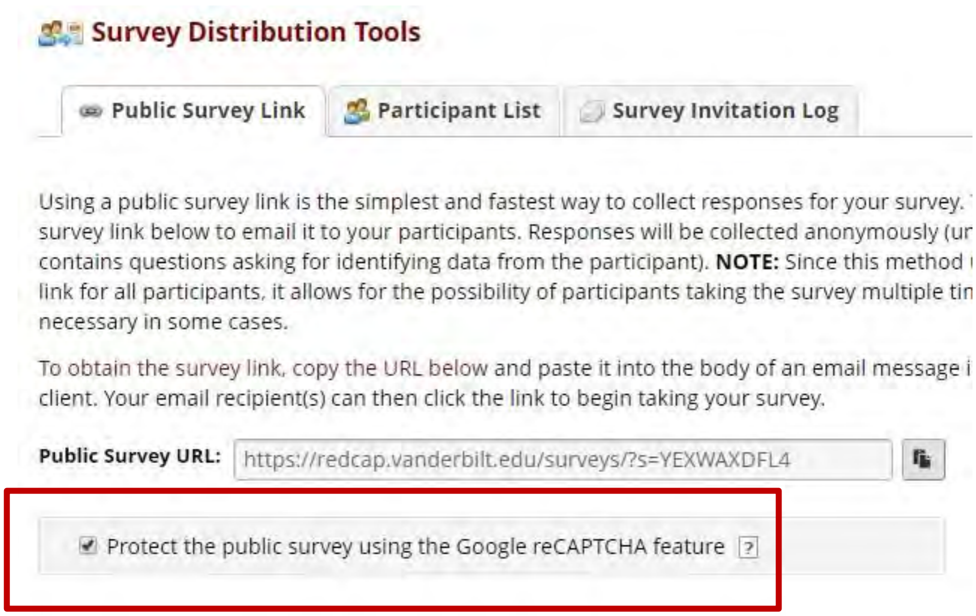
Only one public survey link per REDCap project

Please note: only the first survey in a project has a public survey link. Any subsequent surveys within the project have their own unique link. There are several ways you can disseminate the private link. This is important in tying the responses from different surveys together. If you wish to disseminate multiple surveys with public survey links for each one, just know that each survey will have to be in a separate REDCap project and the responses cannot be tied together.

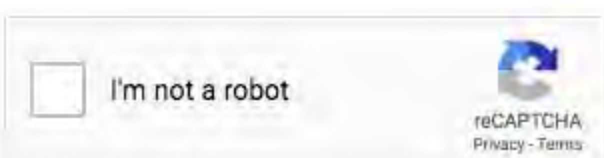
This concept is still true even if you have a Longitudinal Project with multiple arms. Only one instrument (regardless of which arm it is in) can have a public survey link. So, even if you have multiple arms, you don't get one public survey link per arm.

8.17.3 reCAPTCHA – Protect the public survey using the Google reCAPTCHA feature

This feature allows you to 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 enable the Google reCAPTCHA functionality on the Public Survey Link tab of Survey Distribution Tools:



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:



This feature is 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. Note: A survey participant will never have to pass the reCAPTCHA test more than once per day on a given device/computer.

8.17.4 Emailing unique survey links to participants

If you know ahead of time the email addresses of your survey respondents, you can email the survey link to those people from REDCap using Compose Survey Invitations. To use that feature, you first need to build your Participant
List.

Participant List

You can use something called the Participant List to send private, one-time use survey links to potential survey participants. This is helpful if you want participants to only complete the survey once. It is required that you know the person's email address in advance.

REDCap generates a survey URL that is unique to each member of the list, which enables you to track who is responding to your survey invitation – and who is not – without requiring that the survey form contain any identifying information.

Quick Guide to Building a Participant List

- Click on Survey Distribution Tools on the left-hand navigation bar o If you are not seeing the Survey Distribution Tools link, you have not enabled surveys on your project. See [these instructions] for doing that.
- Click on the Participant List tab

- Click 'add participants' o Add email addresses, one per line
- Click on compose survey invitations o Select the timing o Enable reminders (optional) o Compose the message
    - Select who the invitation comes from
    - Add a subject line
    - Edit the message – you can edit the pre-populated text. Just don't remove [survey-link]. That text converts to a private survey link once you hit send.

  o Confirm recipients by ticking/unticking email addresses in the participant list
- Click the send button!

Participant Identifier (Optional)

The ability to specify an identifier for each member of the participant list is optional. This means that you can choose a tracking model that best suits your project:

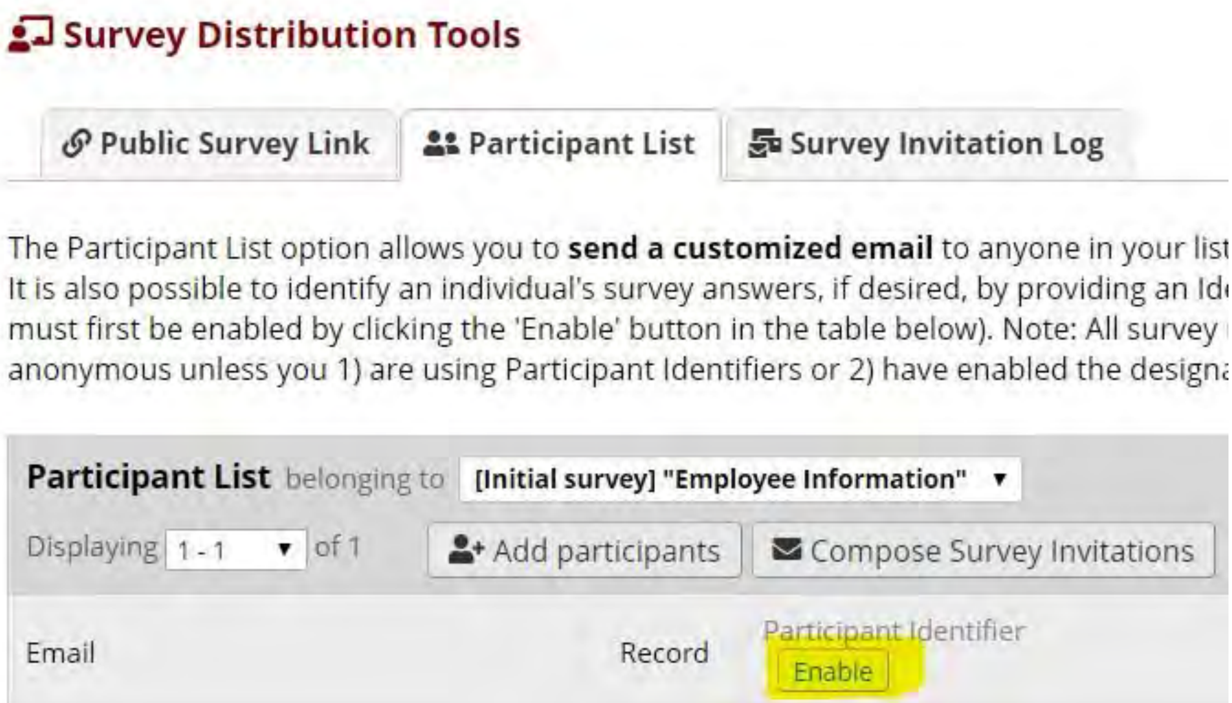
1. **No identifier:** the Participant List shows who has responded but there is no link from the participant to a specific response. **The responses remain anonymous**.

2. **With identifier:** the Participant List shows who has responded and you can navigate directly to the participant's response.

This setting is available only when your project is in Development and your first instrument is a survey. If your project is in Production mode and you wish to enable identifiers, you will need to email redcap@wchospital.ca and request that the administrator enable Participant Identifiers on your project. You should not use participant identifiers if you want your responses to remain anonymous.

Enable Participant Identifiers

To enable participant identifiers, click the Enable button on the Participant List page:



Add Participants

There are two options for populate your participant list:

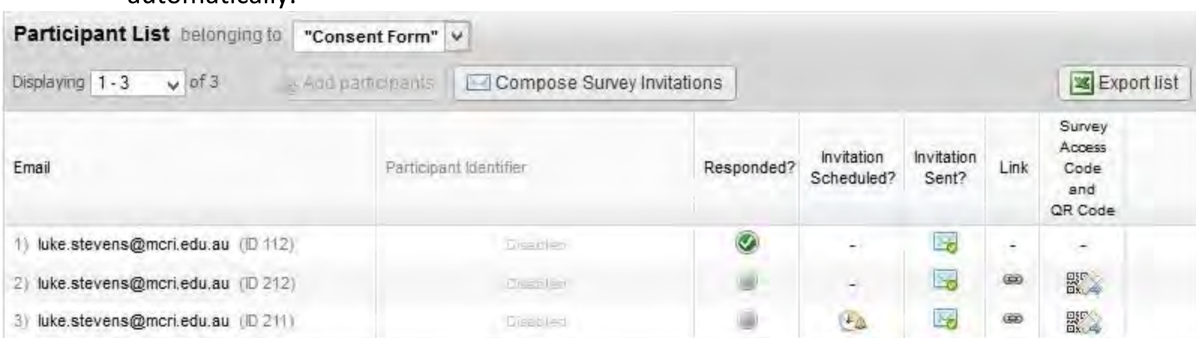
1. Click **Add Participants** and enter (e.g. copy-and-paste) your list of email addresses (and identifiers, if enabled), one per line:

<email address>	email only, with no identifier
<email address>,<id>	comma-separated email,id when identifiers have been enabled

If you add participants with identifiers but you have not enabled identifiers, you will see this error message:

If you wish to build a participant list from a distribution list within your email client (e.g. Outlook), please see the instructions for [Converting an Outlook Distribution List into a Participant List.]()

2. [Designate an email field]() from one of your data collection forms. Email data entered into this field will be used to populate the Participant List automatically.



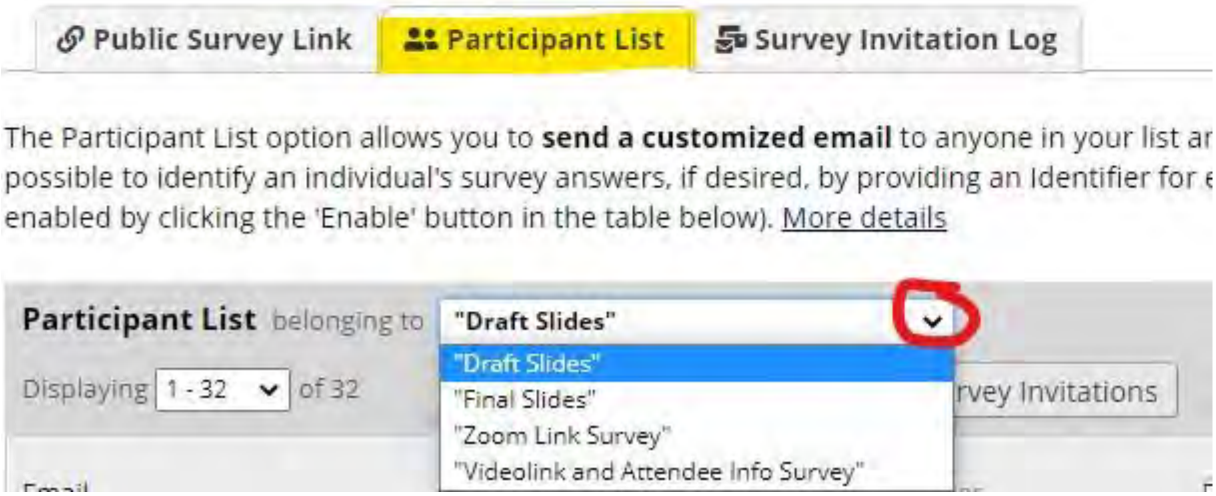
Note:

- Participant Identifier values must be unique
- Email addresses need not be unique. You may add your own (or a project) email address for all records, for example, if you wish to tailor each request to each specific participant and send the request email yourself

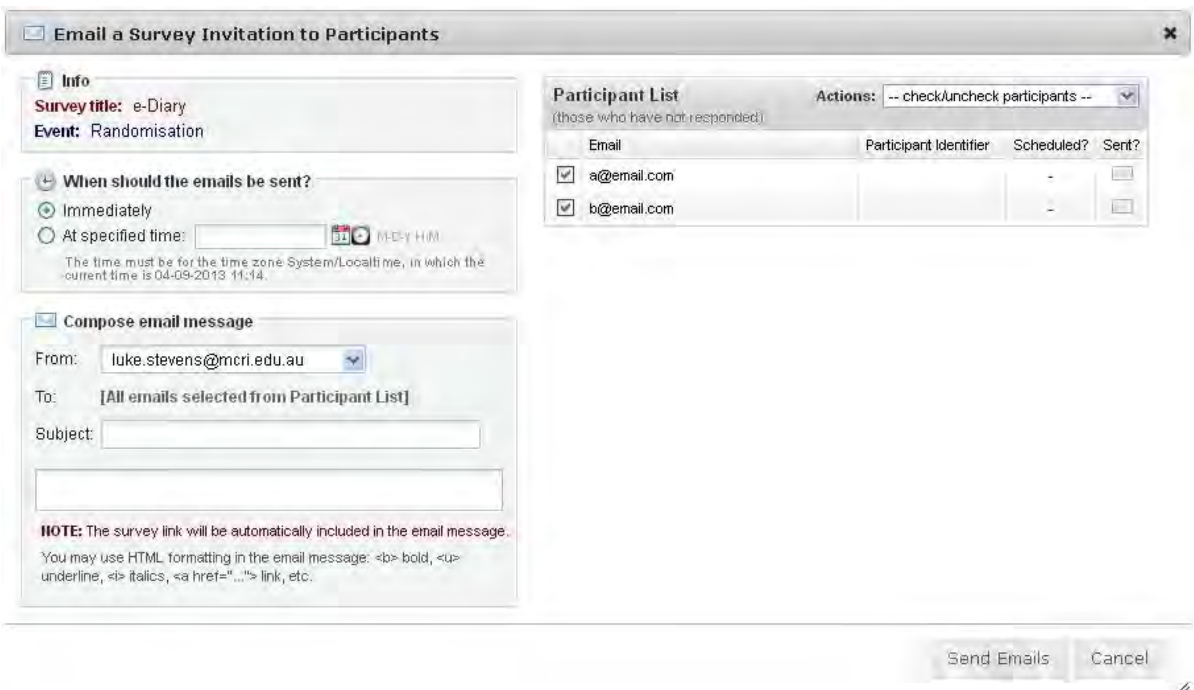
Send Survey Invitations via Participant List

If you know in advance the email addresses of your survey participants, you can use something called the Participant List to send a unique survey link to each individual. This prevents people from taking the same survey more than once, which they can do if you use the public survey link.

If you have more than one survey in your project, by default you will come to the Participant List of the first survey when you land on the Participant List page (which you can get to by clicking Survey Distribution Tools on the lefthand navigation bar and then clicking on the middle tab, Participant List). If you wish to send any of the subsequent surveys to your participants, you can click on the drop-down list to select one of the other surveys:



Please note, though, that only the participants who have completed the initial survey will get pulled through to the participant list of subsequent surveys. The exception is if you have created a data entry form within the project that you use to control survey dissemination. Clicking **Compose Survey Invitations** enables you to send email invitations to members of your participant list.



- Indicate whether the message(s) is(are) to be sent immediately or at a specified time
- Select the email address that you want the message(s) to be sent from. You will have the option to select the email address of any user on the project. If you want the email to come from an email address that you do not see on that drop-down list, see this section of this User Guide in regards to Associating another email address.

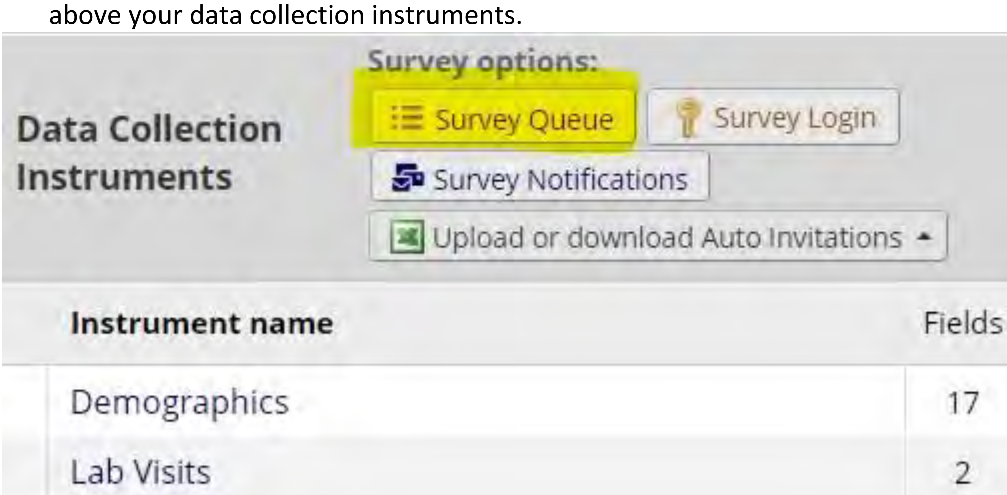
- Set the message subject and body: the participant's unique URL will automatically be appended to the message body. You can edit any of the pre-populated text, but you must keep the unique survey link string, which will be listed within brackets.
- Select the desired recipients by ticking the relevant checkbox. The Actions drop-down list gives you shortcuts to ticking:
  1. Check All
  2. Uncheck All
  3. Check Sent
  4. Check Not Sent
  5. Check Scheduled
  6. Check Not Scheduled
  7. Check Not Scheduled and Not Sent
- There is no limit to the number of times an invitations may be manually sent and re-sent to a participant

8.18 Survey Queue

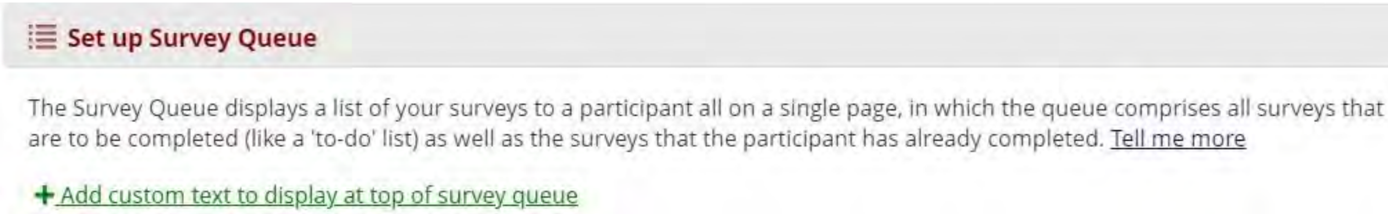
The survey queue enables your survey respondents to see a list of the surveys that you are asking them to complete. This can be a powerful feature because it enables you to, for example:

1. Force respondents to complete surveys in a particular order
2. Give different surveys to different respondents based on certain criteria. Age-specific questionnaires, for example.
3. Control when surveys become available.

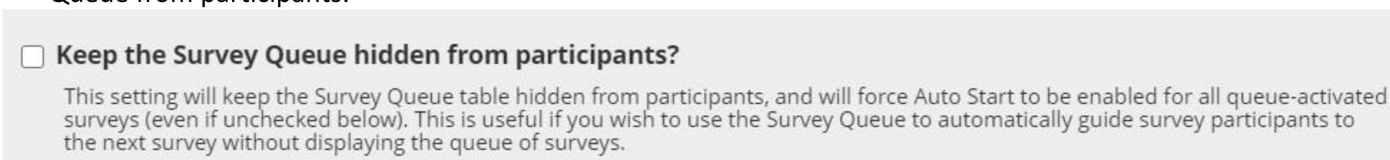
To activate your survey queue, navigate to Online Designer and click the Survey Queue icon located above your data collection instruments.



A “Set up Survey Queue” box will appear. If you would like, you may add your own custom

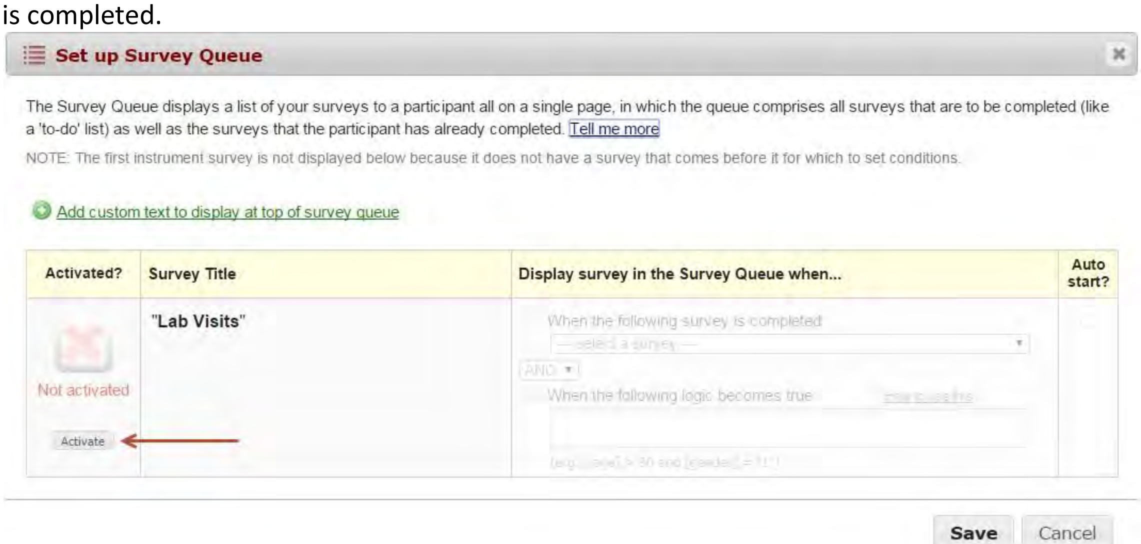


text to display at the top of the survey queue. You’ll also notice an option to hide the Survey Queue from participants:



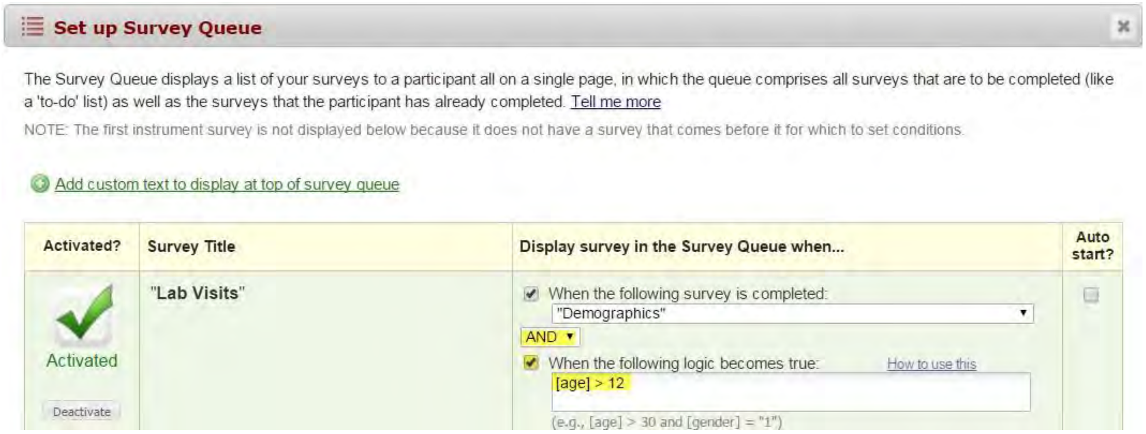
8.18.1 Selecting your surveys for the Survey Queue

Click the Activate icon for each survey you would like to set up. Under the “Display survey in the Survey Queue when…” column, use the drop down to indicate when the survey should be displayed. For an example, you might want your second survey to display after the first survey is completed.

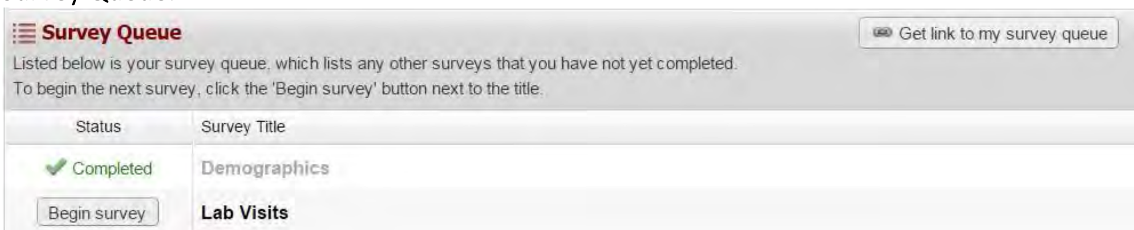


If you would like to add additional logic as to when the next survey should be displayed, use the operator drop down and select AND/OR and then check the box next to “When the following logic becomes true” and finally add your logic in the formula box. See further down for tips on <u>how to configure complex Boolean logic</u>.

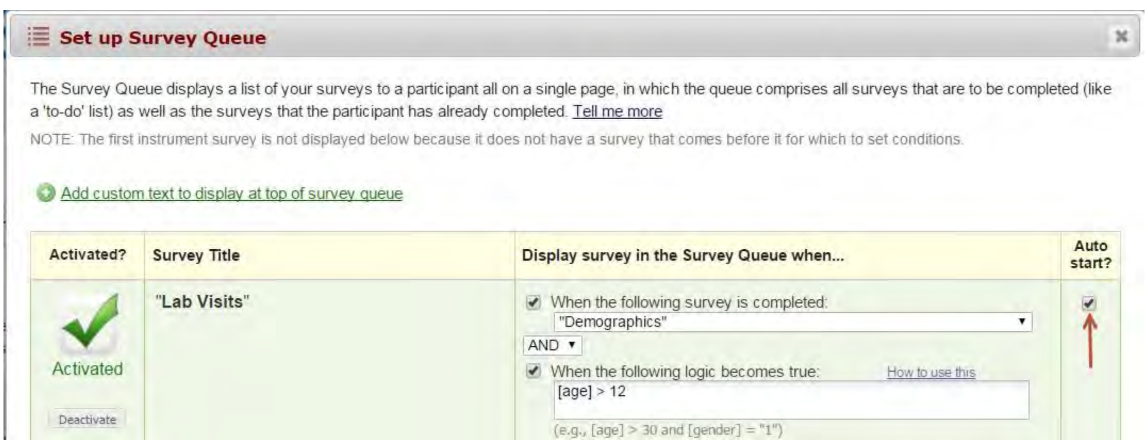
For an example, I want my second survey to start after my first survey is completed AND the participant’s age is greater than 12. To do this, I added the variable for the participant’s age field in square brackets, the greater than sign and the number. [age] > 12



When a participant takes my survey and enters an age greater than 12, they will see the following Survey Queue:



They can click the Begin Survey to start the second survey. If you would like the second survey to automatically launch and do not want to force the participant to click the Begin Survey icon, you can accomplish this by going back to the Survey Queue settings and click the box underneath the Auto Start column. When the participant finishes the first survey and they are at least 13 years old, the second survey will display.

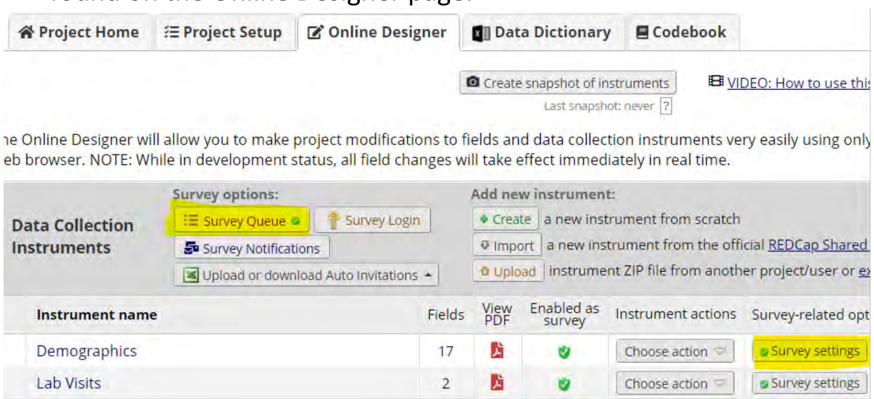


You may continue to add logic for the rest of your surveys.

As with all features in REDCap, it is a good idea to test this feature before using it with real participants.

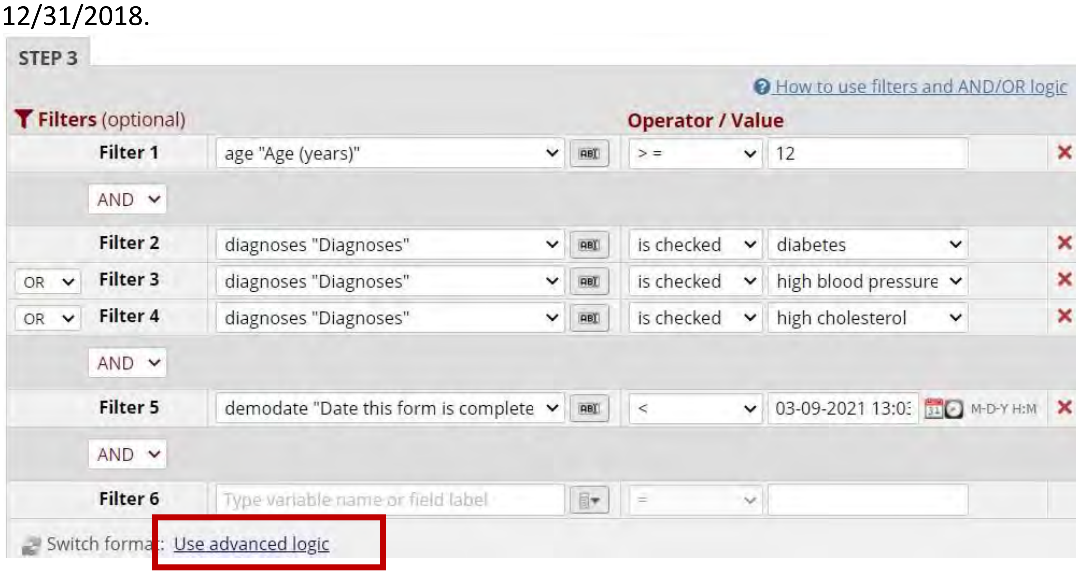
Caution when using Survey Queue

The auto-continue option overrides the Survey Queue. So, if you want to use Survey Queue, make sure that autocontinue is turned off for any surveys that precede a survey that is activated in the Survey Queue. Otherwise, the participant will automatically be taken to the next survey even if they do not meet the conditions specified in the Survey Queue.
The auto-continue option is in Survey Settings for the individual survey. Survey Queue is found on the Online Designer page.

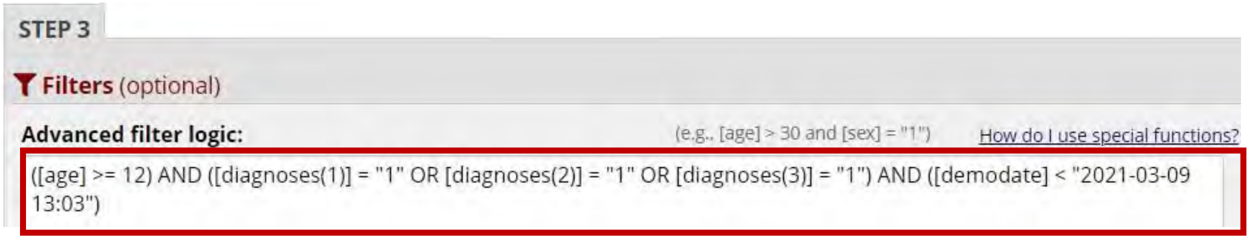


Design tip: writing conditional logic for a Survey Queue

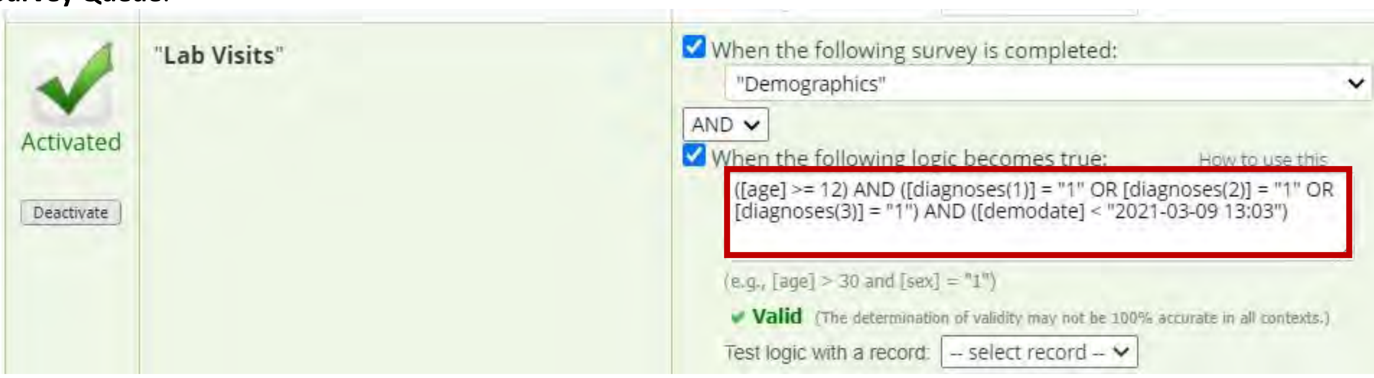
Sometimes it can be tricky writing conditional logic, especially when working with checkbox fields or date ranges. What you can do is create a test report using the filter section of the custom report to figure out your logic.
In the example below, we are essentially saying that we want to see the results where the box is checked for any of the three boards and the roster date is between 1/1/2018 and 12/31/2018.



You can check the results of the report to make sure you have your logic configured correctly. Once you get it right, you can click on Advanced Logic (noted in the red box above) and click the ‘convert’ button. You will see your logic written for you in Boolean form.



You can copy and paste that logic into the box “When the following logic becomes true” in your **Survey Queue**:



8.19 Automated Survey Invitations (ASIs)

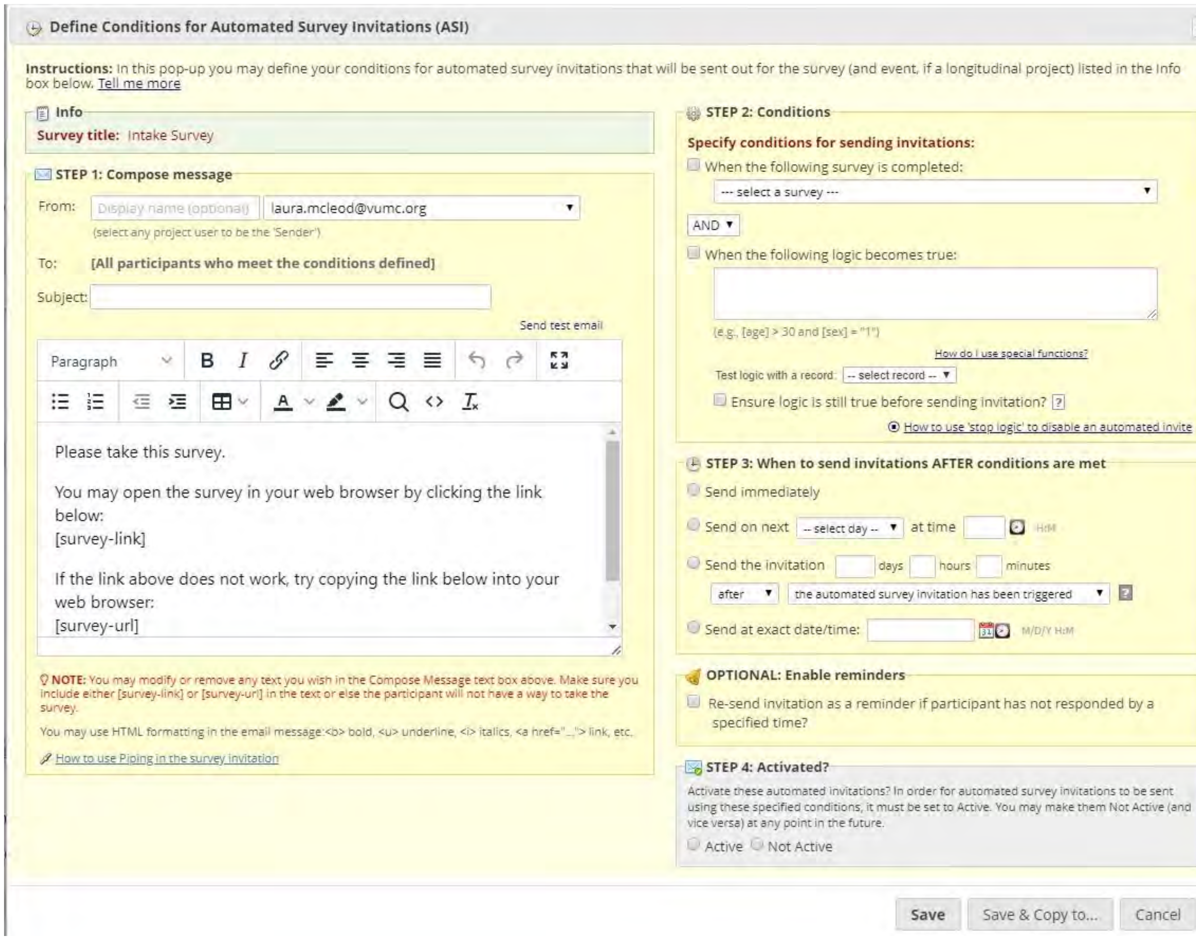
You can configure invitations to be sent automatically by REDCap upon certain criteria being met using the **Automated Invitations** option.

Exception: Automated Survey Invitations **do not work** on a project enabled with repeating instruments/events.

Requirement: You need to have the ‘designate an email field’ function enabled on your project setup page in order for Automated Survey Invitations (ASI) to work. For instructions on how to set that up, see this section of this User Guide. (If you have designated a survey-specific email field in Survey Settings for the instrument, that will work, too).

Note: you may want to have your Codebook open on a separate tab if you are going to use piping in the survey invitation email and to write the conditional logic. • Click **Automated Invitations** in the **Online Designer** tab for the appropriate survey

- If your project is longitudinal, select the event
- The **Define Conditions for Automated Survey Invitations** dialog is displayed



Info: Displays the event and survey that you have selected **Step 1:**

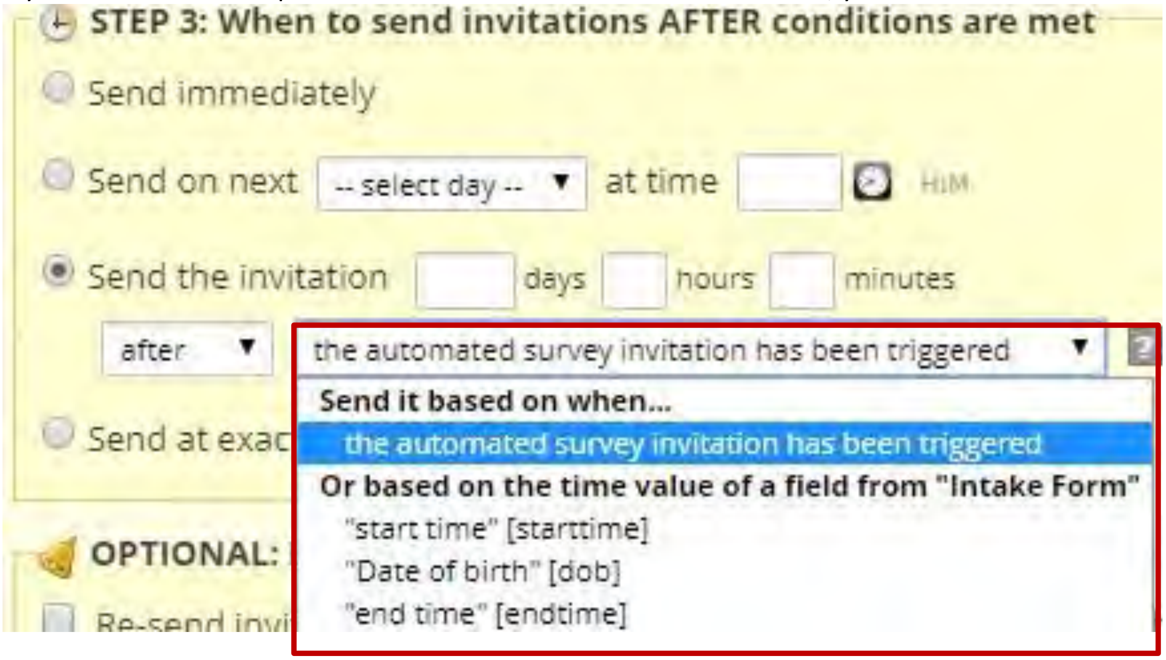
Compose message:

- There is a drop-down arrow next to the 'From' box. If you click on it, you will see the email addresses associated with any user on the project. If you want the email to come from an email address that is not listed in that drop-down list, see the instructions regarding [Associating another email address](#).
- Specify the subject line and content for the email that REDCap will send.
- The participant's unique URL link and some stock text will pre-load in the dialog box. You can edit the content, but you need to keep the survey link in the format it appears (with brackets around it). That text is a smart variable. Once the invitation is sent, that text converts to the private survey link for that individual.
- **Step 2: Conditions:**
- Indicate the conditions that – when met – will indicate to REDCap that an invitation is to be sent. ***Ensure that you include the event reference alongside any field reference*** *if your project is longitudinal (as in the example shown in the image above).*
- If you want to employ stop logic so that you can easily cancel an invitation after it has been scheduled, be sure to include that logic in the conditional logic box and also tick the 'Ensure logic is still true…' box.
- **Step 3: When to send:**

- Specify when REDCap should send the invitation **after the trigger condition has been met.**

Date-based timing for Automated Invitation

If you select the third option in the 'When to send invitations' section, you will see this:



Note that you have the option to send the invitation based on a date-validated field in your project. This is helpful if the date you want to send the invitation is based on a date that is relative to an individual record and is not the same for all records. • **Optional: Enable reminders**:

- Choose the settings you want for automating the resending of the survey invitation. The invitation will be sent at most five times (i.e. the initial invitation and four resends).
- **Step 4: Activated?**:
- To save your ASI settings, click on save. By default, the settings will remain Inactive. This is helpful during the design phase of the ASI.
- Save & Copy to…
- If you have several automated invitations to set up and most/all of the content is the same, you can use the Save & Copy to option. This will replicate your automated invitation settings across whichever automated invitations you select.

Note that you can still send invitations manually via the participant list irrespective of the **Automated Invitations** settings.

Scheduled invitations (and reminders) may be deleted via the Survey Invitation Log.

Once an automated survey invitation has been triggered…

Note: once an ASI fires for a record, you can't make it trigger again, even if you change the conditions and the record meets the new conditions. You can however, re-send the invitation via the Participant List. If you do that, you would go to the Participant List (via Survey Distribution Tools) of the particular survey and click on Compose Survey Invitations. You could select the option 'check sent' to filter your participant list as it appears in the Compose Survey Invitation box.

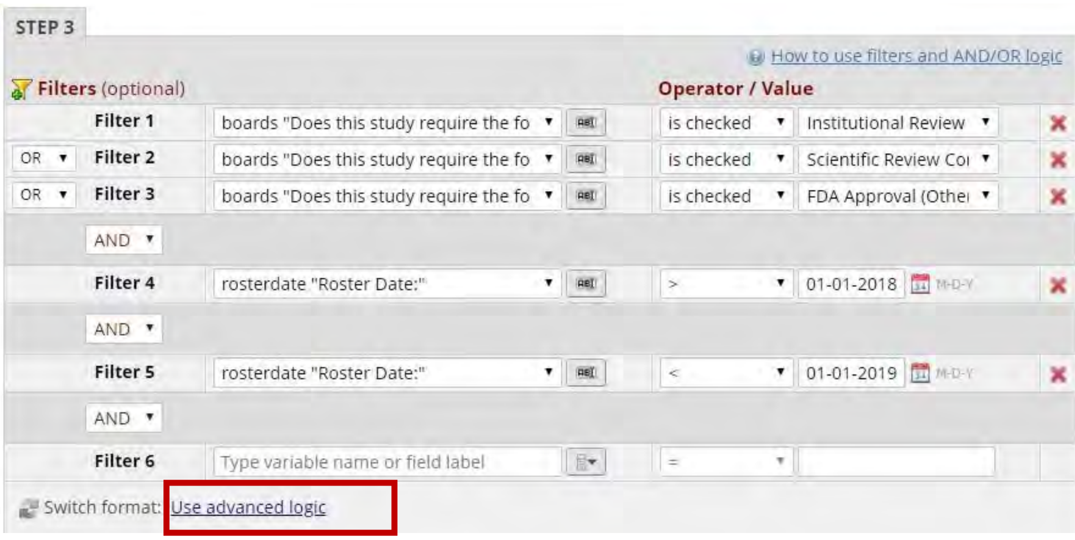
8.19.1 Automated Survey Invitation online tutorial

Please click on this link for an interactive tutorial in Automated Survey Invitations (ASIs):
https://redcap.vanderbilt.edu/surveys/?s=LKM4DPEHL4

Design tip: writing conditional logic for an Automated Survey Invitation

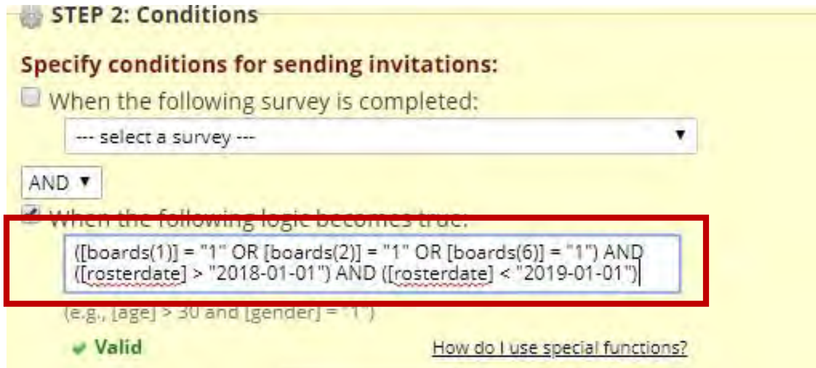
Sometimes it can be tricky writing conditional logic, especially when working with checkbox fields or date ranges. What you can do is create a test report using the filter section of the custom report to figure out your logic.

In the example below, we are essentially saying that we want to see the results where the box is checked for any of the three boards and the roster date is between 1/1/2018 and 12/31/2018.



You can check the results of the report to make sure you have your logic configured correctly. Once you get it right, you can click on Advanced Logic (not it in the red box above) and click the 'convert' button. You will see your logic written for you in Boolean form.

You can copy and paste that logic into the box "When the following logic becomes true" in your **ASI**:



If you want to use a datediff function to return results that satisfy the conditions for the last year, you can add the datediff function to your advanced logic. The advanced logic builder does not have the capability of constructing it.

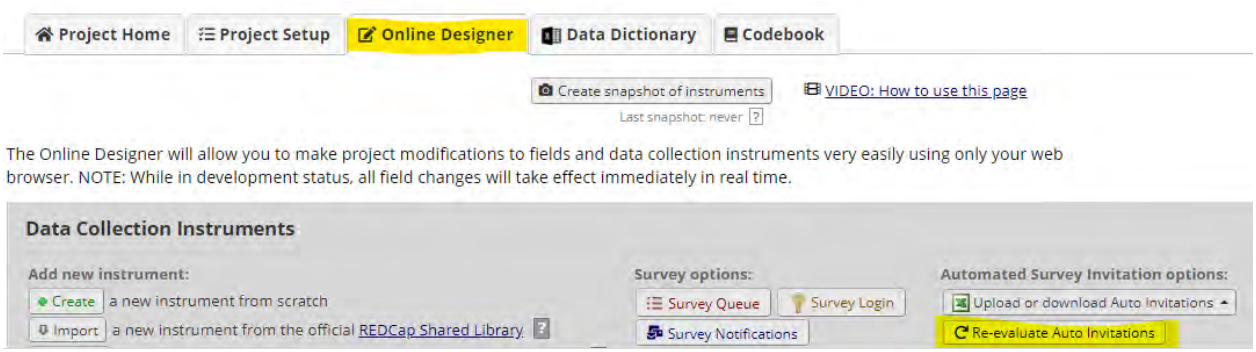
For the above example, our date validation is in the format of ymd. To capture results from the last year, you could add datediff([rosterdate],"today","d","ymd")<=365 to your advanced logic.

8.19.2 Conditional logic in ASI of Longitudinal Project

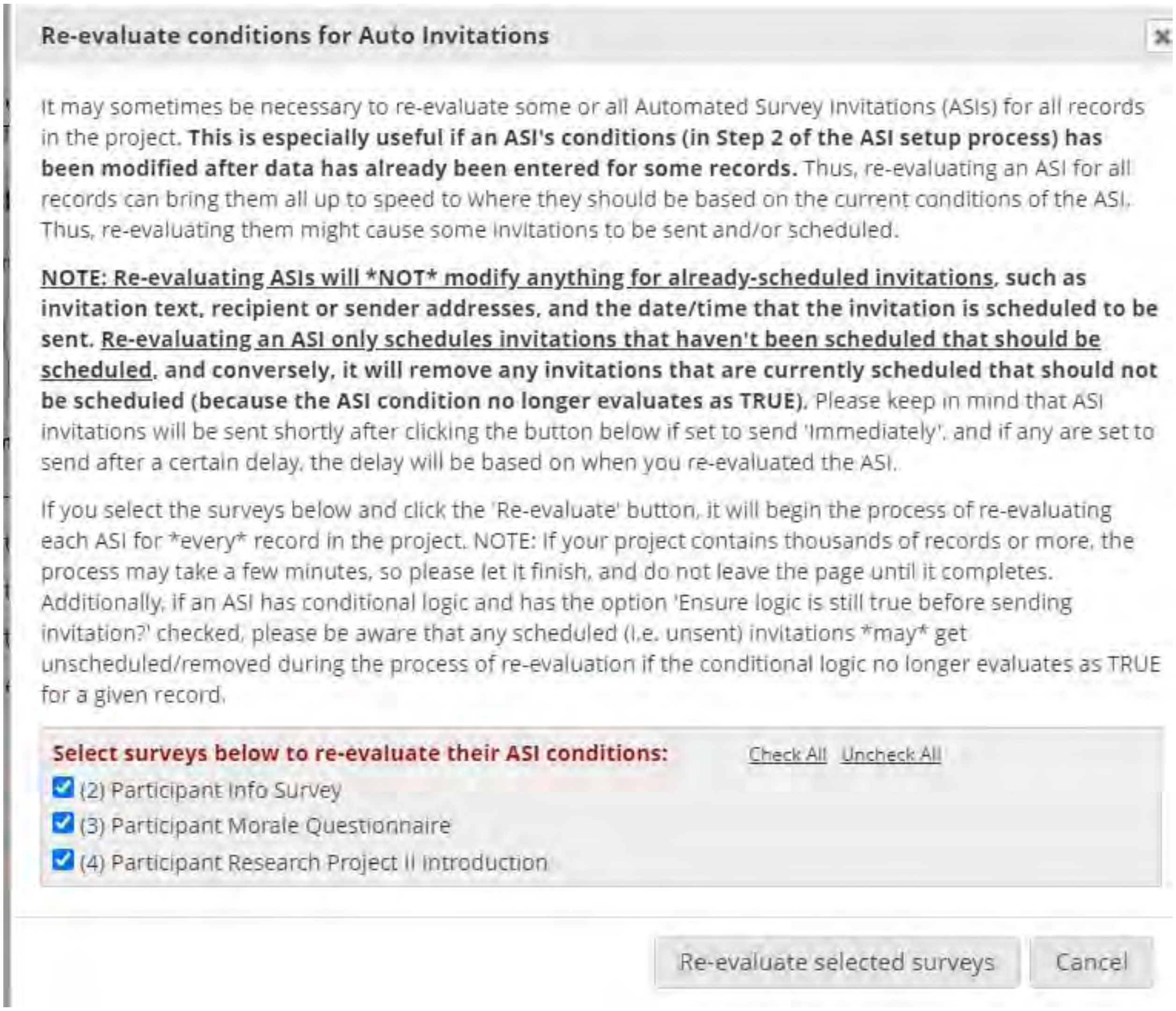
If your project is longitudinal and you want to use a variable in your conditional logic that is from an event *that is not the current event*, you need to pre-pend to the variable the appropriate unique event name also enclosed within square brackets, e.g. [unique_event_name][variable_name]. Unique event names can be found by going to Project Setup/Define My Events. You will see an events table, and the last column shows you the Unique event name, which is automatically generated by REDCap.

8.19.3 Re-evaluating Automated Survey Invitations

There is a button on the Designer page that you can click to re-evaluate automated survey invitation logic.



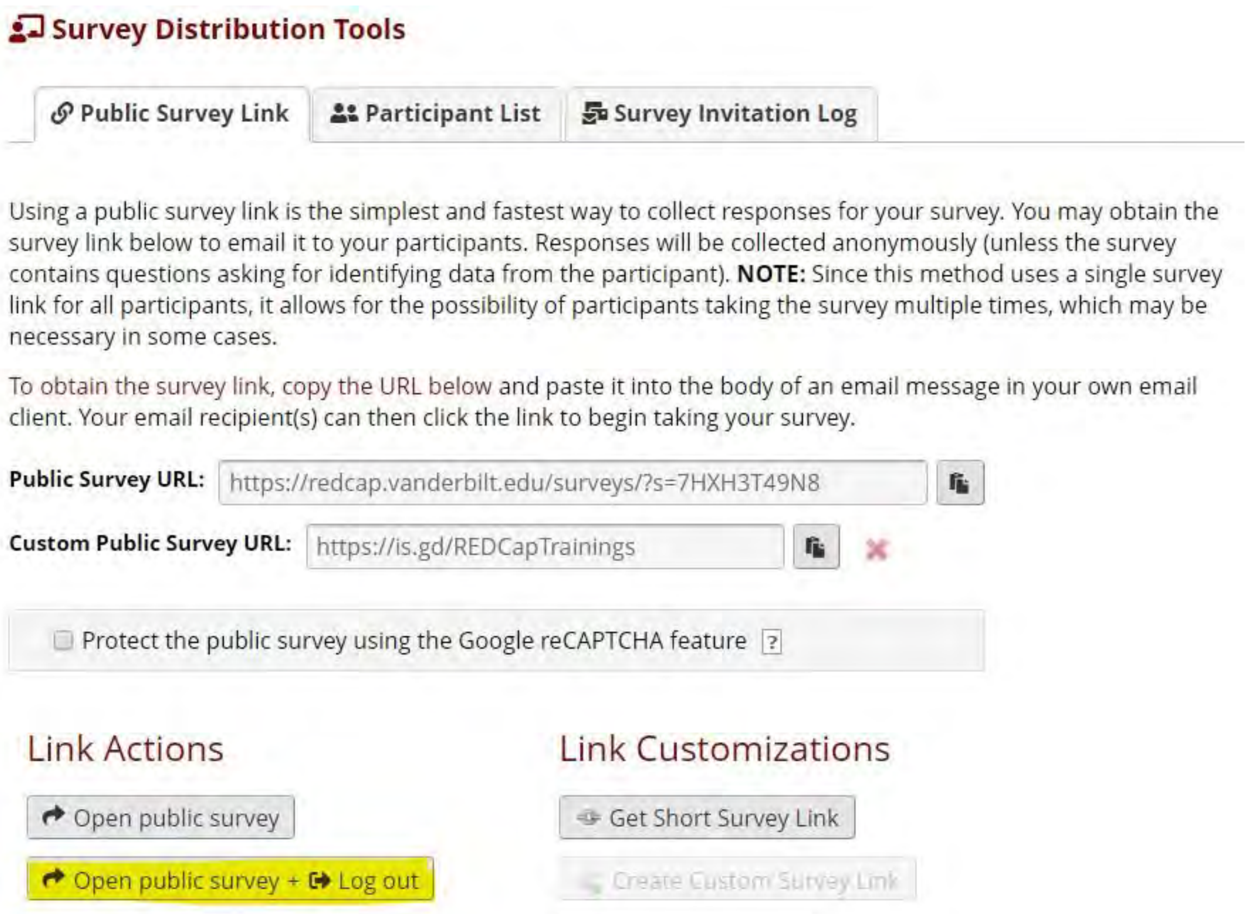
This button manually triggers automated invitations. This is useful for sending automated invitations to records that existed before the automated invitation was created or if the data changed in existing records so that they now meet the conditional logic of the automated invitation. Reminder: new automated invitations don’t automatically trigger retroactively. You can see in the below screenshot that you have the ability to select which automated invitation you want to re-evaluate:



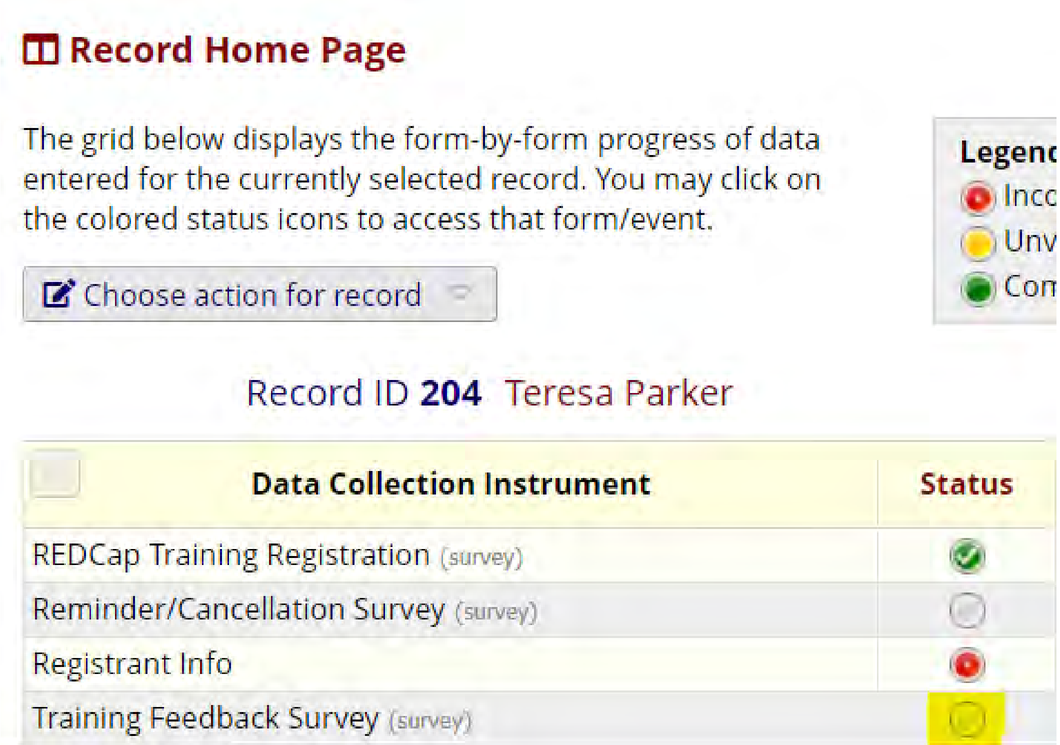
8.19.4 Giving device to survey participant in person

If you want a person to complete a survey as a participant and they are in the same physical space as you, it is best to use the logout feature when handing the device over to the participant. That will prevent the participant from having access to your project. This protects the security of the data that is stored in your project.

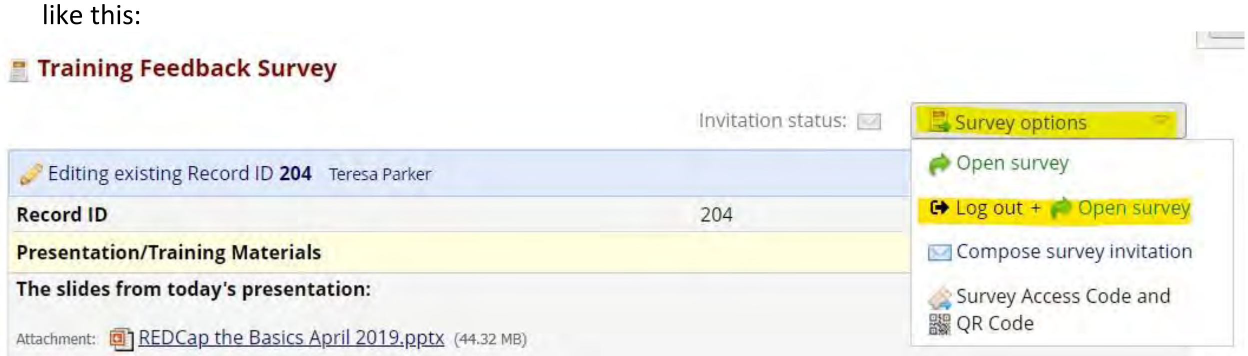
If the survey you wish the person to complete is the first survey in the project and there is a public survey link, you can go to Survey Distribution Tools and select the logout option from there:



If the survey you wish them to complete is not the first survey, navigate to the record home page for that person via the Record Status Dashboard or Add/Edit records:



On that record home page, click on the empty circle of the survey you want the person to complete. In this example, you're clicking on the highlighted circle in the image above. You will see a screen like this:



If you click on the Survey options button on the top right, you see an option to Log out and open the survey. This means the person will now be entering their information into the instrument as a survey. They will not see the lefthand navigation bar. This protects the security of the data that is stored in your project.

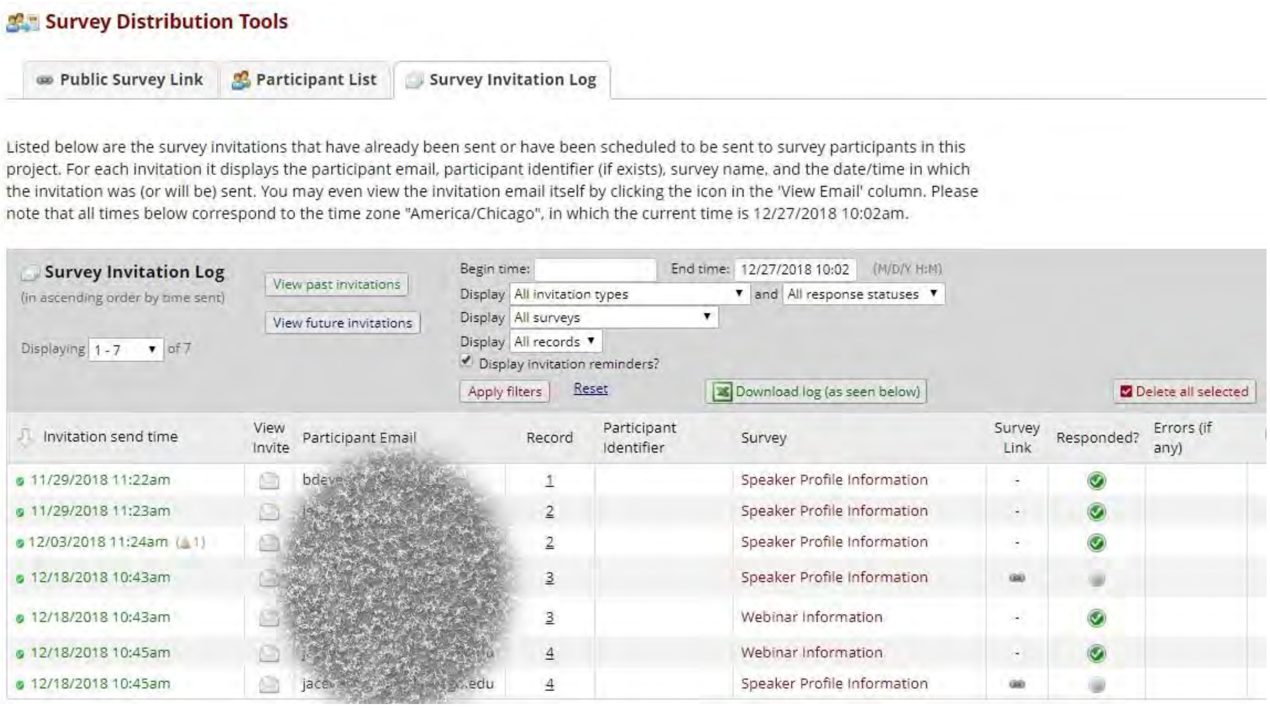
8.19.5 Viewing Survey Invitations

The **Survey Invitation Log** tab of the **Survey Distribution Tools** page can display all of the survey invitation messages sent for your project and the date and time that any future invitations are scheduled to be sent.

Use the filter criteria to specify the criteria for the invitations you are interested in seeing.

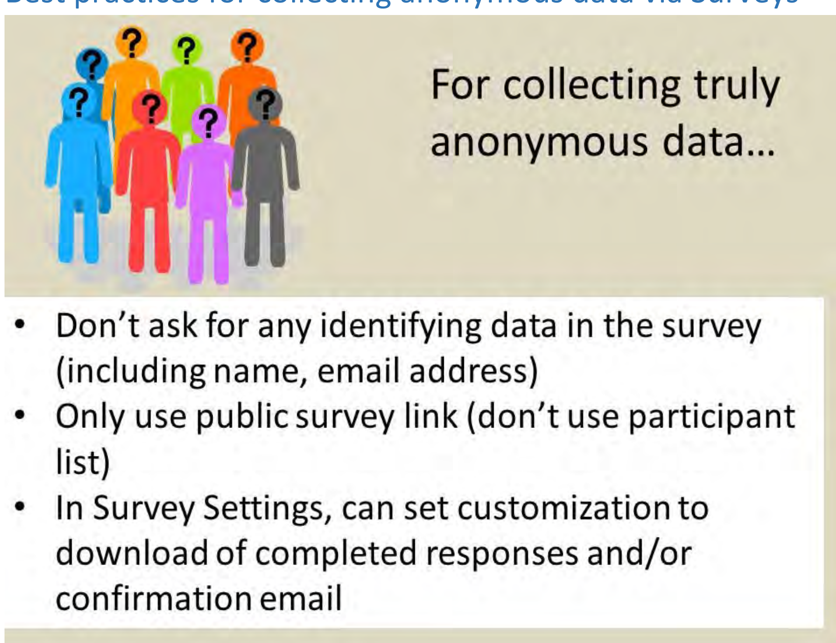
Click Apply filters to refresh the list.

Unsent invitations (including reminders) may be deleted by clicking the red **X**. There is no undo, but you may always send or invitation manually.



To view the content of the email invitation, click on the envelope icon.

8.19.6 Best practices for collecting anonymous data via Surveys



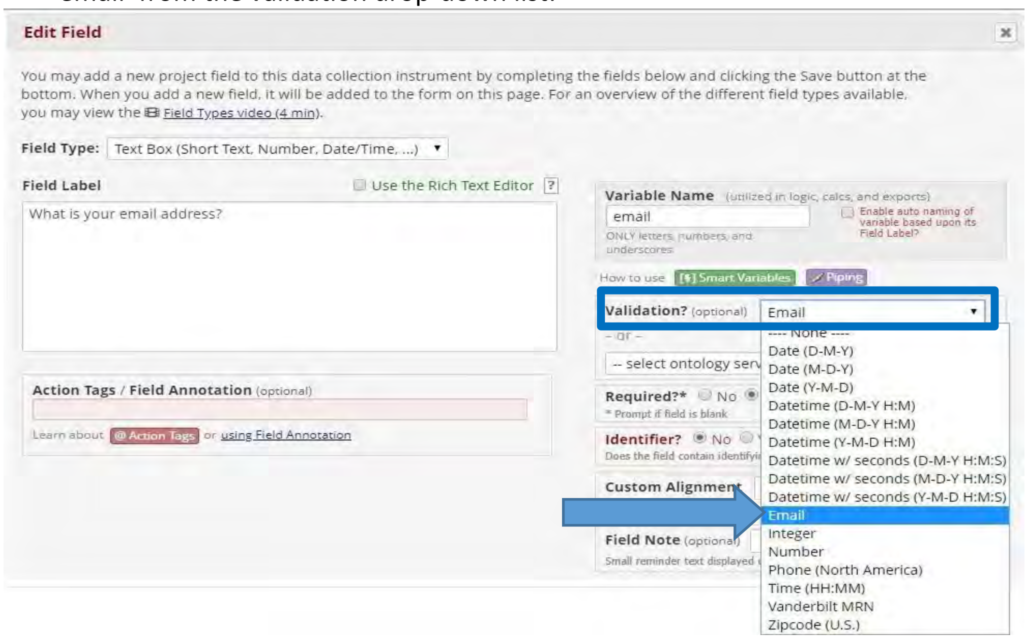
Testing the survey

It is critical to test your survey to make sure it looks and behaves the way you want it to for your survey participants. See Adding test data for surveys for suggestions on how to do that.

8.20 If you have a follow-up survey

These are instructions for a Classic (not Longitudinal) project where the first instrument is a survey (and therefore the public survey link is available) and you plan on having a follow-up survey(s) in the same project.

1. Make sure there is an email-validated text box field in the first survey that asks for the survey participant's email address. It should be a required question. To do this, add a field, select the field type 'text box', fill out the field label and variable name and select 'email' from the validation drop-down list:



2. On the project set up page, scroll down to Enable Optional Modules and customizations. Click the 'Enable' button for 'designate an email field…'

a. A dialog box will pop up. Click on the drop-down arrow and select the email address in the first survey. If you are not seeing the email address field that is in your first survey, it is likely because you have not added email validation to the field.

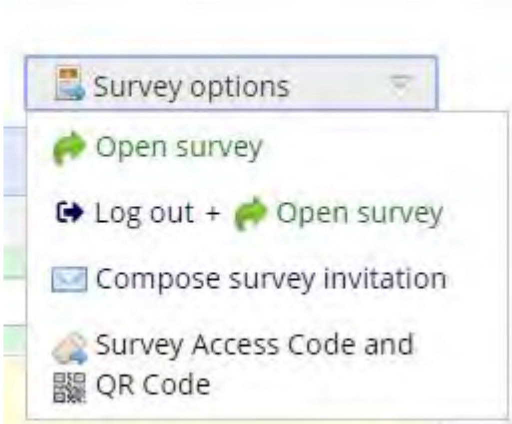
With those two pieces in place, REDCap will have the email address of the survey participant and therefore know where to send any follow-up surveys.

8.20.1 Testing a follow-up survey

To see how a follow-up survey will look, follow these steps. These instructions are for a Classic (not longitudinal) project whose first instrument is a survey, and therefore a public survey link is available:

1. Create a test record for the first survey. The easiest way to do this is to go to Survey Distribution Tools, Open Public Survey and enter test data.
2. Go to Add/Edit Records or the Record Status Dashboard. Find the record that you just created and select it. You should land on the Record Home page:

3. Click on the circle that aligns with the follow-up survey. You will now be on the form-version of that instrument for that specific record.
4. In the upper right-hand corner you will see a survey options button:

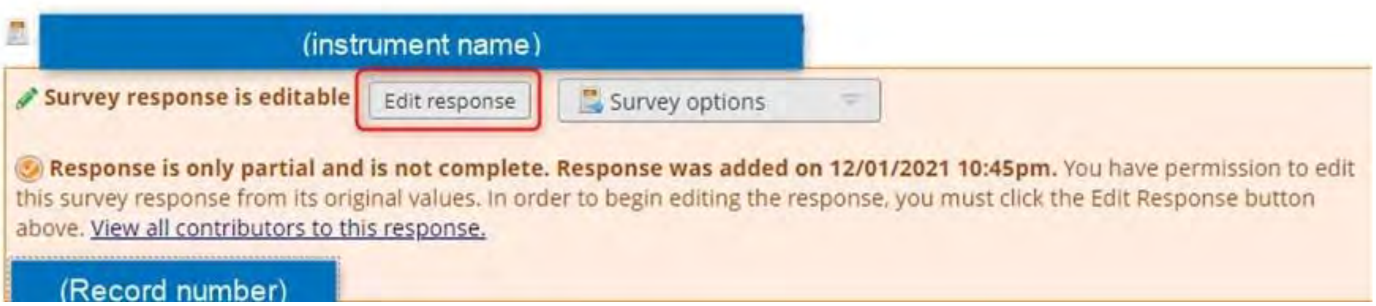


5. Select the Open survey option. It will open up a new tab so that you are now viewing the instrument as a survey for that specific record.

8.21 Marking a Survey as Complete

If a survey participant has submitted a partially completed survey but you want to mark the survey as complete, you can do so if you have edit survey responses permission. That permission is set via the User Rights application in the Data Viewing Rights section.

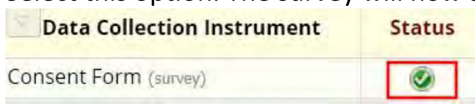
1. Go to the participant's record and open the instrument that you would like to mark complete.
2. Click the 'Edit response' button at the top of the survey page.



3. Once you click that, a box will appear in the upper right-hand corner with some save options. Click the down arrow on the button that says "Save &…":

4. You'll now see some other save options, including 'Save & Mark Survey as Complete'.

5. Select this option. The survey will now appear as complete.



8.22 ERASE CURRENT VALUE Message during survey entry

If a survey participant lets you know that they are seeing a message that reads “ERASE CURRENT VALUE OF FIELD”, it is not an error! This is REDCap letting the participant know that there is a value hidden on that page. REDCap is asking if the survey participant wants that hidden value to be over-written, or if they want to retain the value. This situation can occur because of a couple scenarios:

- there is a field with the action tags @DEFAULT + @HIDDEN, whose value is being pre-filled due to the default action tag AND is not displaying due to branching logic
- the survey participant has changed an answer(s). By changing the answer to a question, questions that previously displayed due to branching logic are now suppressed (because the condition which triggered the follow-up questions to appear no longer applies).

The message gives the survey participant the option to retain the existing data (by clicking ‘cancel’) or erase the data (by clicking ‘ok’).

As an example,

- let’s say survey respondent Keeda selected the answer “other” to a question “What is your favorite flavour ice cream? (variable name **flavour**).
- When she selects that choice, that causes the question asking her to describe her other favorite flavour (variable name **flavour_other**) to appear.
- Keeda enters ‘pistachio’ for the answer to flavour_other. Then Keeda saves the survey.
- If Keeda returns a few days later and changes her choice for that first question from ‘other’ to ‘strawberry’, she is going to be prompted with a message that says that REDCap is going to erase the data value she has saved for the subsequent question (the **flavour_other** question). That’s because that follow-up question no longer applies to her.

Keeda will then have the option to click ‘ok’ to erase her response ‘pistachio’ or to click ‘cancel’ to keep the original answers to those two questions.

9 Codebook

The Codebook is a list of your projects questions and serves as a quick reference for viewing the attributes of any given field in the project without having to download and interpret the Data Dictionary or access the Online Designer. This is particularly helpful when you are in Production mode since the only way you can access an instrument via the Online Designer is by entering into Draft Mode.

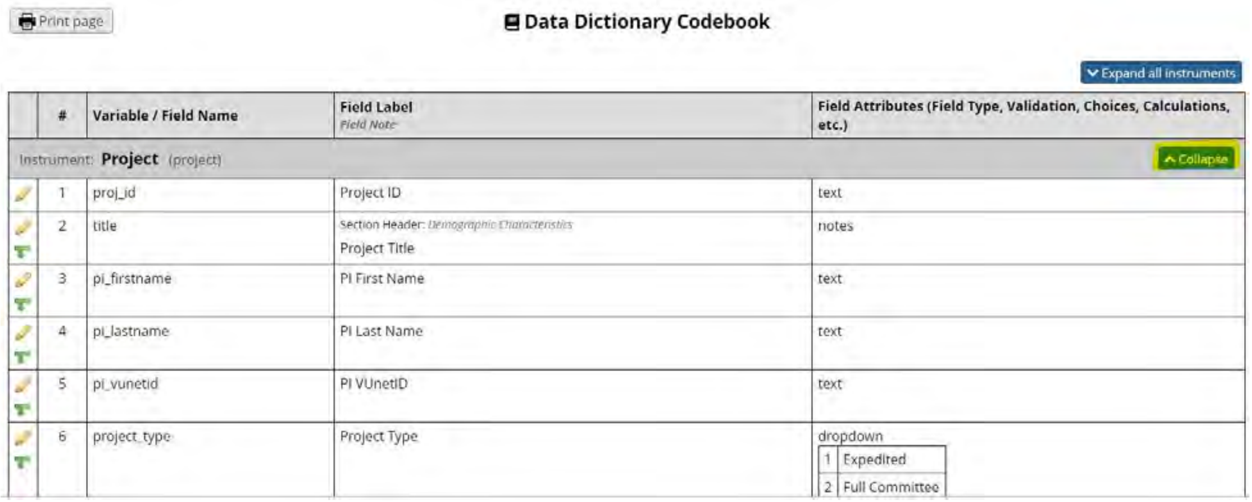
Times when it may be helpful to access the Codebook:

- When you are writing conditional logic for an Automated Survey Invitation
- When you are writing calculated fields
- When you are using piping

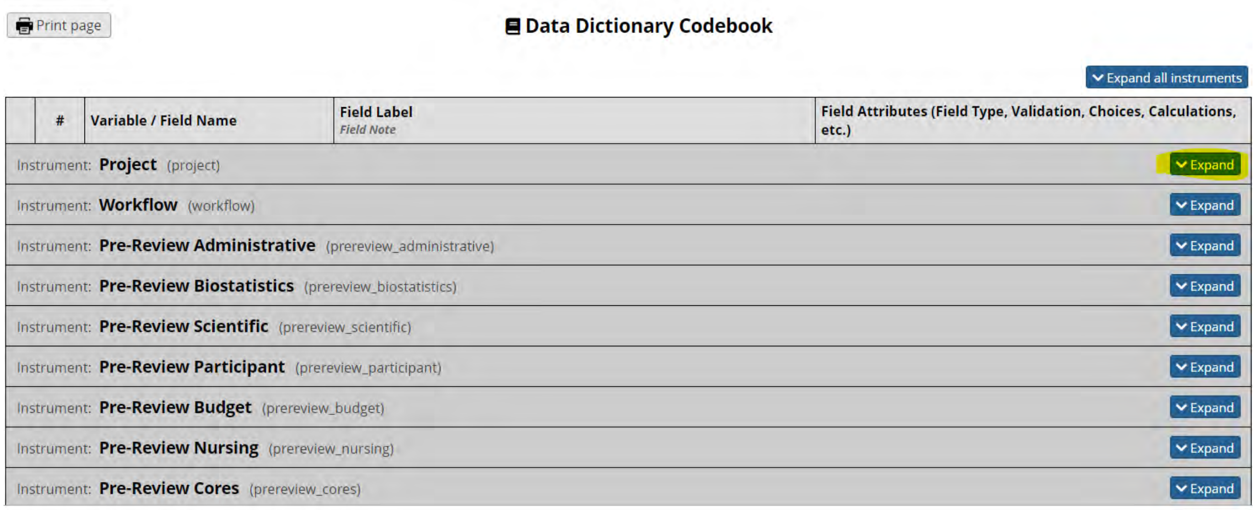
Access the codebook view by clicking the **Codebook** button () on the left-hand navigation bar Under Project Home and Design.

9.1 Collapse/expand instruments in Codebook

If you have multiple instruments and many fields within your project, the Codebook page can be very long. There may be times when you want to only look at the fields for a specific instrument. To condense the page so that you are only viewing the specific instrument you wish to look at, you can use the ‘collapse’ option.



Likewise, when all instruments are collapsed, you can expand them.



10 Quick Guide to using the Data Dictionary

1. If your project is in Development mode, go to Designer (in the Project Home and Design section on the left-hand menu) and click on the ‘Create snapshot of instruments’ button. You are essentially creating a ‘backup’ of your project.
2. From your left-hand menu, click on Dictionary (in the Project Home and Design section)
3. Click on the green link “Download the current Data Dictionary”
4. Save the file (keeping it as a .csv file – don’t convert it to an Excel workbook!) somewhere on your computer where you can easily locate it
    a. If you have special characters, it’s best to save the file as CSV UTF8.
5. Make changes in the spreadsheet

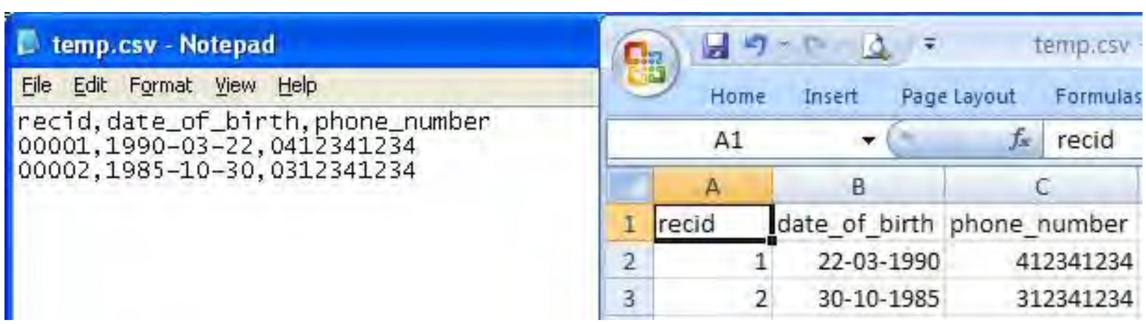
a. It might be helpful to have your Codebook open, for reference. You can access your codebook in the Project Home and Design section on the left-hand menu.

6. Return to the Dictionary page within your project. Click on the Choose File button, locate the file and upload it.
   a. If in Production mode, you will need to click on 'Enter draft mode' at the top of the page. The File upload button will now appear. After uploading the new data dictionary, click the 'Submit Changes for Review' button at the top of the page.

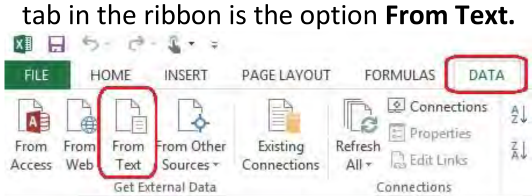
10.1 Note on CSV files

A CSV file, which is the format a data dictionary comes in, is simple plain text with one record per line and columns delimited with a comma – i.e. each individual value in each record is separated by a comma (CSV is an acronym for "Comma-Separated Values"). On Windows computers CSV files are set to open using Excel by default, and Excel will generally use the commas to separate the values into columns, but **a CSV file is NOT an Excel file**.

Beware Excel's not-so-helpful automatic data formatting: it can cause you to lose format information from CSV data such as leading zeros and specific date formatting...



It may be preferable to open your CSV file in Excel not by double-clicking on the file in the usual way, but by opening a blank Excel worksheet and using the import wizard: on the Data tab in the ribbon is the option **From Text.**



This method enables you to specify that you want Excel to treat some (or all) of your columns as text, thus displaying the data exactly as it appears in the source file, not using Excel's opinion of what you want to see.

10.2 Making changes to your project with the Data Dictionary

The Data Dictionary is a helpful tool to use when making global changes to your project (for instance, changing a word that appears several times in the project) or moving blocks of fields.

Why are there two methods that are essentially equivalent? There are different situations that suit the use of one method over the other:

Use the Online Designer...

- for small changes like adding or editing a single
- field
- to apply specific formatting to form names
- to gain familiarity with branching logic
- expressions using the drag-n-drop builder tinkering with and testing a calculation when you feel like it

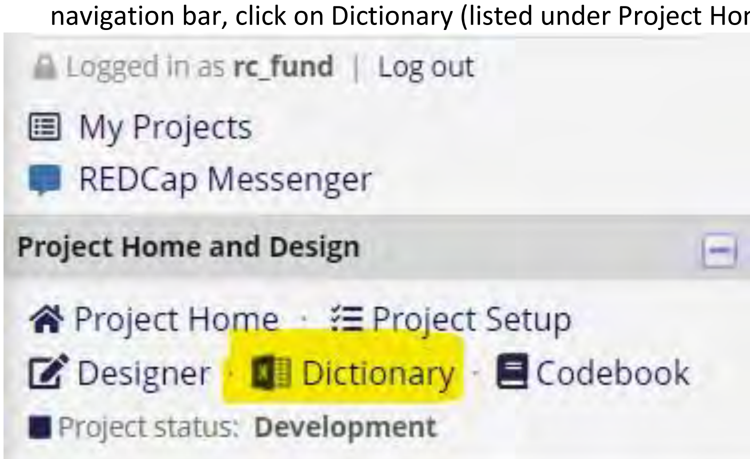
Use the Data Dictionary...

- when you have many fields to add, edit or
- remove
- to utilize Excel features such as auto-fill and copy/paste to quickly specify similar settings to multiple fields to keep a record of the current state as a backup that you may want to roll back to
- when you feel like it

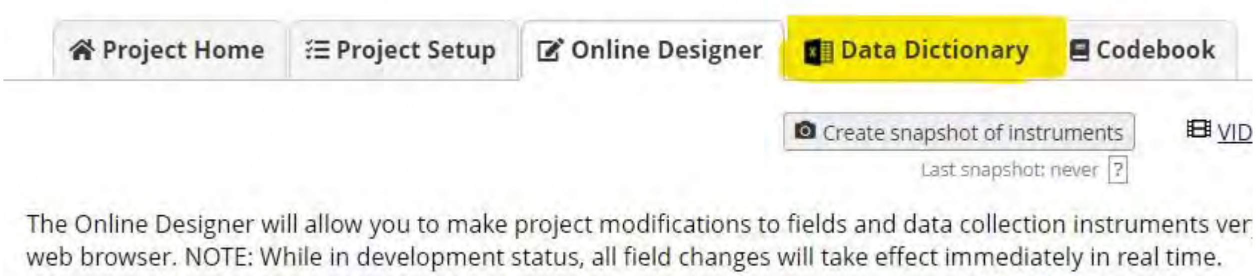
These are merely considerations to keep in mind: feel free to use whichever method you are most comfortable with.
The REDCap data dictionary is a CSV file that contains the specification of all fields in your data collection forms: the form metadata. In other words, the data dictionary is your project's code book.

10.3 Where to access the Data Dictionary

You can access the Data Dictionary from a couple places within your project. On the left-hand navigation bar, click on Dictionary (listed under Project Home and Design):

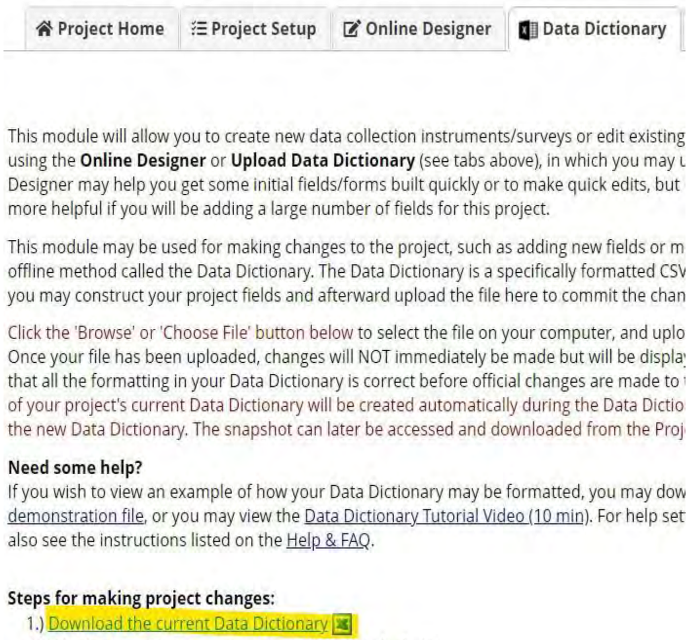


Or if you are on the Online Designer page, you can click on the Data Dictionary tab:



10.4 Download the Data Dictionary

Always download the current version of the data dictionary before making new updates.
Changes made using the online designer or by other users will be lost if you make changes in and upload an out-of-date data dictionary. To download the data dictionary, click on "Download the current Data Dictionary' from the Data Dictionary tab:



Design tip: create snapshot of instruments when in Development mode

Because any changes you make to the design of your project go into effect immediately when in Development mode, there is not an 'un-do' button if you change your mind.

It is more likely that you would want to un-do a change if there are multiple people designing the project at the same time and one person is making a design change that another team member is not aware of and who doesn't agree with the change.

To give yourself the opportunity to revert the design of the project to a previous iteration, it is a best practice to use the 'create snapshot of instruments' feature. You can find that feature on the Online Designer tab:

That feature automatically creates a data dictionary of the project at the time that you click the button. That data dictionary is saved to the Project Revision History tab. So, if you want to revert to that data dictionary, you can go to Project Revision History, download that data dictionary and then upload it back into the project. You can access the Project Revision History tab via Project Home or Project Setup:

Project Home | Project Setup | Other Functionality | Project Revision History

The tables below list information about when major changes and revisions were made to the project. The first table below di when the project was created, and if the project is in production, lists the time it was moved to production, as well as any rev made to the project fields while in production. You may also download any of the Data Dictionaries from past revisions. The t the bottom displays general statistics with regard to the times of project changes and revisions.

Project Revision History — Hide data dictionary snapshots

Created project	03/18/2019 9:18am	-	Created by rc_fund (REDCap Fundamentals)
Data dictionary snapshot	05/15/2019 3:27pm	Download data dictionary	Snapshot by rc_fund (REDCap Fundamentals)
Development status (current)	-	Download data dictionary	

10.5 Edit the Data Dictionary

The data dictionary is in CSV format, which is plain text with values delimited with commas. Excel is generally the tool of choice for editing CSV files, but you may use any spreadsheet program or text editor.

10.5.1 Data dictionary in Excel

	A	B	C	D	E	F
1	Variable / Field Name	Form Name	Section Header	Field Type	Field Label	Choices, Calculations,
2	study_id	demographics		text	Study ID	
3	first_name	demographics	Demographics Information	text	First Name	
4	last_name	demographics		text	Last Name	
5	dob	demographics		text	Date of Birth	
6	sex	demographics		dropdown	Gender	0, Female | 1, Male
7	address	demographics		notes	Street, City, State, ZIP	
8	phone_number	demographics		text	Phone number	
9	eventdate	visit_form		text	Date of Event	

10.5.2 Data dictionary in Notepad

REDCapUserGuide_DataDictionary_2012-06-22-1.csv - Notepad

File Edit Format View Help

```
"Variable / Field Name","Form Name","Section Header","Field Type","Field Label","Choices,
study_id,demographics,,text,"Study ID",,,,,,,,,,
first_name,demographics,"Demographics Information",text,"First Name",,,,,,,,,,
last_name,demographics,,text,"Last Name",,,,,,,,,,
dob,demographics,,text,"Date of Birth",,,date_dmy,,,,,,,
sex,demographics,,dropdown,Gender,"0, Female | 1, Male",,,,,,,,,
address,demographics,,notes,"Street, City, State, ZIP",,,,,,,,,,
phone_number,demographics,,text,"Phone number",,,phone,,,,,,,
eventdate,visit_form,,text,Date of Event,,,,,,,,,,
```

10.6 Things you can/can't do in the Data Dictionary

When editing the data dictionary there are certain things to bear in mind about what is, and what is not permitted:

You can... **You cannot...**

- Add new rows, i.e. add new fields and matrix • Add, remove, rename or rearrange columns groups • Have any blank rows
- Delete rows, i.e. remove fields • Mix up the fields from different forms – forms'
- Change form name (although some changes to fields must appear together in blocks of adjacent how names are formatted – e.g. ALL CAPS – must rows be done using the [Online Designer](#))
- Move fields to a different form
- Re-order fields in a form
- Re-order forms (but ensure that the record id field remains as the top row - the first field of the first form)

10.7 Saving the Data Dictionary

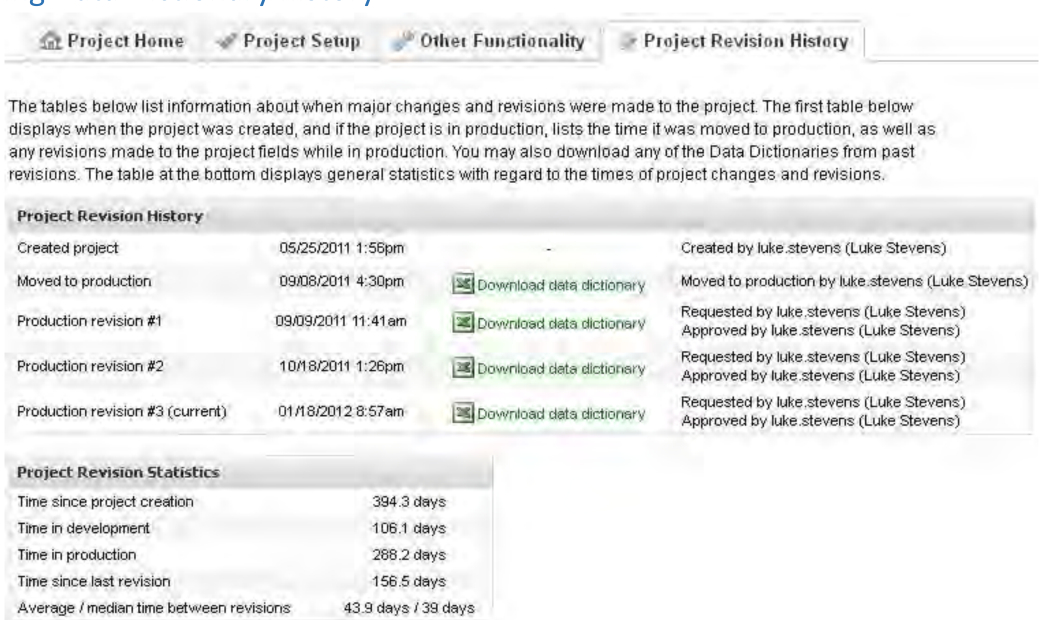
After making changes in the data dictionary, ensure that it is saved in CSV format, i.e. with the file extension .csv. Files with other extensions (e.g. .xlsx, .txt) cannot be uploaded.

10.8 Upload Data Dictionary

Browse to the file you saved and click **Upload File**. REDCap will load your file and perform a number of validation checks that ensure your settings are valid, for example:

- Check that the file is a valid CSV file containing the expected column headers
- Ensure all required settings are present (e.g. field name, form name, field label)
- Ensure settings are valid (e.g. no spaces in field names, choices specified in the correct format)
- Ensure type and validation settings are consistent (e.g. you cannot have a drop-down list field with a validation type of date)

10.9 Viewing Data Dictionary history


Project Home | Project Setup | Other Functionality | Project Revision History

The tables below list information about when major changes and revisions were made to the project. The first table below displays when the project was created, and if the project is in production, lists the time it was moved to production, as well as any revisions made to the project fields while in production. You may also download any of the Data Dictionaries from past revisions. The table at the bottom displays general statistics with regard to the times of project changes and revisions.

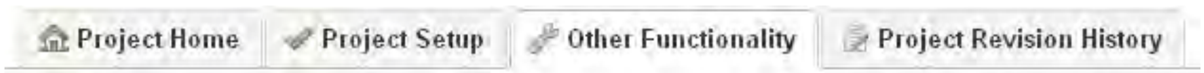
Project Revision History			
Created project	05/25/2011 1:56pm	-	Created by luke.stevens (Luke Stevens)
Moved to production	09/08/2011 4:30pm	Download data dictionary	Moved to production by luke.stevens (Luke Stevens)
Production revision #1	09/09/2011 11:41am	Download data dictionary	Requested by luke.stevens (Luke Stevens) Approved by luke.stevens (Luke Stevens)
Production revision #2	10/18/2011 1:26pm	Download data dictionary	Requested by luke.stevens (Luke Stevens) Approved by luke.stevens (Luke Stevens)
Production revision #3 (current)	01/18/2012 8:57am	Download data dictionary	Requested by luke.stevens (Luke Stevens) Approved by luke.stevens (Luke Stevens)

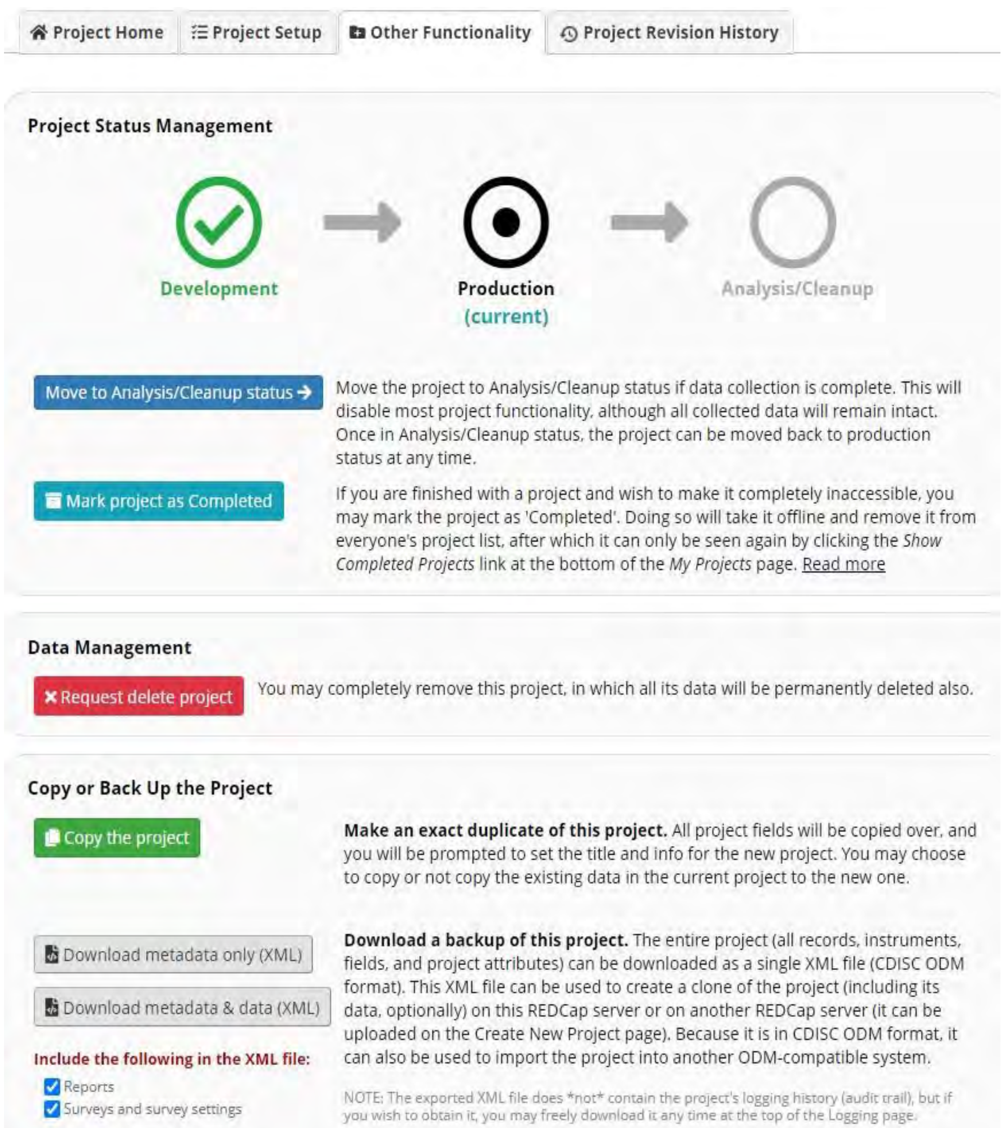
Project Revision Statistics	
Time since project creation	394.3 days
Time in development	106.1 days
Time in production	288.2 days
Time since last revision	156.5 days
Average / median time between revisions	43.9 days / 39 days

The **Project Revision History** tab gives you access to the details of each version of the data dictionary. You can download any of the data dictionary CSV files.

11 Other Functionality

You must have Project Design & Setup permissions to perform actions on the Other Functionality page. You can see the Other Functionality tab by clicking on Project Home or Project Setup.





The **Other Functionality** tab provides some additional project tools re: Project Status Management, Data Management and Copy/Backup Project capabilities.

11.1 Project Status Management (on the Other Functionality tab)

A REDCap project can exist in one of four status categories at any given time: Development, Production, Analysis/Cleanup or Complete. To see more detailed information about those statuses, see this page of this User Guide.

To change the status of your project to Analysis/Cleanup or to mark it as complete, you would go to the Other Functionality tab (via Project Home or Project Setup) and click the corresponding button.

11.2 Data Management (on the Other Functionality tab)

11.2.1 Deleting a project

If you wish to delete the entire project (including all the data), click on Project Setup and then click on the Other Functionality tab. In the Data Management section, you will see a button for 'Delete the project' or 'Request delete project', depending on if the project is in Development or Production.

- If your project is in Development, once you click 'delete the project', you will be prompted to confirm and then the project is immediately deleted.
- If your project is in Production, once you click the 'request delete project' button and confirm, a REDCap administrator will be alerted and will delete your project for you.

If you do not see the Project Setup and Other Functionality tabs, this means you do not have the User Rights to perform this function. You can check with another user on the project about your request to delete the project. You can find a list of users on the project on the Project Home tab.

11.2.2 Erase all data (development only):

If your project is in Development you may erase all currently collected data in the project. This will delete all data (including any survey responses), calendar events, documents uploaded onto forms/surveys, and all data export files stored in the File Repository. File attachments for fields/questions will NOT be deleted, nor will survey logos, survey participants, or files uploaded by users in the File Repository. You might wish to do this if you are doing testing in phases and wish to delete records related to any earlier phases of testing.

To perform this function, go to Project Setup and then click on the Other Functionality tab. You will see the button for 'Erase all data' in the Data Management section.

Two notes:

- If you do not see the Project Setup and Other Functionality tabs, this means you do not have the User Rights to perform this function. You can check with another user on the project about your request to delete the project. You can find a list of users on the project on the Project Home tab.
- Moving your project from Development to Production also gives you the ability to delete all records. The difference is that in addition to deleting data, you are also 'locking' the design framework of your project. That is the step you take when you are ready to collect real data.

11.2.3 Copy a project:

If you wish to make a copy of your project, you can first go to the Project Setup page (via the left-hand navigation bar in the Project Home and Design section) and then click on the Other functionality tab that you'll see in your right-hand workspace.

In the Copy or Back Up the Project section, click on the 'Copy the project' button. The first thing you'll need to do is to give the copied project a new name (it has to in some way be different from the name of the existing project). Then you'll have the opportunity to select which parts of the project to copy:

Essentially, by copying your project, you will now see both the original project and the copied project on your "My Projects" page when you are logged into REDCap.

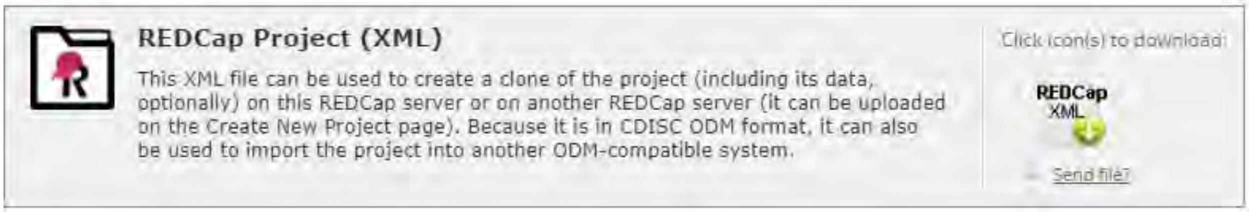
11.2.4 Download an XML of your project

If you want to create a backup of your project or be able to give it to someone else so that they can create the same project, you can use the XML option on the Other Functionality tab in your project. You get to this tab by first clicking on the Project Setup tab (via the left-hand navigation bar, in the Project Home and Design section).

Once you get to the Other Functionality tab, you'll see two XML options in the 'Copy or Back Up the Project' section. The first one is essentially the framework of your project. The second option is the framework and all the data.

Essentially, by creating an XML of your project, you will now have a file of your project. You can store it wherever it might be useful to you or share it with someone else. This is especially handy if you have a colleague working at a different institution that has its own REDCap installation. They can take that file and create a new project with it on their installation.

Please note: you would want to be VERY careful of where you store the XML file if you download the metadata **& data** (the second button). That's because your data might be sensitive information. If you choose to share an XML file that contains data, your best option would be to use the Send-It feature. Send-It allows you to secure share files via email. You can select that option during the download process:



12 Adding Data (Data Entry)

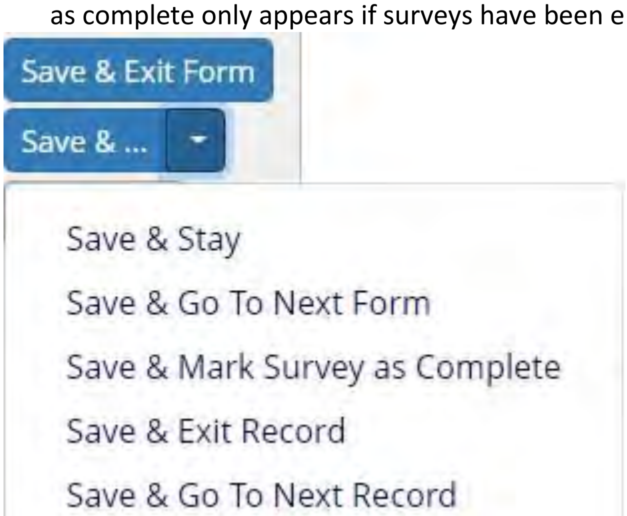
For a video overview of Data Entry, [see this link](). It is 19 minutes in length. You can access the video from the Home or My Projects tab by clicking on Training Videos. If you are in a REDCap project, look on the left-hand navigation bar under the Help & Information section at the bottom of the navigation bar.

12.1 What to know about data entry

- You can use the tab key to move from one question to the next
- Validation will force you to enter data enter a specific way
- Branching logic will determine what questions you see
- Required questions force you to enter an answer for those questions in order to save
- Each entry creates a record

12.2 Save options for data entry

At the bottom of the page you will see (some of) these options (the option to save & mark survey as complete only appears if surveys have been enabled on the project):



Save & Stay (Save and Stay) is a good option if you are entering complex data and you think it might take you awhile to get through the entire form. It will allow you to save what you have entered but still remain on the page.

Save & Go To Next Form (Save and Go To Next Form) is a good option if there are multiple instruments within the project and you want to enter data for the same record across multiple instruments. That option will take you to the next instrument for the same record you are currently on.

Save & Mark Survey as Complete (Save and Mark Survey as Complete) is a good option if you are entering data on behalf of a survey participant. It's important to use this option if there are subsequent surveys in the project. That is because if you are using the Survey Queue or Automated Survey Invitations, there are cases where the completion of an instrument AS A SURVEY determines whether or not a subsequent survey invitation gets sent. If you simply mark the with one of the other save options, REDCap doesn't know that the subsequent survey invitations should be triggered. Additionally, marking the form as a completed survey will generate a confirmation (if you have that set up in Survey Settings.) If you simply mark it complete as a data entry form, the confirmation email will not get sent.

Save & Exit Record (Save and Exit Record) is an option you might use if you are only entering the data for one instrument for one record.

Save & Go To Next Record is a good option when you are entering data for multiple records and you want to stay on the same instrument.

12.3 ERASE CURRENT VALUE Message during data entry

If, when performing data entry, you see a message that reads "ERASE CURRENT VALUE OF FIELD", it is not an error! This is REDCap letting you know that there is a value hidden on that page. REDCap is asking you if you want that hidden value to be over-written, or if you want to retain the value.

This situation can occur because of a couple scenarios:

- there is a field with the action tags @DEFAULT + @HIDDEN, whose value is being pre-filled due to the default action tag AND is not displaying due to branching logic
- the user entering the data has changed an answer(s). By changing the answer to a question, questions that previously displayed due to branching logic are now suppressed (because the condition which triggered the follow-up questions to appear no longer applies).

The message gives the user the option to retain the existing data (by clicking 'cancel') or erase the data (by clicking
'ok'). As an example,

- let's say project user Baratunde selected the answer "yes" to a question "Does the patient have diabetes? (variable name **hasdiabetes**).
- When Baratunde selects that choice, that causes a follow-up question to appear, "Does the patient take medication for their diabetes?" (variable name **takemedication**) to appear.
- Baratunde enters 'yes' for the answer to **takemedication**. Then Baratunde saves the survey.
- If Baratunde returns a few days later and changes the choice for that first question (hasdiabetes) from 'yes' to 'no', he is going to be prompted with a message that says that REDCap is going to erase the data value he has saved for the follow-up question (the **takemedication** question). That's because that follow-up question no longer applies.

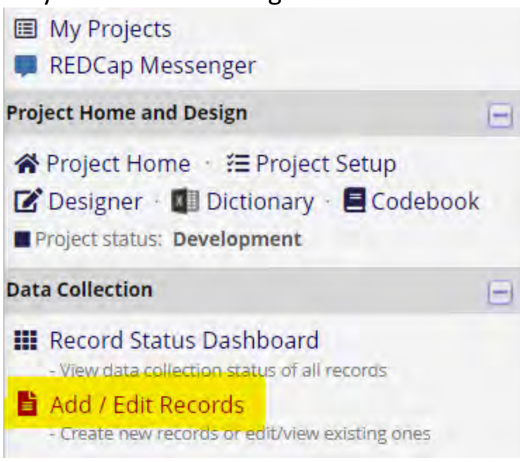
Baratunde will then have the option to click 'ok' to erase his response 'yes or to click 'cancel' to keep the original answers to those two questions.
If a user wants to pre-emptively check to see if any fields in the project will prompt the 'erase current value of field' message to appear, the user can run Data Quality Rule F. You do that by

clicking on the Data Quality link (on the lefthand navigation bar in the Application section) and clicking ‘Execute for Rule F’.

13 Viewing Data

13.1 View individual record

You can view any individual record within your project by clicking on the Add/Edit records link on your left-hand navigation bar.



Select the record from the drop-down menu. You will be brought to the Record Home Page of the record you selected. For longitudinal projects, you will see the Event Grid.

Design Tip for Viewing Records

You can add a label to a record number, so that as you are viewing a list of records in the Add/Edit records or Record Status Dashboard, you will know more information about the record rather than having to open it to see what data is in it. For instance, if the record represents a person, you can add the person’s first and last name as the custom record label. So instead of this:

Displaying: Instrument status only | Lock status only |

Record ID	Registration Survey	Internal form	Follow-up Survey	Internal form 2	Final survey
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

You will see this:

Record ID	Registration Survey	Internal form	Follow-up Survey	Internal form 2	Final survey
1 Bonnie Plunkett					
2 Kelly Kapoor					
3 Christy Plunkett					
4 Mindy Lahiri					
5 Sam Swarek					
6 Jake Peralta					
7 Shawn Spencer					
8 Andy McNally					
9 Gus Burton					
10 Danny Castellano					

For more information, see the Set a Custom Record Label section of this User Guide.

13.2 Search Records

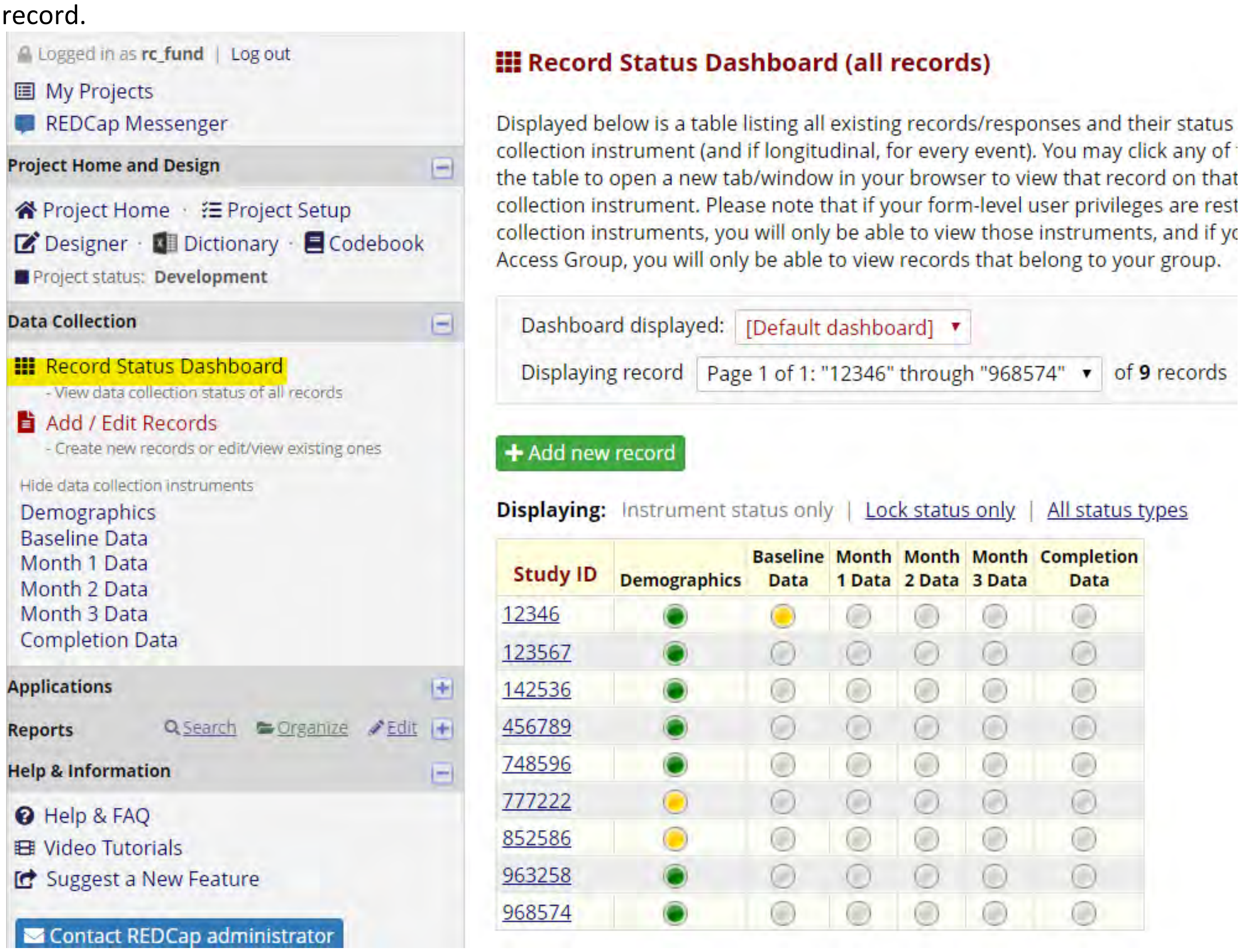
To search for an individual record by something other than the record identifier, you can use the **Data Search** section of Add/Edit Records. Only non-categorical fields appear in the list as they are most likely to contain useful identifiers.

With each keystroke of your typing, records with saved data matching your entry are shown in a list. Click an item in the list to select that record. You will be taken directly to the event/form for the data item you selected.

13.3 Record Status Dashboard

This is a table that lists all records/responses and their status for every data collection instrument in the project. To access it, click on Record Status Dashboard on the left-hand navigation bar, in the Data Collection section.

You may click on one of the icons in order to open the data collection instrument for a specific record.



A record that has been entered as a data entry form will have the circle filled with colour. A record that has been entered as a survey will have the colour and a checkmark in it.

13.4 Viewing Aggregate Data

See the Applications section of this User Guide re: Data Exports, Reports and Stats. You will learn how to view all of the data in your project and also how to select a sub-set of data for viewing.

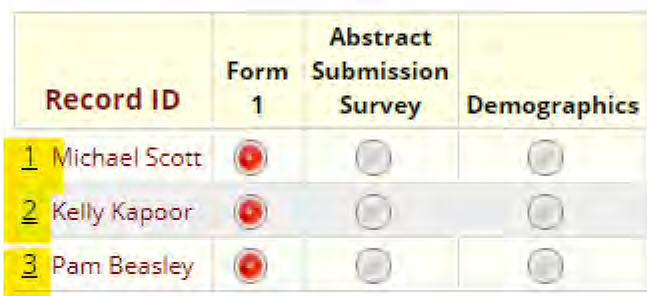
13.5 Rename records

If you have been assigned the permission to rename records (via the User Rights application)…

… you will be able to rename a record via the Record Home Page.

To get to the record home page, click on the hyperlink in the record ID column. (In your project, the record ID might be called something else – Study ID, Project ID, etc). For our example here, we're referring to it as Record ID.)

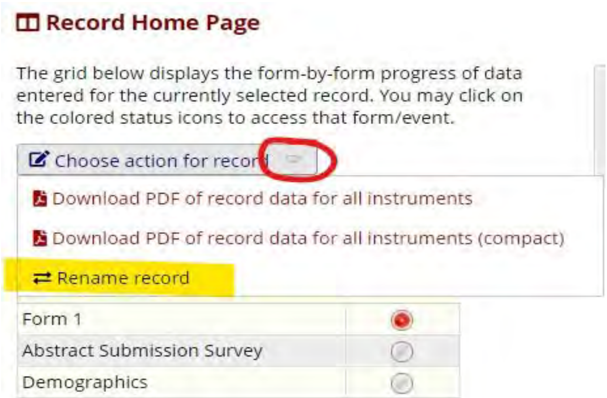
For instance, if you go to Record Status Dashboard, the first column is Record ID and it has a hyperlink in each row:



Record ID	Form 1	Abstract Submission Survey	Demographics
1 Michael Scott			
2 Kelly Kapoor			
3 Pam Beasley			

If you click on that hyperlink for one of the records, it will bring you to the Record Home page:

You can click on 'Choose action for record' and select the option to 'rename record':



If you don't see the option for 'Rename record', that means you have not been given permission to rename records.

Renaming records is something that users might want to do if they have surveys enabled on their project, since having surveys enabled forces auto-numbering. This gives them the opportunity to assign a name (other than the auto-assigned number) that conforms with their study protocol. Of course, this can only happen after the record is created.

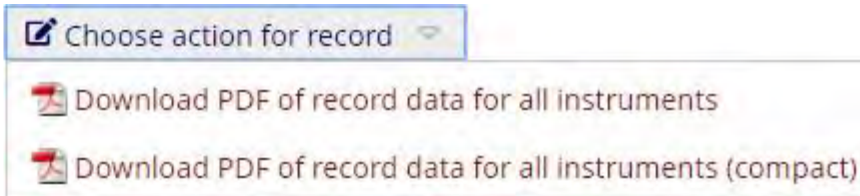
13.6 Printing PDFs of your data

There are multiple ways to print PDFs of the records in your project. To customize the appearance of the PDF, please see PDF Customizations.

13.6.1 Printing PDFs of one record across all instruments

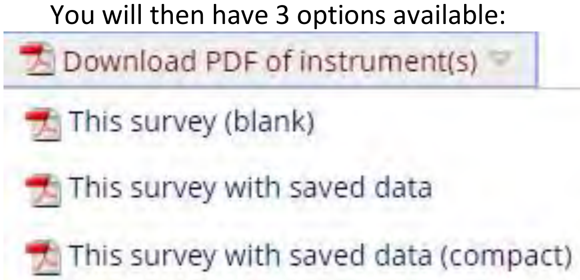
From Add/Edit Records - Select record from drop-down menu. You are now on the Record Home Page.

You can download either a full version (1st option listed) or compact version (2nd option listed) of the data. The first version will give you all the fields and all the responses in the instrument, regardless of whether the question was hidden due to branching logic or if it was left empty. A compact version shows only the fields that were asked and does show questions that were hidden due to branching logic. If you have multiple instruments, the PDF will contain data across all instruments.



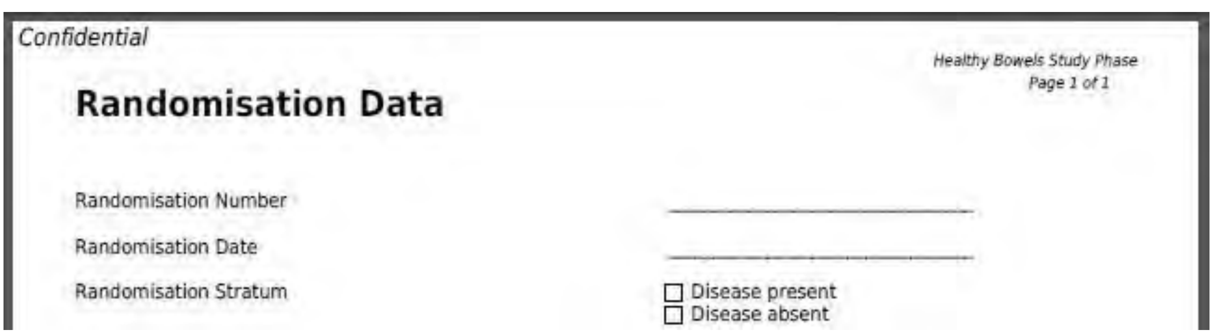
13.6.2 Printing PDF of one instrument for a record

If you wish to download a PDF of only one instrument, click on the record for that instrument. You can get to a specific instrument for a record by going to the Record Home Page via Add/Edit records (see above) or via the Record Status Dashboard.
You will then have 3 options available:



Again, the compact version simply means that it will not show the fields that were hidden due to branching logic.

13.6.3 Note about printing PDFs of blank instruments


Confidential

Healthy Bowels Study Phase
Page 1 of 1

Randomisation Data

Randomisation Number ____________

Randomisation Date ____________

Randomisation Stratum ☐ Disease present
☐ Disease absent

Note that the document produced is not suitable for use as a paper data entry form because it does not provide sufficient guidance on expected data formats and coding to the person completing the form and the data entry person. For example, even three simple fields in the screenshot below would lead to a number of questions:

1. Is Randomization Number expected to be numeric? Could it be alphanumeric?
2. How many characters are expected for Randomization Number?

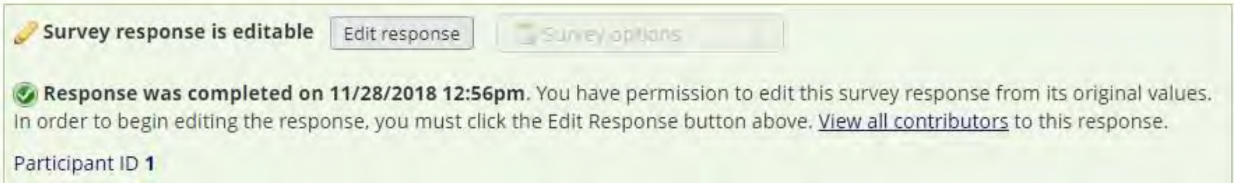
3. What format should be used for writing dates? dd-mm-yy? mm/dd/yyyy? dd-mmm-yyyy? yyyy-mm- dd? Consistency is very important, especially for projects running in a number of countries.
4. How does the data entry person encode the response for Randomization Stratum? 1=present, 2=absent? 1=present, 0=absent?
5. For all fields, what code can the data entry person enter if data is missing from the form? What about if data is illegible or otherwise raises some query?

14 Changing data

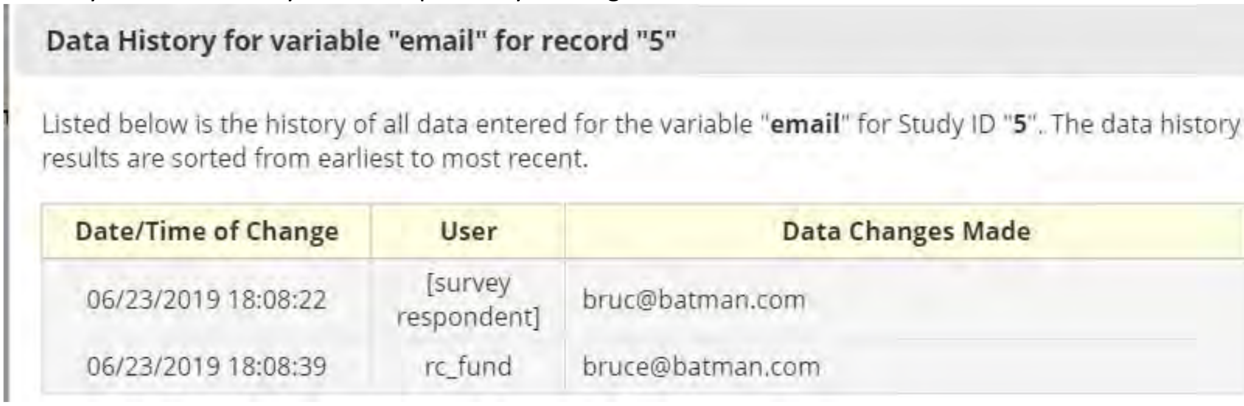
14.1 Edit records (edit response)

To edit a **data entry form**, you must have been granted the right level of access by the REDCap Administrator. This is to ensure the participant's responses are as close to "source of truth" as possible. With this user right, you could then go to the record, make changes and save. If you over-write data that has been previously entered, you may view the history of the response by clicking on the 'H' next to the field:

Editing survey responses are even more tightly controlled and require REB / APQIP Approval for each member of the study team that will need this level of access. Audits will be performed at the various timepoints as well as the end of the study to ensure there has not been a significant number of changes, either overall or by a single user.
With this user right, you could then go to the record, click on the 'edit response' button.



You can make changes and save. If you over-write data that has been previously entered, you may view the history of the response by clicking on the 'H' next to the field:



Data History for variable "email" for record "5"

Listed below is the history of all data entered for the variable "**email**" for Study ID "**5**". The data history results are sorted from earliest to most recent.

Date/Time of Change	User	Data Changes Made
06/23/2019 18:08:22	[survey respondent]	bruc@batman.com
06/23/2019 18:08:39	rc_fund	bruce@batman.com

14.2 Delete Records

To delete a record for a project that is in production you must obtain REB / APQIP Approval or Acknowledgement, and then submit this paperwork to the REDCap Administrator. The REDCap Administrator will then review the request and if appropriate will delete the requested record. NOTE: Once deleted a record cannot be restored, so it is absolutely imperative that the correct record is identified

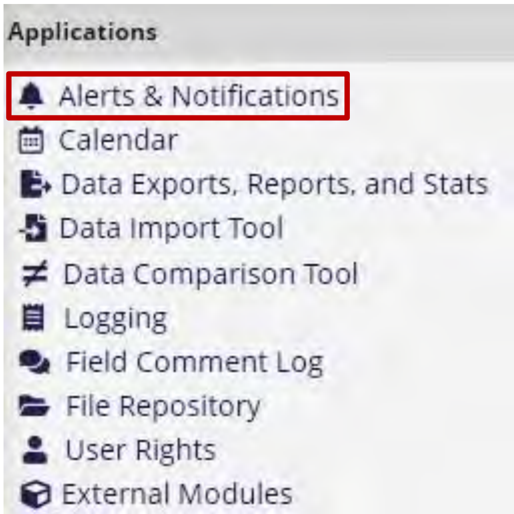
15 Applications

15.1 Alerts & Notifications

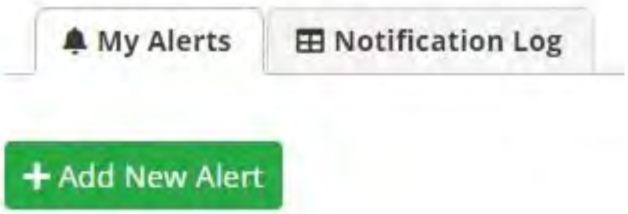
The Alerts & Notifications feature allows you to construct alerts and send customized email notifications. These notifications may be sent to one or more recipients (a user on the project, a survey respondent or someone else) and can be triggered or scheduled when a form/survey is saved and/or based on conditional logic whenever data is saved or imported.
When adding/editing an alert, you will need to 1) set how the alert gets triggered, 2) define when the notification should be sent (including how many times), and 3) specify the recipient, sender, message text, and other settings for the notification.
For the message, you may utilize customized options such as rich text, the piping of field variables (including Smart Variables), and uploading multiple file attachments.
Alerts apply to both data entry forms and surveys, and they also allow for more options regarding who can be the recipient of a notification (project users, survey participants, etc.).
A video tutorial of Alerts & Notifications can be found at this link:
https://vimeo.com/435876248/ef0dc53ca8

To create an Alert using Alerts & Notifications

To create an alert, click on Alerts & Notifications in the Applications section on the left-hand navigation bar.



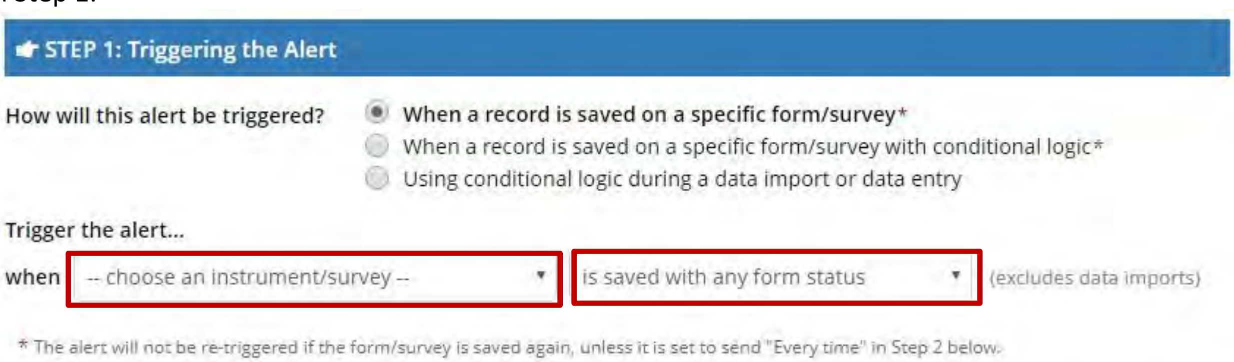
Then click on the Add New Alert button:



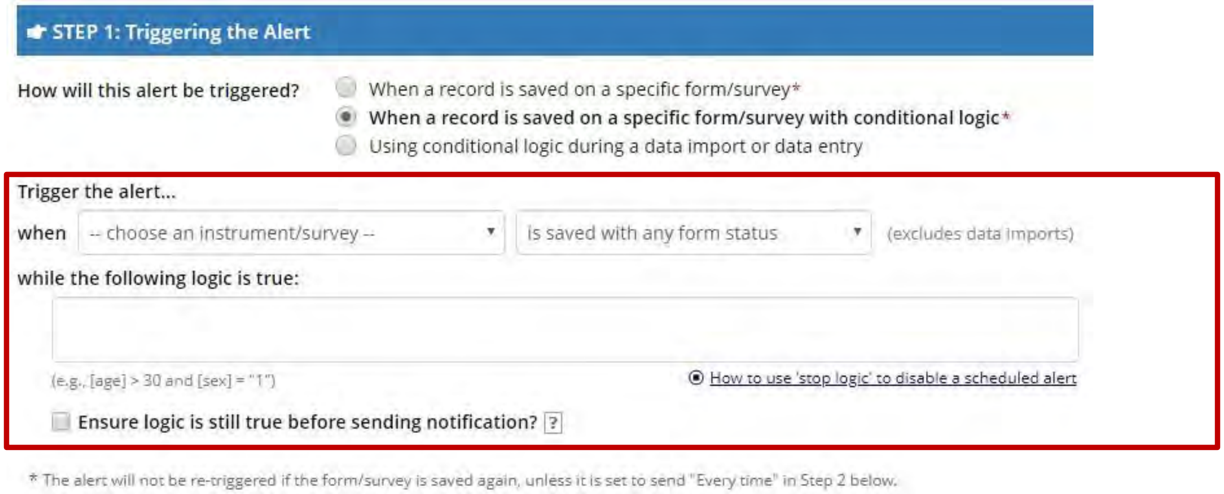
You will then see the following sections for you to configure:

Title the Alert
You can title your alert, which is helpful if you have many alerts. This is a way to distinguish one alert from another.

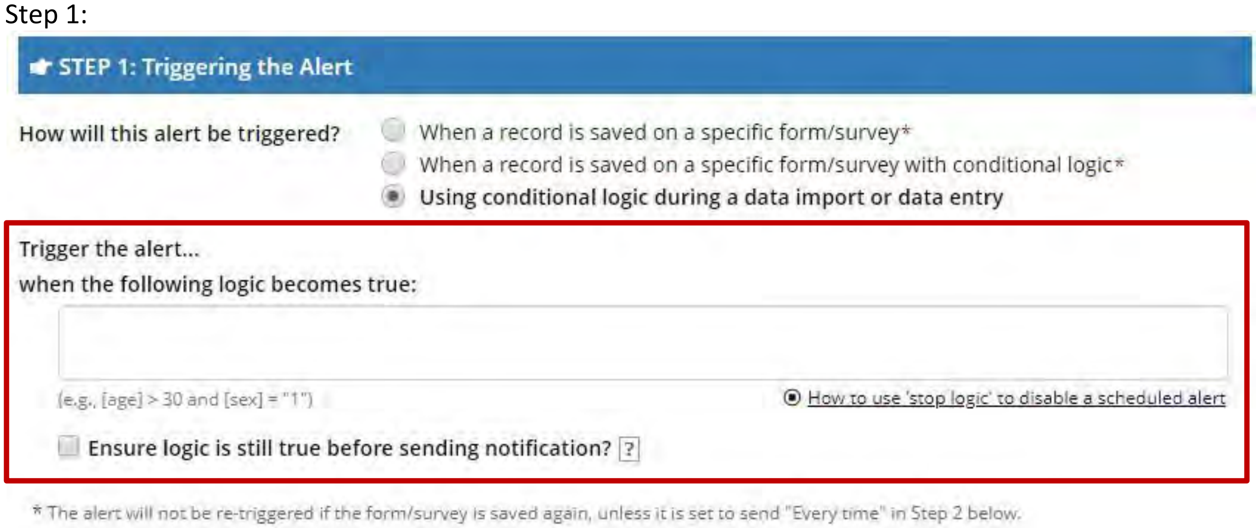
Step 1 of Alert setup
If the condition for triggering the alert is simply that a record is saved, these would be your choices in Step 1:



If the condition for triggering the alert is based on conditional logic, these are the choices you will see in Step 1:

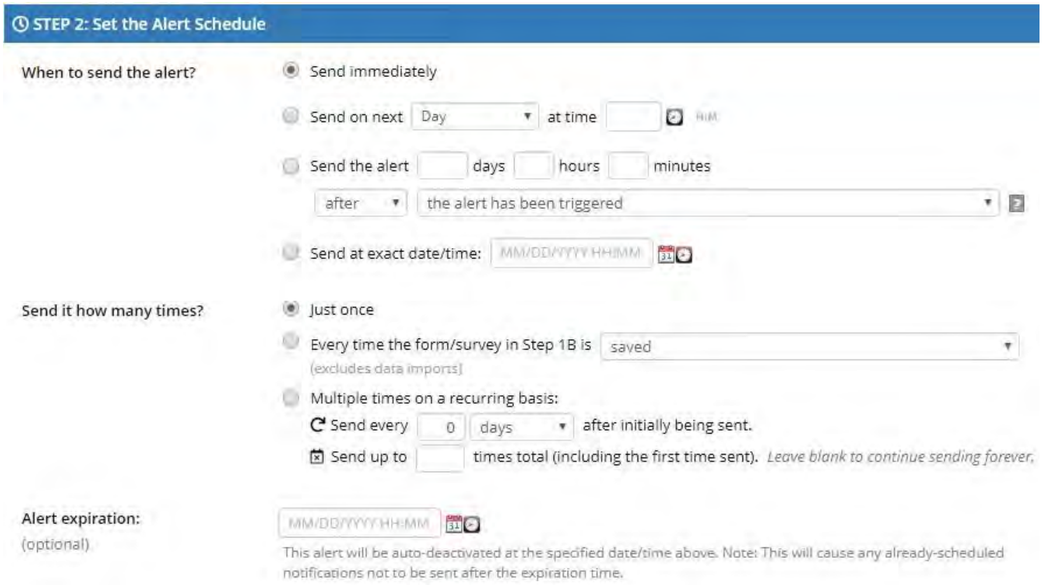


If the condition for triggering the alert is based on data import, these are the choices you will see in Step 1:



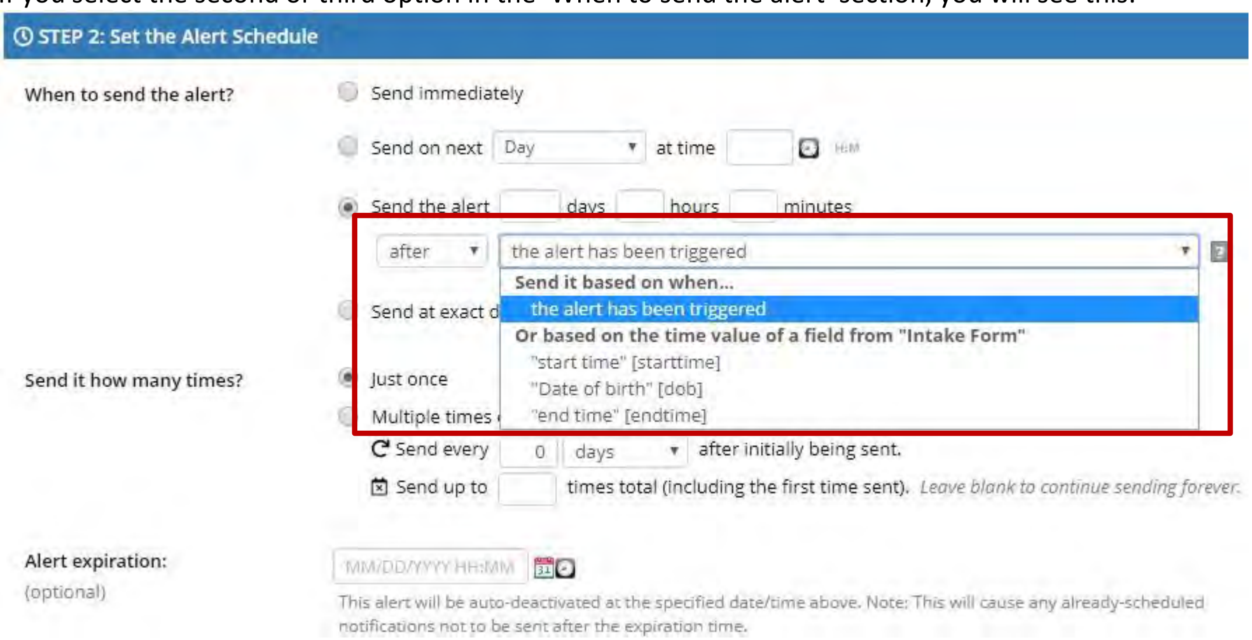
Step 2 of Alert setup

This is the section where you tell REDCap when to send the alert and how many times to send it.



15.1.1 Date-based timing for Alert

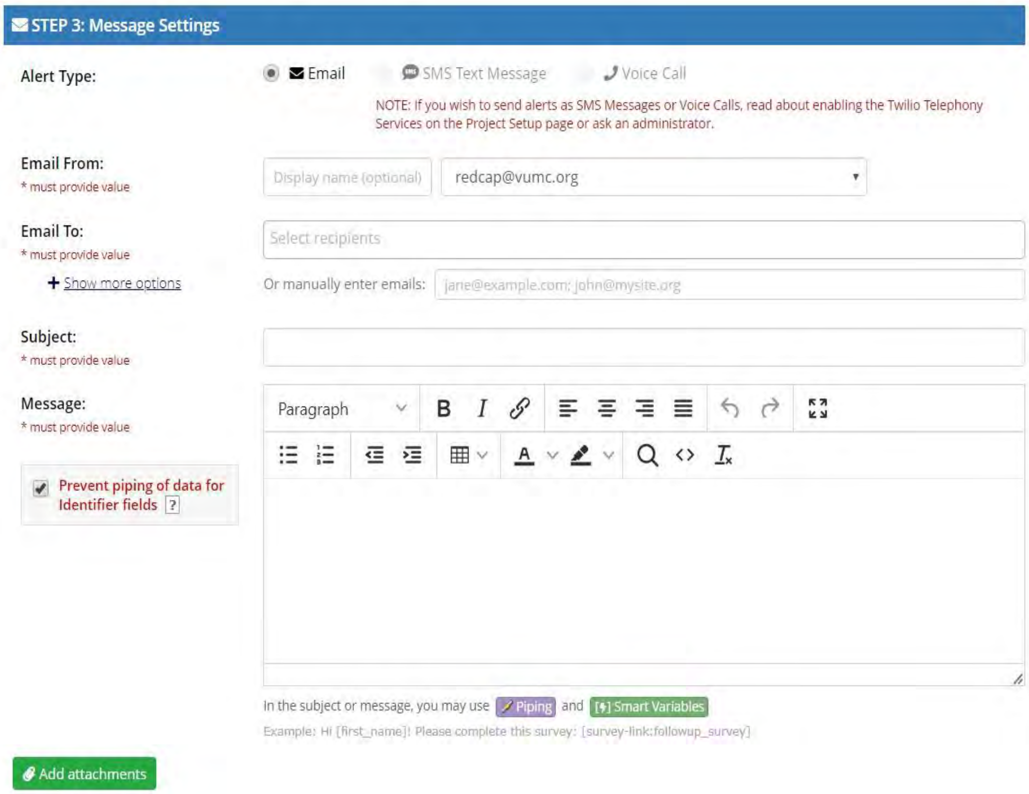
If you select the second or third option in the 'When to send the alert' section, you will see this:



Note that you have the option to send the alert based on a date-validated field in your project. This is helpful if the date you want to send the alert is based on a date that is relative to an individual record and is not the same for all records.

Step 3 of Alert setup

This is the section where you configure who the alert comes from, who it will go to, who to email if there are message send failures, the subject line and body of the email and upload attachments.



Alert Type: This setting will default to e-mail. If you have Twilio enabled on your project, you will have the ability to set it to SMS message or voice call.

Email from: There is a drop-down arrow next to the 'From' box. If you click on it, you will see the email addresses associated with any user on the project. If you want the email to come from an email address that is not listed in that drop-down list, see the instructions regarding Associating another email address.

Email To: This can be an email address captured in a field on the project or a user on the project. When you click on the drop-down arrow, you will see a list of email-validated text box fields and the email addresses associated with the users on the project. If you wish the alert to go to someone who is not a user on the project, simply manually type the email address in the second box (labeled 'or manually enter emails').

Email CC and Email BCC: click on the 'show more options' link located below Email To to see these.

Email to send email-failure errors: put the email address of the person managing the alert. If the recipient's email client rejects your message for some reason (e.g. the file size is too big), then this person will be notified.

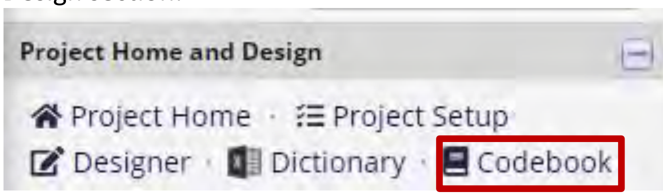
Note: if you are attaching a file(s) to the alert, it is highly recommended that you put an email address in the 'Email to send email-failure errors'. That way, if the recipient's email client rejects your message for some reason (e.g. the file size is too big), then someone will be notified. The maximum file size for each attachment is 10 MB. **Piping in Alerts**

The box 'Prevent piping of data for identifier fields' is automatically checked for all alerts. This means that any field variables (e.g., [date_of_birth]) that exist in the alert's subject line or message will not have their value piped if the field has been tagged as an 'Identifier' field. In this case, it will simply replace the field variable with [*DATA REMOVED*] rather than piping the actual data into the message. This is a preventative measure, since an Alert is sent via email and email is not a secure form of communication. If you wish to pipe identifiable information into the subject line or body of the email message, you will have to un-check that box. NOTE: Sending PHI through these emails will require REB / APQIP Approval. The REDCap Administrator will stop or modify any project that is attempting to send PHI without the appropriate approvals.

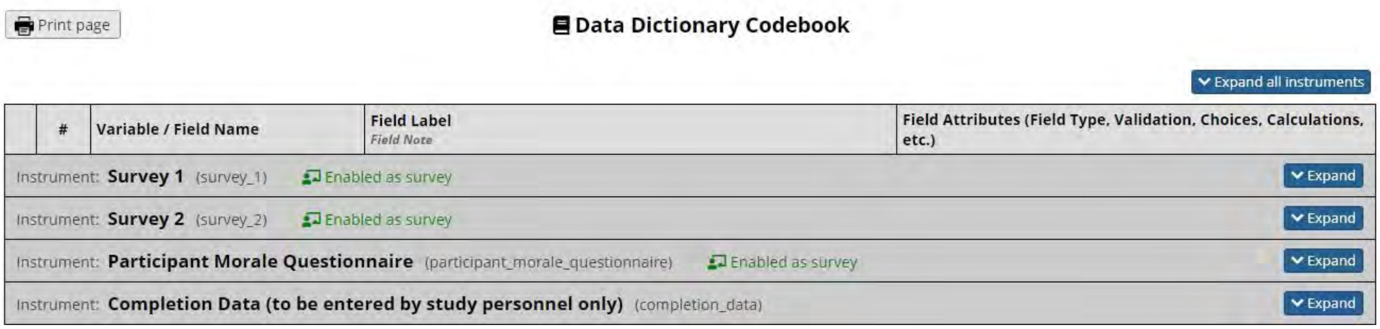
Adding a smart variable survey link to an alert

Many users wish to add a smart variable link to a follow-up survey in their alert. You'll need to look in your Codebook for information to structure that smart variable. It is in the codebook that you will find the back-end name of your survey instrument.

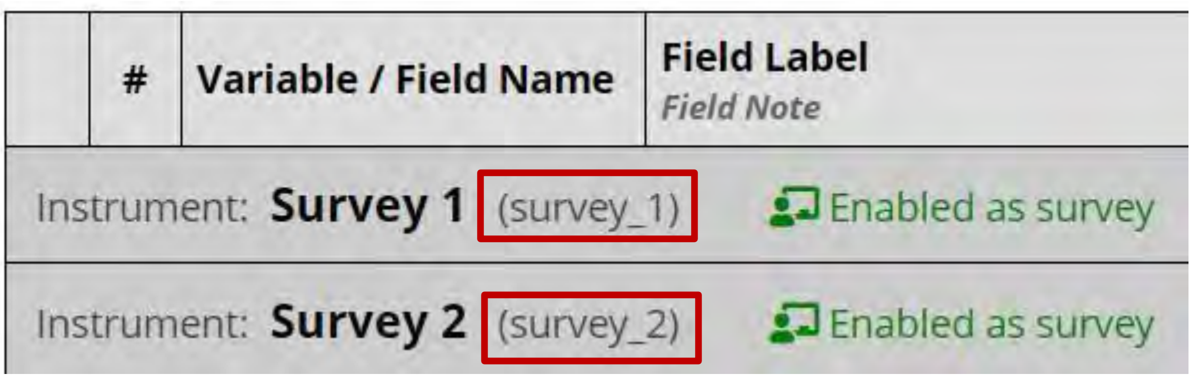
To access your Codebook, click on the link in the left-hand navigation bar in the Project Home and Design section:



You'll then see, in your workspace on the right, a listing of all the instruments and variables in your project. You can click on the blue button 'collapse all instruments' to see a concise listing of your instrument names:



You'll note that next to the survey title is a parenthetical statement:



That is the back-end instrument name that you need to include in a smart variable survey link. Here is how you structure your smart variable for a survey link:

[survey-url:instrument]	The web address (URL) of the specified survey for the current record/event/instance. The format must be [survey-url] or [survey-url:instrument], in which 'instrument' is the unique form name of the desired instrument. This can be used simply as [survey-url] inside the content of a survey invitation, in which 'instrument' is assumed to be the current survey instrument.	[survey-url:followup_survey]	https://redcap.vanderbilt.edu/surveys/?s=fake
		[previous-event-name][survey-url:followup_survey]	https://redcap.vanderbilt.edu/surveys/?s=fake
[survey-link:instrument:Custom Text]	The HTML web link that, when clicked, will navigate to the specified survey for the current record/event/instance. The format must be [survey-link], [survey-link:instrument], or [survey-link:instrument:Custom Text], in which 'instrument' is the unique form name of the desired instrument. 'Custom Text' is an optional parameter whereby you can specify the visible link text, and if it is not provided, it defaults to the survey title of the survey. The format [survey-link:Custom Text] can also be used if the instrument is assumed, such as when viewing a form or in a survey invitation. Also, it can be used simply as [survey-link] inside the content of a survey invitation, in which 'instrument' is assumed to be the current survey instrument.	[survey-link:followup_survey]	Follow-up Survey
		[next-event-name][survey-link:followup_survey]	Follow-up Survey
		[survey-link:prescreening:Take the pre-screening survey]	Take the pre-screening survey

The word 'instrument', as written in the above smart variables, is meant to be substituted with your back-end instrument name.

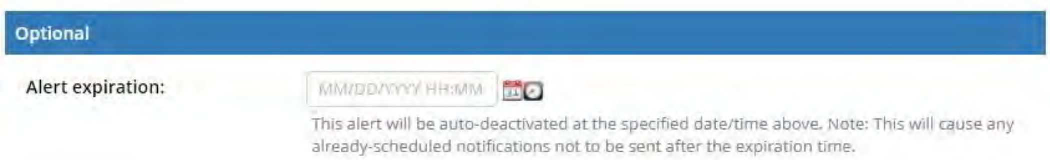
So in the example project, if you want to provide the smart variable survey link to Survey 2, it would look like this:

[survey-link:survey_2]

That string of text is what you write in the message section of the alert. You are seeing those words. But when the alert recipient views the message, they will see a hyperlink to the survey. REDCap is smart enough to know to send the specific survey link (tied to the recipient's record) to that person.

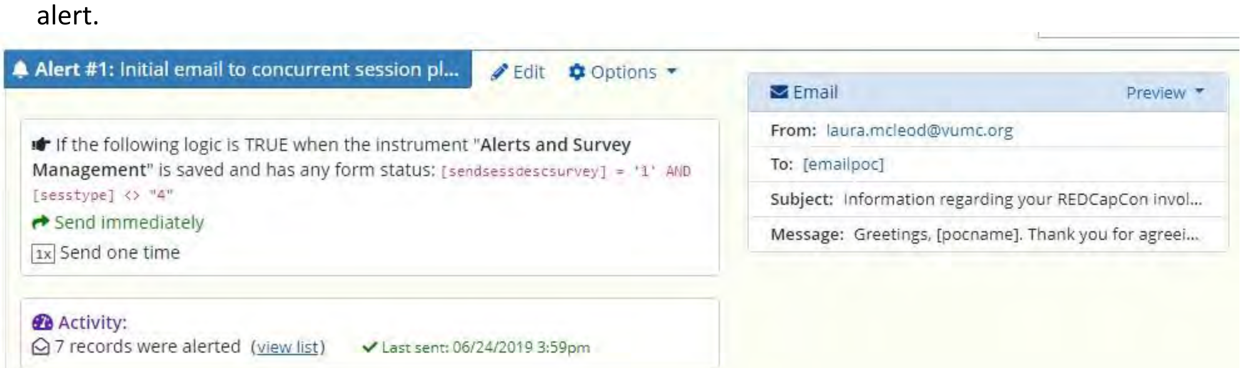
15.1.2 Optional setting in Alert

If you wish for REDCap to automatically expire your alert at a specified time, you can set that here.



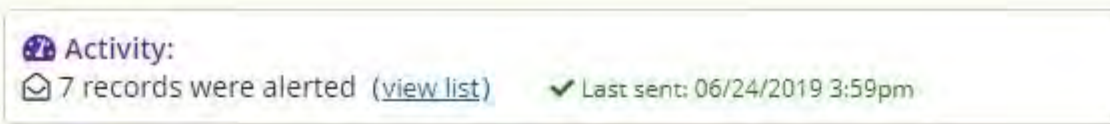
15.1.3 Alert listing

Once you have created your alert, an abbreviated listing will appear, showing the highlights of the alert.

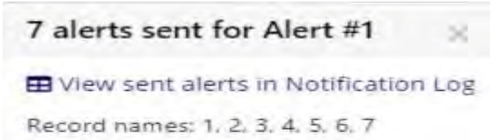


15.1.4 Alert Activity

To see a summary of what activity has occurred for the alert, you can look at the Activity section of your alert on the Alerts & Notifications page,



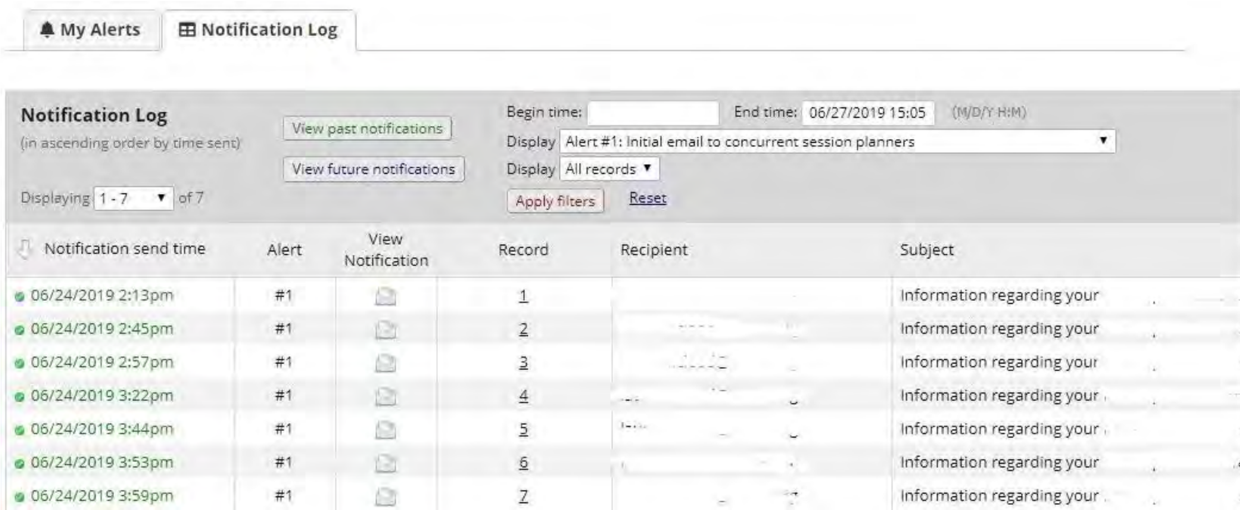
If you click on the view list link, you will see something like this:



Please note, the record numbers are not hyperlinks. To see a detailed listing of Alerts sent, click on the View sent alerts in Notification Log link.

15.1.5 *Notification Log*

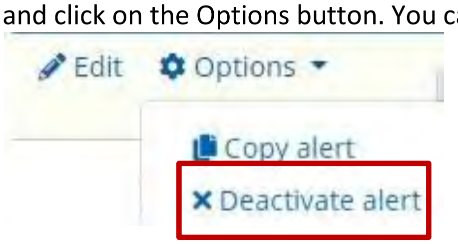
The notification log is a detailed listing of what alerts have been sent. It might look something like this:



You will note that the alert number, not the name that you gave the alert, is listed. Also, the email address in this image has been obscured but you will see the first email address of the person to whom the alert was sent to. If you wish to view other recipients of the email (other people listed in the To, CC or BCC sections), click on the View Notification icon. You will see there a copy of the Alert.

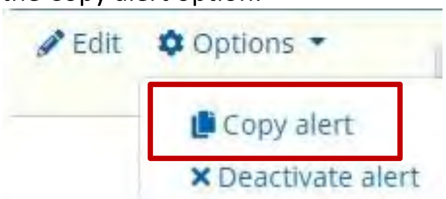
15.1.6 Deactivating Alert

If you wish to manually deactivate an alert, go to your Alerts & Notifications page, find the alert and click on the Options button. You can then click on the Deactivate alert option:



15.1.7 Copying Alert (Copy alert)

Sometimes you might need to set up an alert that is very similar to one you've already created, but with a small change. To easily copy the existing alert, you would go to the Alerts & Notifications page, find the existing alert and click on the Options button. You can then click on the Copy alert option:



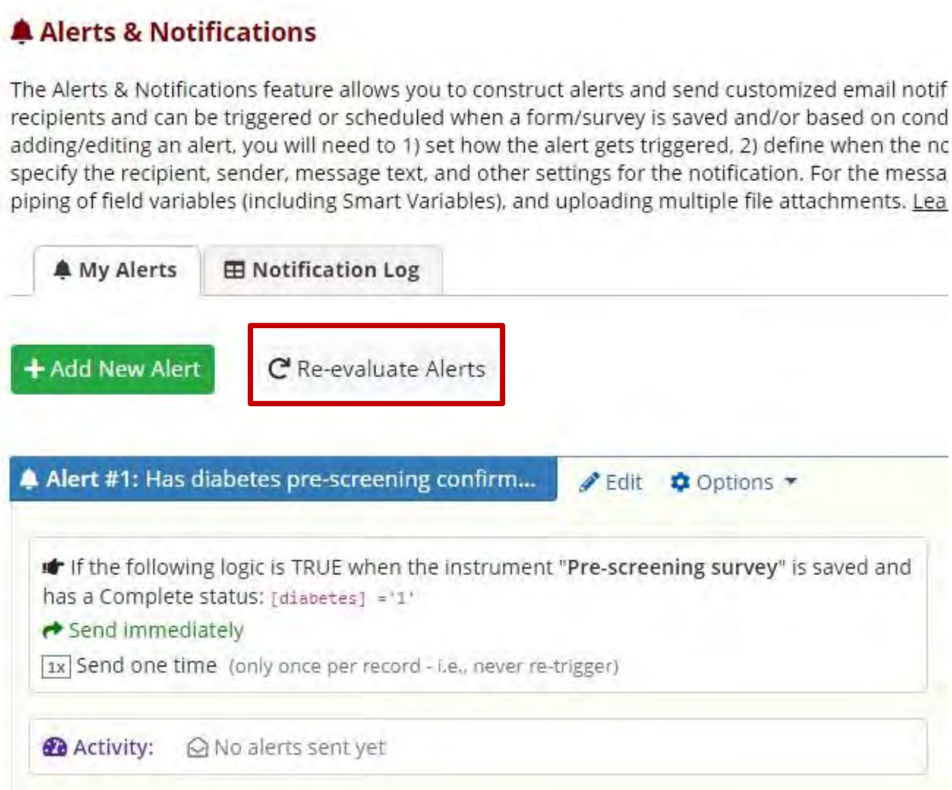
You would then edit the alert.

15.1.8 Editing Alert (Edit alert)

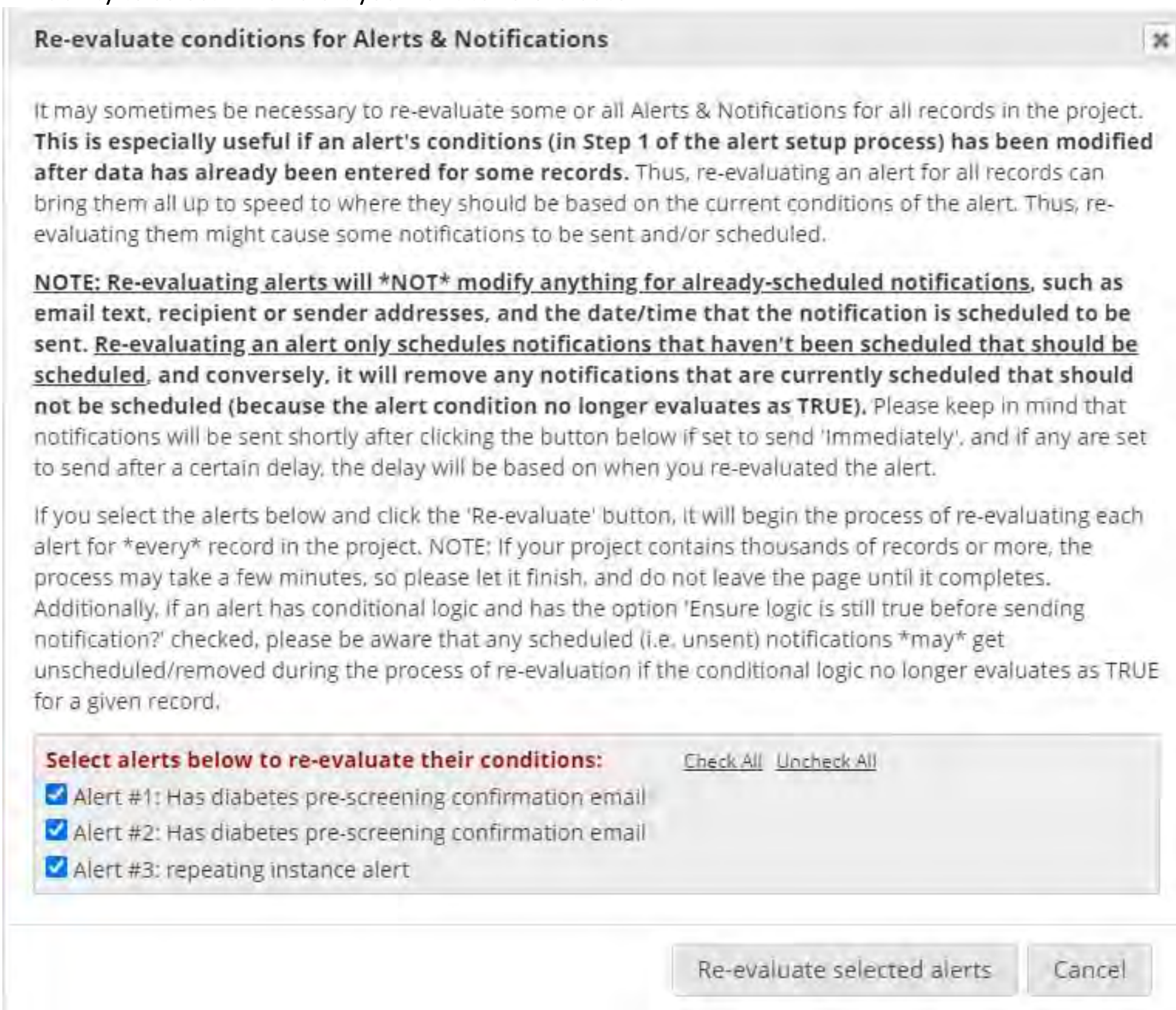
To edit an alert, you would go to the Alerts & Notifications page, find the existing alert and click on the Edit icon:

15.1.9 Re-evaluating Alerts

There is a button on the Alerts & Notification page that you can click to re-evaluate alerts.



This button manually triggers alerts. This is useful for sending alerts to records that existed before the alert was created or if the data changed in existing records so that they now meet the conditional logic of the alert. Reminder: new alerts don't automatically trigger retroactively. Warning: Making changes to the conditional logic in a project in Production and then re-evaluating your alert will resend the email to ANY and ALL participants that meet the new criteria, including any who would have received an email based on the old logic. Please ensure that you test, validate and review the logic before (re-sending) these emails. If you inadvertently email participants that you did not mean to, 1) Contact the REDCap Administrator immediately and 2) A Protocol Deviation will need to be submitted to the REB indicating what happened, who received the email, etc. You can see in the below screenshot that you have the ability to select which alert you want to re-evaluate:

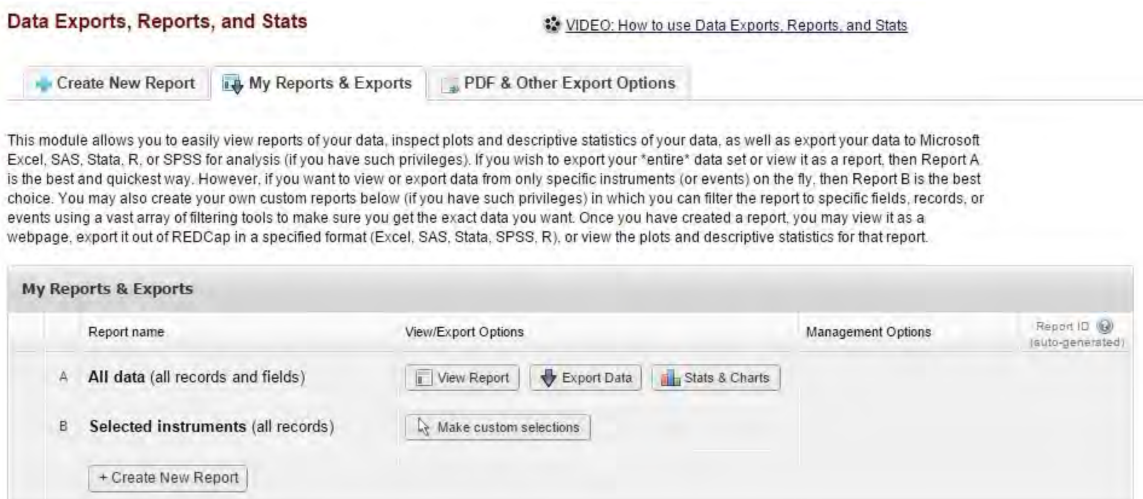


15.2 Calendar (for longitudinal projects only)

The calendar application can be used when the project is a longitudinal project. Please go to the [Longitudinal Projects] section of this User Guide for more information. You can also see the training video embedded in the application or find further information on the topic in the Help & FAQ section within REDCap itself.

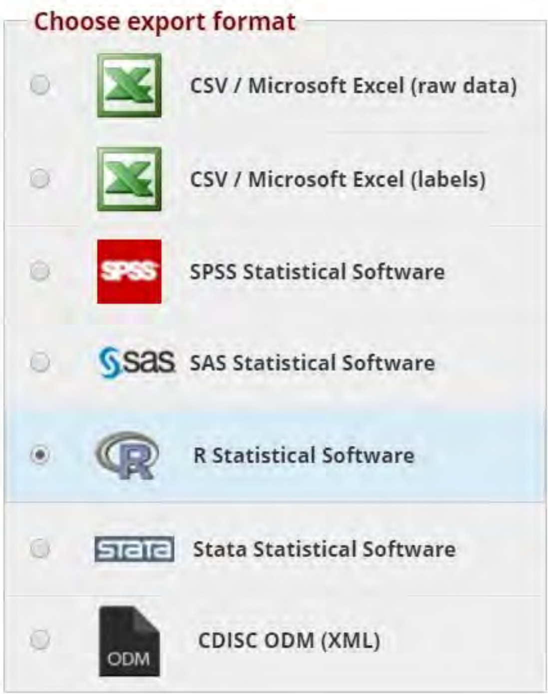
15.3 Data Exports, Reports and Stats

On the left-hand navigation bar, under Applications, you will see a link for Data Exports, Reports & Stats. This page allows you to easily view reports of your data as well as export your data to Microsoft Excel, SAS, Stata, R or SPSS for analysis. If you wish to export your *entire* data set or view it as a report, then Report A is the best and quickest way. If you want to view or export data from only specific instruments (or events) on the fly, then Report B is the best choice. It should be highlighted here that the vast majority of WCH Users will NOT be given data export access, and those that do will likely only have DE-IDENTIFIED export access. If full data sets are required, either an REB / APQIP approval or amendment is needed (and submitted to the REDCap Administrator) or a submission to the REDCap Administrator needs to be made explaining the need for the full data set. The Administrator will then extract the data and send it through REDCap's Secure Transfer module, with an expiration of 3 days.

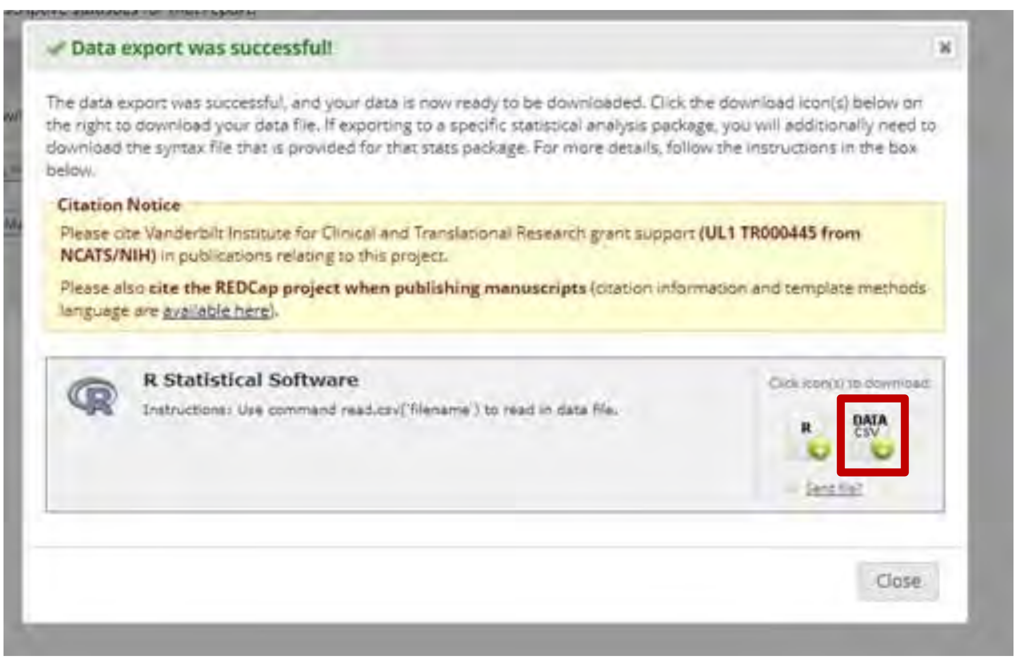


Tips for Exporting Data to R

You have the ability to manually download data into R via the Data Exports, Reports and Stats application. When you click on the export button, you see this:



Select the "CSV" option:



CSV is the best option, rather than "save as R file option". *When you select export as R file, it creates an R script that doesn't really work (and expects you to ALSO download the CSV) instead of downloading the data in a uniquely R format.*

You can now read the data into R using the interactive interface in RStudio (File -> Import Dataset) or by entering the command read.csv(filename) at the R prompt or in an R script.

If you would like a reproducible workflow that grabs data from REDCap every time it runs, consider using an API (see this section of the User Guide regarding R and the REDCap API).

15.4 Create Custom Report

You may create your own custom reports 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.

Custom report: Step 1

To get started, click on Data Exports, Reports & Stats on the left-hand navigation bar. In your workspace on the righthand side of the screen, you will see a tab 'Create New Report' – click on that.

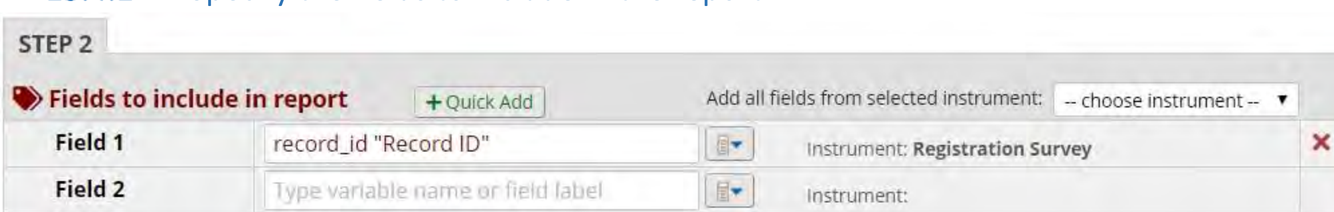
Enter a name for the report and indicate who should be able to access the report:

- All users
- A list users specified by name
- All users from a particular user role or roles
- All users from a particular data access group or groups (see User Rights for more information about user roles and data access groups)

Indicate who should have access to editing, copying or deleting the report. This feature will only be available to users on the project who have "Add/Edit/Organize Reports' privileges. Multiple users might want to use a report in different ways and might choose to change some of the fields, filters or sorting options. This setting will allow you to restrict other users' ability to make those changes.

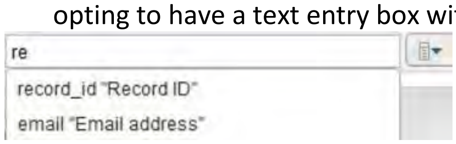
Custom report: Step 2

15.4.1 Specify the fields to include in the report



Note:

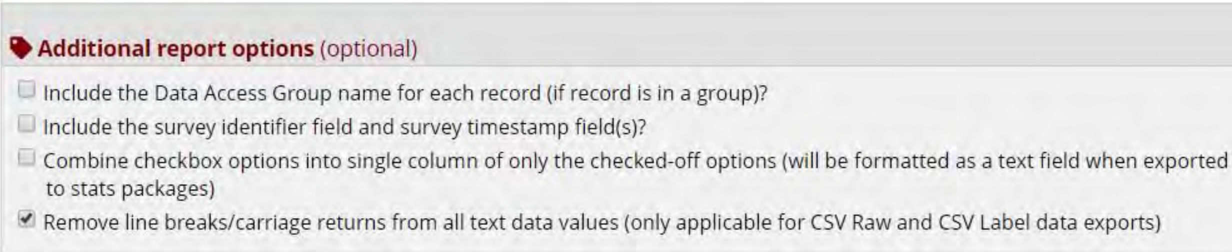
- If your list of fields is very long it can be easier to find them by clicking **ABI** and opting to have a text entry box with an autocomplete dropdown.



- You can click on the 'Quick Add' button to easily tick off the fields you want to see in the report
- You may reorder fields by dragging a field to a new position

- Remove fields using the red **X**

15.4.2 Additional report options


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)
- [x] Remove line breaks/carriage returns from all text data values (only applicable for CSV Raw and CSV Label data exports)

Include the Data Access Group name for each record

If your project has Data Access Groups, you will have the option to include the Data Access Group name as a datapoint in the report.

Survey Identifier field and survey timestamp fields

If your project includes surveys, you have the option to tick a box so that the survey identifier field and survey timestamp fields are included in your report.
If you use multiple choice checkboxes in your project, you will note that each choice takes up its own column in a report or export. If you prefer to have those columns combined, tick the option to combine check box options.

Custom report: Step 3

Specify a filter for the records (optional).
You can apply straightforward filters by selecting the relevant fields and specifying an operator (e.g. “equals”) and a value to match. For complex expressions involving functions or requiring parentheses click **Use advanced logic** to write your filter expression. The syntax for the expression follows the same rules as for calculated fields and branching logic.

Live Filters

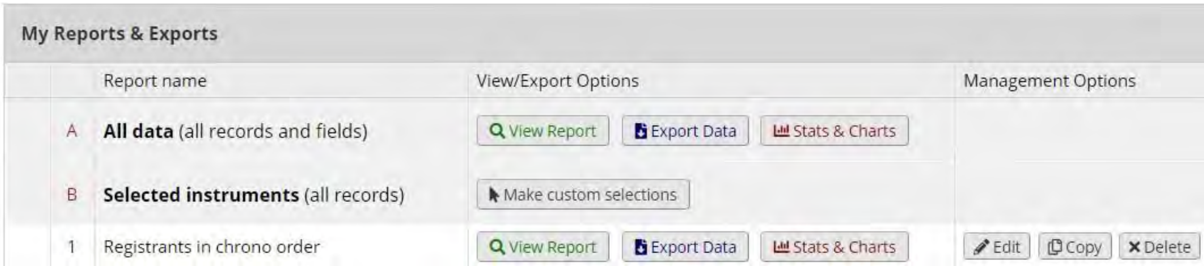
Live filters can be selected on the report page for dynamically filtering data in real time. With the exception of the Record ID field, only multiple-choice fields can be used as Live Filters.
An example of when this might be useful is if you are looking at a report of all patients who have diabetes. You could have a live filter on gender and race. So when you first view the report (with no live filters), you would see all patients with diabetes. If you wanted to know how many of them are female, you could click on the live filter for gender and select to only see females. You would then be looking at a sub-set of your data: patients with diabetes who are female. You can then click the live filter for race and select African American. That would deliver you a further sub-set of data, this one displaying only the African American female patients who have diabetes.

DAG filter

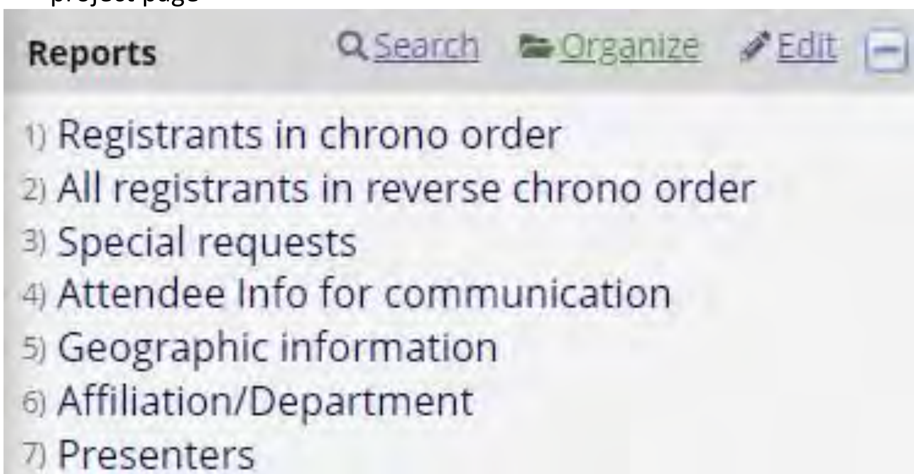
If your project has DAGS in it, you have the option to limit your results based on DAG name(s).

Custom report: Step 4

Specify up to three of the report fields by which the records will be sorted
You will then click **Save Report**. You will be asked if you wish to View the Report, Return to My Reports & Exports or Continue Editing report. Once you click View Report, your report will be added to your report list on the left-hand navigation bar.



Reports are also listed in their own section of the left-hand menu and are available directly from any project page

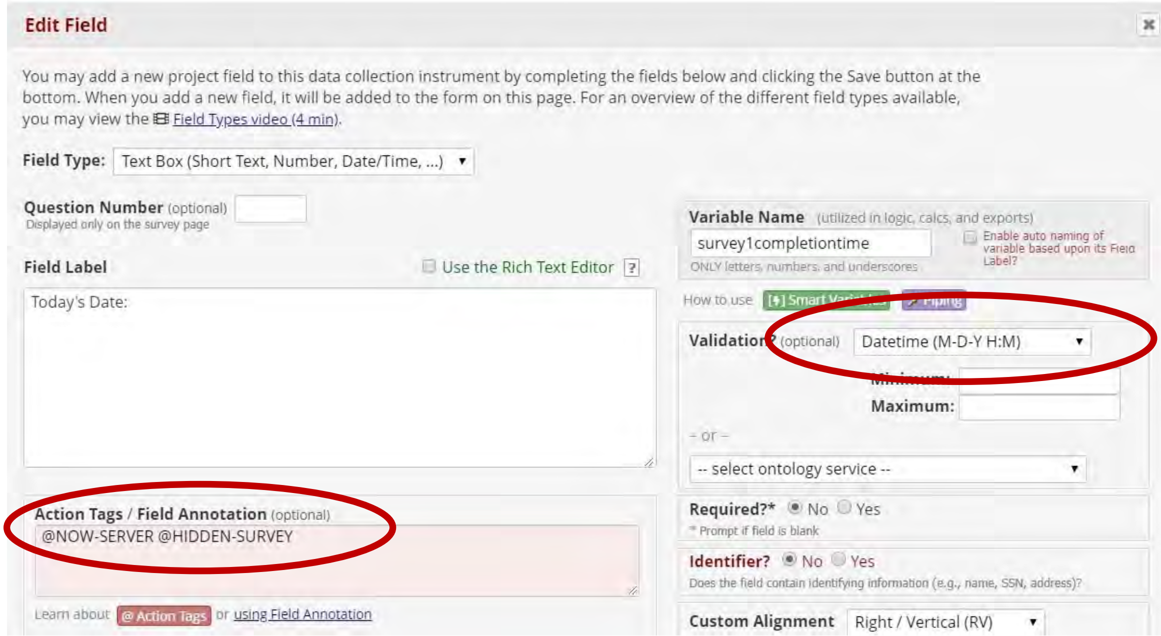


Design tip: Survey Timestamps

While you do have the option in the Reports section to add a survey timestamp to a report, that timestamp is solely for the first survey in your project. If you have multiple surveys, REDCap does not automatically capture those survey completion times in the Report. Additionally, the survey timestamp is not a field on which you can sort your report. So if you need to sort your responses based on completion time, you will not be able to do that.

You can automatically capture the timestamp of subsequent survey completion times (and the initial survey completion time, should you wish to use that field to sort results) using action tags. To do that, add a validated date/time field as the last field in your survey. When in that field, click on action tag and add ‘NOW-SERVER’. Also click on ‘HIDDEN-SURVEY’. What that does is instruct REDCap to capture the date behind the scenes without the survey participant having to fill it in.

See below for a screenshot example



15.4.3 Comparing Timestamps

Survey Timestamp	Action tag NOW-SERVER	Action tag NOW
Shows the time of the Women's College server (Eastern Time Canada) at the time the survey was submitted.	Shows the time of the Women's College server (Eastern TIme Canada) at the time the survey page loaded.	Shows the user's local time at the time the page loaded.

15.5 Capturing start and end time of a survey response

To capture how long it takes a survey participant to complete a survey, you need to have to timestamps to compare: a start and end time. To do this, you must use the field type Begin New Section to segment your survey into these start and end times. You must also enable the multiple page per section feature in survey settings. With those things in place, you can add two fields to capture the start and end time. The start field should be the first field in the survey and the end field should be the last field in the survey. Those fields will have the action tags HIDDEN-SURVEY and NOW added to them. This means the fields will not be visible to the survey participant, but REDCap will use those fields to capture the time behind the scenes automatically. Once that data is captured, you can compare the start and end time to determine the duration.

1. Add a field named 'starttime' as the first field in the survey. It is a text box field with YMD HM validation. Add the action tags HIDDEN-SURVEY and NOW-SERVER to the field.
2. Add a Begin New Section field type immediately after the starttime field or shortly after it.
3. Add a field named 'endtime' as the last field in the survey. It is a text box field with YMD HM validation. Add the action tags HIDDEN-SURVEY and NOW-SERVER to the field.
4. Add a Begin New Section field type right before the endtime field or shortly before it.

5. In survey settings, scroll down to Survey Customizations and select ‘one section per page (multiple pages) for Question Display Format. Be sure to scroll up or down and click the ‘save changes’ button.

For completed survey responses, you can now subtract the endtime from the starttime to determine how long the participant took to complete the survey.

15.5.1 Automatically calculating survey duration time

You can create a calculated field that will compare the end/start time in the above-designed scenario. To do this, you could create a separate data entry form within the project. In that data entry form, create a calculated field. The calculation equation would be datediff ([endtime],[starttime],"m").

15.6 Managing and Using Your Reports

On the left-hand navigation bar, under Applications, you will see a link for Data Exports, Reports & Stats. When you click on that, in your right-hand workspace you will land on a tab called “My Reports & Exports”. You will see the two built-in reports (Report A – All data and Report B – Selected instruments) and then any custom reports that have been created for your project. The table supports the following tasks:

15.6.1 View Report

Run the report and display the results in a table onscreen

15.6.2 Export Data

Select an export format and any de-identification options and download report data in CSV format, plus a syntax file for the stats package options.

15.6.3 Stats & Charts

Graphical and statistical information of your collected data can be viewed by clicking on the Stats & Charts button for any report.

View scatterplot graphs, summary stats or bar/pie charts for each variable in the report. It does not enable you to define your own summaries, such as tabulations of two fields. If you wish to do that, you can create a smart variable of Aggregate Functions, Charts or Tables. For more information on that, click on the Smart Variables button on the Project Setup page:

How the summary data is presented varies according to the field type:

- **Categorical fields (**quantifiable fields, which includes any of the choice field types**)**: summarized in bar and pie charts
- **Numeric fields**: summarized in scatter plots. This can be of assistance in identifying outliers. Click on a data point to navigate to the specific record.
- **Text fields**: you see simple totals for the number of records that have data and the number of records where the value is missing

15.6.4 **Edit** Report

Return to the edit screen to make changes to the design of the report.

15.6.5 **Copy** Report

Create a new report as a copy of the report selected. A new title must be entered, and you may then make alterations to other aspects of the new report's setup (allowed users, fields, record filter, sort).

15.6.6 **Delete** Report

Remove the report. There is no Undo!

15.6.7 Reorder Report List

You can reorder the list of reports by hovering your mouse pointer over the left-hand column of the table of reports and dragging a row in the table to a new position.

15.7 Reports and Data Exports with Repeating Instruments and Events

Two new fields will be automatically included in Reports and Data Exports if data is collected through repeating instruments or events. Each repeated instance of an instrument or event will be displayed as a new row in the report or export file.

A Repeating Instrument will populate both columns and provide multiple rows for each instance.

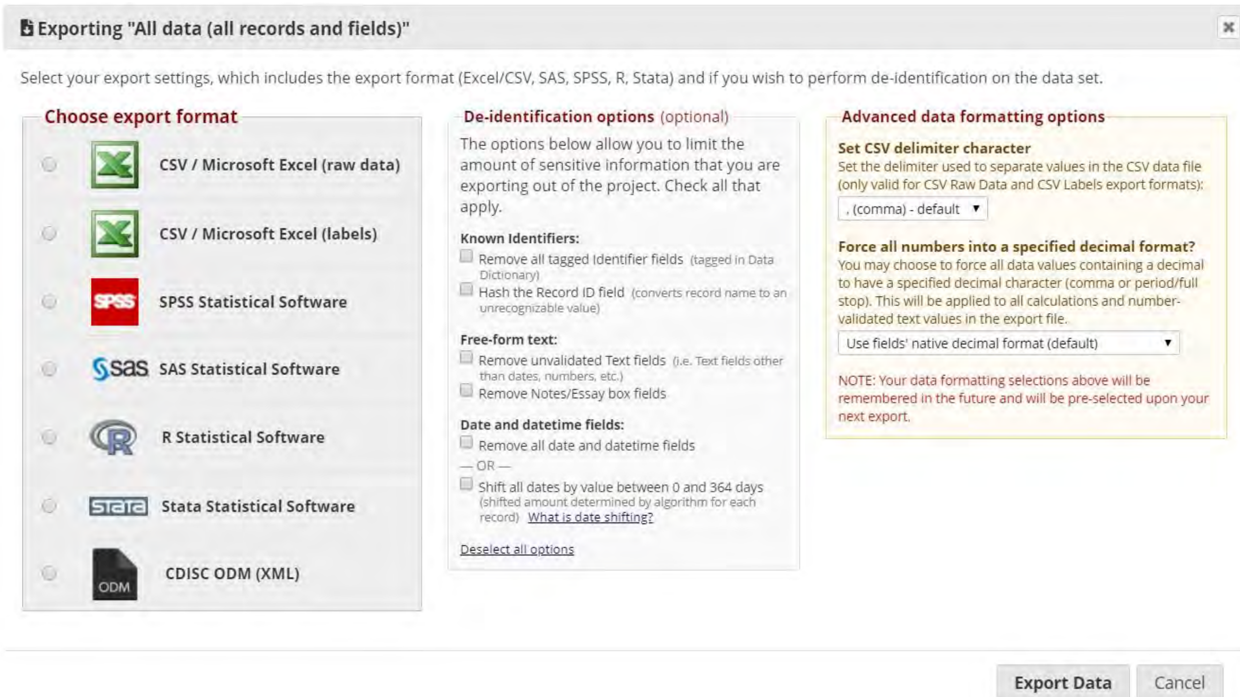
A Repeating Event will provide one row without populating the Repeat Instrument column (all of the instruments for the event are repeated). The Repeat Instance number is an auto-numbered value (beginning with 1) that is incremented with each repeat of the instrument or event.

Sample Reporting

Study ID (study_id)	Event Name (redcap_event_name)	Repeat Instrument (redcap_repeat_instrument)	Repeat Instance (redcap_repeat_instance)	Date collected (meddat)	Medication Name (med)	Dosage (dose)	What is the Adverse Event? (adverse_event)
1178902	Baseline						
1178902	Baseline	Medications	1	2017-03-23	Tylenol	400 mg	
1178902	Baseline	Medications	2	2017-03-25	Aspirin	200 mg	
1178902	Baseline	Medications	3	2017-03-28	Zyrtec	10 mg	
1178902	Month 1		1	2017-03-20	Prilosec	10 mg	Nausea
1178902	Month 1		2	2017-03-29	Lisinopril	5 mg	Headache

If the report contains data specifically from a repeating instrument (as opposed to a repeating event), a field named 'redcap_repeat_instrument' will additionally be included, representing the instrument name for which the row of data belongs.

15.8 Export Data



After clicking Export Data for a report, you must select the format for the export and any de-identification options.

15.8.1 Export Formats

Choose how you would like to download the data. Either:

15.8.2 CSV Format

- Raw data:
Variable names in the first row; categorical data shown as values

	A	B	C
1	record_id	participant_complete	consent_survey_complete
2	112	2	2
3	211	2	0
4	212	2	0

- Labelled data:
Variable labels shown in first row; categorical data shown as labels

	A	B	C
1	Record ID	Complete?	Complete?
2	112	Complete	Complete
3	211	Complete	Incomplete
4	212	Complete	Incomplete

Use the "Raw" option if you are wanting to take a backup of your data or if you want to use the data for producing charts or to prepare a file to import back into REDCap (or indeed another system).
Remember that CSV files are NOT Excel files, and Excel may not display CSV data exactly how it is in the CSV file. See Note on CSV Files.

15.8.3 Statistical Software

For each stats package option (SPSS, SAS, R and Stata) REDCap will give you a raw data file in CSV format and a syntax file that will read in the data from the CSV file and apply the appropriate column formatting, variable labels and value labels.

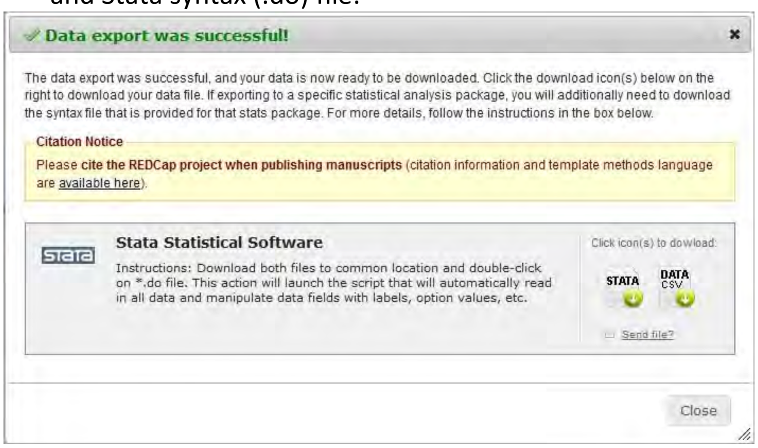
15.8.4 De-Identification

- **Known identifiers**: obfuscate record identifiers and/or ensure all fields that are flagged as identifiers in the online designer or data dictionary are excluded from the export
- **Free-form text**: text entry fields with no validation (and particularly Notes-type fields) may well have identifying information entered into them. You can opt to exclude such fields from the export
- **Date and datetime fields**: can be excluded or date-shifted whereby all dates for each record are shifted by a random but consistent number of days (for example, record 1 dates all +23 days, record 2 dates all +201 days etc.)

For users whose export permissions are set to **De-identified only** (see User Rights) these options (with the exception of record identifier hashing) are always applied.

15.8.5 Downloading

After the export is run and you have confirmed the citation reminder you are presented with buttons for downloading the files in the format you chose. For example, here a raw data file and Stata syntax (.do) file:



Notes on CSV files:

- Note the reminder to cite your use of REDCap in any published material. See http://www.project- redcap.org/cite.php for some boilerplate text.
- The data in the Excel CSV Raw and stats package DATA CSV files are identical – raw, unlabelled data in CSV format – but the stats package DATA CSV files do not contain header rows (field information is included in the syntax files)
- The **Pathway Mapper** files for SPSS and SAS are Windows batch files. When you have downloaded the associated syntax and data files, you can run (double-click) the pathway mapper. It will update the syntax file's file handle/infile statement so that it includes the full file path to the location where the files are saved.

Using the **Pathway Mapper** is optional (and not possible if you use Mac or Linux). You can perform the same task by manually setting the path in the syntax file, or by setting the current working directory to the appropriate location.

- **Send file?** loads the export files into REDCap's Send-It application, enabling you to send the files securely to anyone. The maximum file size is 125 MB.

- All exports are saved to the database and can be downloaded again using the [File Repository]

PDF & Other Export Options

The **PDF & Other Export Options** tab gives you options for downloading:

- A ZIP file containing all files uploaded to all of your project records
- A single PDF containing all data for all forms for all of your project records Further information is available in the text on the page.

15.9 Project Dashboards

Project Dashboards are pages with dynamic content that can be added to a project. They can utilize special Smart Variables called **Smart Functions, Smart Tables, and Smart Charts** that can perform aggregate mathematical functions, display tables of descriptive statistics, and render various types of charts, respectively. Project dashboards have two basic attributes: a title and a body. User access privileges are customizable for each dashboard, and anyone with Project Design privileges can create and edit them. A wizard is provided on the Project Dashboard creation page to help you easily construct the syntax to add Smart Functions, Smart Tables, or Smart Charts to your dashboards, and a list of helpful examples is also included.

Data filtering: By default, Smart Functions, Smart Tables, and Smart Charts will utilize all the data from *all records* in the project. However, you may utilize a subset of the data in the project by limiting them to a specific report's data (using a unique report name), to records belonging to one or more DAGs, and/or to data in specific events (if the project is longitudinal). Unique report names can be found for each report listed on the "My Reports & Exports" page. You can append the unique report names, unique DAG names, and unique events names to any Smart Function, Smart Table, or Smart Chart using the syntax described in the Smart Variables documentation.

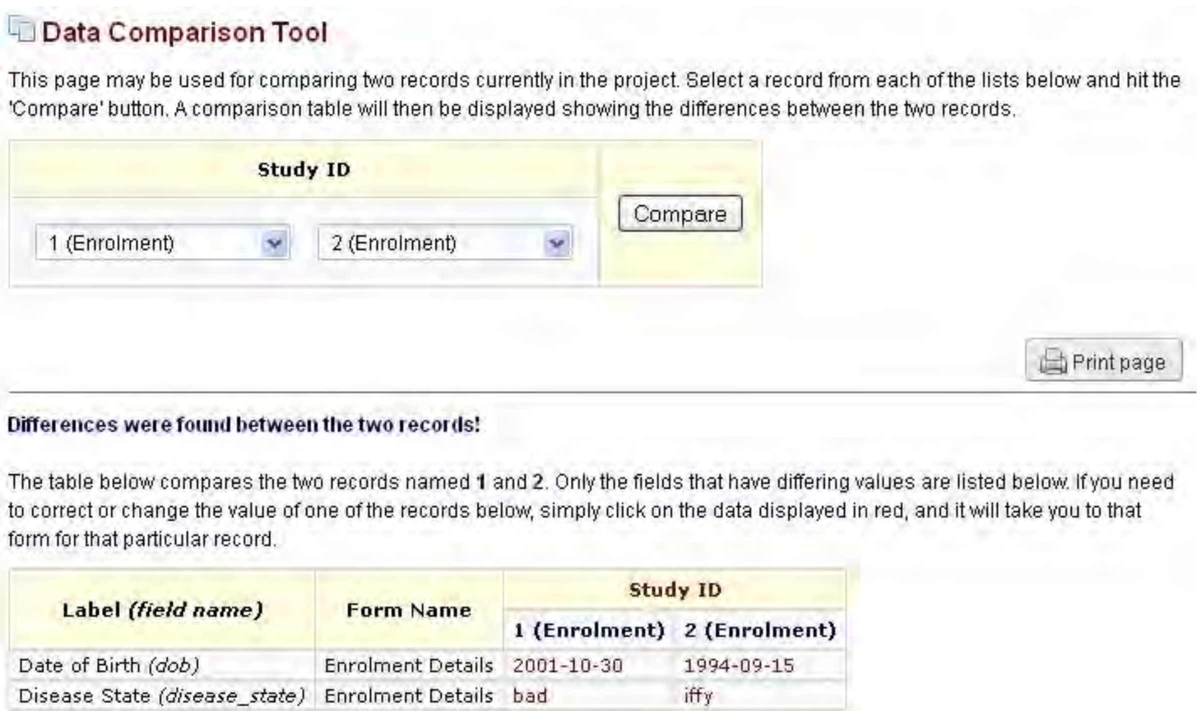
Set as "public": Project dashboards may also be optionally set as "public", which means that they can be viewed outside of the REDCap project by anyone with the unique link to the public dashboard (i.e., without logging in). To help protect potentially sensitive data being displayed on public dashboards, any Smart Function, Smart Table, or Smart Chart displayed on the public version of the dashboard will not be rendered unless they are utilizing/displaying at least 11 data points.

15.10 Data Import Tool

This application is used when you have existing data that you would like to add to your project. Detailed steps are provided on the application page. Note that you will need to download the data import template first and the then paste your data into that template. Should your project require importing data from another source into REDCap, please contact redcap@wchospital.ca to discuss the specifics.

15.11 Data comparison Tool

This application may be used for comparing two records currently in the project. It is typically used for projects using Double Data Entry.
Select a record from each of the lists below and hit the 'Compare' button. A comparison table will then be displayed showing the differences between the two records. Only the fields that have differing values are listed. If you need to correct or change the value of one of the records, you can click on the data displayed in red, and it will take you to that form for that particular record.



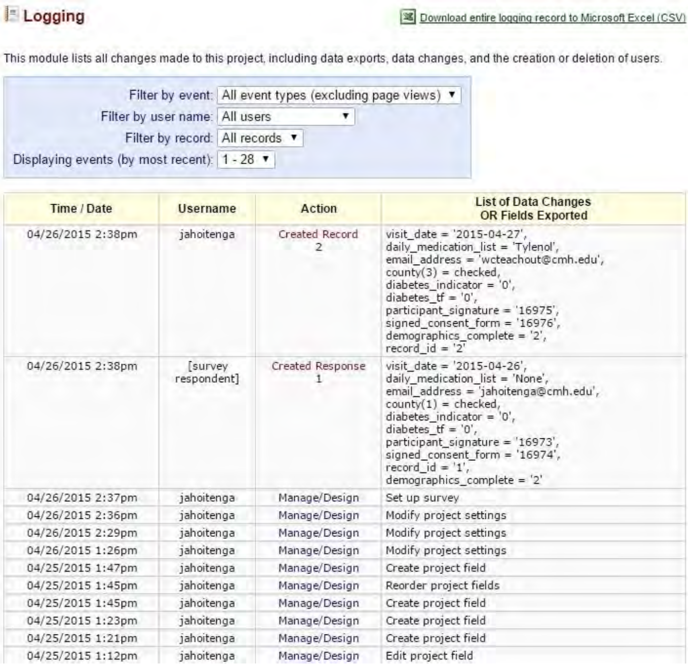
Note: Data Comparison Tool and Repeating Instruments

While repeating instruments/events are fully supported when using Double Data Entry, REDCap states that the Data Comparison Tool ***does not*** *fully* support the Repeating Instruments and Events feature. Data can be compared (and even merged if using Double Data Entry), but REDCap will only allow comparison and merging of Instance #1 of a repeating instrument or repeating event. In other words, all other repeating data will be ignored on this page. Also, all non-repeating data can still be compared and merged.

15.12 Logging

The **Logging** module is where you can view audit trail information, i.e. a log of data changes in your project. You can view and reconstruct a history of record creations, updates and deletions and review the activity of your project’s users.

This will list the date and time and user or survey respondent who made changes made to the project. This includes data exports, data changes and the creating or deletion of users. **Note:** It does not give you the details of the changes made.


Logging

Download entire logging record to Microsoft Excel (CSV)

This module lists all changes made to this project, including data exports, data changes, and the creation or deletion of users.

Filter by event: All event types (excluding page views)
Filter by user name: All users
Filter by record: All records
Displaying events (by most recent): 1 - 28

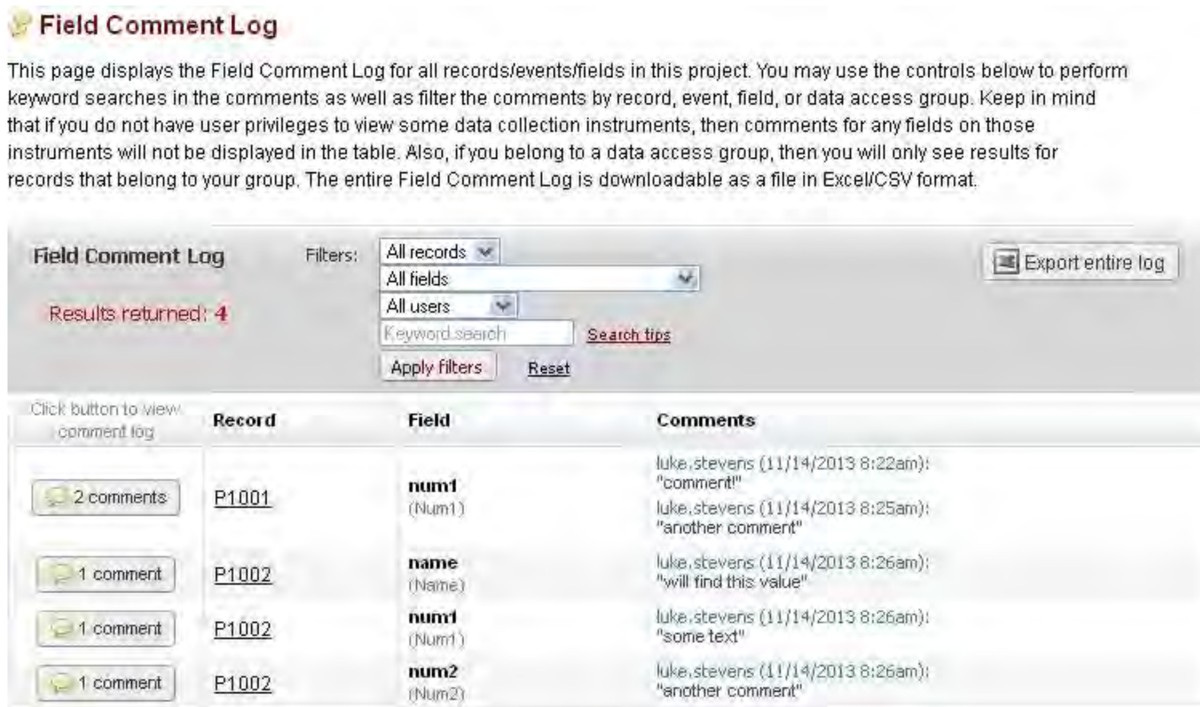
Time / Date	Username	Action	List of Data Changes OR Fields Exported
04/26/2015 2:38pm	jahoitenga	Created Record 2	visit_date = '2015-04-27', daily_medication_list = 'Tylenol', email_address = 'wcteachout@cmh.edu', county(3) = checked, diabetes_indicator = '0', diabetes_tf = '0', participant_signature = '16975', signed_consent_form = '16976', demographics_complete = '2', record_id = '2'
04/26/2015 2:38pm	[survey respondent]	Created Response 1	visit_date = '2015-04-26', daily_medication_list = 'None', email_address = 'jahoitenga@cmh.edu', county(1) = checked, diabetes_indicator = '0', diabetes_tf = '0', participant_signature = '16973', signed_consent_form = '16974', record_id = '1', demographics_complete = '2'
04/26/2015 2:37pm	jahoitenga	Manage/Design	Set up survey
04/26/2015 2:36pm	jahoitenga	Manage/Design	Modify project settings
04/26/2015 2:29pm	jahoitenga	Manage/Design	Modify project settings
04/26/2015 1:26pm	jahoitenga	Manage/Design	Modify project settings
04/25/2015 1:47pm	jahoitenga	Manage/Design	Create project field
04/25/2015 1:45pm	jahoitenga	Manage/Design	Reorder project fields
04/25/2015 1:45pm	jahoitenga	Manage/Design	Create project field
04/25/2015 1:23pm	jahoitenga	Manage/Design	Create project field
04/25/2015 1:21pm	jahoitenga	Manage/Design	Create project field
04/25/2015 1:12pm	jahoitenga	Manage/Design	Edit project field

Notes:

- Note the different filter options to help you narrow the scope of log records included in the view
- You may **Download the entire logging record**, just be aware that this may take some time for large or very active projects.

15.13 Field Comment Log

An application that lists all field comments for all records/fields. Field comments can be keyword searched and filtered.



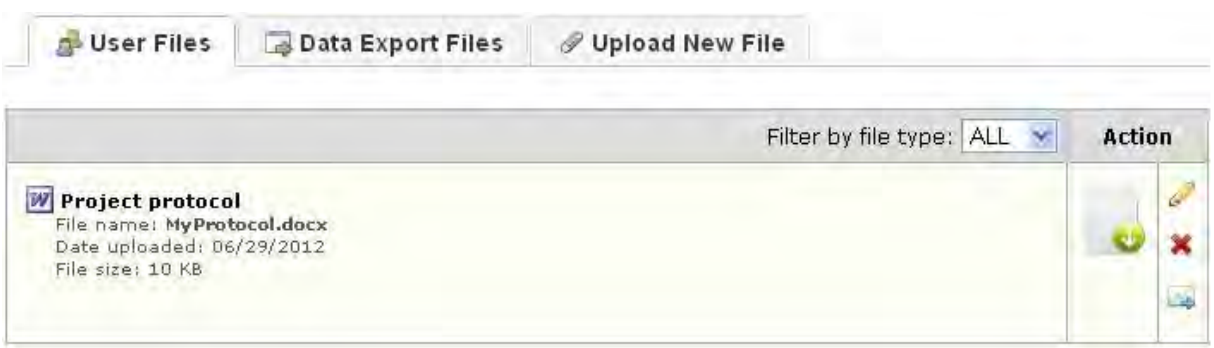
Notes:

- Note the different filter options to help you narrow the scope of comment records included in the view
- You may **Export entire log** in CSV format
- Unfortunately, it is currently not possible to change the month/day/year date format
- Clicking on the Record link for a field will open the associated data entry form and record

15.14 File Repository

This application may be used for storing and retrieving files and documents used for this project. For instance, if you have an SOP (standard operating procedure document) or any other reference document which team members might need access to, you can upload it here. User Files

The **User Files** menu tab is where you view all files that have been uploaded for a project.



Notes:

- The four **Actions** are:

o
Download file o Edit
label o Remove file o
Send the file to anyone
using [Send-It (max file size 125 MB)]

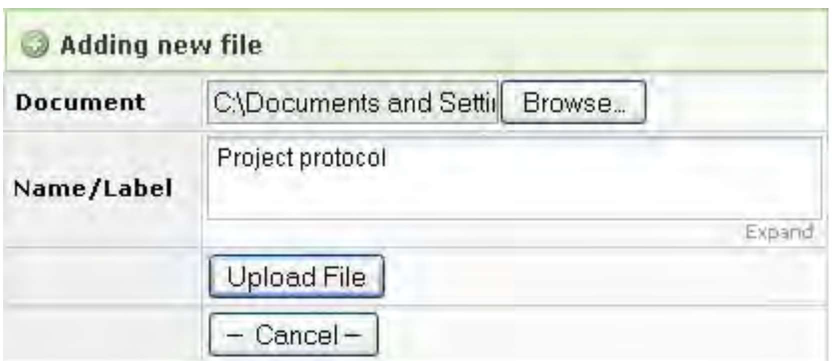
- All files will be visible to and all actions can be performed by any user that is given access to the **File Repository** module.

Data Export Files

The **Data Export Files** menu tab gives users with Data Export permissions access to the history of data exports.

Upload New File

Uploading a new file is very straightforward: select the **Upload New File** menu tab, select the file to upload and give it a label, then click **Upload File**.

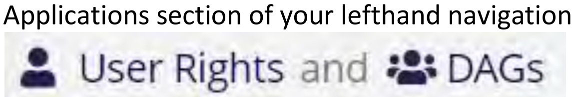


15.15 Data Access Groups (DAGs)

Access to certain project records may be limited by using Data Access Groups (DAGs), in which only users within a given Data Access Group can access **records** created by users within that group. This may be useful in the case of a multi-site or multigroup project that requires that groups not be able to access another group's data.
Please note: you would not want to have a public survey link available in a project with DAGs. That is because a survey that is completed via a public survey link will not go into a DAG.

Create a Data Access Group

If you are a user on a project and your username is not in a DAG, you will see this link in the Applications section of your lefthand navigation bar:



To create a DAG, click on the DAG link on the left-hand navigation bar. Enter the name of the new group into the text box and click **Add Group**.

Data Access Groups	Users in group	Number of records in group	Unique group name (auto-generated)	Delete group?
Melbourne	luke1	0	melbourne	✖
Sydney		0	sydney	✖
[Not assigned to a group]	luke.stevens * Can view ALL records	10		

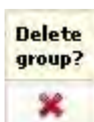
Type new group name | Add Group

The new group will be added to the table. The table also indicates the users that are assigned to each group and the **Unique group name** used in data imports and exports.

15.15.1 Rename a Data Access Group

Rename a Data Access Group by clicking its name in the table. Click or tab away from the field and the new name is saved automatically.

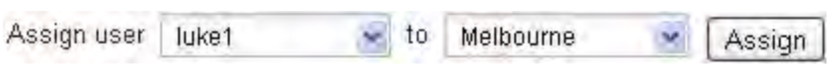
15.15.2 Delete a Data Access Group



to delete a group.

You must remove all users from the Data Access Group before it can be deleted.

15.15.3 Assign User to a Data Access Group



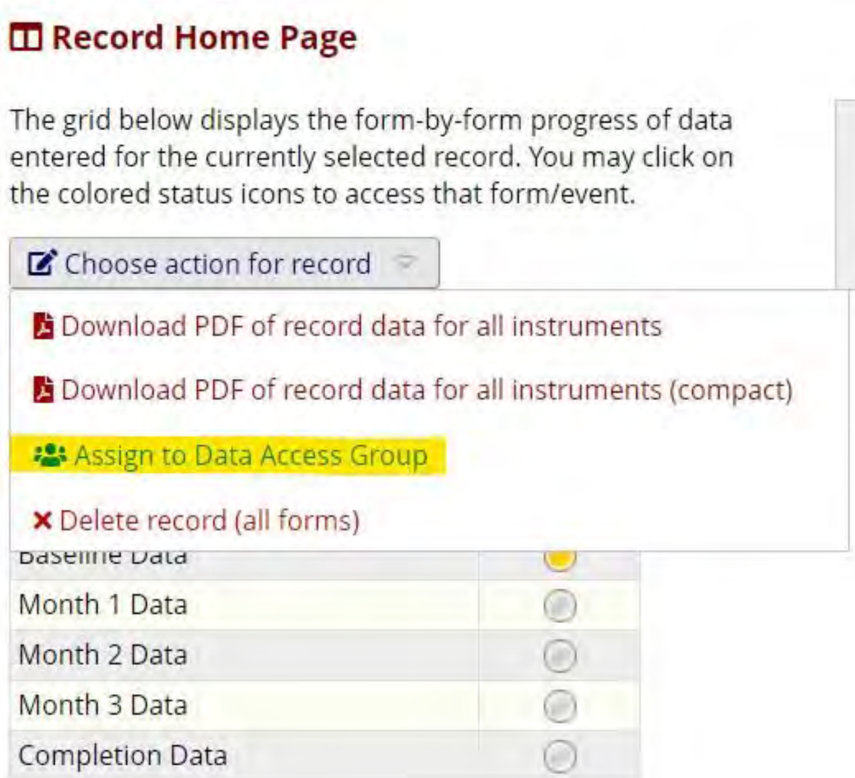
Select the user and group and click **Assign**. The user will be assigned (or re-assigned) to the group. Note that it is not possible for a user to belong to more than one Data Access Group.

15.15.4 Remove User from a Data Access Group

Select the user, then select [No Assignment] as the group. Click **Assign** and the user will be removed from all Data Access Groups.

15.15.5 Assigning Records to a Data Access Group

To add records to a Data Access Group, go to the record home page and select "Assign to Data Access Group":



A note about Data Access Groups and surveys

It is not advisable to use a public survey in a project that has Data Access Groups. That is because any data entered via a public survey link will create a record that is not in a Data Access Group, which means anyone on the project will be able to see the record. A user on the project could assign the record to a data access group, but it is not a practical solution.

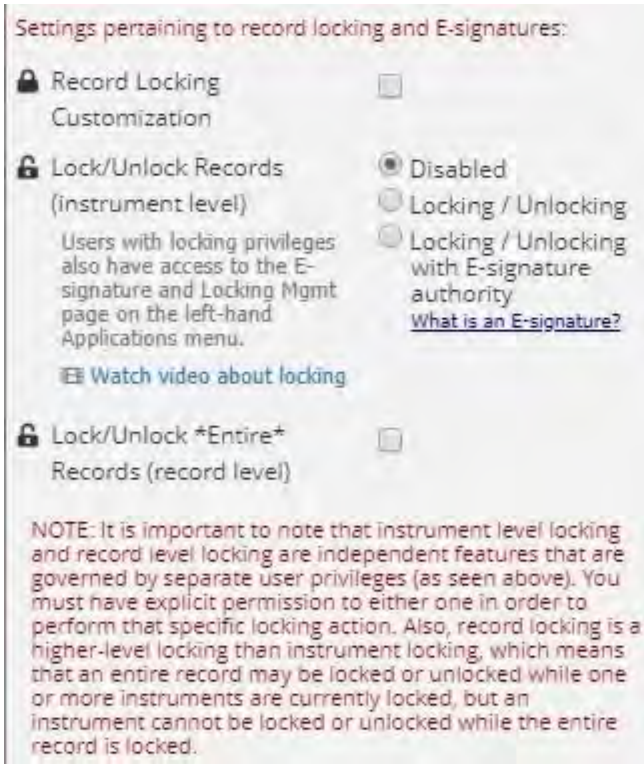
15.16 E-signature and Locking Management

Record locking and e-signatures are optional features that can help you gain greater control over the data in your project.

Data for a record can be locked on an instrument level or for the entire record. It essentially freezes data so that users don't accidentally modify it without authorization. Unauthorized users cannot alter data in a locked instrument. REB / APQIP approval is required to use this feature; any amendments or approvals must be given before this functionality will be enabled. The Protocol, Data Management Plan and Delegation Log must all explicitly state who will be signing / locking as well as who will be able to unlock a record, and the corresponding workflows.

15.16.1 User Rights for record locking

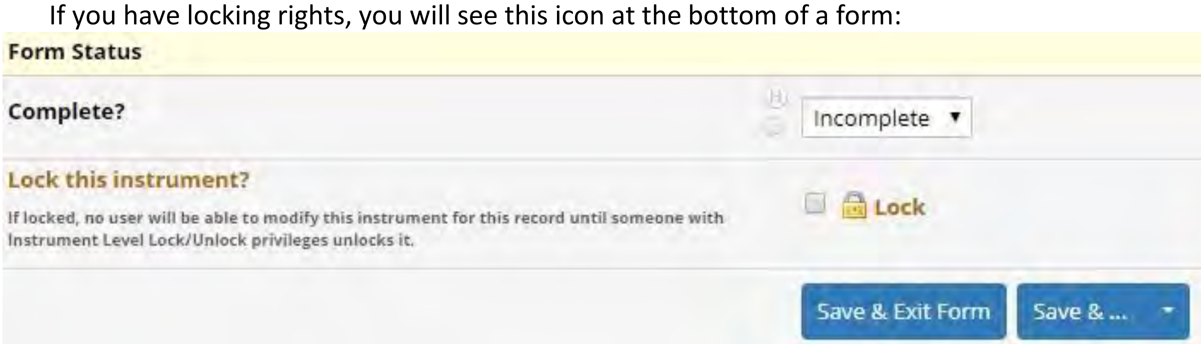
Go to User Rights (found on the left-hand navigation bar in the Applications section), click on a username or role and scroll down to see the following under Basic Rights:



You'll note that by default it is disabled. But you can change the selections according to your need.

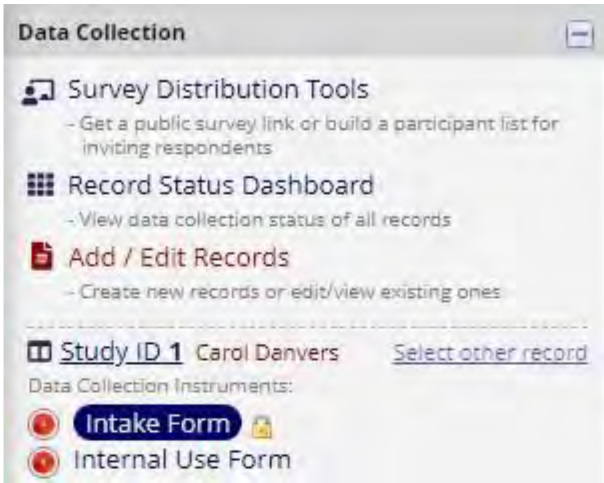
How to lock a form

If you have locking rights, you will see this icon at the bottom of a form:



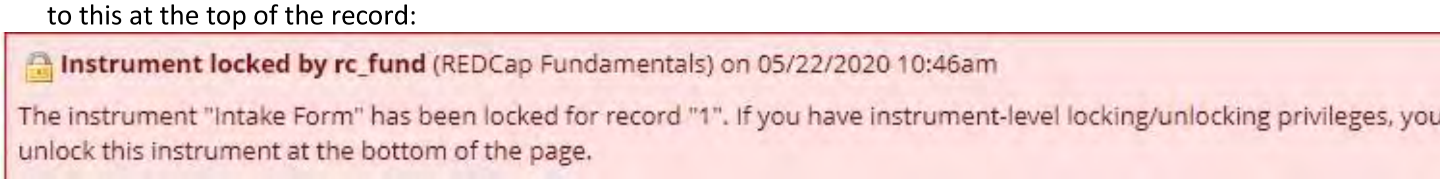
Tick the box to the left of 'Lock' to lock the form. Now, when viewing the record home page, you will see a lock icon:

You'll also see the lock icon on the left-hand navigation bar in the Data Collection section:



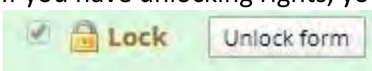
15.16.2 How a locked form will look

A user can open a locked record but they will not be able to edit it. They will see a message similar to this at the top of the record:



15.16.3 How to un-lock a form

Records that are **locked** cannot be updated unless the lock is first removed by a user with record Lock/Unlock permissions.
If you have unlocking rights, you will see this image at the bottom of a form:



You can click the "Unlock form" button to enable editing of the data on the form.

15.16.4 To enable e-signature functionality

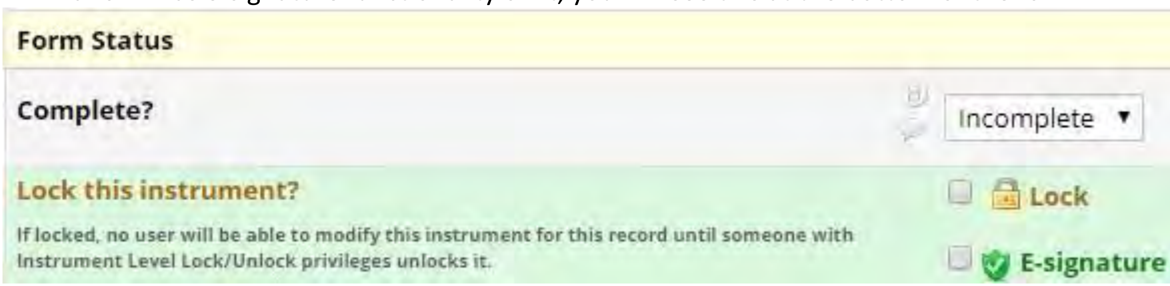
To use the e-Signature functionality, you must first have permission. Go to User Rights (on the left-hand navigation bar in the Application section), click on the username or role and tick the option for Locking/Unlocking with E-signature authority.
On the left-hand navigation bar in the Applications section, you will now see a link to Customize & Manage Locking/E-signatures. Click on that link. You will see something like this:

Display the Lock option for this instrument?	Data Collection Instrument	Also display E-signature option on instrument?	Lock Record Custom Text	Edit / Remove Custom Text
☑	Intake Form	☐	Save	
☑	Internal Use Form	☐	Save	

In the column “Also display E-signature option on instrument?”, you can tick the box that corresponds with the instrument for which you want to have E-signature.

15.16.5 How to lock a form with e-Signature:

If a form has e-signature functionality on it, you will see this at the bottom of the form:



You can tick the E-signature box, but it will only capture your signature if you have also ticked the Lock box. You will be prompted to enter your REDCap credentials and you will then click the save button. The record will now have this icon when viewing the record home page:

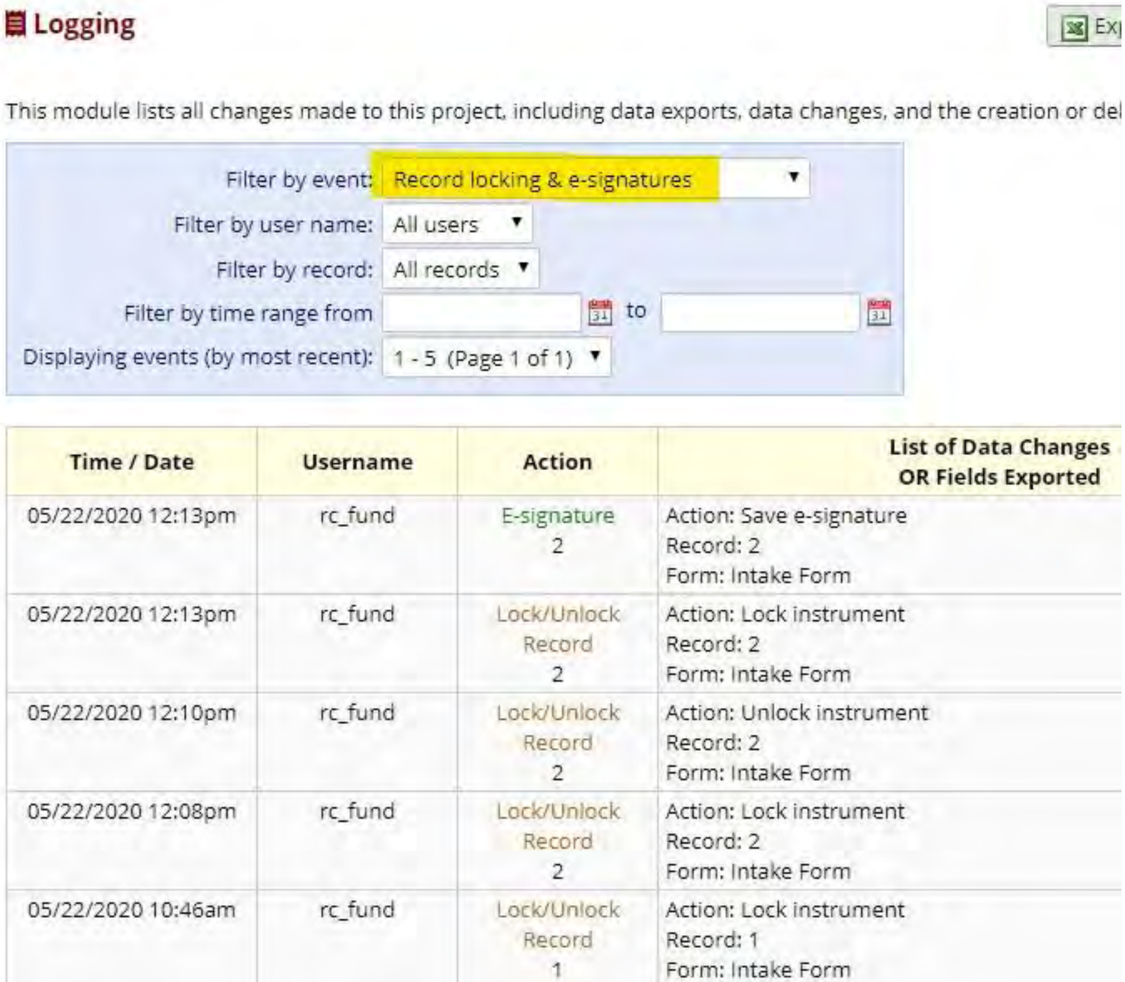
And if you were to open the form again, you would see something like this at the bottom of the form:

Although locking a record prevents its data from being modified, the e-signature goes a step farther, and serves as the equivalent of a handwritten signature. If a record has been e-signed, then **it denotes that its data has been both locked (to prevent further changes) and authorized** (i.e. by a user with e-signature privileges).

It is also important to note that **anyone with locking privileges (even if lacking e-signature authority) will negate the esignature on a form when unlocking the record**, after which data changes can be made to the record. The e-signature can be re-applied after such data changes. For any given record, an e-signature can be saved and negated on a form an unlimited number of times. When saving an e-signature, a user will be asked to enter their username and password for verification. If the username/password verification fails three times in a row, the user will be automatically logged out of REDCap.

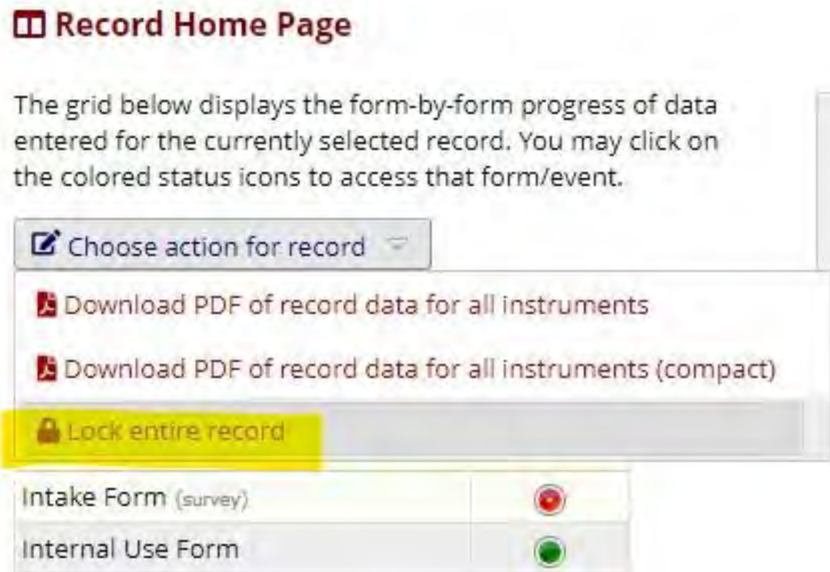
15.16.6 How to view historical record of e-signatures

Go to the Logging page (found on the left-hand navigation bar in the Applications section), and apply the filter “Record locking & e-signatures’. You will see something like this:

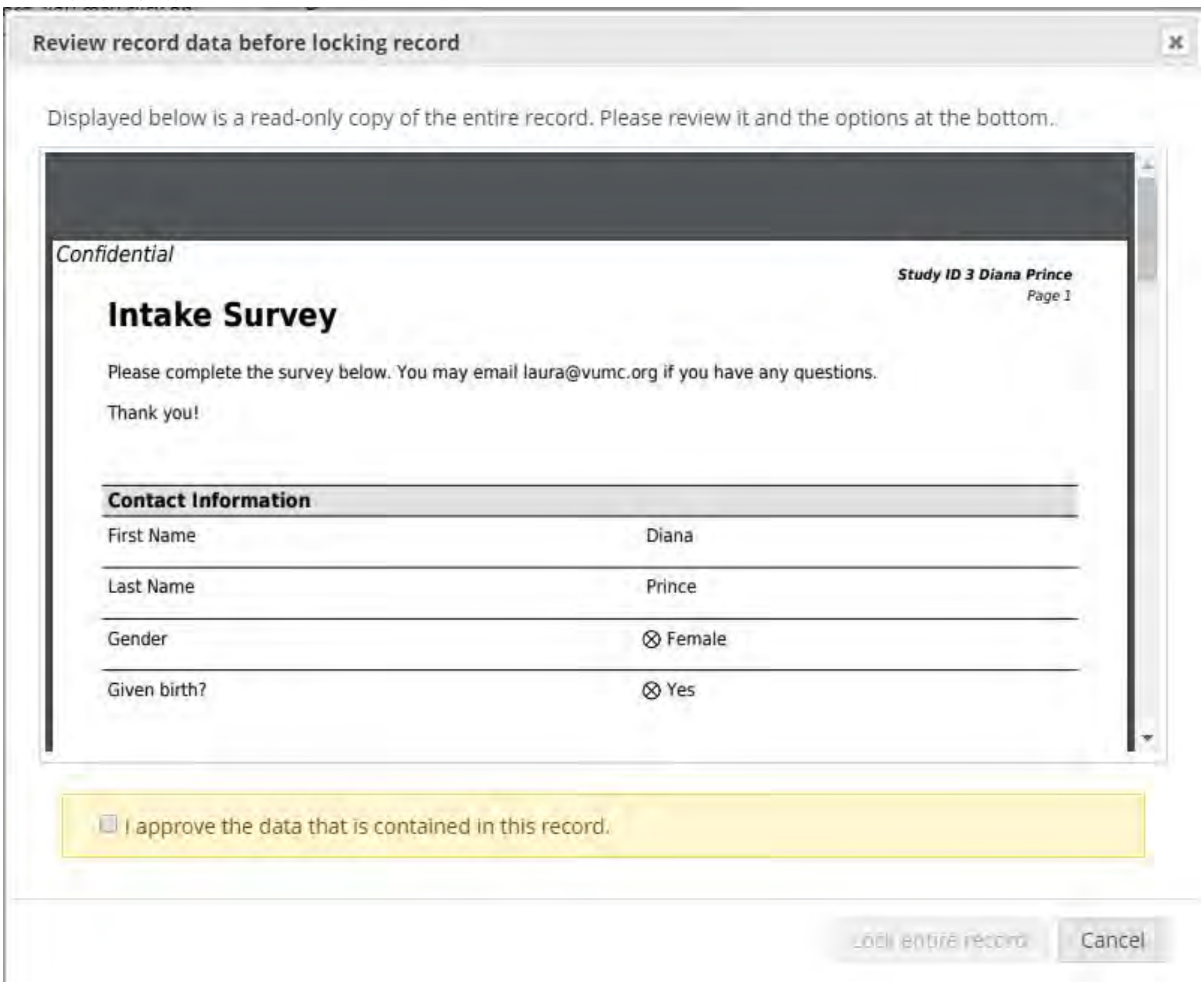


15.16.7 How to lock a record

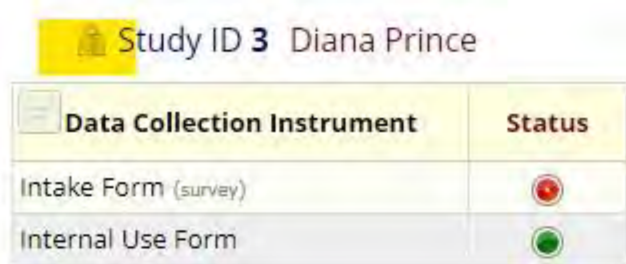
If you have rights to lock an entire record, you will see this option on the record home page:



When you select that option, you are given a preview of all the data for the record, across all instruments:



Scroll through the data to make sure it is ready for locking. Then tick the approval box and the 'lock entire record' button.
The entire record is now locked, which you can see denoted with the lock icon on the Record Home Page:

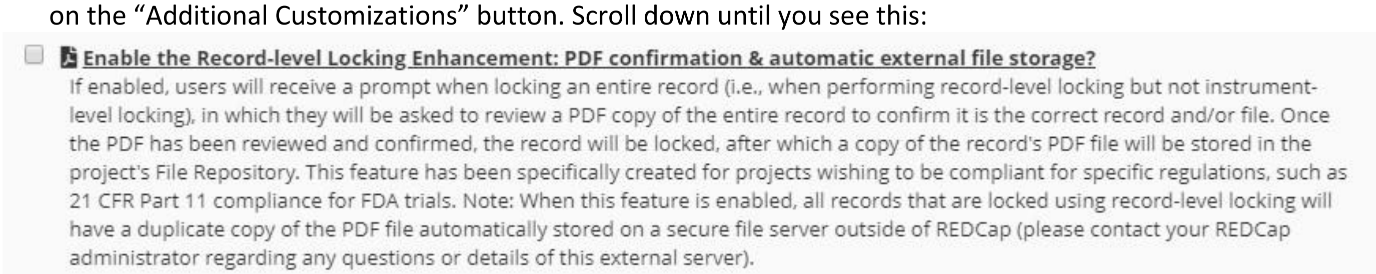

Study ID 3 Diana Prince

Data Collection Instrument	Status
Intake Form (survey)	
Internal Use Form	

You'll note that the individual forms are not necessarily locked. You could also individually lock them, so that if an authorized user unlocks the entire record, they might still be restricted from unlocking a specific form for that record.

15.16.8 How to enable part 11 compliance for record-level locking

Go to the Project Setup page (on the left-hand navigation by in the Project Home and Design section), scroll down to the section named "Enable optional modules and customizations" and click on the "Additional Customizations" button. Scroll down until you see this:


Enable the Record-level Locking Enhancement: PDF confirmation & automatic external file storage?
If enabled, users will receive a prompt when locking an entire record (i.e., when performing record-level locking but not instrument-level locking), in which they will be asked to review a PDF copy of the entire record to confirm it is the correct record and/or file. Once the PDF has been reviewed and confirmed, the record will be locked, after which a copy of the record's PDF file will be stored in the project's File Repository. This feature has been specifically created for projects wishing to be compliant for specific regulations, such as 21 CFR Part 11 compliance for FDA trials. Note: When this feature is enabled, all records that are locked using record-level locking will have a duplicate copy of the PDF file automatically stored on a secure file server outside of REDCap (please contact your REDCap administrator regarding any questions or details of this external server).

Tick the box and save. Going forward, any records that are locked will now automatically be converted to a PDF and the PDF of that record will be stored in your File Repository. Any files stored in that file repository are secured on an external file server that has been validated for Part 11 compliance.

15.16.9 File repository for locked records

If your project has the Record-level Locking Enhancement option enabled, once a record is locked, a PDF of the record will automatically be sent to the project's File Repository. To view those files, go to File Repository (found on your left-hand navigation bar in the Applications section). Then click on the "PDF Archive of Locked Records" tab:

This file repository exists on an external file serve that meets the requirements for Part 11 compliance.

15.17 Data Quality

This application will allow you to execute data quality rules upon your project data to check for discrepancies in your data. Predefined data rules that are already developed for you in the application are for such things as missing values, field validation errors and outliers for numerical fields.

A “data quality rule” is a calculation expression that must evaluate to True or False. When a rule is executed on your project data any records for which the expression evaluates False can be viewed and potentially corrected.

The **Data Quality** page includes detailed instructions.

15.17.1 Execute Rules

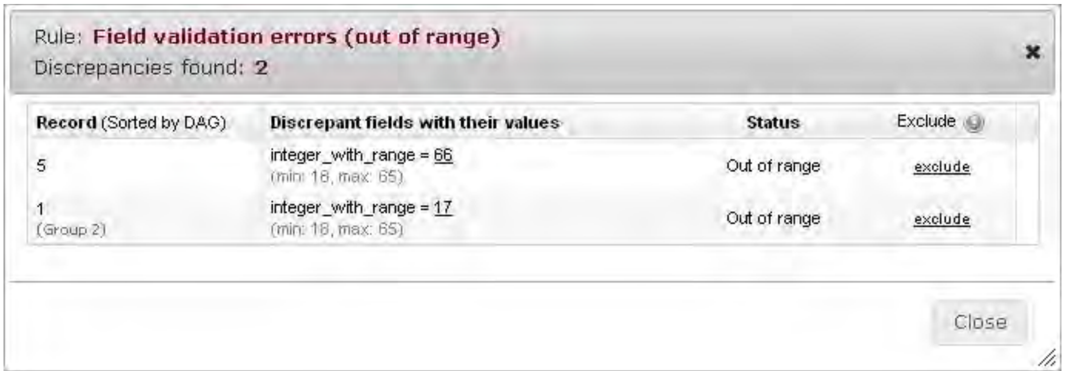
Execute rules one at a time using **Execute**, or all together using **Execute All Rules**.

The **Clear** button refreshes the view to the state before any rules have been executed.

Discrepancies

Rules that identify discrepancies (i.e. where your project contains data for which the calculation expression returns False) are highlighted in red.

- Click **view** to see the records that fail the test.

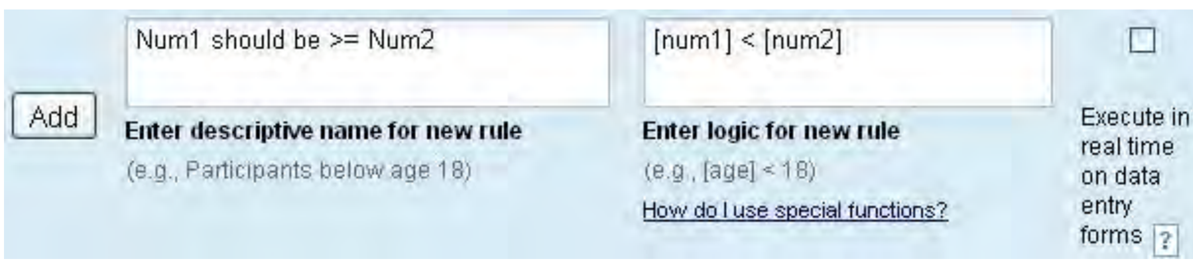


- Navigate to the record / form that contains the discrepant value by clicking on the value

- Clicking **exclude** will mark a discrepant value as not to be included as a discrepancy in future executions of this rule

15.17.2 Add a New Rule

Add a new rule by entering a description of the rule and the calculation expression. Then click **Add**.



For more information on calculation expressions see [Calculated Fields](). Remember that data quality rule expressions must evaluate to True or False.
Important Tip! If your expression includes a "less than" sign (<), ensure that you include a space after it (as shown above). This stops the page thinking that you're entering a potential harmful HTML tag and stripping out the remainder of your expression! Using "Less than or equal to" (<=) is fine – this problem does not occur.

Real Time Execution

Ticking the **Execute in real time** option is a useful mechanism for performing cross-field validation checks during data entry. Rules where this option is ticked will be execute each time you save a data entry form that contains a field that is part of the expression.
Note that the rules are executed on **data entry forms only**: NOT when importing data via Data Import or API, and NOT during survey data entry.

15.18 API

The REDCap API ("Application Programming Interface") is an interface that allows external applications to connect to REDCap. It enables remote retrieval or modification of data or settings within REDCap, such as performing automated data imports into or exports from a specified REDCap project. If you require the use of an API, you will need to contact the REDCap Administrator at redcap@wchospital.ca to discuss.

15.19 Double Data Entry – Data Comparison Tool

Double data entry is a tried and tested strategy for validating data entered manually. Ideally all records would be entered twice by different data entry persons, but if this is not practical, double entry and checking of just a sample can be a worthwhile compromise.

REDCap contains specific functionality for managing double data entry, but there is a requirement that specific users are allocated to entry roles 1 and 2. This is often too restrictive for projects that have several data entry staff that might fulfil different roles at different times.
An alternative – similar – method is for each record to be entered as normal once, then for a duplicate record to be entered as a new record but with a suffix appended to the record identifier, for example:

study_id
1001
1002
1003
...
1001-duplicate 1002-duplicate 1003-duplicate
...

Validation of the data entry is performed using the Data Comparison Tool (and source data e.g. paper CRF). Each pair of records is viewed in the tool, which highlights any instances where a field value differs between the pair. Data can be corrected and the "-duplicate" records dropped from data exports prior to analysis.

16 Further customizations to your REDCap project

If you are interested in changing, customizing, personalizing, or extending a particular module, so that it better addresses your specific needs, you are also welcome to contact WCH's REDCap Team at redcap@wchospital.ca to explore their fee-based services.

16.1 Longitudinal Projects

If your project will contain instruments that will be used to collect data numerous times, you will want to enable your project as a Longitudinal Project. An example of a project that is well-suited for longitudinal design is when participants undergo certain assessments at defined time points over the duration of their participation in a study, as defined in the study protocol.

16.1.1 Project Setup

Enable your project as a longitudinal project

On the Project Setup page on the first step, click Enable for 'Use Longitudinal data collection with defined events".

16.1.2 Design instruments

You will want to next design your data collection instruments and then follow the below steps to round out the longitudinal aspects of your project design.

Design Tip: calculated fields and branching logic in longitudinal projects

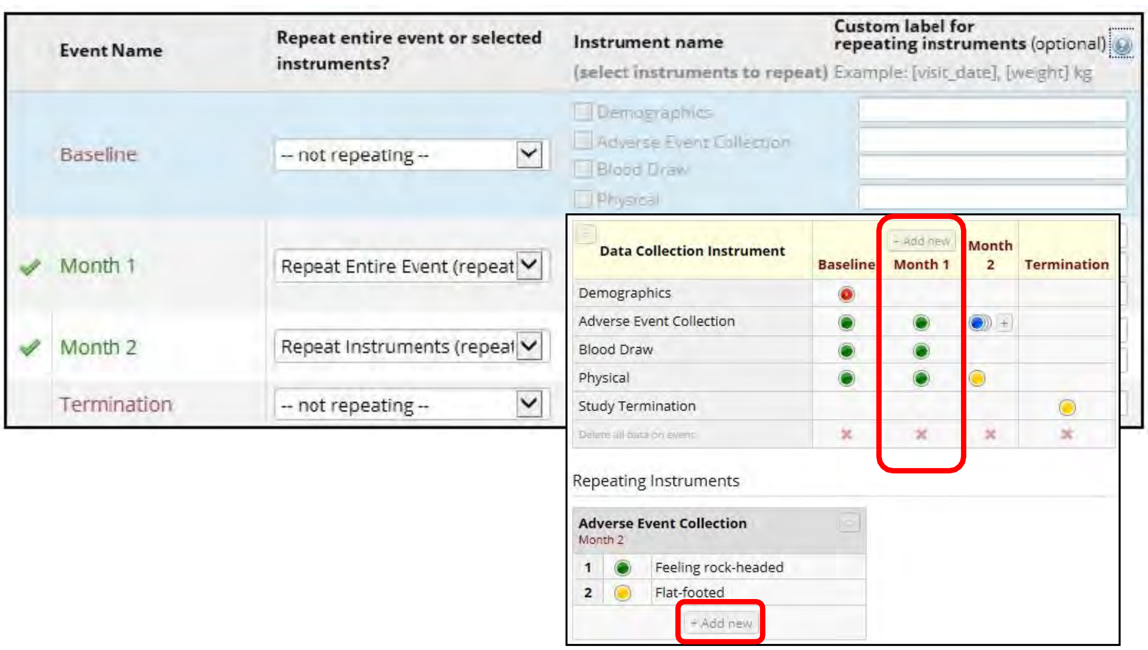
When using calculations and branching logic that reference variables in different events, be sure to include the unique event name before the variable. If the unique event name is not added before the variable, the calculation/bl will not work.

If you want to pipe in data from an event ***that is not the current event***, you need to pre-pend the appropriate unique event name, also enclosed within square brackets. For example, [enrolment][first_name]. Unique event names can be found by going to Project Setup/Define My Events. You will see an events table, and the last column shows you the Unique event name, which is automatically generated by REDCap.

16.1.3 Enabling Repeating Instruments and Events in a Longitudinal Project

While the repeating instruments feature allows you to repeat a given instrument as a single unit, the repeating events feature allows you to repeat an entire event of instruments together, in unison. This might be useful when multiple instruments have data correlating together, such as multiple surveys which are collected back to back for a specific time-point or visit, for example.

Note: this option assumes 1) events are already defined and 2) instruments have been designated to events.



For more information about Repeatable Instruments, please see this section of this User Guide.

16.1.4 Design your Event Grid

When your project is configured as longitudinal you can define a series of events and associate data collection forms with those events.

An Event Grid determines how scheduling will work and how data will be created in your longitudinal project. Designing your Event Grid is comprised of two steps:

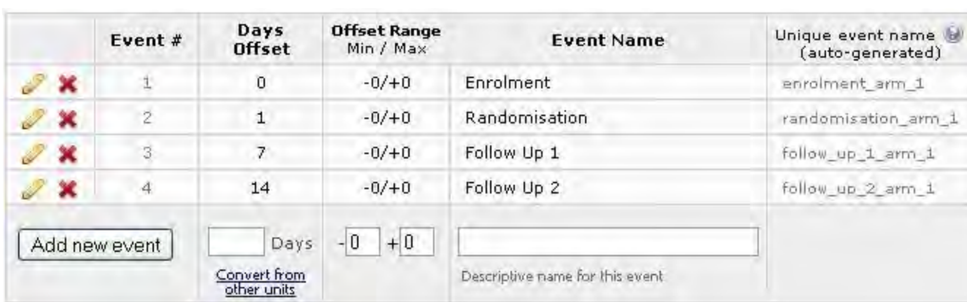
1. Defining your events
2. Designating (or assigning) instruments to your events

Those two steps can be found on your Project Setup page, after you have enabled your project for longitudinal data collection.

These steps should only be done while the project is in Development mode (not Production.)

Define My Events

To define events click **Define My Events** on the **Project Setup** page. The **Define My Events** page opens.



	Event #	Days Offset	Offset Range Min / Max	Event Name	Unique event name (auto-generated)
	1	0	-0/+0	Enrolment	enrolment_arm_1
	2	1	-0/+0	Randomisation	randomisation_arm_1
	3	7	-0/+0	Follow Up 1	follow_up_1_arm_1
	4	14	-0/+0	Follow Up 2	follow_up_2_arm_1
Add new event		Days Convert from other units	-0 +0	Descriptive name for this event	

Notes:

- The edit button ( ) facilitates editing a record
- Use the delete button ( ) to remove an event from the schedule
- To add an event, enter data into the text boxes then click **Add new event**
- The number of events you can define is limited only by your patience for creating them and assigning forms!
- **Days Offset** is the number of days from an arbitrary baseline on which an event will be created when using the Scheduling module. If not using the Scheduling module Days Offset is just for information.
- **Days Offset** can be negative
- **Offset Range** is a number of days before (-) or after (+) the date set using Days Offset. There is no special significance to this range within REDCap, other than that a warning message is displayed if you move the scheduled event date to a date that is outside of the range. For example, an event is scheduled on 10th June +/-5 days. If the event is rescheduled to a date before June 5th or after June 15th a warning message is displayed that prompts the user to

confirm that they accept the new out- of-range date. See Scheduling for more information about the Scheduling module.

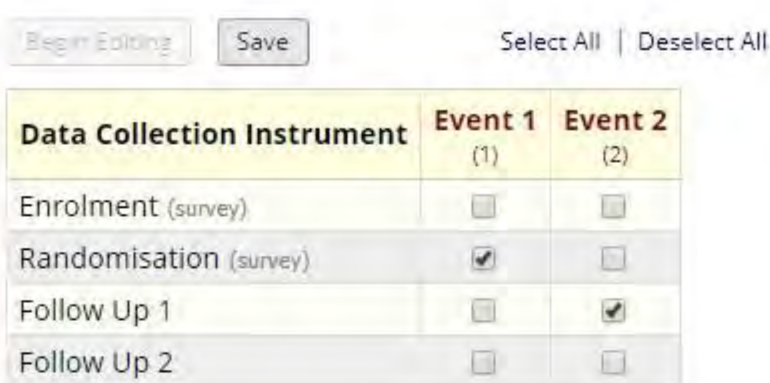
- Note the settings for **Unique event name**. These codes are used when importing and exporting longitudinal data.

16.1.5 Designate Instruments for My Events

The next step in setting up your event grid is to assign your data collection instruments to your events. Designating your instruments creates links between events and data collection instruments. This allows completion of any instrument multiple times for each record.

To assign data collection forms to events click **Designate Instruments to My Events** on the **Project Setup** page or on the **My Events** page. The event setup page opens.

The Designate Instruments page displays a grid of events, instruments and arms. Each event has its own column, each instrument has its own row, and (if applicable) each arm has its own tab. Designating instruments to your events is a required step for your longitudinal project to work. To designate the instruments to events, click on 'Begin Editing' and select the instruments that are to be assigned to events by ticking the boxes.



Remember to designate instruments for each arm of the project. Each arm uses a separate series of events, but all arms use the same instruments. For more information about defining arms, see below.

16.1.6 Defining Arms

REDCap's Arm functionality enables you to create alternative event schedules for different groups of participants: different randomized treatments, for example.

Name your arms and set up the events as described for Define My Events.

Participant records are assigned to an Arm when they are created. **It is not possible to later edit the arm to which a record is assigned**, although it is straightforward to export data, delete the record and recreate it in the correct arm, and then import the record's data.

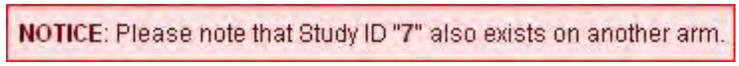
Projects where the arm is not known at the time records need to be created (a project with an enrolment phase, followed by a randomization at a later date, for example) should be set up with an arm specifically for the initial phase, as well as arms for the randomized treatment phase. Following randomization, a record can be created in the appropriate randomized arm with a record id that matches the record in the initial arm.

16.1.7 Creating a New Record: Arms

You must select the arm appropriate to your new record before creating the record in the same manner as described above.

For longitudinal-type projects where multiple Arms are defined (see Defining Arms), each arm functions essentially as a distinct project. **Record identifiers are unique only within an arm**: you can have a record identified with study_id=1001 in both Arm 1 and Arm 2, for example.

It is not possible to ensure that a record identifier is unique within the project, although REDCap does provide a warning when creating a new record with a record identifier that matches one from another arm:



Records are assigned to an Arm when they are created, and **it is not possible to later edit the arm to which a record is assigned**. There are ways to handle the need for a record to switch to another arm, however, depending on the reason why the switch is required.

16.1.8 Switching Arms: Correcting an Incorrect Arm Assignment

A switch of arm can be achieved indirectly via an export-import "shuffle":

1. Using the Data Export module perform the "Export all project data" task and download the data in **Raw CSV** format
2. Locate the data row (or rows) that relate to the record to be switched to a different arm. There will be more than one row if data exists for more than one event: rows are uniquely identified by the combination of record identifier (e.g. study_id) and event reference (e.g. enrolment_arm_1).
3. Delete all rows that correspond to other records
4. Correct the event reference, e.g. change enrolment_arm_1 to enrolment_arm_2.
5. Save the file in CSV format. **Ensure that all dates remain in yyyy-mm-dd format and any leading zeros in numeric fields are preserved.** Excel can be unhelpful here: see Note on CSV Files.
6. Use the Data Import tool to re-import the record's data
7. View the newly imported record to ensure that the data has been imported as you expect
8. Delete the original record from the incorrect arm

To perform these tasks user(s) require Create Record and Delete Record permissions and permission to access the **Data Export** and **Data Import** modules.

16.1.9 Switching Arms: Progression Through Study

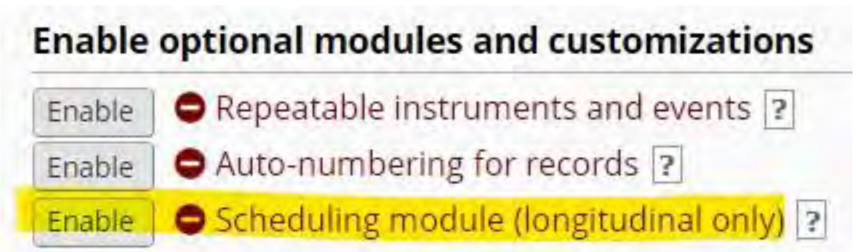
Projects where the arm is not known at the time a record is created should be set up with an arm specifically for the initial phase, as well as arms for any subsequent phase(s). Create the record in the initial arm, then later create a record in the appropriate subsequent arm with a record id that matches the record in the initial arm. REDCap warns you of the duplicate identifier, but in this case, you expect to see this message: you have mistyped the identifier if you don't.

16.2 Scheduling

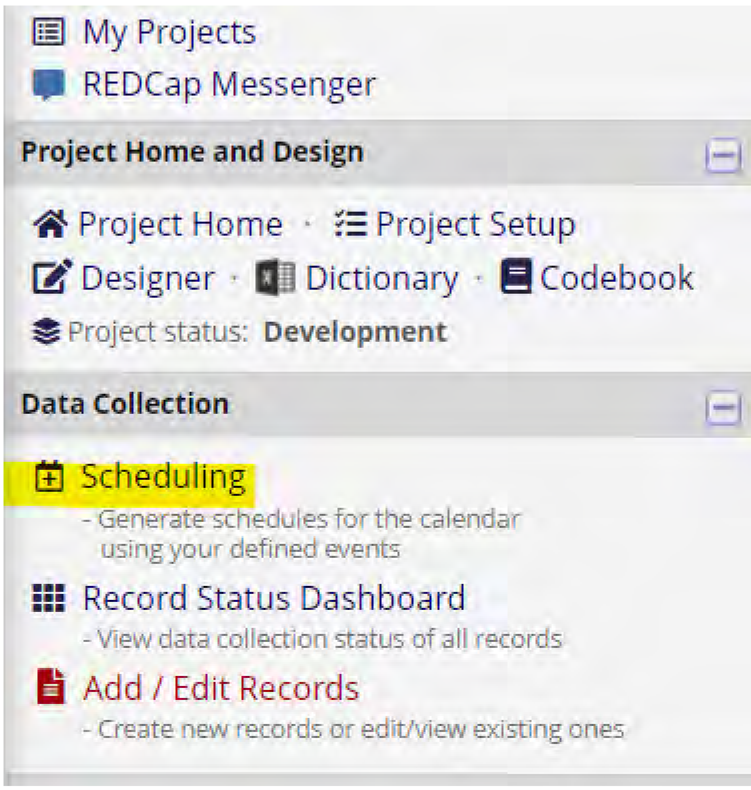
The **Scheduling** module is optional for longitudinal projects. It works in conjunction with the events you have created to enable you to generate an event schedule for each individual project record. Typically, this is a calendar of a participant's study visits.

16.2.1 Enable Scheduling module

To make use of the scheduling module, you must first enable the feature on the Project Setup page under Enable optional modules and customizations:

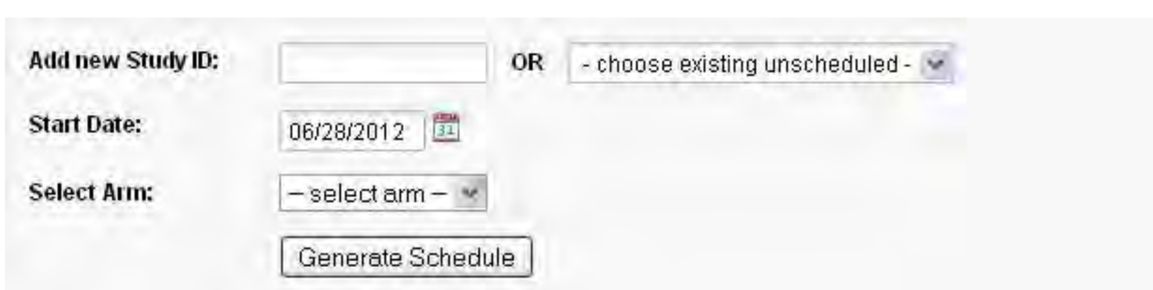


Once it is enabled, you will be able to access it via the **Scheduling** button in the left-hand menu in the Data Collection section:



16.2.2 Create a Schedule

Create participant schedules on the **Create Schedule** tab.



Notes:

- You can create a new record here by entering a new record identifier in the text entry box: be sure to select the correct arm if your project has multiple arms (see [Creating a New Record: Arms]()).
- Start Date is the baseline date for the schedule: the date from which each event's offset days is calculated.

A "projected schedule" is generated and displayed, allowing you to adjust event dates and times (avoiding weekend visits, for example). The schedule is not saved until you click **Create Schedule**.

16.2.3 View or Edit Schedule

Select the relevant record to view the associated schedule.

- Edit ( ): edit the date, time, status or notes for the schedule event
- Delete ( ): remove the schedule event. **Be careful: there is no 'Undo'!**
- View ( ): Open the schedule event in a dialog box. Also permits editing.

Do not delete event records unless you really mean to!

Schedule events across all records in your project may be viewed in a calendar format using the [Calendar]()module.

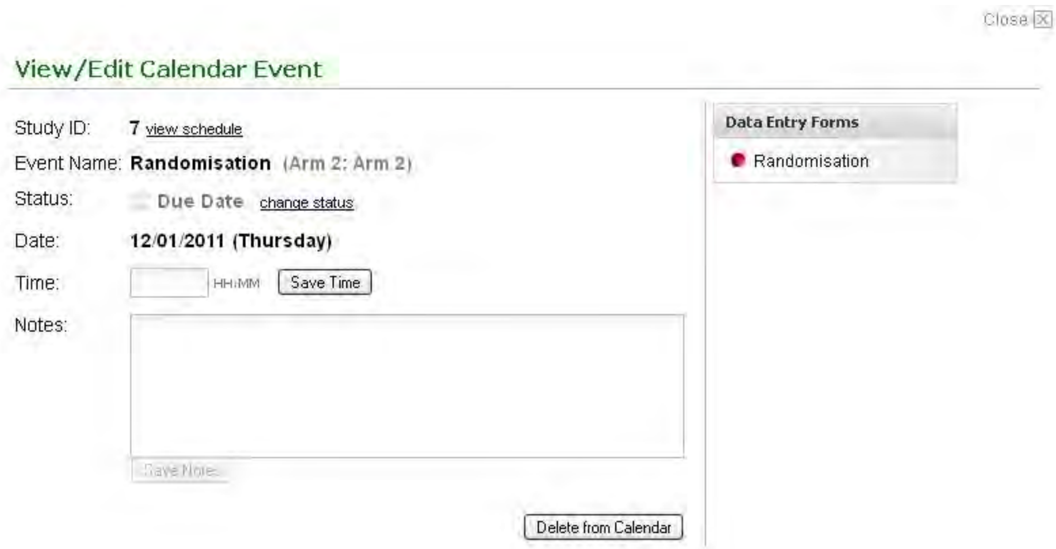
16.3 Calendar

The **Calendar** module integrates with REDCap's scheduling functionality to provide a calendar-based view of participant events.

- Select the **Day**, **Week** or **Month** to view the events for that period
- **Agenda** shows a list of the events for the period in date order
- The **+ New** button will add a new ad-hoc event to the calendar, but you cannot associate data entry forms with adhoc events

16.3.1 Calendar Events

- Click on an event to view and make edits to the calendar event



- Note the link to the data entry forms that are associated with the study event. Click the link to go to the form for data entry.
- The **Event Status** field has five settings:
- Due Date
- Scheduled
- Confirmed
- Cancelled
- No Show

The coloured event status indicator changes (as shown) according to the status of the event.

REDCap ascribes no particular significance to the status of an event, which means that you can use these status flags in any way that suits you. The wording of the label does not bind you to any specific meaning.

16.4 Exporting Longitudinal Data

With longitudinal projects you will find that your exported data contains multiple rows per project record: one row per record per event for which data is exported, as illustrated below:

	A	B	C	D	E
1	study_id	redcap_event_name	dob	randomisation_date	follow_up_date
2	1	Enrolment (Arm 1: Arm 1)	30-10-2001		
3	1	Randomisation (Arm 1: Arm 1)		01-02-2012	
4	1	Follow Up 1 (Arm 1: Arm 1)			14-02-2012
5	1	Follow Up 2 (Arm 1: Arm 1)			19-02-2012

It is done this way to handle situations where a field occurs on a form used in more than one event, such as follow_up_date in the illustration above.

For your analyses you will often (but not always) need to manipulate the data so that it has all data for a record in a single row. Your stats package will have tools for accomplishing this kind of task (e.g. reshape i n Stata, casestovars i n SPSS).

After reshaping, the data above will appear in a manner similar to this:

J	K	L	M	N
study_id	dob	randomisation_date	follow_up_1_date	follow_up_2_date
1	30-10-2001	01-02-2012	14-02-2012	19-02-2012

16.5 Longitudinal Reports

The current report builder is very limited when it comes to building report in longitudinal projects. Due to the fact that a field may be associated with multiple events, you get a result row for each record *for each event*, as illustrated below.

Study ID (study_id)	Event Name (redcap_event_name)	Date of Birth (dob)	Enrol Date (enrol_date)	Randomisation Date (randomisation_date)	Second Dose Date (second_dose_date)	Follow Up Date (follow_up_date)
1	Enrolment	2001-10-30	2011-12-14			
1	Randomisation			2012-02-01		
1	Follow Up 1					2012-02-14
1	Follow Up 2					2012-02-19
2	Enrolment	1994-09-15	2011-12-14			
3	Enrolment	1995-12-06	2011-12-15			

It severely restricts the usage of limiters because report records for events not associated with the field will never contain data for the field the limiter is applied to, and will therefore be excluded from the report results.

For example, say we wanted to view data for project records with dob < 01-01-2000. If we specify a filter of dob < 01-01-2000 then data from Randomization and Follow Up events will no longer appear in the result set because there can never be a value for dob associated with those events.

16.5.1 Public Survey Links within a Longitudinal Project

There is only one survey for which you can have a public survey link in a project. If the first instrument in Online Designer is a survey, you can assign it to multiple arms and each arm will have a different public survey link – but they will all direct the participant to take the same survey.
To access your public survey links, go to Survey Distribution Tools on the left-hand menu. You'll see your Public Survey Link tab and a line of text that reads "The survey link below applies only to "x." There is a drop-down menu next to the name of your first arm. You can click on the drop-down arrow to get the public survey link for the other arms within the project. Just know that it will direct people to the same survey.

17 Additional Tools In REDCap

17.1 eConsent electronic

There is an electronic consent (or eConsent) framework available in REDCap. This is typically used when consenting participants for a research study. The eConsent framework only works as a survey (not a data collection instrument.) Please see Survey Termination Options/Auto-Archiver = eConsent Framework above.

17.1.1 Setting up eConsent

You will need to design the content of your eConsent form. That will be dictated by what was approved by the REB. You will add the fields to that instrument that provide the information you want given to the participant and then have the fields that you want the participant to complete. The eConsent framework then provides the mechanics by which the participant is able to review the information they have provided before submitting and also saves an electronic version of their consent into the file repository of your project.

1. Design your consent survey in Online Designer
2. If you wish the consent survey to be distributed via the public survey link, the consent survey will need to be the first instrument in your project
3. Enable the eConsent instrument as a survey by clicking 'enable' under the column "Enabled as survey."
    a. If you are not seeing the Enable button, that means you do not have surveys enabled on your PROJECT. Go to Project Setup and click on the button 'use surveys on the project'
4. You will be brought to Survey Settings
5. **To set up eConsent framework**, see the section called "PDF Auto-Archiver." In that section, select the option "AutoArchiver + e-Consent Framework." You can read more about that framework by clicking on "What is the e-Consent Framework?" hyperlink in that section.
6. Be sure to click the Save Changes button at the bottom of that page.

17.1.2 Resources re: e-Consent survey

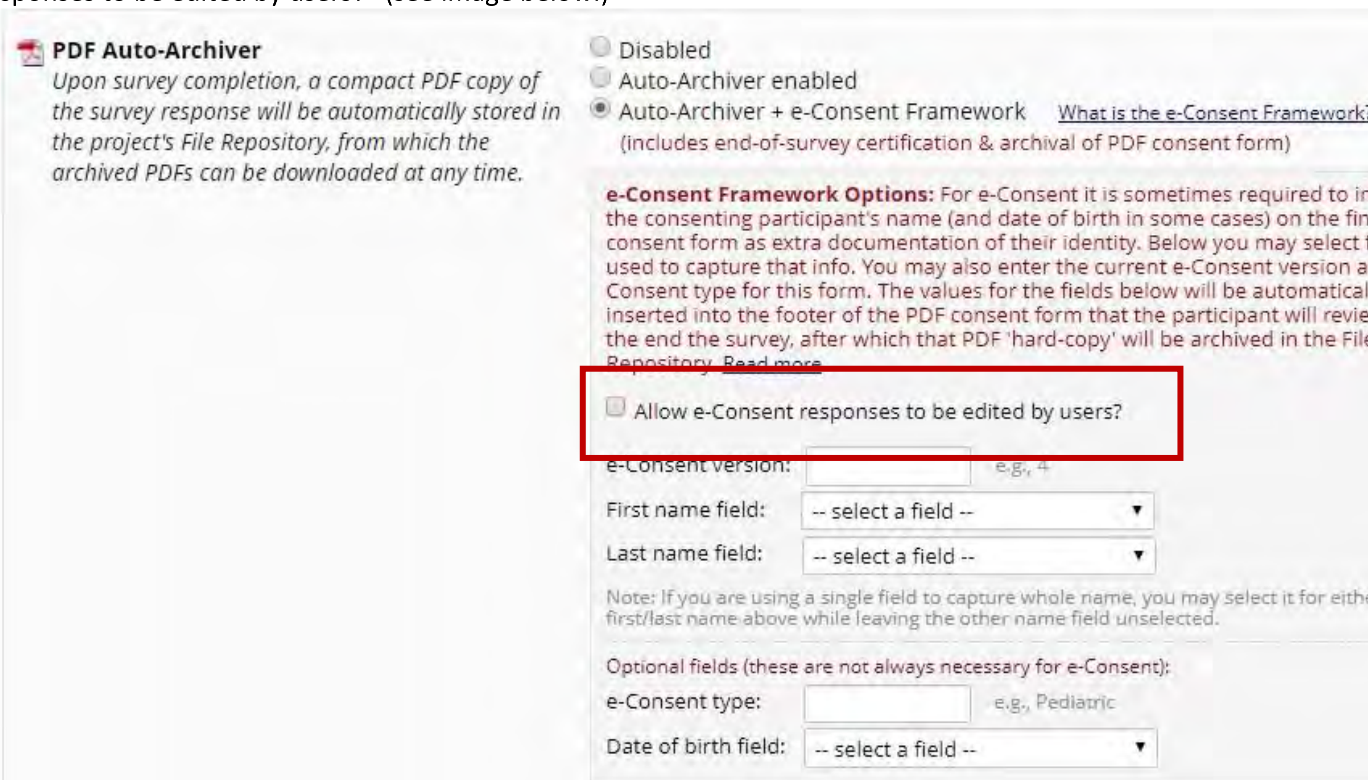
Further information or questions about eConsent should be brought to the REDCap Support Drop-in sessions. Please use this information to coordinate closely with your REB to learn about what they require for your specific protocol.

Viewing eConsent documents

As a participant submits their survey in a project that has the eConsent framework enabled on it, their signed eConsent form will go directly to your Projects File Repository. You can access the File Repository on the left-hand navigation bar under Applications.

17.1.3 Editing e-Consent documents

You may need to edit a participant's eConsent form (for instance, if they entered their name as Rob and it should be Robert. If you anticipate this might happen, tick the box for "Allow e-Consent responses to be edited by users?" (see image below.)



17.1.4 Updating your e-Consent Form

As your study progresses, you may find that you want to edit the terms of the consent form. To do that, update your e-Consent survey fields and then change the e-Consent version number in the Survey Settings. This will make it very clear which version of the consent document that the participant signed.

18 Communication Tools within REDCap

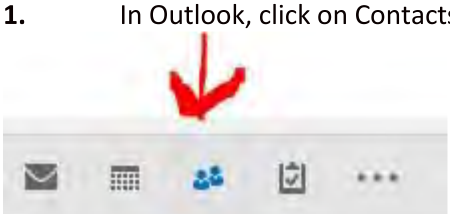
Depending on how your project is structured, emails sent from your REDCap project will be sent from either redcap@wchospital.ca or from the email address you've specified during the build. This is where using a generic study email will become useful, as study participants may email you back during vacation etc. Having a generic email allows multiple people to monitor and reply to these emails.

19 Converting an Outlook Distribution List into a Participant List

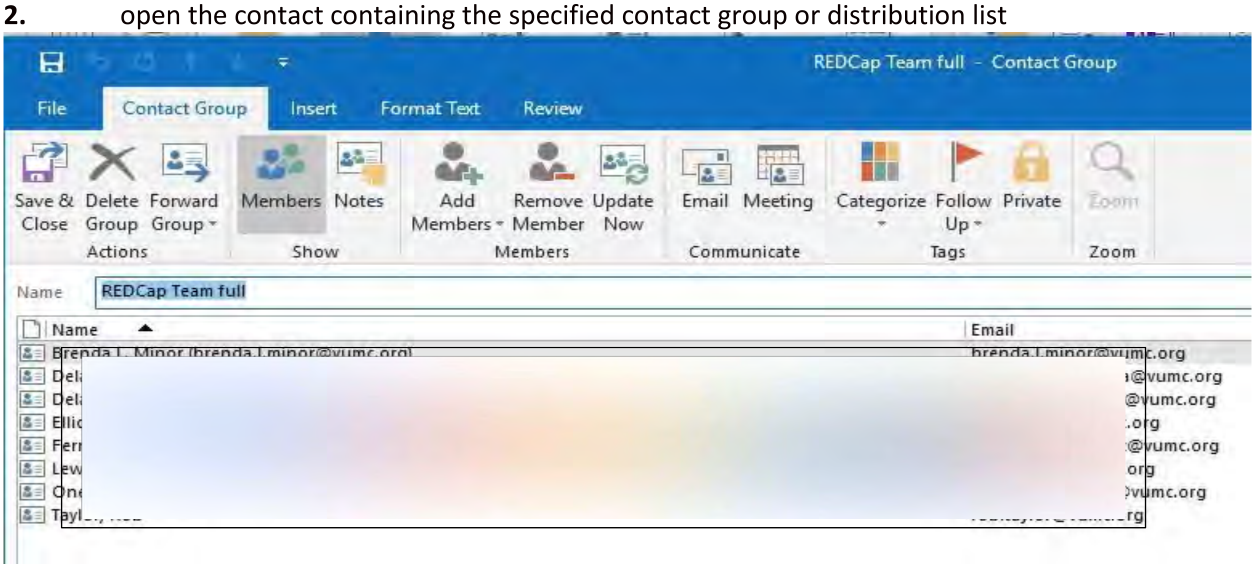
Using the Participant List in REDCap is very helpful in sending out survey invitations. One of the biggest benefits is that it creates a unique survey link so that a person can only complete the

survey once. You can also enable reminders when composing your survey invitation, so that people who have not completed the survey are sent a follow-up email, reminding them to complete the survey.
To create a participant list, each participant needs to be listed on a separate line, with the email address being listed first. When viewing members of a distribution list, the information may not be listed in the format required by REDCap. To convert your distribution list so that REDCap will accept it, please follow these instructions.
Please remember that if you use a participant list, technically your participant's responses are not considered anonymous. That is because they are tied to an email address, which is identifiable.
These instructions are adapted from this online article:
https://www.extendoffice.com/documents/outlook/1730-outlookextract-export-distribution-list-as-csv-to-excel.html#a1
The options you see may vary slightly depending on your version of Excel or if you are using a Mac. Whichever version you are on, you should be able to follow the prompts on your screen to accomplish the conversion. If the images shown don't align with what you are seeing, and you find it confusing, try searching for a similar article online. It's possible you can find one that matches what you are seeing.

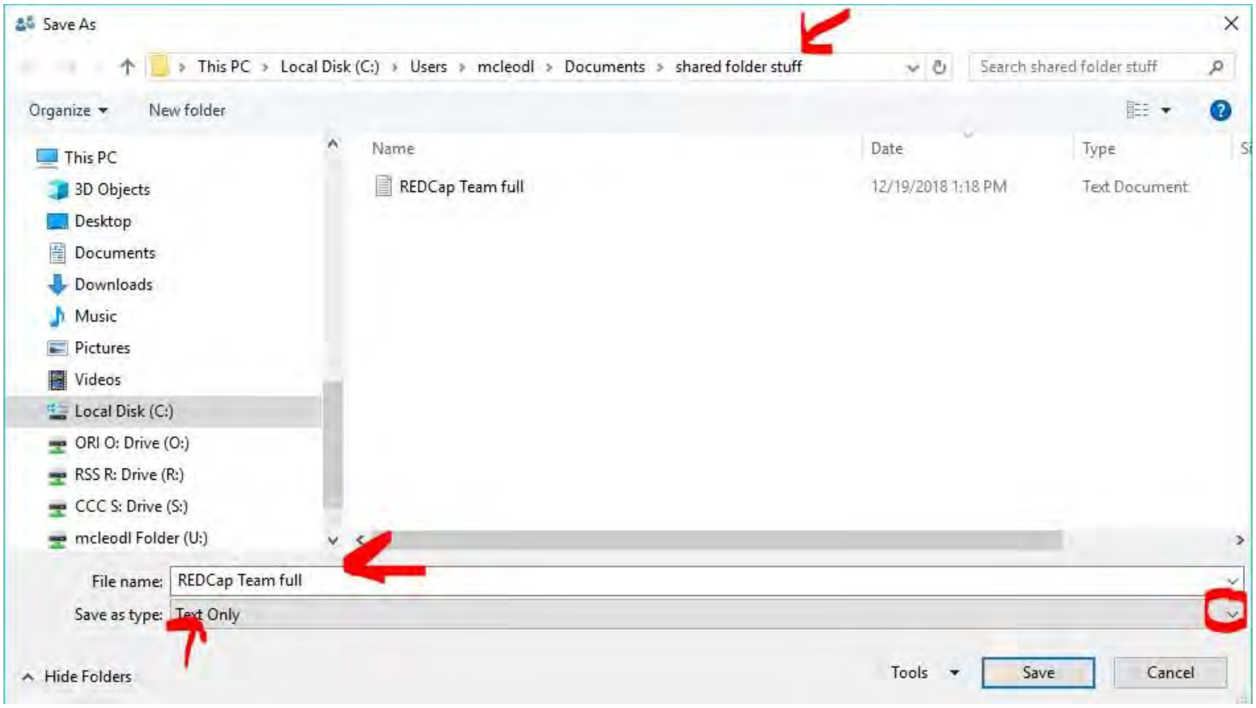
1. In Outlook, click on Contacts



2. open the contact containing the specified contact group or distribution list



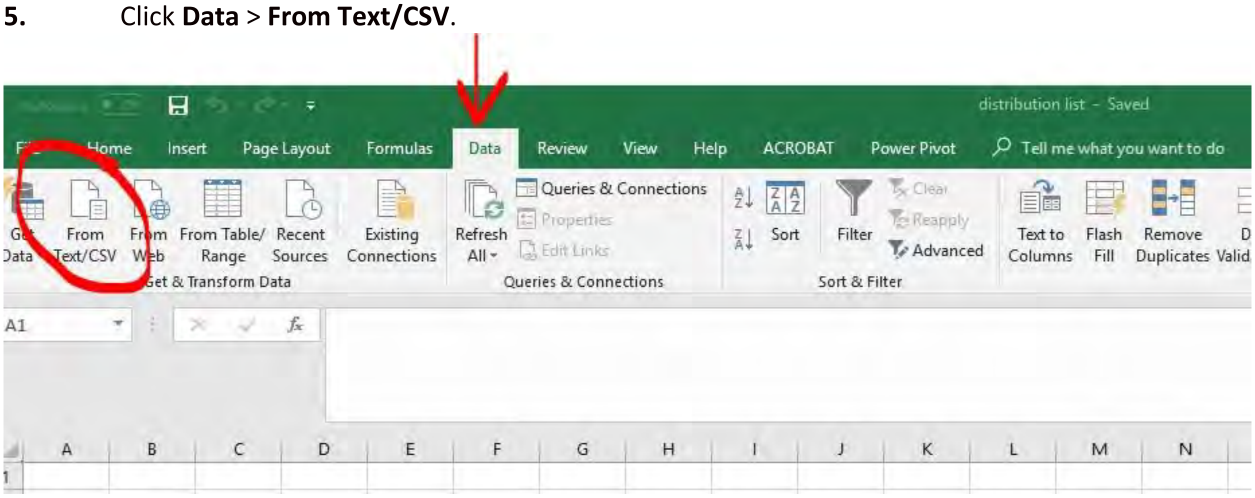
3. Click **File** > **Save As**.
a. In the Save As dialog box, you need to *(1)* ensure the filepath for the saved file is correct *(2)* Rename the exported file if needed; *(3)* Click on the **Save as type** drop-down list (it will default to Outlook Message format – Unicode) and change it to **Text Only**; and *(4)* click **Save** button. See screenshot:



Now the specified contact group is saved as a separate text file.

4. Open Microsoft Excel, click on blank workbook. Save the Excel Workbook to a specified location on your computer.

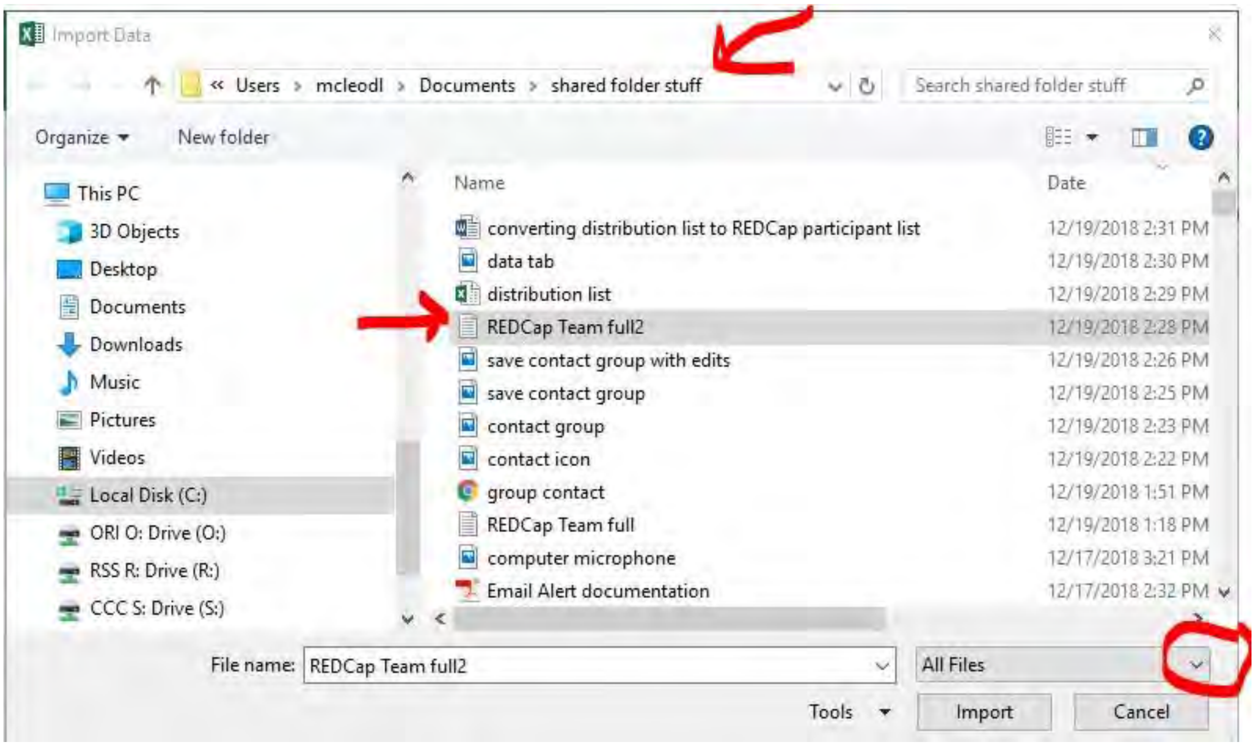
5. Click **Data** > **From Text/CSV**.



6. A dialog box will pop up.

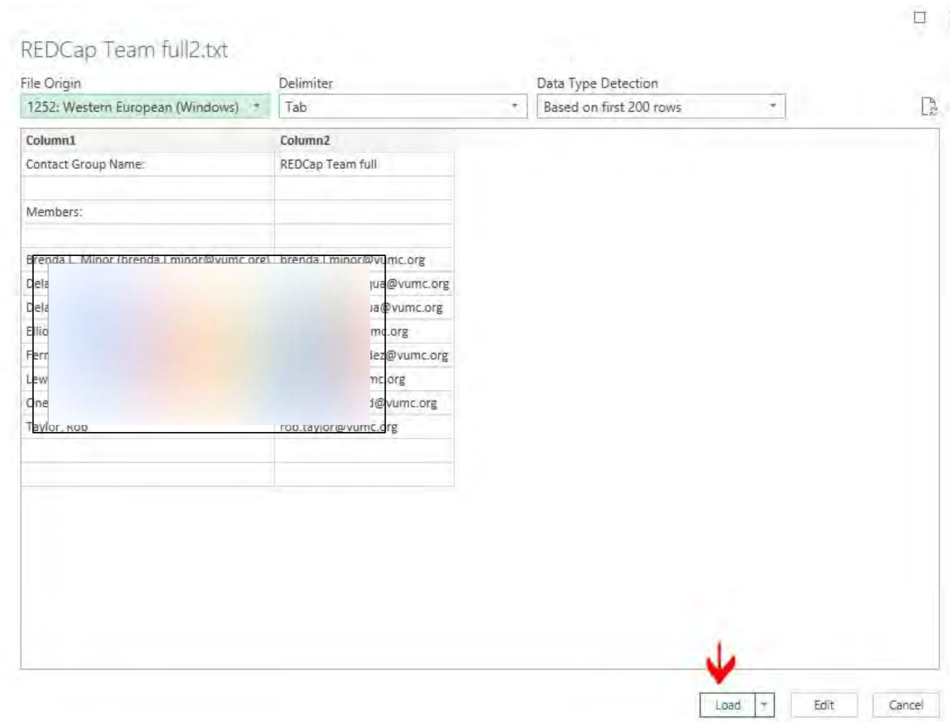
a. Go to the filepath where you saved the distribution list and select the distribution list file.

b. the drop-down list besides **File name**box defaults to Text Files. Change that selection to All Files. c. click the **Import** button.

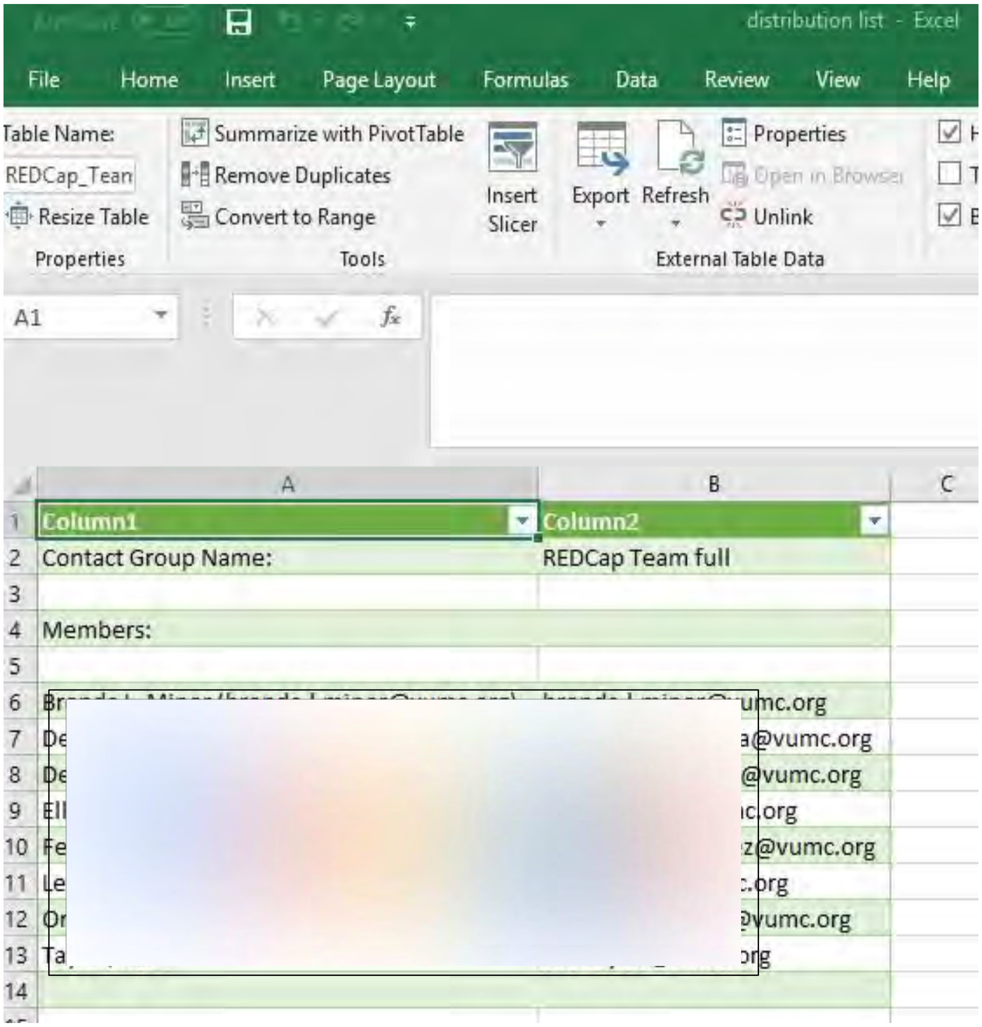


7. Now the Text Import Wizard pops out. You want to make sure that your email addresses are in a separate column from the names and that there is one email address per cell. If the data comes in and the email address content is not separate, you can separate it from the rest of the content by selecting a delimiter (tab, comma, space.)

8. Click the 'Load' button to finalize the import.



Now you will see the specified text file is imported and placed at the specified range.



The data comes in with the identifying information in column a and the email addresses in column b with one name per row, which is how REDCap will need the information for the Participant List. You can copy the email address content directly into the REDCap participant list tab. To add the people to your REDCap participant list:

1. Select the cells that have the email addresses and copy the content to your clipboard.
2. Go to your REDCap project and click on Survey Distribution Tools
3. Click on the Participant List tab
4. Click on Participant list and paste the content from your clipboard into it

19.1 Modifying a participant list to include identifiers

If you want to include the participant identifier, you have to do a few more steps. You would only want to use identifiers if it is ok that the responses are not anonymous.

1. Make a copy of the Excel sheet (so that, if in re-formatting you mess up the data you can go back to the original.
2. Cut column A and paste it so that it comes after the column with the email address content.

3. Copy the block of content (only the cells in column b and c that contain email addresses and names)
4. Paste the content into a Word document. It will appear in the Word doc as a table with grid lines
5. Click on the top left-hand corner of the grid (where the compass icon is). This will highlight the whole table. You will
now see a "Layout" tab appear on your toolbar.
6. Click on the Layout tab
7. Making sure the whole table is still highlighted, click on the Convert to Text button (button that is second from the
right)
8. A dialog box will pop up that asks you how you want to separate text. Click on the option "Other" and make sure a
comma is in the box to the right of it.
9. Your list will now have the email addresses and participant identifiers in comma-delimited format.
10. Go to your REDCap project and click on Survey Distribution Tools
11. Click on the Participant List tab
12. Make sure participant identifiers are enabled (click on the enable button if they aren't)
13. Click on Participant list and
paste the content from your Word doc into it

20 Tips for writing conditional logic

Boolean logic can be used in branching logic, survey queue, custom reports automated invitations and Alerts & Notifications. To aid you in writing Boolean logic, here are some examples:
Assume this project has 4 instruments in it:

- Intake survey (intake_survey)
- Student survey (student_survey)
- Staff survey (staff_survey)
- Faculty survey (faculty_survey)

And the Intake survey has the following questions in it:

Variable name	**Field Label**	**Raw choice value, choice label**
status	Which is your status?	1, student 2, staff 3, faculty 4, other
location	Which of the following are accurate (check all that apply)?	1, I work on the main campus 2, I work at a satellite campus 3, I work from home
vpn	Do you have VPN set up on your home computer?	1, yes 0, no
email	What is your email address?	(not applicable)
suggestions	Do you have suggestions for our Town Hall topics?	(not applicable)

20.1 Checkboxes Boolean logic

You'll only want the VPN question to display if the person ticks the checkbox that they work from home. Checkboxes work a little differently than multiple choice single answer field types (radio buttons and drop-down). The branching logic will look like this:
[location(3)] = '1'
You'll see that within the brackets is the variable name and also the raw choice value of the choice for "I work from home". So it's more than just the variable name that's in the brackets. The '1' that comes after the equals sign essentially means that the box for that choice was ticked.

20.2 Multiple choice single answer Boolean logic

If you have a Survey Queue and want a participant to take the **Student** survey only if they indicated in the **Intake** survey that they are a student, the conditional logic would read:
[status] = '1'
You'll note that the variable name is in brackets and the raw choice value associated with student is in quotes.

20.3 Combination of filters and use of 'does not equal'

If you want to see a list of records for participants who are faculty and do not work from home, it would be: [status] = '3' and [location(3)] <> '1'
The <> means 'not equal to'.

20.4 Contains Boolean logic

If you want to send a link to the Faculty survey only to those faculty with email addresses ending in 'wchospital.ca', you could create an automated invitation with this conditional logic:
[status] = '3' and (contains([email], "wchospital.ca"))

20.5 Is not blank Boolean logic

If you want to have an Alert go to a staff member only if the suggestions question has been answered, you could write the conditional logic of the alert as:
[suggestions] <>""
Two double quotes means 'blank' – not text has been entered into that field.

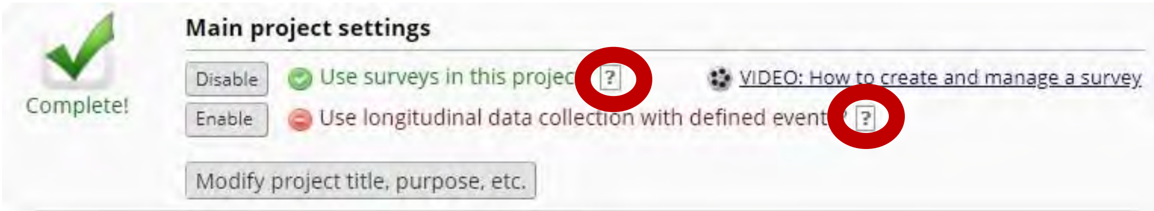
20.6 Maximum file size limits

- descriptive text field = 50 MB
- file upload field = 50 MB
- Send-it file = 125 MB
- File repository = 50 MB
- attachment to an alert = 10 MB

21 Additional Training/Support Resources

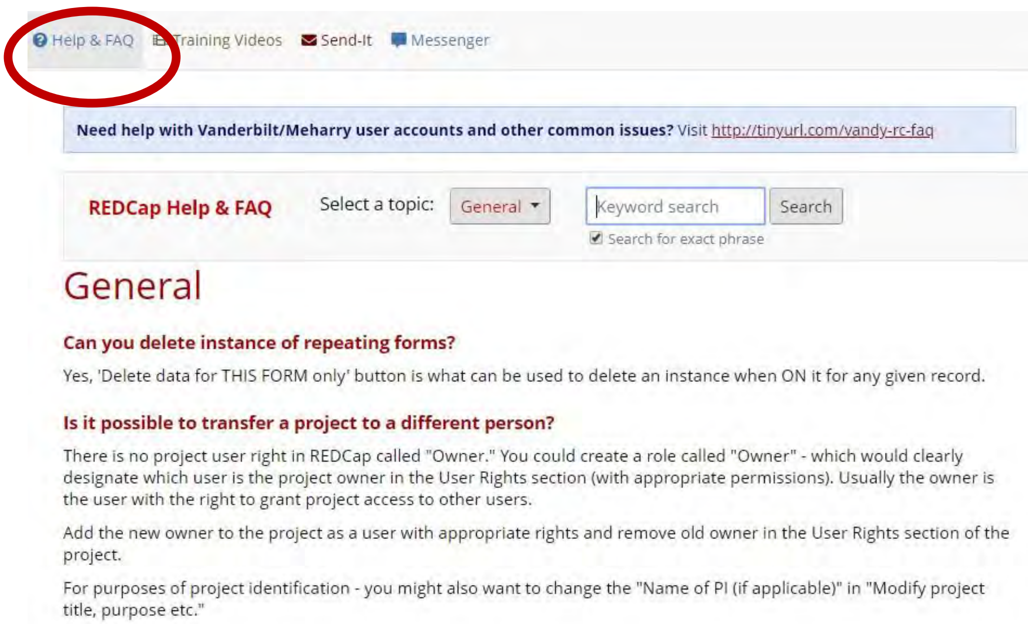
21.1 Instructional text within REDCap

There is a lot of built-in instructional text within REDCap itself. Any time you see the question mark symbol in a box, you can click on it for more information.

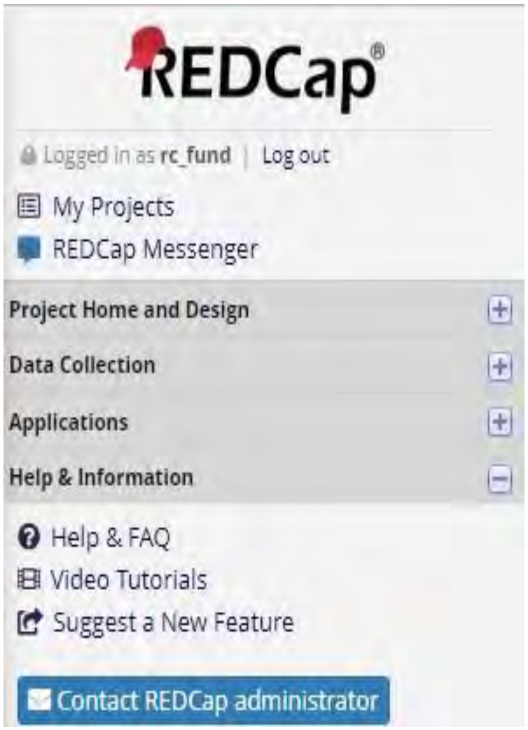


21.2 Help & FAQ within REDCap

The Help & FAQ page contains a number of questions and answers relevant to general use of the system. Make it your first point of reference if you get stuck, particularly for help with branching logic or calculated field expressions. The Help & FAQ tab appears at the top of your screen.

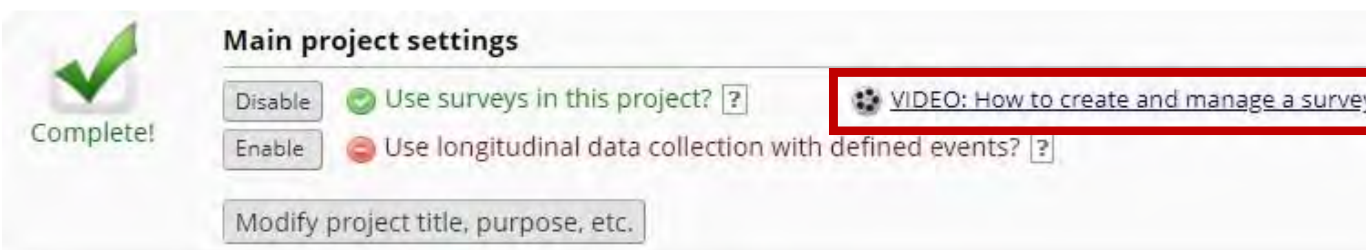


From within a project, you can select it from the left-hand menu.



21.3 Training Videos

The Training Videos tab within REDCap provides guidance on specific REDCap elements. Currently there are videos for those just getting started, Building a Project, Basic Features and Modules, Types of REDCap Projects and Special Features within REDCap Projects. The Training Videos tab appears at the top of your screen. From within a project, you can select it from the left-hand menu. You will also find hyperlinks to specific videos embedded within your project pages.



21.4 Email

If you click on the Contact REDCap Administrator blue button from within your project, an email will be created that is prepopulated with your name, email address, REDCap User Name and most importantly – the name and PID of the project you are in. This is very helpful to the REDCap administrator. Please note that given the high volume of emails and ongoing projects, not all emails can be replied to – the Drop in sessions are the best way to get support for a project.

21.5 Video Tutorials

You can view pre-recorded trainings at the bottom of this page. In those trainings you are taught principles of REDCap and taken through examples of how to apply those principles.