Government of Western Australia
Child and Adolescent Health Service

TELETHON KIDS INSTITUTE
Discover. Prevent. Cure.

Research Skills Workshop 2019 CAHS Research Education Program

REDCap Basics

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Getting started with REDCap

Logging in

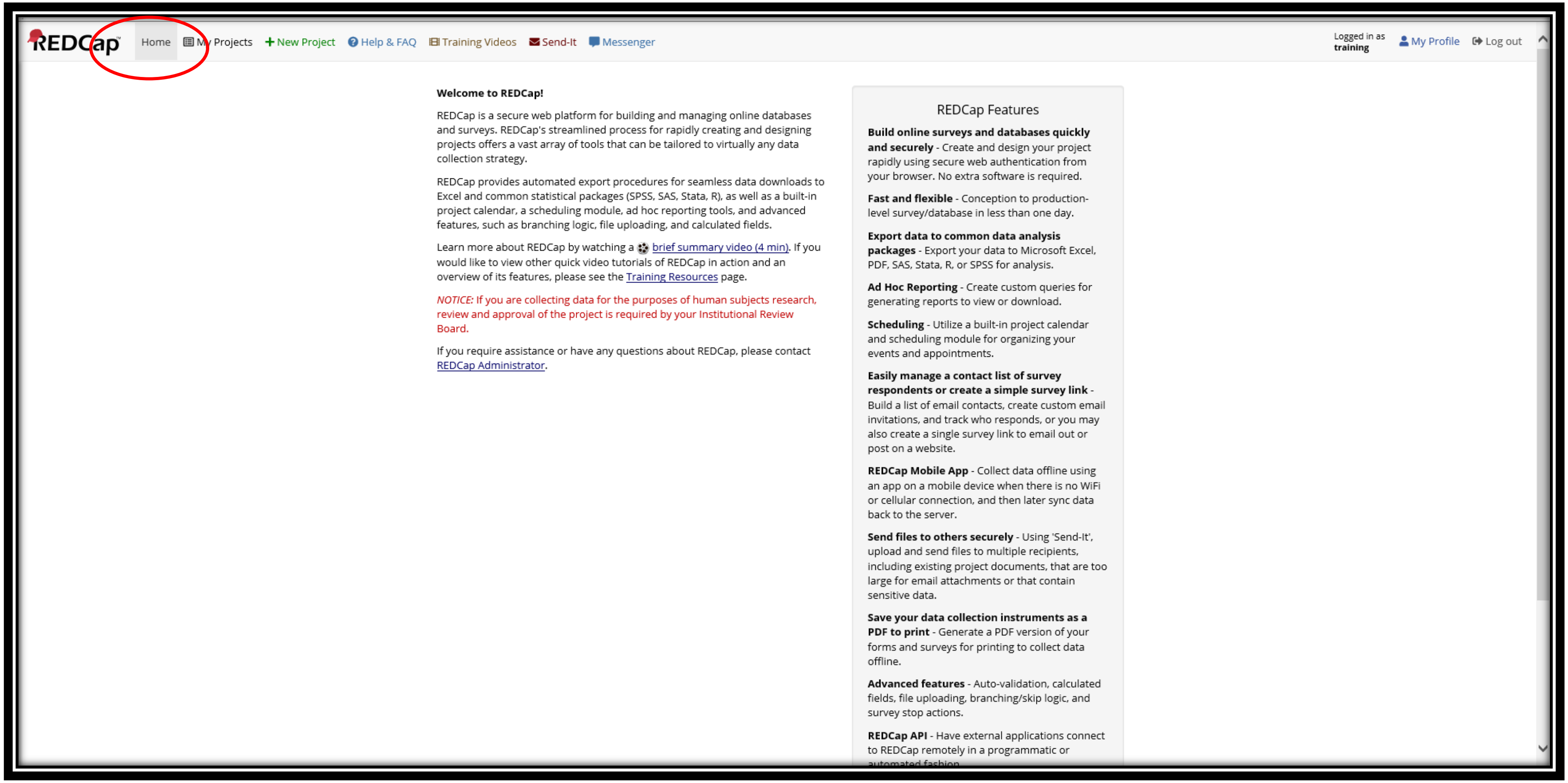
To access The Telethon Kids Institute instance of REDCap login at:

https://redcap.telethonkids.org.au

Users must be registered within the system in order to build and manage projects.
Users with Telethon Kids accounts:
Everyone who has an institute email address will already have access (using the password from your email / workstation) to login to REDCap.
Users external to Telethon Kids:
If you or your collaborator are external to Telethon Kids, contact redcap@telethonkids.org.au and provide the 1) name, 2) email address, and 3) 'reason for access' for the person requiring access to REDCap. The REDCap administrator will then create an account for that user.

Navigating REDCap

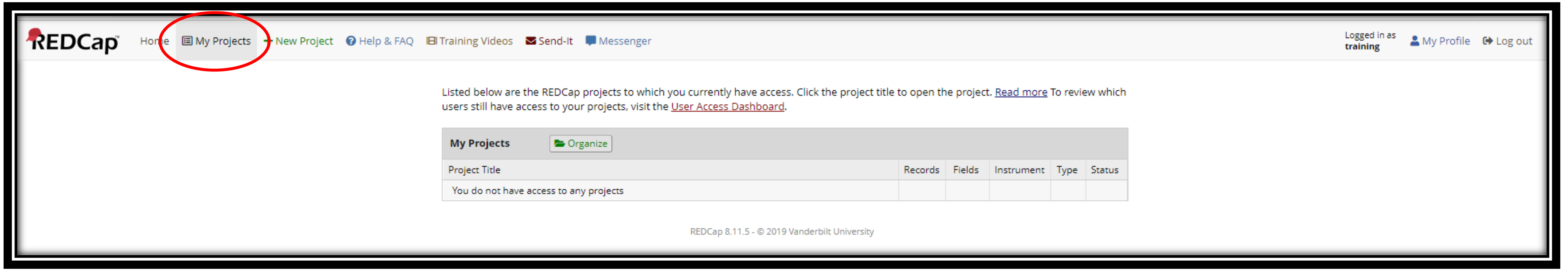
The REDCap Homepage



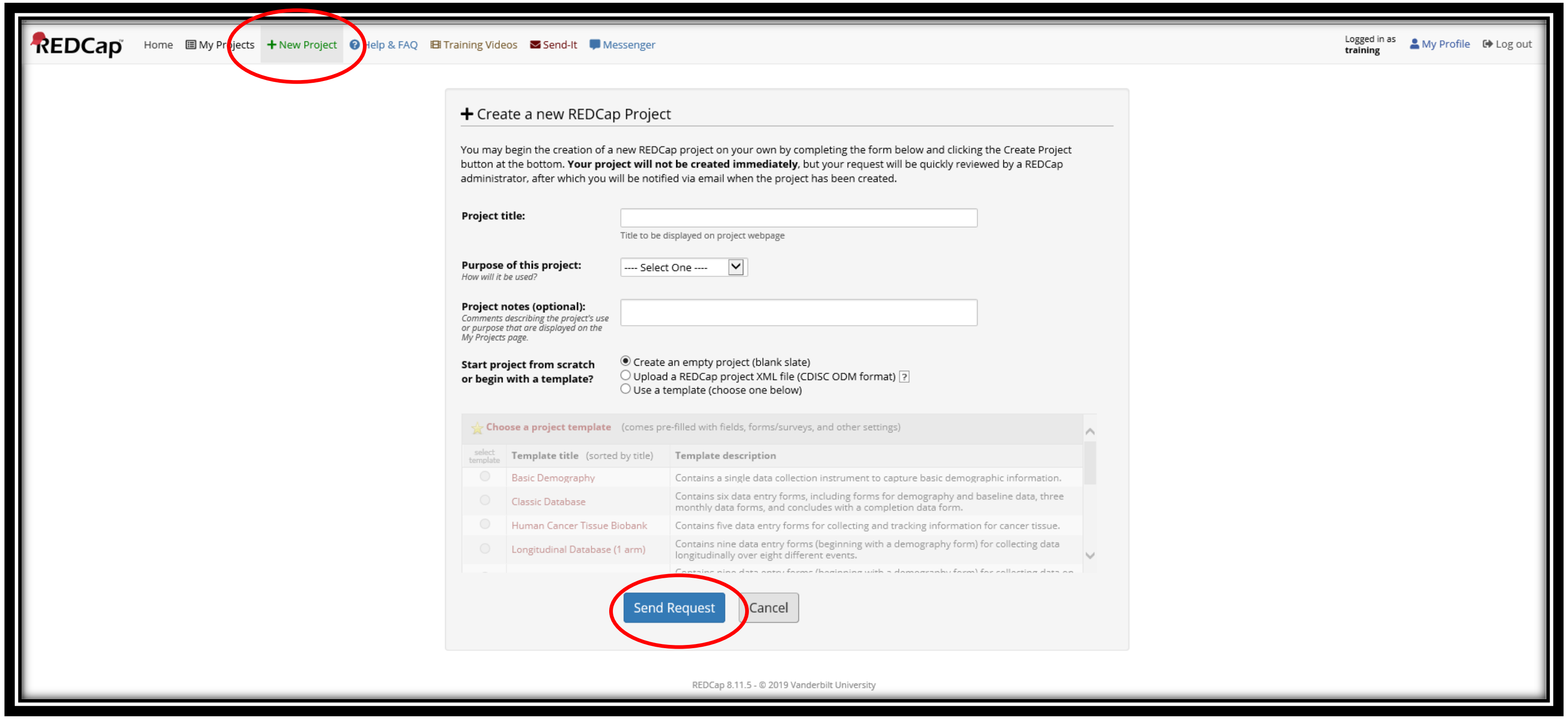
My Projects

The 'My Projects' page lists all the REDCap projects to that you currently have access.

Click the project title to open the project.



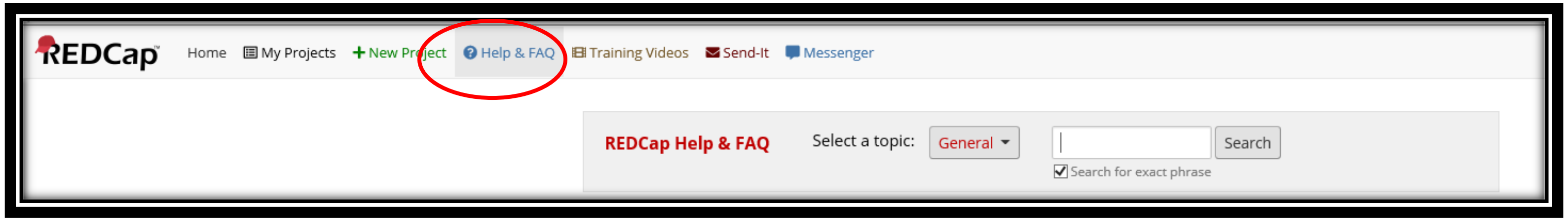
+ New Project



Once users are registered in the REDCap system they may create a new project by completing the form and submitting the request for approval.

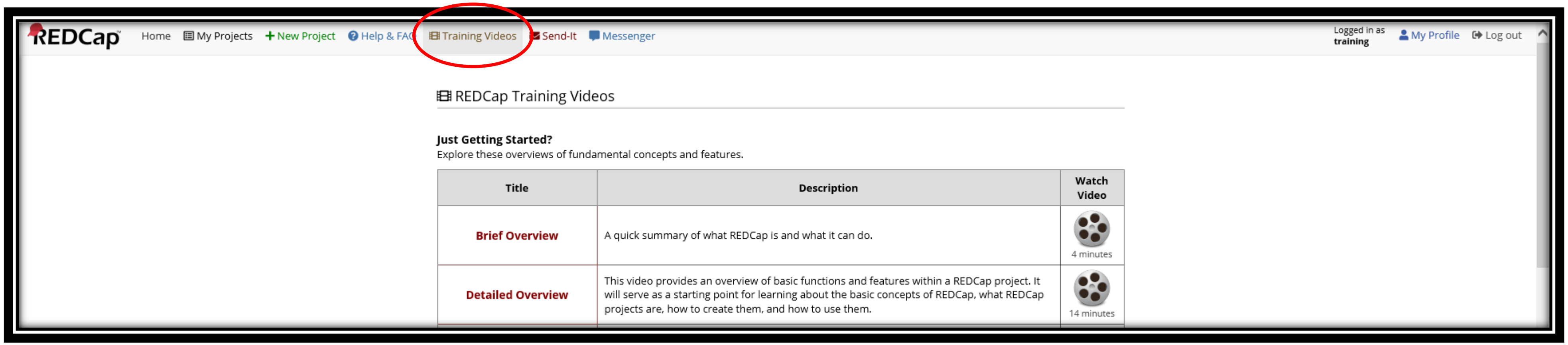
Help & FAQ

The Help & FAQ page contains useful information on many topics related to creating and managing projects within REDCap.



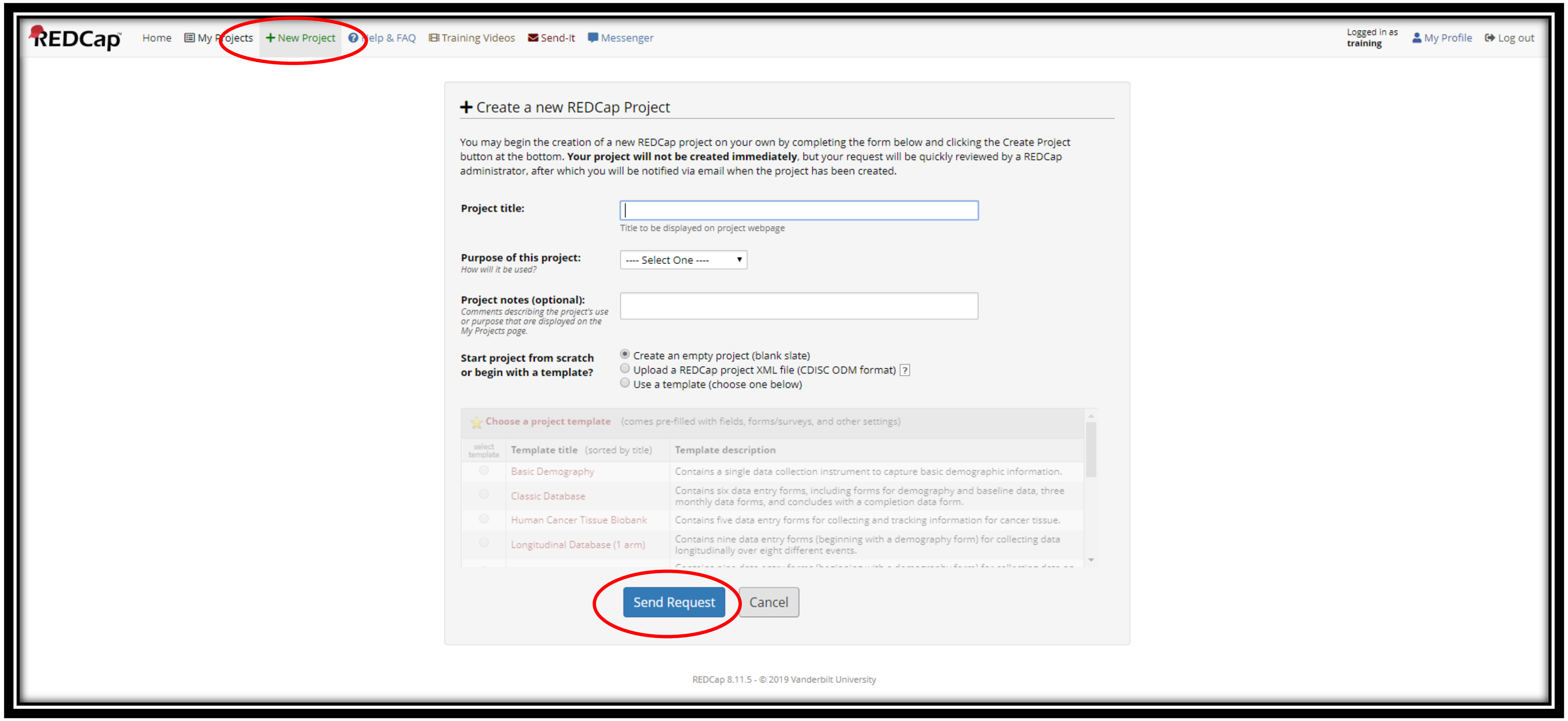
Training Videos

REDCap has a number of self-help videos that provide more detailed training on how to use the REDCap system to build and maintain projects.



Creating a new REDCap Project

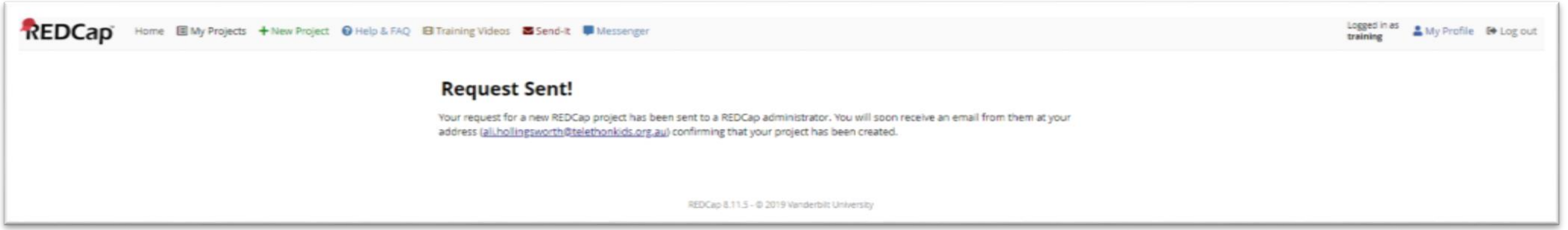
New Project



Click on the **+ New Project** tab to open up the form above. Complete the Project Title, Purpose, and select whether you wish to create an empty project, upload a REDCap project or use one of the template projects available from the template list shown.

Once 'Send Request' has been clicked, an automated email will be sent to the REDCap administrator who will review and approve the request for a new project (standard approval times apply). Following approval, you will be able to access your Project through the 'My Projects' page.

NOTE: *Please give studies a sensible name that could be searched for in the future, preferably something that is likely to be unique. Avoid a title like "Parents Questionnaire", instead consider "Autism – ABC Trial – Parents QOL Questionnaire".*



Using an existing REDCap project to create a new project

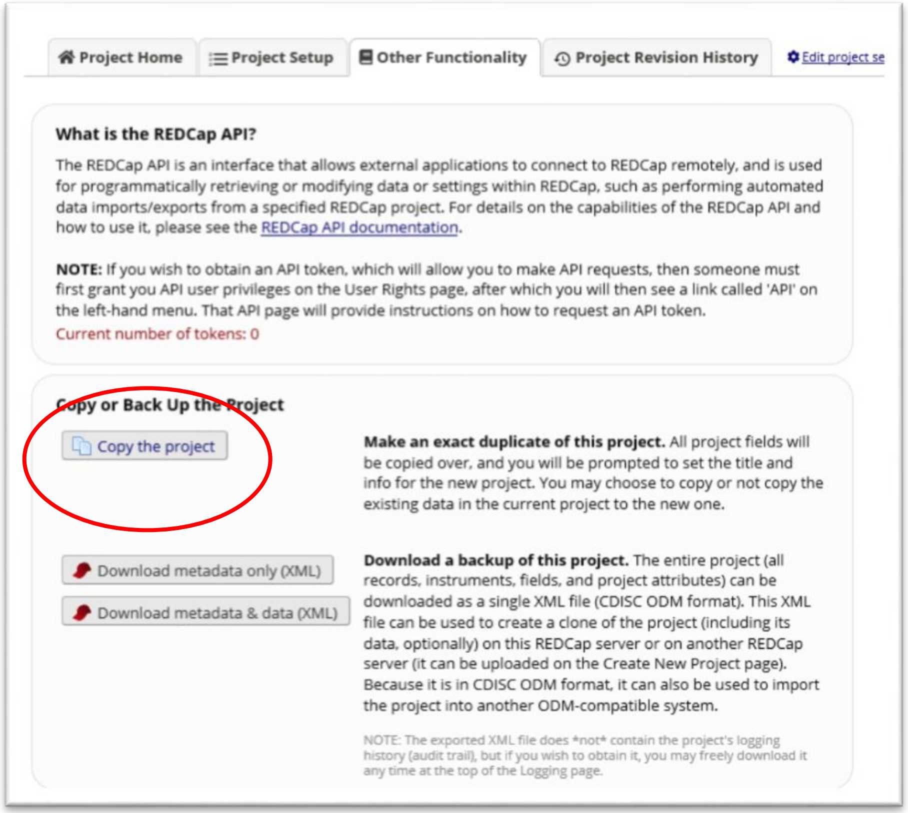
REDCap enables you to be able to copy an existing project from within the same REDCap instance you are using and that you have permission to access.

Creating a project from an existing data dictionary

1. Log into REDCap

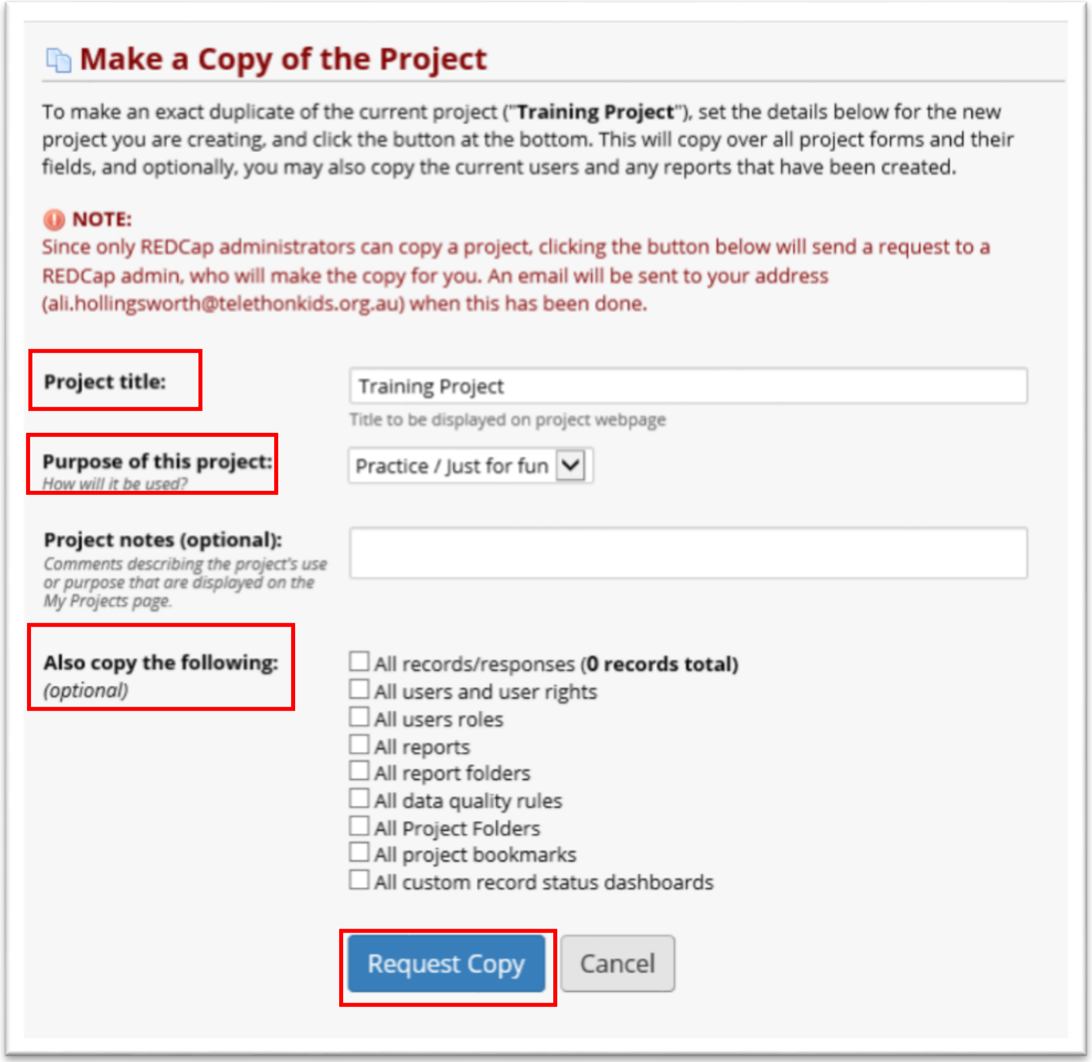
2. Select your required project from the 'My Projects' tab that you want to copy and create a new project of

3. On the 'Other Functionality' tab, under 'Copy or Back up the Project' select the 'Copy Project' button



4. On the ‘Make a Copy of the Project’ tab, check the following and update or select where required:

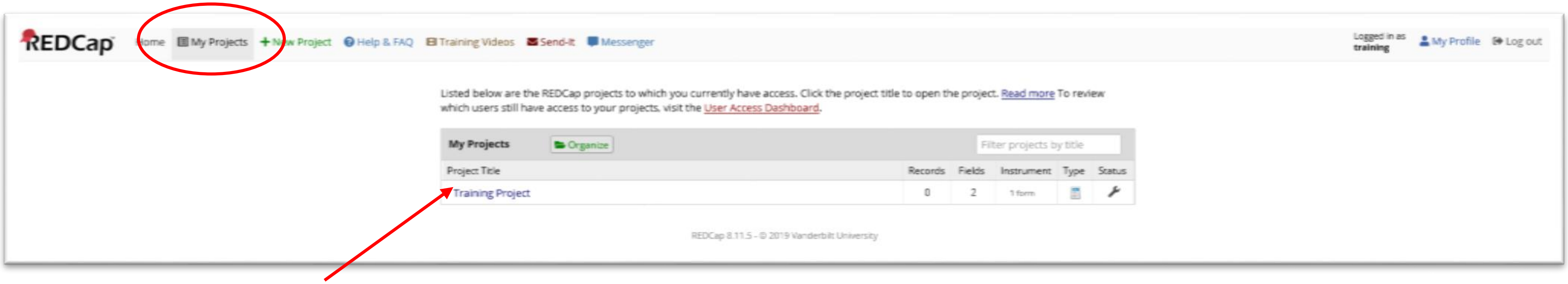
- Project Title: Change this title so you can distinguish between the project you are creating a copy from and the new project
- Purpose of this project: Change the dropdown list selection and any other information if this option or any of the details have changed
- Also copy the following: If you want to copy all the records, or keep any of the reports, setting, reports etc., select the required tickbox to copy the information to the new project
- Select the ‘Request Copy’ button



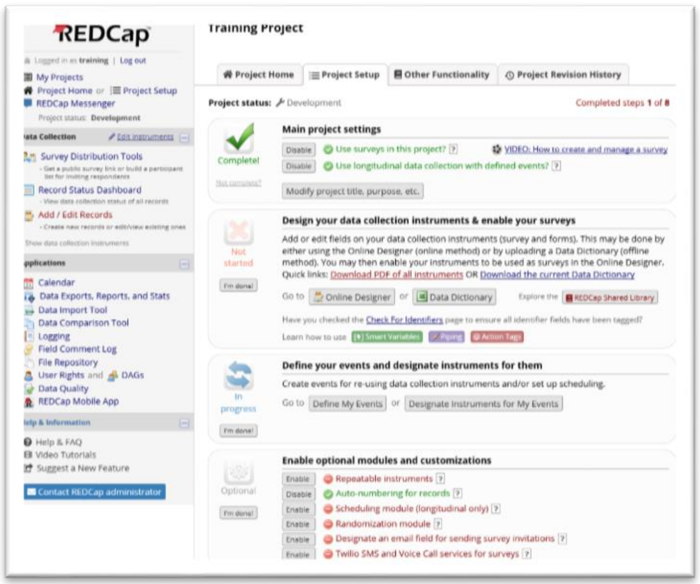
5. Once the changes have been approved by the REDCap administrator you will receive an email notification advising that your project has been successfully copied. You can then continue to setup your project and make any required change to the instruments via the online designer.

Configuring your REDCap Project

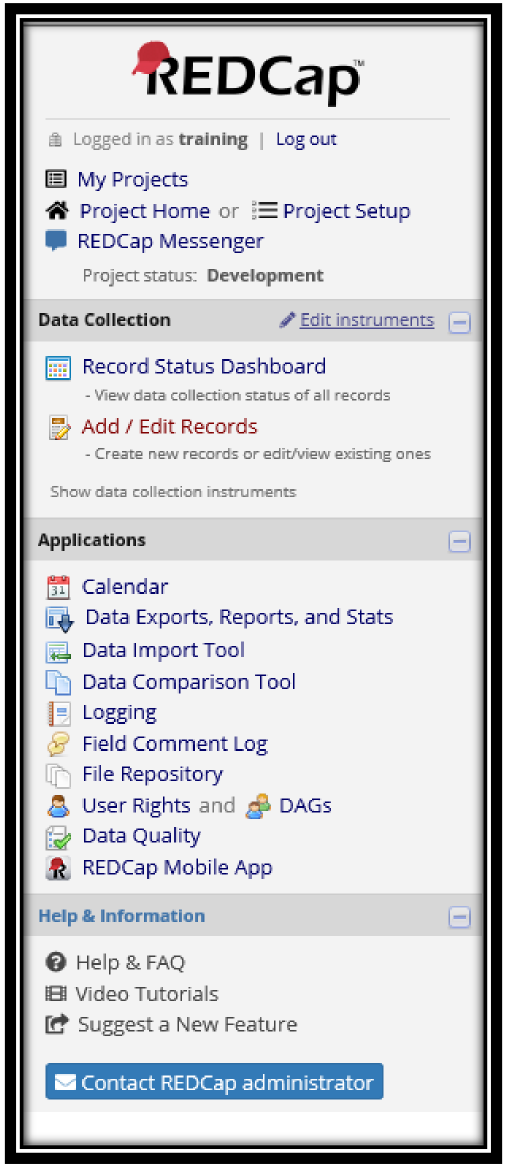
Once your Project has been created, it will be available on the 'My Projects' page



To navigate the various options within that project, click on the project title.

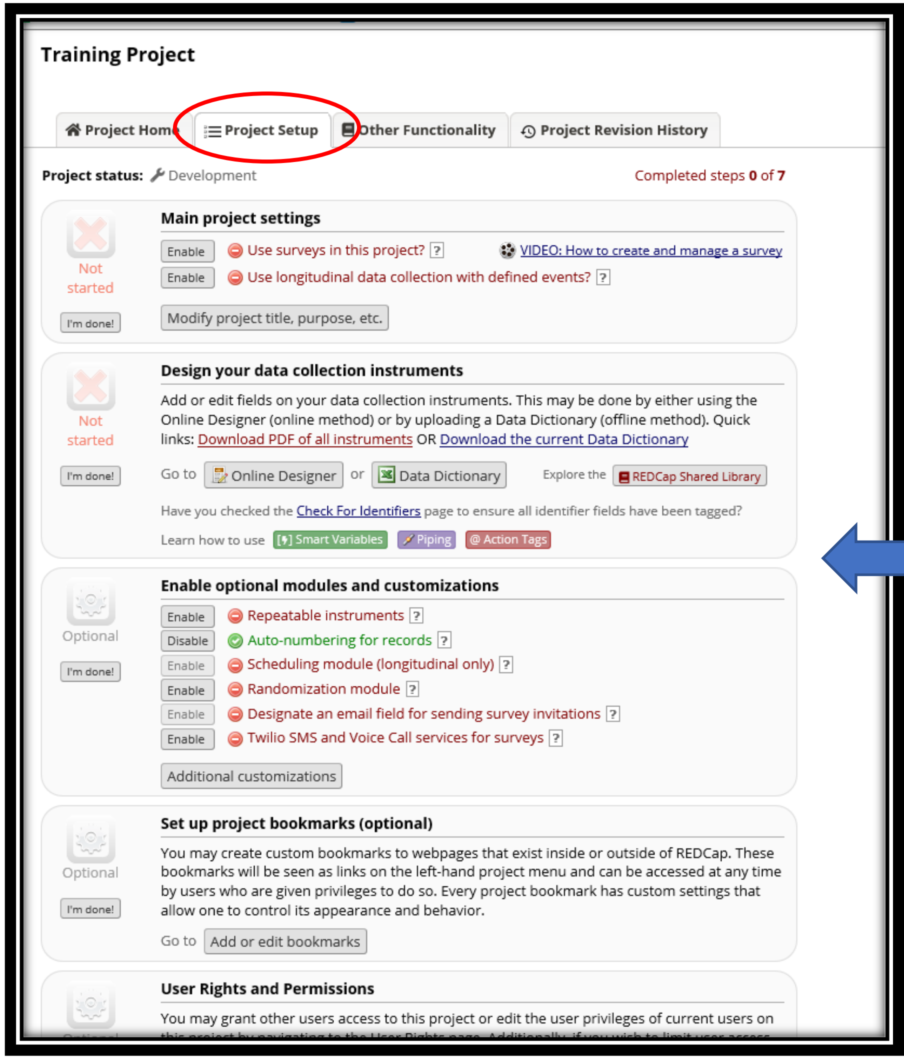


Project Side Navigation bar



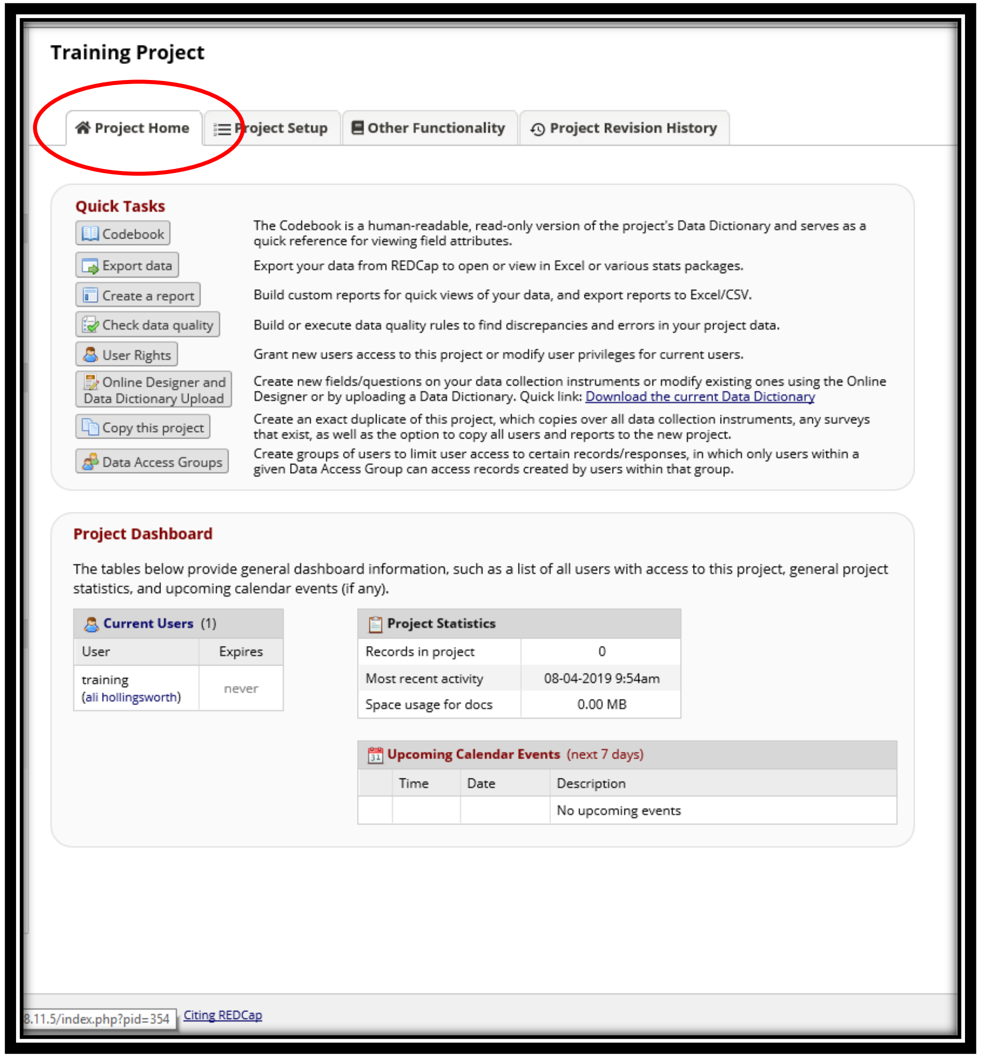
Access to most parts of REDCap including My Projects, Project Home, Project Setup, Data Collection and Applications as well as Help & Information

Project Setup



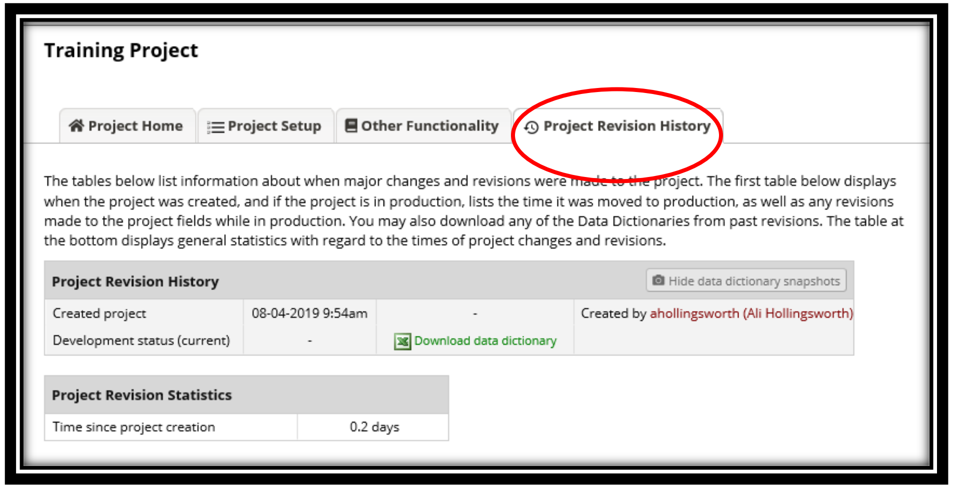
Access to the Online designer, Data Dictionary, Main project settings, optional modules and customizations.

Project Home



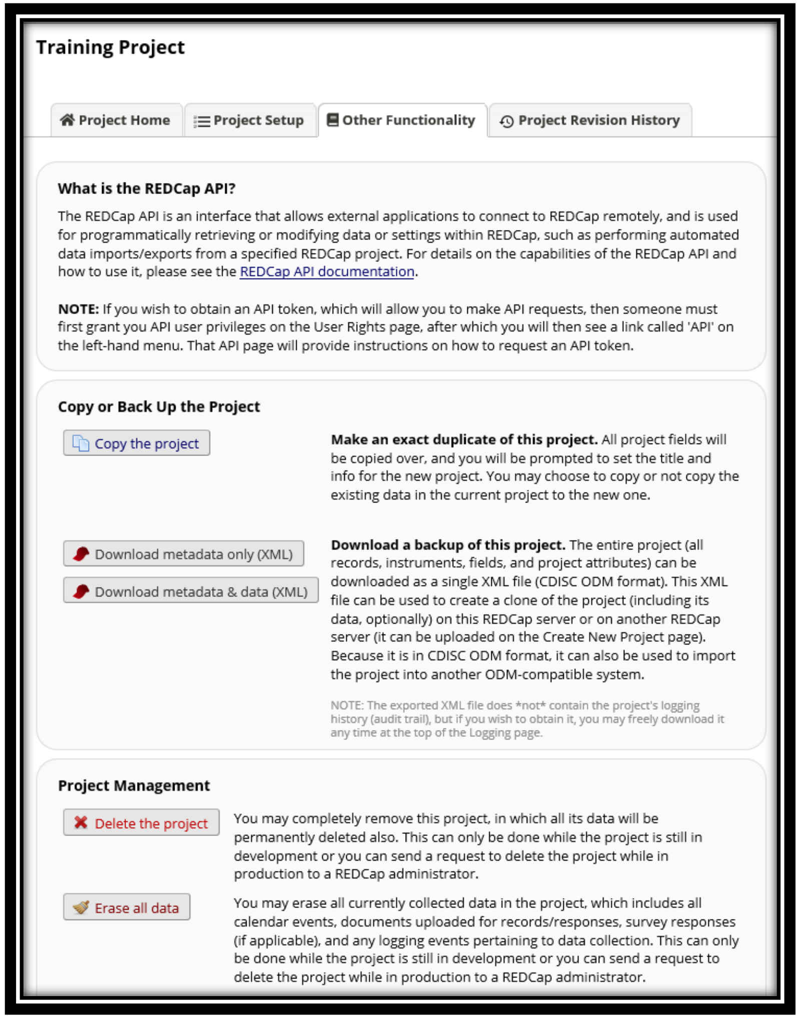
An alternative way to access many of the settings available from Project Setup and side navigation bar

Project Revision History



Each time a production change is made, a copy of the project's data dictionary will be saved automatically and available for download from the Project Revisions History tab.

Other Functionality



Training Project

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

What is the REDCap API?

The REDCap API is an interface that allows external applications to connect to REDCap remotely, and is used for programmatically retrieving or modifying data or settings within REDCap, such as performing automated data imports/exports from a specified REDCap project. For details on the capabilities of the REDCap API and how to use it, please see the REDCap API documentation.

NOTE: If you wish to obtain an API token, which will allow you to make API requests, then someone must first grant you API user privileges on the User Rights page, after which you will then see a link called 'API' on the left-hand menu. That API page will provide instructions on how to request an API token.

Copy or Back Up the Project

Copy the project

Make an exact duplicate of this project. All project fields will be copied over, and you will be prompted to set the title and info for the new project. You may choose to copy or not copy the existing data in the current project to the new one.

Download metadata only (XML)

Download metadata & data (XML)

Download a backup of this project. The entire project (all records, instruments, fields, and project attributes) can be downloaded as a single XML file (CDISC ODM format). This XML file can be used to create a clone of the project (including its data, optionally) on this REDCap server or on another REDCap server (it can be uploaded on the Create New Project page). Because it is in CDISC ODM format, it can also be used to import the project into another ODM-compatible system.

NOTE: The exported XML file does *not* contain the project's logging history (audit trail), but if you wish to obtain it, you may freely download it any time at the top of the Logging page.

Project Management

Delete the project

You may completely remove this project, in which all its data will be permanently deleted also. This can only be done while the project is still in development or you can send a request to delete the project while in production to a REDCap administrator.

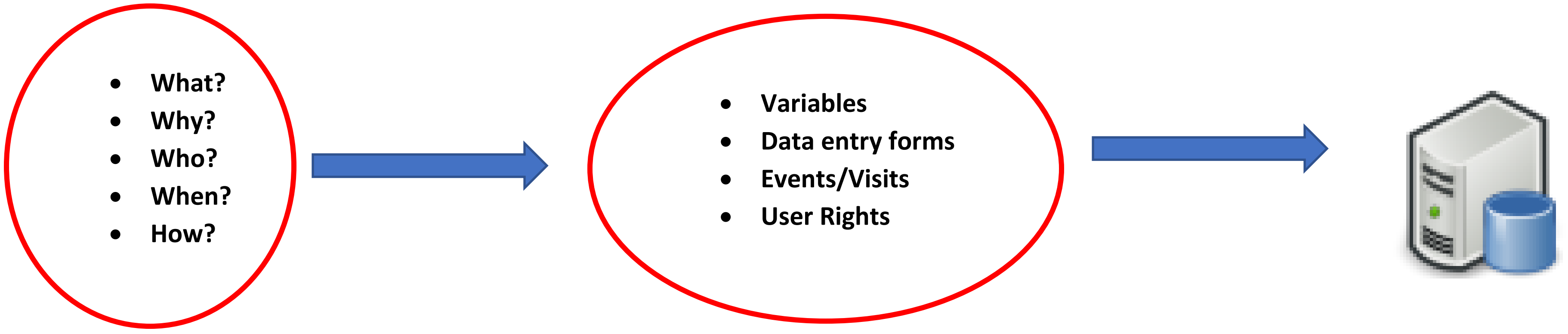
Erase all data

You may erase all currently collected data in the project, which includes all calendar events, documents uploaded for records/responses, survey responses (if applicable), and any logging events pertaining to data collection. This can only be done while the project is still in development or you can send a request to delete the project while in production to a REDCap administrator.

Allows you to copy, delete or archive your project and download or erase data.

Project Structure

Before beginning a REDCap project you should formulate a general study design, collate your data capture tools (specific forms), and think carefully about the structure of your study and the flow of participants through your study. Be cognisant of the end goal of the research throughout this process.



Configuration of the main project settings is completed in the Project setup page. The configuration of your project will vary according to the type of project you are creating.

<u>There are three data collection types available in REDCap:</u>

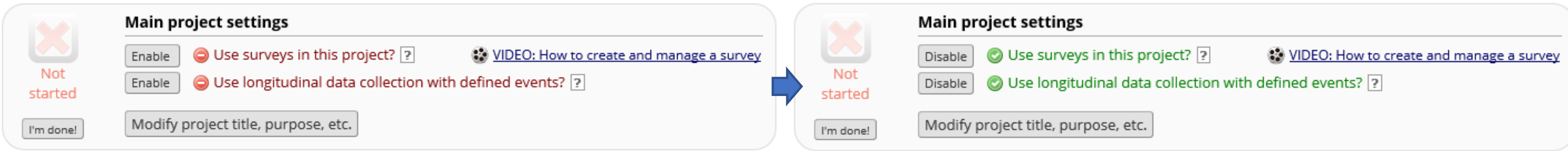
1. Data collection performed only by study team → Data entry forms
2. Data collection performed only by subjects / study participants → Survey
3. Screening phase before enrolling subjects → Survey + Data entry forms (survey will be used to screen subjects and data entry forms to collect study data).

There are two collection formats available for data entry forms:

Classic: one record per patient

Longitudinal: one record per patient per event (timepoint), with the possibility of defining multiple arms

If your project is using surveys and / or is collecting data longitudinally, these settings need to be enabled within the Main project settings section of the Project Setup page for your project, as shown below



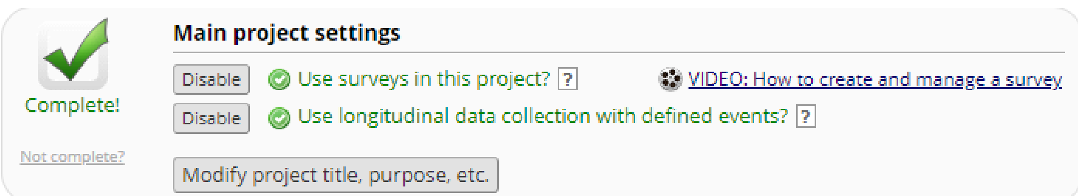
Click on 'Enable' next to 'Use longitudinal data collection with repeating forms' if your project will contain instruments that will be used to collect data numerous times. For an example, you are going to collect lab results over ten visits for the same participant.

Click on 'Enable' next to 'Use surveys in the project' to set up some or all of your data collection form(s) as surveys.

NOTE: Simply clicking on these options does not make your project longitudinal or make your data collection form(s) become surveys. Clicking these options only creates the template for your project to collect data in this way, and further steps are required to complete the enablement of these features.

It's not until you create an event table on the 'Define My Events' page and/or 'Enable' a specific form(s) as a survey(s) on the 'Online Designer'/'Edit Instruments' page that these features become functional. If you do not plan to use these features, it is recommended that you do not enable these features since it will create unnecessary data fields in your project and can cause problems upon data export.

Once you are finished with your main project settings, click "I'm done". This will serve as a visual check mark that this section is completed. Note: You can always go back and change your settings while in Development mode.

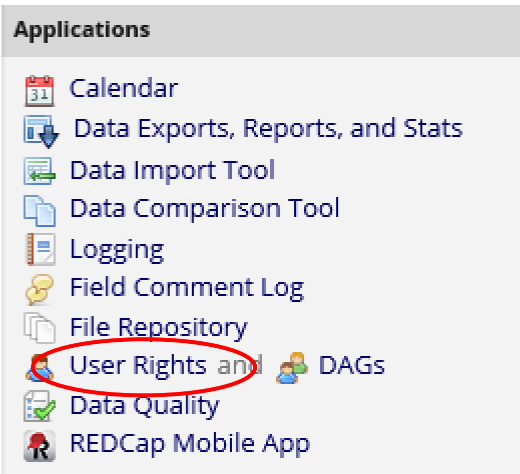


Project Administration – User Rights

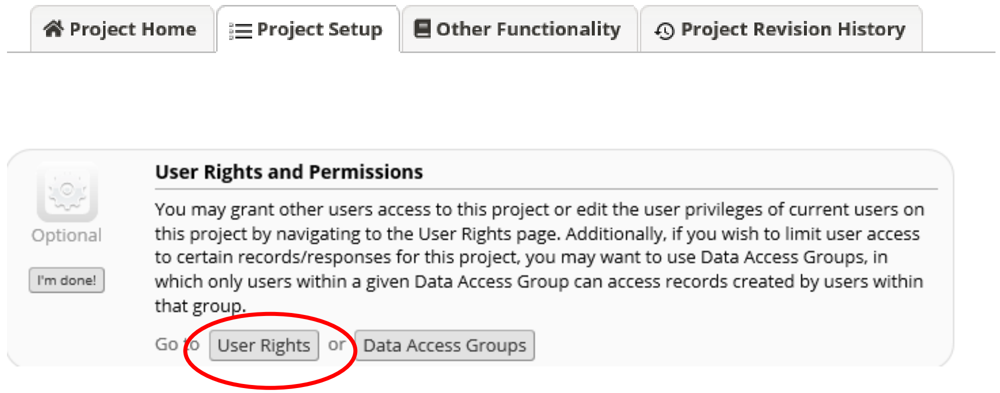
User Rights: The User Rights application is where the project creator defines the customized privileges that each project member has in terms of project design, data entry, and data access.

This can be accessed by A) From the Navbar menu > Applications> User Rights **OR** B) Project Setup page > User rights and permissions

A)



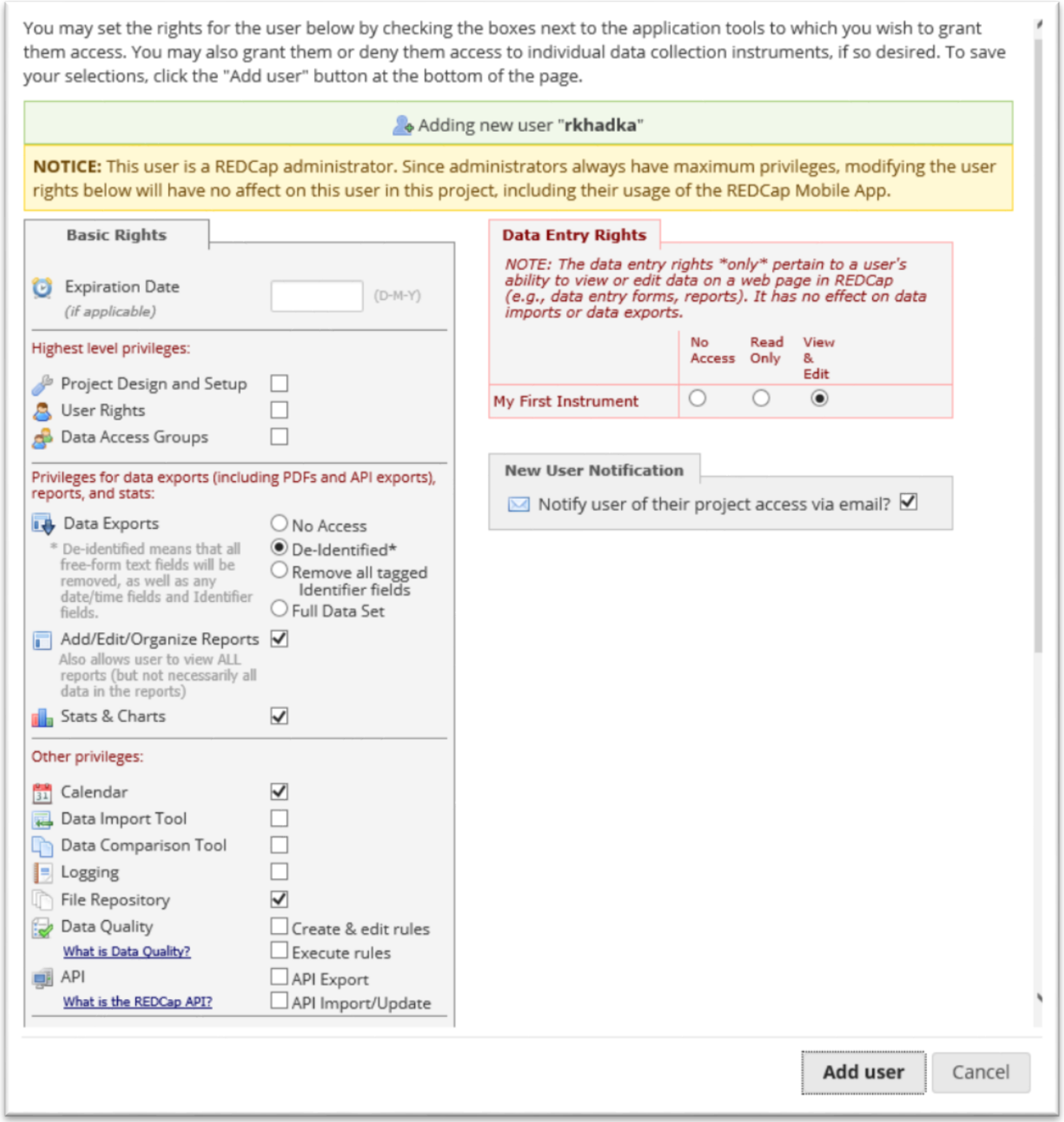
B)



This page may be used for granting users access to the project and for managing the privileges of those users. You may also create roles to which you may assign users; thse are useful when you will have several users with the same privileges as they allow you to apply (and change if needed) the same privilege set to those users. Roles are also a natural way to categorize users within a project. In the box above you may add/assign users or create new roles, and the table at the bottom allows you to make modifications to any existing user or role in the project, as well as view a glimpse of their user privileges.

<u>Steps for adding a new user to the project</u>

1) Ensure the new user has registered for a REDCap account https://redcap.telethonkids.org.au/redcap 2) After the new user has registered for a REDCap account, go to the project you would like to add them to. A list of your projects can be found under “My Projects.” 3) Once you are in your project, go to “User Rights” which is listed on the left hand side bar under Applications or under the Project settings page. 4) Once you have gone into “User Rights,” you will see a list of users that already have access to your project (if applicable) and which permissions they have (see above). 5) To add a new user, type their username into the “Add New user” field (A) and click ‘Add with custom rights’. 6) Once you have done this another screen will appear that lists all of the rights that are available (see below). Now you are ready to assign this user rights. The default settings for each new user are shown below.


You may set the rights for the user below by checking the boxes next to the application tools to which you wish to grant them access. You may also grant them or deny them access to individual data collection instruments, if so desired. To save your selections, click the "Add user" button at the bottom of the page.
Adding new user "rkhadka"
NOTICE: This user is a REDCap administrator. Since administrators always have maximum privileges, modifying the user rights below will have no affect on this user in this project, including their usage of the REDCap Mobile App.
Basic Rights
Expiration Date
(if applicable)
(D-M-Y)
Highest level privileges:
Project Design and Setup
User Rights
Data Access Groups
Privileges for data exports (including PDFs and API exports), reports, and stats:
Data Exports
* De-identified means that all free-form text fields will be removed, as well as any date/time fields and Identifier fields.
No Access
De-Identified*
Remove all tagged Identifier fields
Full Data Set
Add/Edit/Organize Reports
Also allows user to view ALL reports (but not necessarily all data in the reports)
Stats & Charts
Other privileges:
Calendar
Data Import Tool
Data Comparison Tool
Logging
File Repository
Data Quality
What is Data Quality?
Create & edit rules
Execute rules
API
What is the REDCap API?
API Export
API Import/Update
Data Entry Rights
NOTE: The data entry rights *only* pertain to a user's ability to view or edit data on a web page in REDCap (e.g., data entry forms, reports). It has no effect on data imports or data exports.
No Access
Read Only
View & Edit
My First Instrument
New User Notification
Notify user of their project access via email?
Add user
Cancel

Steps for creating a new role and assigning users to roles

1) In the ‘Create new roles’ field (C), give your new role a name for example ‘Data Entry’ and click ‘Create Role’. Again the table above will display, allowing you to select the appropriate privileges for the role. Once you have selected the desired privileges, click ‘Create role’. This role will then show in the user rights table (as below)

Role name (click role name to edit role)	Username or users assigned to a role (click username to edit or assign to role)	Expiration (click expiration to edit)	Project Design and Setup	User Rights	Data Access Groups	Data Export Tool	Reports & Report Builder	Graphical Data View & Stats	Calendar	Data Import Tool	Data Comparison Tool	Logging	File Repository	Record Locking Customization	Lock/Unlock Records	Data Quality (create/e rules)
—	**training** (ali hollingsworth)	never	✔	✔	✔	Full Data Set	✔	✔	✔	✔	✔	✔	✔	✖	✖	✔
Data Entry	[No users assigned]		✖	✖	✖	De-Identified	✔	✔	✔	✖	✖	✖	✔	✖	✖	✖

2) To add users to a role, enter the user name in the ‘assign new user’ field (B) and then select the role to which you wish to assign the user by selecting ‘assign to role’ A list of all available roles will display for you to select from.

Data Entry Rights

Data Entry Rights

NOTE: The data entry rights *only* pertain to a user's ability to view or edit data on a web page in REDCap (e.g., data entry forms, reports). It has no effect on data imports or data exports.

	No Access	Read Only	View & Edit
My First Instrument	○	○	◉
Diet	○	○	◉
School	○	○	◉
Exercise	○	○	◉
Rand 36 Item SF Health Survey Instrument (Version 1.0)	○	○	◉

The Data Entry Rights section allows you to control access to individual forms.

- The default setting is that all new users will have access to view and edit every form in the project but this can be changed by selecting either “No Access” or “Read Only” for each form.

  No Access – User cannot view or edit the form at all.

  Read Only – User can view the form but cannot change or add data to the form

To Change an Existing User’s Rights

1) Click on the user’s name, select ‘Edit user privileges’ This will take you to the list of user rights that are available.

2) You can now check or uncheck the permissions you want to change for that user.

3) Click on “Save Changes” once you are finished. To delete a user so they no longer have access to the project, follow the previous steps and then click on “Remove User” (see right) and select “Remove user” when the dialogue box appears asking if you’re sure you want to delete this user.

Summary of Basic User Rights

Project Design and Setup – *Allows user to change the set up and design of the project, such as creating events, making the project longitudinal, adding a survey, or renaming the project.*

User Rights – *Allows user to assign and change user rights for all those assigned to the project, including themselves.*

Data Access Groups – *For multi-site studies, only users within a given Data Access Group can access records created by users within that group.*

Data Export Tool – *Allows user to export data into Excel, SPSS, SAS, R and Stata. No Access – No data exporting can be performed. De-identified – Can only export data that is not classified as PHI in the project. Full Data Set – All data can be exported, including PHI, from the project.*

Add/Edit/Organise Reports – *Allows users to create and edit reports but not necessarily the data in the reports*

Stats & Charts – *Allows user to view all project data in aggregate graphical format and as descriptive statistics.*

Calendar – *Allows user to view calendar and schedule patients using the scheduling module and the Calendar Application*.

Data Import Tool – *Allows user to import data into project using the data import template (Excel).*

Data Comparison Tool – *Allows users to compare 2 records within a project*

Logging – *Allows user to view all project activity (which users have done what) under 'Applications.'*

File Repository – *Allows user to view and open the files that are stored in the file repository under 'Applications.'*

Data Quality - *Allows user to execute data quality rules upon project data to check for discrepancies in the data, such as missing values, field validation errors, and outliers.*

API – *An interface that allows external applications to connect to REDCap remotely, and is used for programmatically retrieving or modifying data or settings. Allows users to import/export data to and from external applications through the API.*

REDCap Mobile App – *Allows users to collect data offline in the mobile app and download data from the app if permitted.*

Create Records – *Allows user to create new records and add new subjects to project.*

Rename Records – *Allows user to rename records, such as assigning a subject a new Study ID number.*

Delete Records – *Allows users to delete subjects from the project. Expiration Date – Gives user access up until a specified date. Used mostly for temporary employees, such as students performing data entry.*

Record Locking Customization – *Allows user to have access to the Record Locking Customization Application, used for customizing the Record Locking option and E-signature option on data collection instruments.*

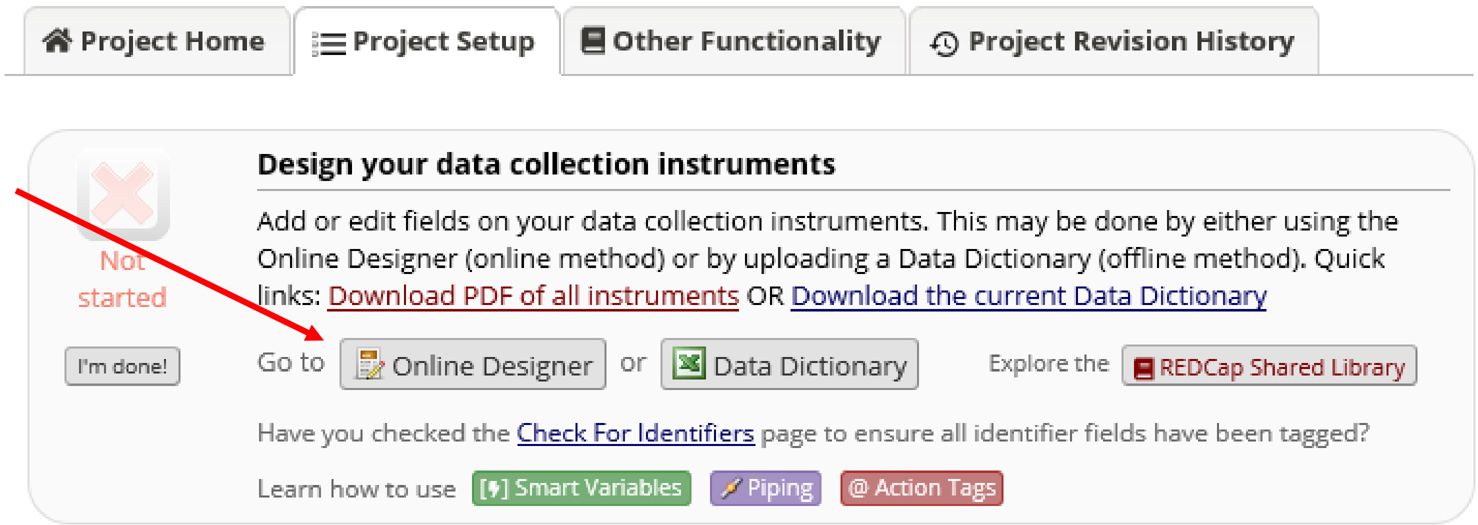
Lock/Unlock Records – *Allows user to lock (and unlock) individual records so they cannot be altered. Disabled – User cannot lock or unlock records Locking/Unlocking – User can lock and unlock records Locking/Unlocking with E-Signature Authority** - User can lock and unlock records a gives them e-signature privileges to apply an e-signature to forms.*

Allow locking of all forms at once for a given record – *Allows user to lock all records across the project for an individual subject.*

Creating and editing data collection forms using the On-line designer

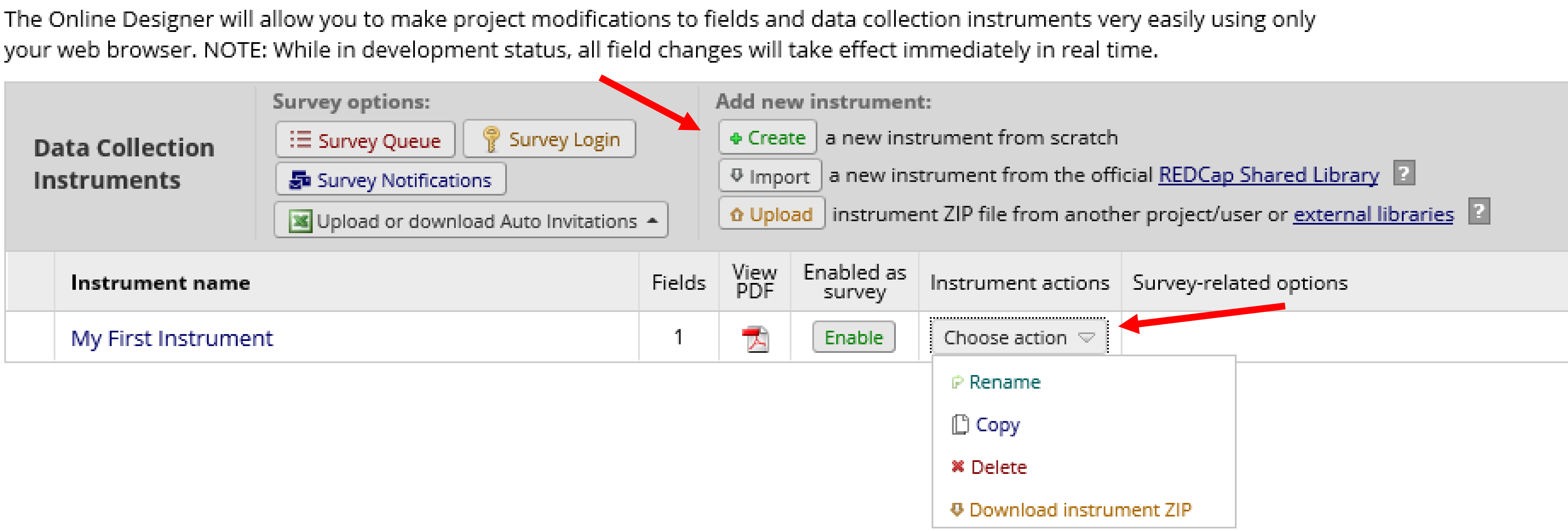
Once your request to create a new project has been approved and you have set your main project settings (enabling surveys and longitudinal data collection) you are ready to design the data collections forms (Instruments).

On the Projects Setup page, click on Online designer

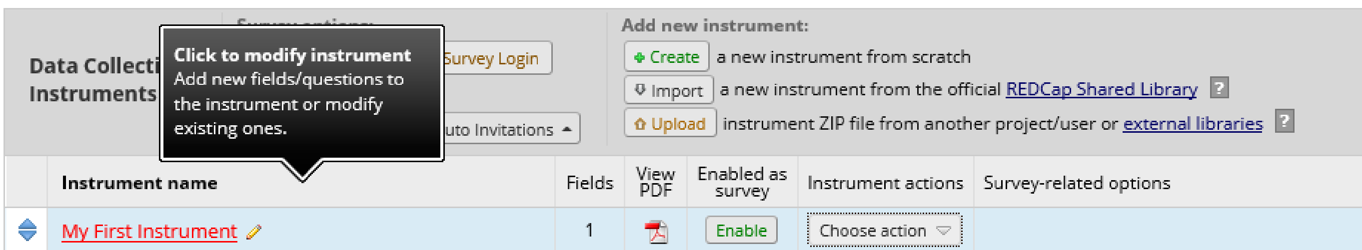


Online Designer

The Online Designer is the primary tool with which you will design your data forms. Assuming that you started with an empty project (started without using a template), REDCap will begin your project with a data collection instrument titled "My First Instrument". To change the title, click the "Choose action" button. To add additional data collection instruments, click on the Create icon. Click on Add Instrument here and enter a name for the new instrument.

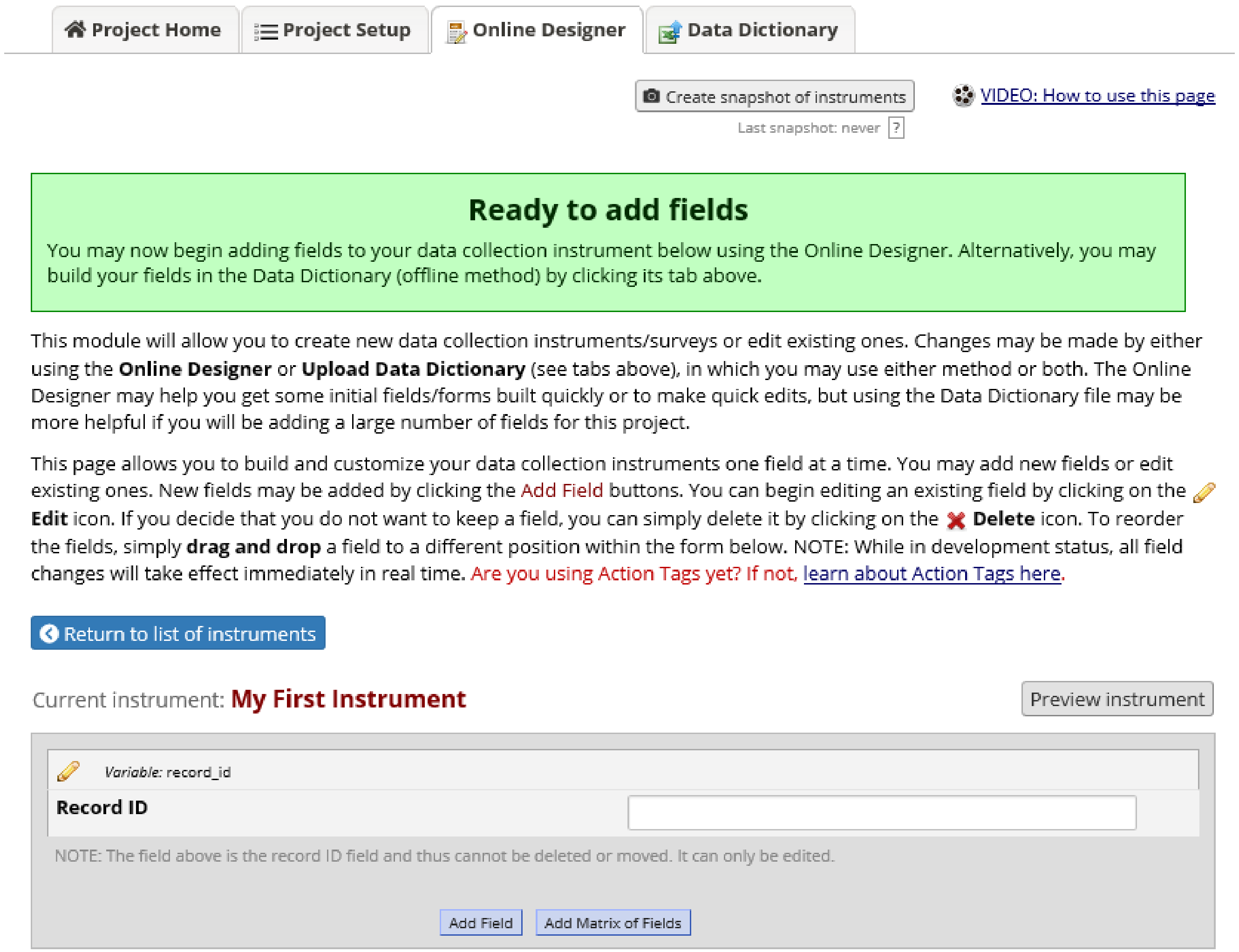


To begin building your data collection instrument, click on the instrument name.



Record Identifier

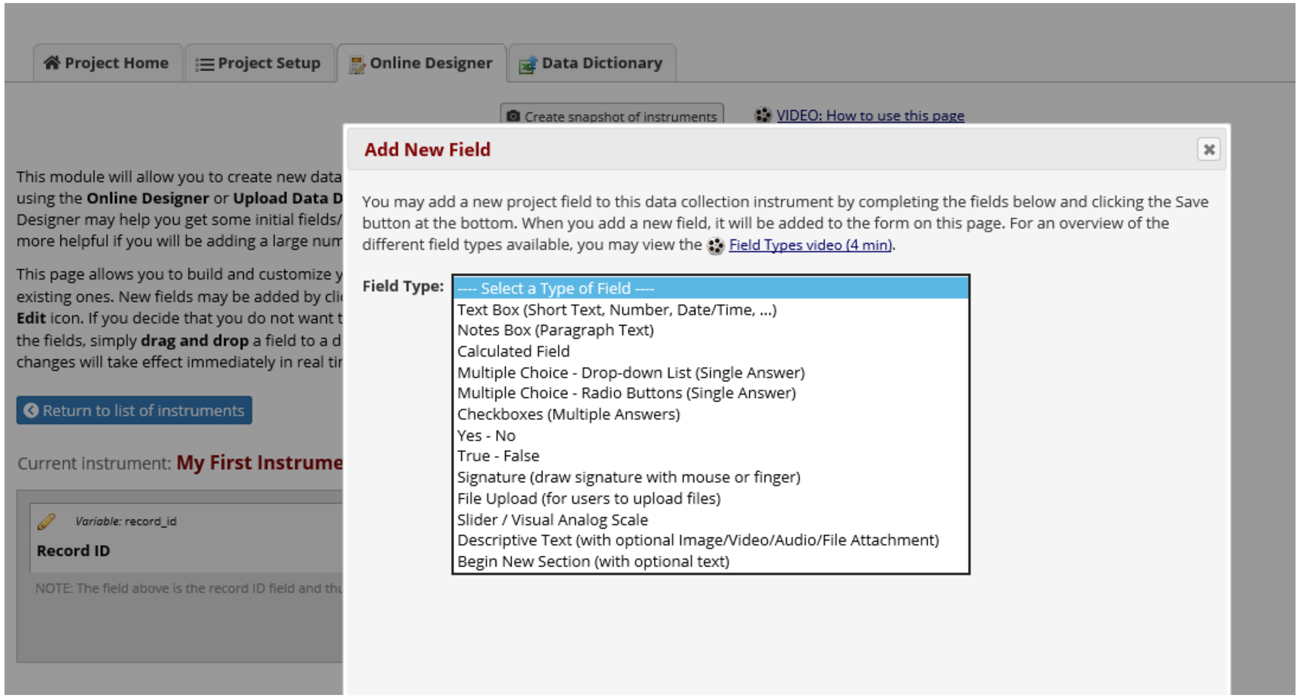
The very first field in the first data collection instrument must be used as the record identifier and must be unique. The record identifiers can be automatically sequentially-generated or user-entered. The record identifier field cannot be deleted however you may rename this field by clicking on the pencil icon. It is strongly recommended to not use any Protected Health Information as the unique identifier to preserve confidentiality. This field does not need to be repeated for any other data instruments throughout the project; this is the only place you will need to be concerned with it.

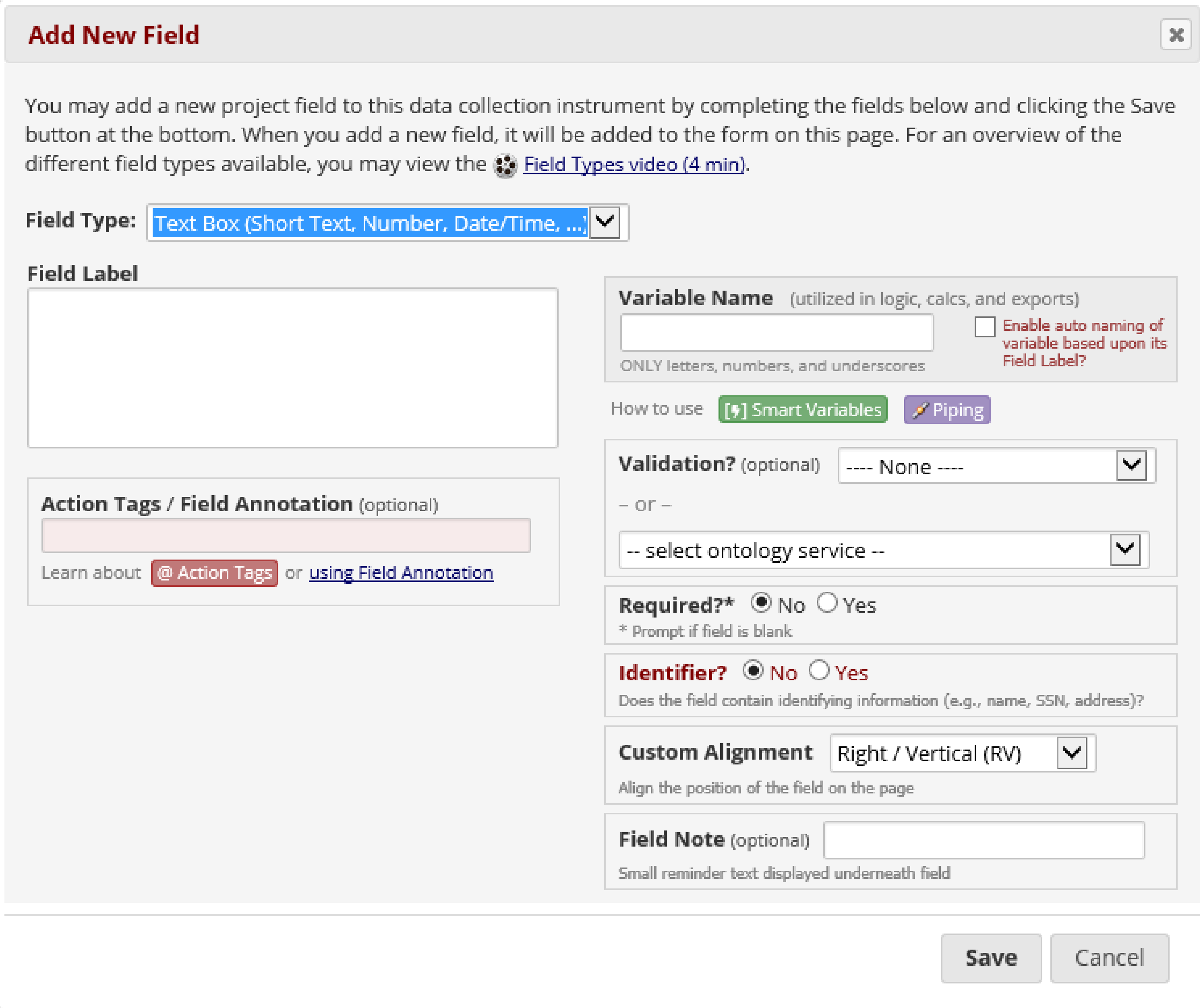


You may click the “Preview Instrument” button to preview what your form will look like during actual data entry. Calculated fields and branching logic will not work in this preview; practice data must be entered in records in order to test those particular functionalities.

Add Fields to Your Data Collection Instruments

Click the Add Field button and select one of the several field types available.




Add New Field
You may add a new project field to this data collection instrument by completing the fields below and clicking the Save button at the bottom. When you add a new field, it will be added to the form on this page. For an overview of the different field types available, you may view the Field Types video (4 min).
Field Type:
Text Box (Short Text, Number, Date/Time, ...)
Field Label
Variable Name (utilized in logic, calcs, and exports)
Enable auto naming of variable based upon its Field Label?
ONLY letters, numbers, and underscores
How to use
[⚡] Smart Variables
Piping
Action Tags / Field Annotation (optional)
Learn about
@ Action Tags
or
using Field Annotation
Validation? (optional)
---- None ----
– or –
-- select ontology service --
Required?* No Yes
* Prompt if field is blank
Identifier? No Yes
Does the field contain identifying information (e.g., name, SSN, address)?
Custom Alignment
Right / Vertical (RV)
Align the position of the field on the page
Field Note (optional)
Small reminder text displayed underneath field
Save
Cancel

The example in this section will use the “Text Box” field type (essentially a “short answer” field), one of the most common field types in REDCap data entry. The general “new field” addition process is very similar across field types – however, other types may have additional features or nuances associated with them, which is discussed in detail in the Field types section.

If you are designing a **survey**, the Field Label will generally be a question, such as “How old are you (years)?” If you are designing a **research data entry form**, your Field Label may look more like a standard label, such as “Age (years)”.

The Variable Name is used by REDCap to store the data. We strongly advise against enabling auto-naming for variables (the checkbox to the right of the Variable Name field). You generally want to keep variable names short but somewhat descriptive, so that if you need to export your data, you will be able to recognize key variables. For instance, “Q1” is not a very descriptive variable name, and is not advised for most situations. “Height” is a good variable name, but “height_in” or “height_cm” is even better, because you are reiterating your measurement unit within the variable name, which is a good practice. If you have many forms, it can be helpful to add a prefix to your field variable names that indicates which form they are on. For instance, a variable representing age in years on your Demographics form might be labeled “dm_age_yrs

Validation is an extended option whereby, REDCap will prompt an error when a field’s entry does not meet certain expectations for data type, for example, if people enter text into what should be a numeric response. There is also the option for setting minimum and maximum expected values. (More information is provided under the validation section below)

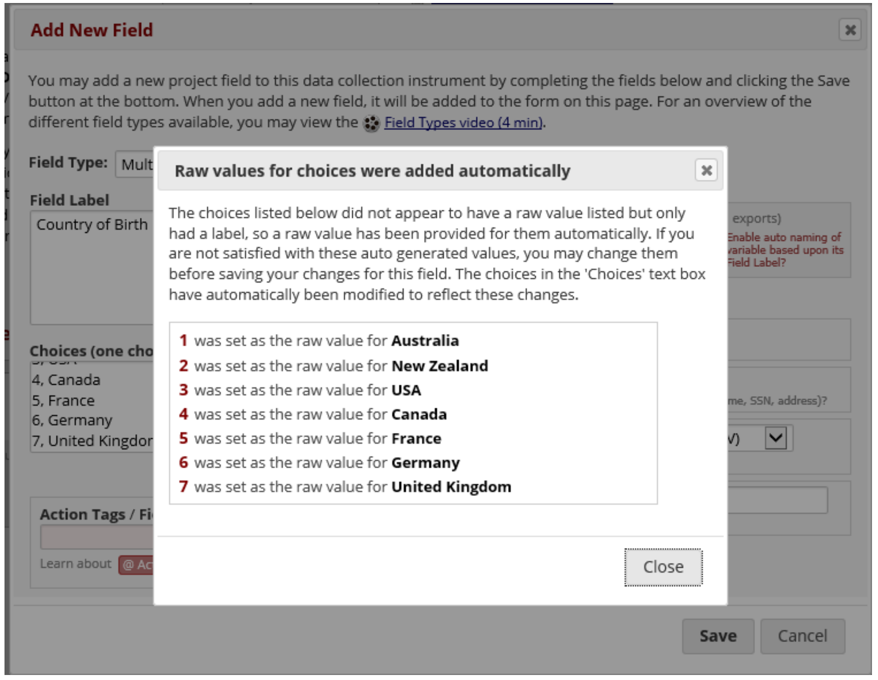
The Required option, by default, is set to “no”. If changed to “yes”, it will require an answer before a data form can be saved (or before a survey can be submitted, depending on your study setup).

The Identifier option should be marked whenever a field asks for one of the 18 HIPAA identifiers. When you export or view deidentified data, the fields that were marked as identifiers will be omitted.

The Custom Alignment option changes how the question (and answers, if the field is a multiple choice option) appears in the data entry screen. We don’t recommend adjusting this unless there is an aesthetic need to do so, but you may play around with the functionality as you explore REDCap’s features.

The Field Note option displays a side-note in small text beneath the text entry field (or multiple choice options) on the data entry screen. It is useful for designating units or clarifying a manner in which the question should be answered (e.g. “Mark all that apply”).

The Choices component of field creation is specifically for multiple choice field types (dropdown list, radio buttons, and checkboxes). It appears directly below the Field Label and serves as the place for you to list the various choices to select from, one choice per line. REDCap automatically “codes” these variables in increasing order beginning with “1.” This is for data storage purposes, and will not affect the way the choices are viewed in data entry. Below is the screen that will be prompted if you have not provided manual codes for your choices



Enabling the auto complete function makes searching easier (on the drop down list only), particularly where there are many options by transforming the drop down into a text search box on the options in the drop down instead of forcing the user to scroll through the entire list.

Validation

When using the Text Box method of entry, it is best to ensure that the data coming in is the type of data that you are expecting to see. One method of doing this is by employing the Validation option in the field creation screen. By utilizing this feature, REDCap will prompt an error when a field's entry does not meet certain expectations for data type.

1.) Date: The three different formats you can specify for date are Day-Month-Year, Month-Day-Year, and Year-Month-Day. Regardless of which type you choose, a small calendar icon will be visible next to the field in data entry which you can utilize to easily specify a date in the appropriate format. You can also click the "Today" icon to automatically fill in the current date.

2.) Datetime: Datetime can be recorded with or without a “seconds” count. The three without seconds follow the same formats as the three Date formats (listed above), with an additional H:M to indicate time (Hours:Minutes). The three that do include seconds also follow the same three Date formats, with an additional H:M:S to indicate time (Hours:Minutes:Seconds). Like the Date option, a calendar icon appears next to the field, and in addition, a clock icon appears. You can also click the “Now” icon to automatically fill in the current date and time.

3.) E-mail: To validate an e-mail address entry, REDCap checks for a singular “@” symbol and an appropriate e-mail domain ending (such as “.com” or “.edu”). The inclusion of other special characters that would not be a part of valid e-mail addresses (such as “$” or “#”) will also prompt a data validation error. This is very widely applicable, however, if you are expecting e-mail addresses connected to new or uncommon domains, we do not recommend using this validation option.

4.) Integer: Integers include all of the negative and positive whole numbers, plus zero. This means that any decimal or fractional values will prompt a validation error, as well as any values outside the designated minimum-maximum range.

5.) Number: This validation type accepts numbers, including decimal values. The four formats are derived from the number of decimal points you choose to allot: 1, 2, 3, or unspecified. If you choose to specify a number of decimal points, an error will be prompted if that exact number of decimal points is not met. For instance, if you have specified two decimal points, an entry of “3” or “3.0” would not be accepted – only “3.00” is considered a valid entry in this case.

8.) Phone: This validation type will only accept a ten-digit U.S. phone number (USA) or ten- digit Australian phone number (Australia)

9.) Postal code: This validation type will only accept a 4 digit number for postcode.

10.) Time: This validation type accepts only HH:MM time format. Like the Datetime type, the clock icon and/or the “Now” icon can be used to assist data entry.

11.) ZIP code: Only five- or nine-digit ZIP codes are accepted. Nine-digit ZIP codes must include a hyphen separating the first five from the final four, or an error will be prompted.

The following pages give an explanation of each field type.

Field types

Text Box (Short Text) This field can be used for text, dates, numbers, email addresses, phone numbers etc. Use the Validation drop down to restrict how data should be entered.

Notes Box: A large text box for a large amount of text. This is convenient for long descriptions and "Additional Comments" boxes.

Calculated Field: A field which performs real-time calculations based on the entries in other fields. For an example, you could create a calculation based off the start time and end time of a test to see how much time elapsed. The syntax for complicated calculations can be intricate, but REDCap will alert you to any syntax errors, and will refuse to attempt calculations until they are resolved, preventing data errors.

Multiple Choice – Drop Down List (Single Answer) This field will display your answer choices as a drop-down list. Only one option can be selected. This can help save space on a data form if **there are many different choices to display.**

Multiple Choice – Radio Buttons: a set of radio buttons (round buttons), from which only one choice can be selected at a time. The "reset" button in the corner removes any current selection and returns the field to a null (absent) value.

Checkboxes: Checkboxes which allow the selection of multiple options if desired.

Yes-No: Radio buttons with the options "Yes" and "No." These values are automatically coded: "Yes" = 1, "No" = 0.

True-False: Radio buttons with the options "True" and "False." These values are automatically coded: "True" = 1, "False" = 0

Signature: This field will allow the participant to add their signature using their mouse or the finger (if using a tablet or touch screen device)

File Upload: This field gives the participant the ability to upload a file or image that may need to be attached to individual records

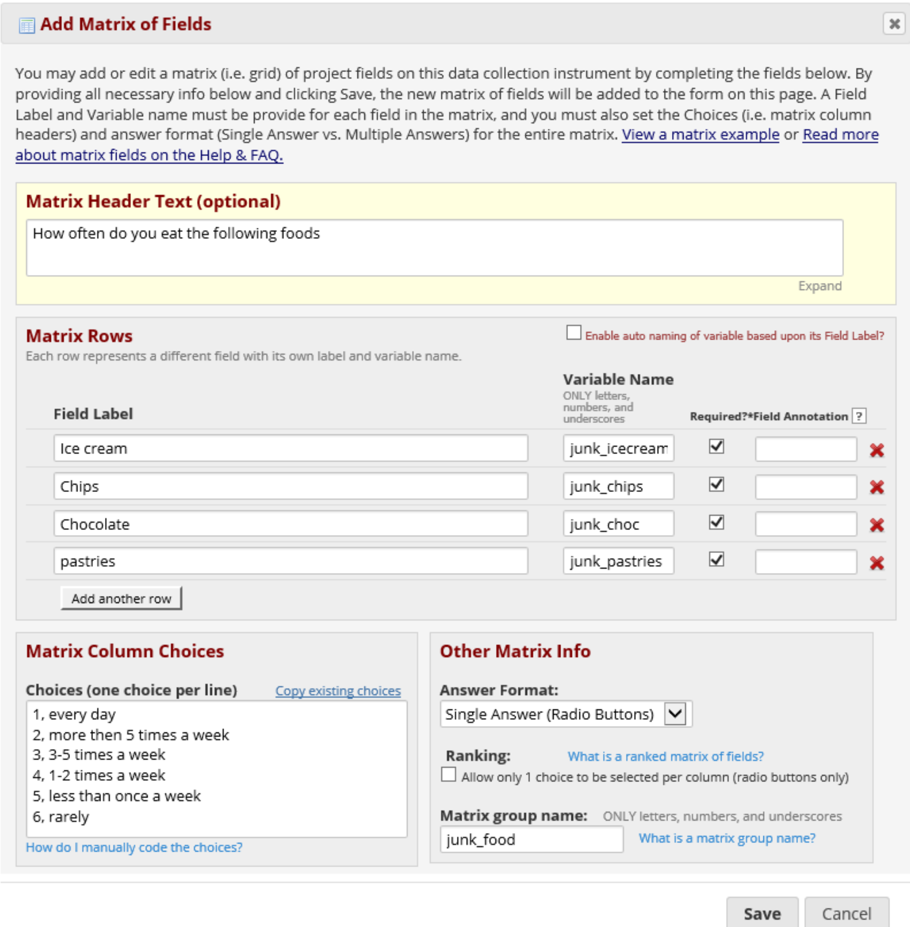
Slider / Visual Analog Scale: Visual analogue scale coded as values 0-100. You may provide labels above the left, middle, and right sides of the slider

Descriptive Text: Text displayed 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 an image as a link or as an inline image.

Begin New Section: A field composed of a single line appearing in different colour from the rest of your form, indicating separation. This is largely for aesthetic/organization purposes. Adding text (to serve as a header) is optional. When deploying a survey, you have the option to break each section into separate pages, giving these headers a true separation functionality.

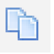
<u>Adding a matrix of fields</u>

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, click Add Matrix of Fields. 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.

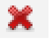


Edit/Copy/Move/Delete a Field

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. You can also move a field by click and hold field and drag the field to a different location. 

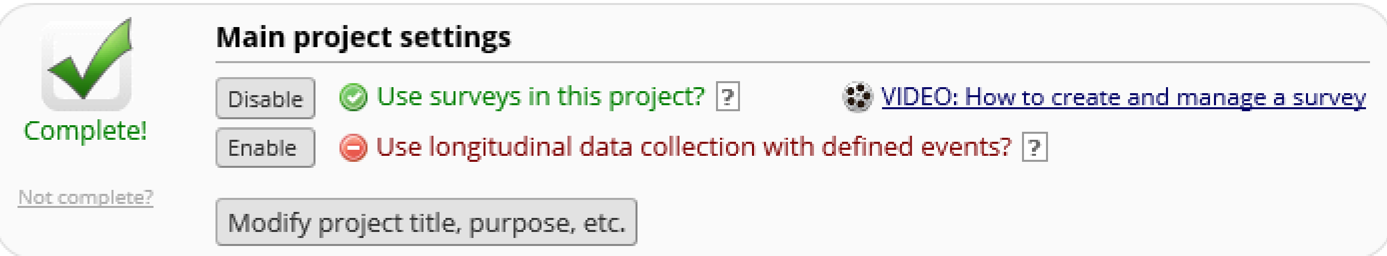
Delete: To delete a field, click on the red X icon 

Add Branching Logic Branching logic is used when you have a field/question that you would only like to appear when a specific answer is given. To enable branching logic, click on the double green arrows on the field you want to hide. 

Survey setup and distribution

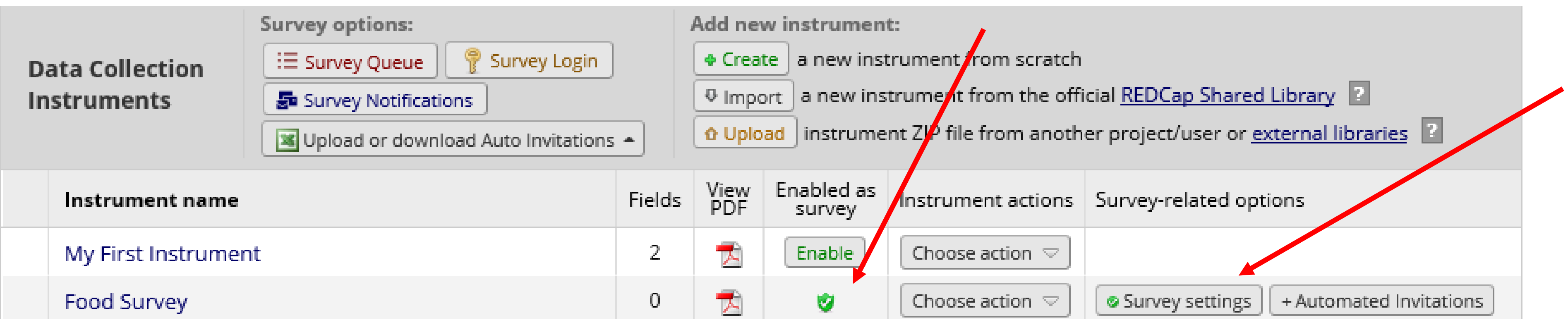
Any data collection form in REDCap can be enabled as a survey, allowing participants to enter data for themselves, without having access to log into REDCap.

To utilise the survey distribution feature of REDCap, you must first enable the use of surveys in your “Main project settings” options on your “Project Setup” home page.



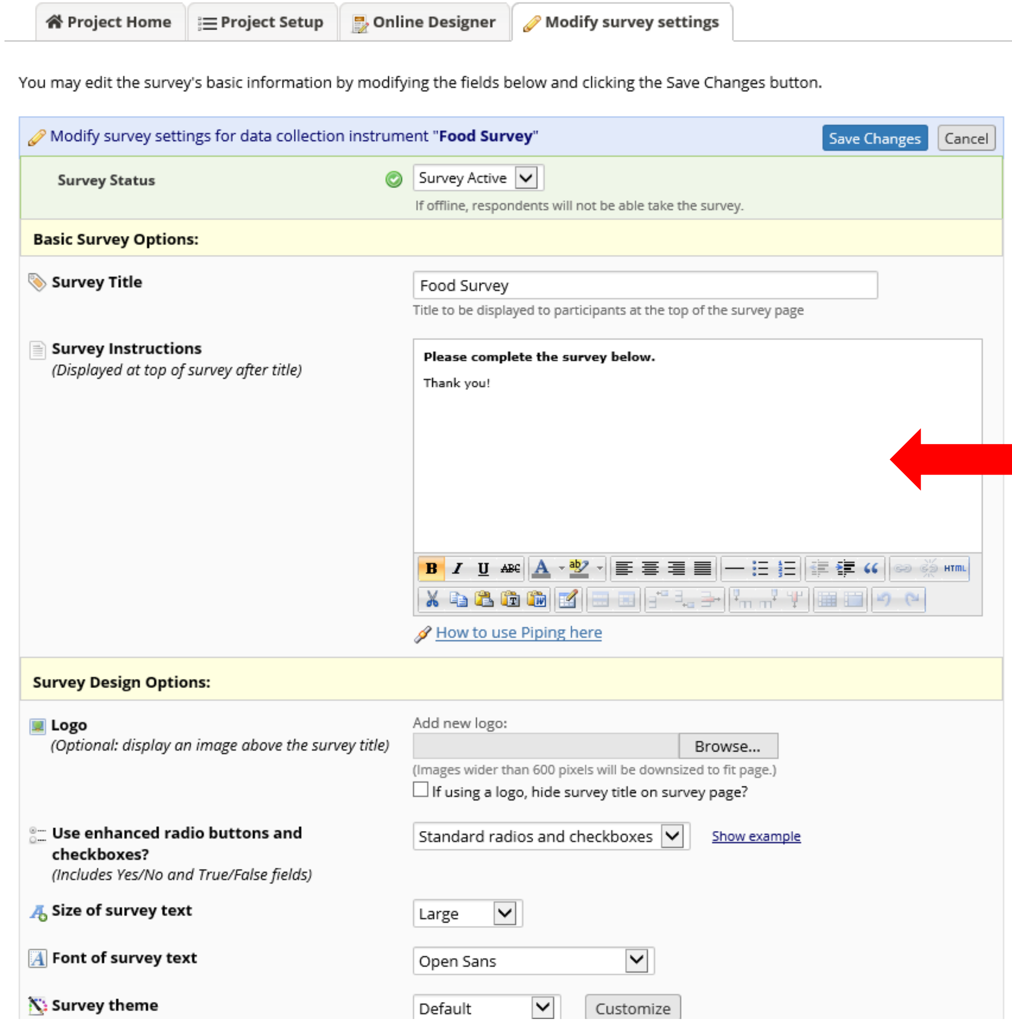
Once this is complete, you will need to indicate which data collection instruments are going to be used as surveys.

In the online designer, enable the form as a survey, by clicking ‘Enable’ under ‘enabled as survey’



Now that the form is enabled as a survey, click on ‘Survey Settings’ to design your survey.

This will take you to the Survey Settings page where you design your survey, such as choosing the font, text size and the survey’s colour theme, and configure its settings, such as the question display format (all on one page or multiple pages), setting up an expiration date, enabling Text-to-Speech functionality, entering the survey completion text, and setting up confirmation emails for respondents.



Type the text you want to appear on the first page of the survey. Normally this contains survey instructions or the wording for your informed consent if consenting subjects on-line

Survey Customizations:

Question Numbering

Auto numbered

Question Display Format
(One page or multiple pages?)

All on one page

Display page numbers at top of survey page

Hide the 'Previous Page' button (i.e., Back button) on the survey page
(prevents respondents from going back to previous pages)

The survey can be one page or multiple pages. To break the survey into sections for multiple pages, use the Begin New Section (with optional text) field type. Each section will be its own page of the survey.

Allow participants to download a PDF of their responses at end of survey?
Display a button for the participant to download a PDF file of their responses for the survey they just completed.

No

This option will not be available if the Survey Auto-continue or Survey Queue auto-start option is enabled. Also, if a field utilizes the @HIDDEN action tag, it will not be displayed in the PDF.

Survey-specific email invitation field
Designate an email field for sending survey invitations for this survey only ?

-- select a field --

Note: This option will override the project-level email invitation field (if enabled on the Project Setup page) and will also override any email address originally entered into the Participant List. Also, if this field has no value and the project-level email field is enabled, then the project-level email field's value will be used instead.

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

Yes

If 'No', then it will NOT display the following text beneath all 'Required' fields: * must provide value

Allow survey respondents to view aggregate survey results after completing the survey?
After completing the survey, participants can view ALL responses in aggregate graphical format and/or as descriptive statistics. Also, the individual respondent's answers will be highlighted in the results.

Disabled

Additional settings:

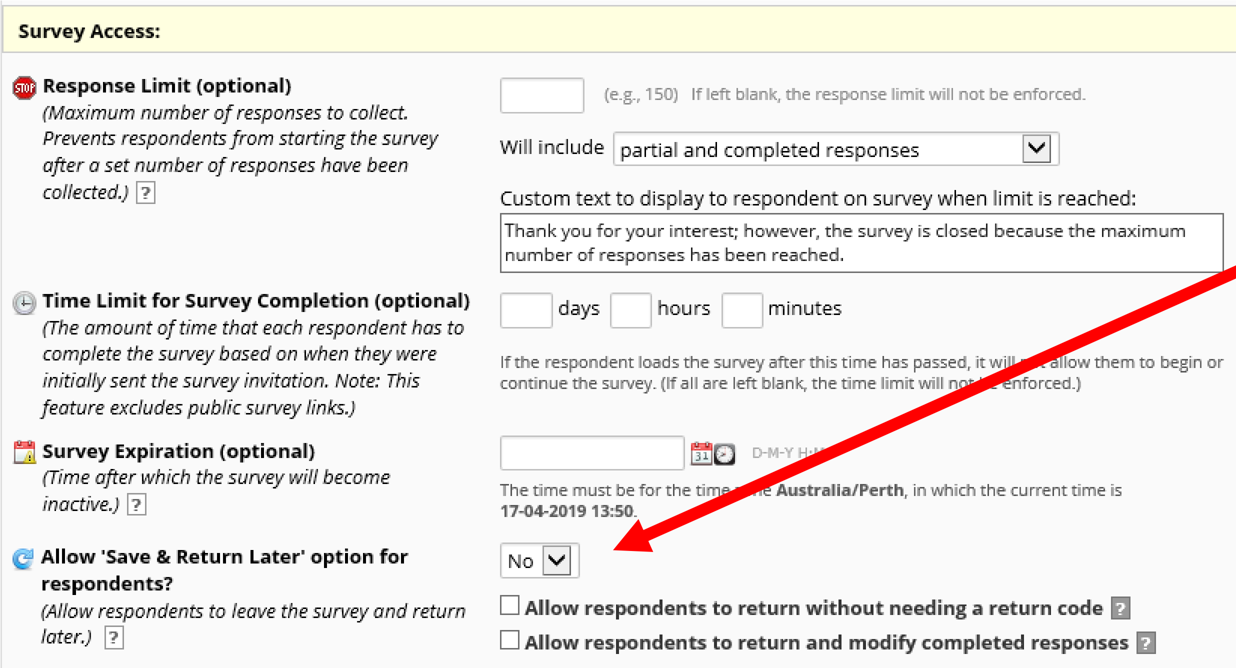
10 Minimum number of responses required before participants are allowed to view aggregate data (recommended = 10).

Do not show plots for questions lacking diversity in response values?
(What does this mean?)

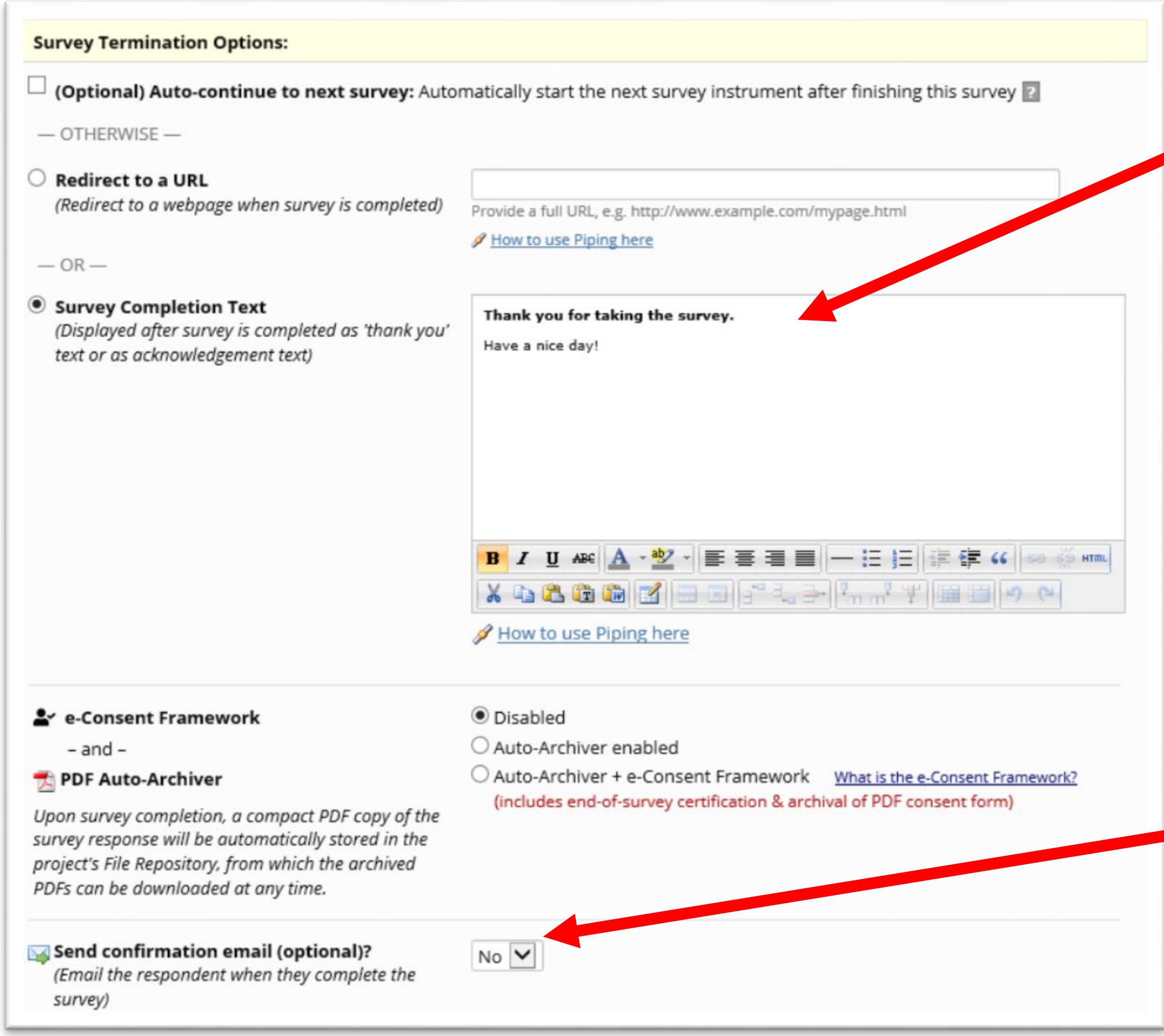
Text-To-Speech functionality
(Allows text on survey page to be read audibly to participants.)
When enabled, icons will be displayed next to all text on the survey page, and when clicked, the text will be read out loud to the participant (must have computer speakers turned on).

Disabled

NOTICE: All text that is spoken is sent to a service hosted at Vanderbilt University that utilizes the IBM Watson Text-to-Speech API service. Be advised that if the survey utilizes piping, for privacy concerns, data piped from Identifier fields will *not* be sent to the service with the rest of the text but will instead be redacted.



Allow 'Save & Return Later' option for respondents? If you're survey is long or you want to allow respondents to save the survey and return to it later, you can enable that here.



Survey Completion text: This is the text that will appear when the respondent submits the survey. It is not emailed to them, it merely appears on the screen when they click Submit.

Sending an e.mail confirmation will work by using the email address on the participant list. If a confirmation is required for a public survey, the participants email address needs to be collected within the survey.

Survey distribution

Once the survey settings are completed and saved, the survey needs to be distributed. There are two methods of distributing the survey: via the *Public Survey Link* and via the *Participant List.*

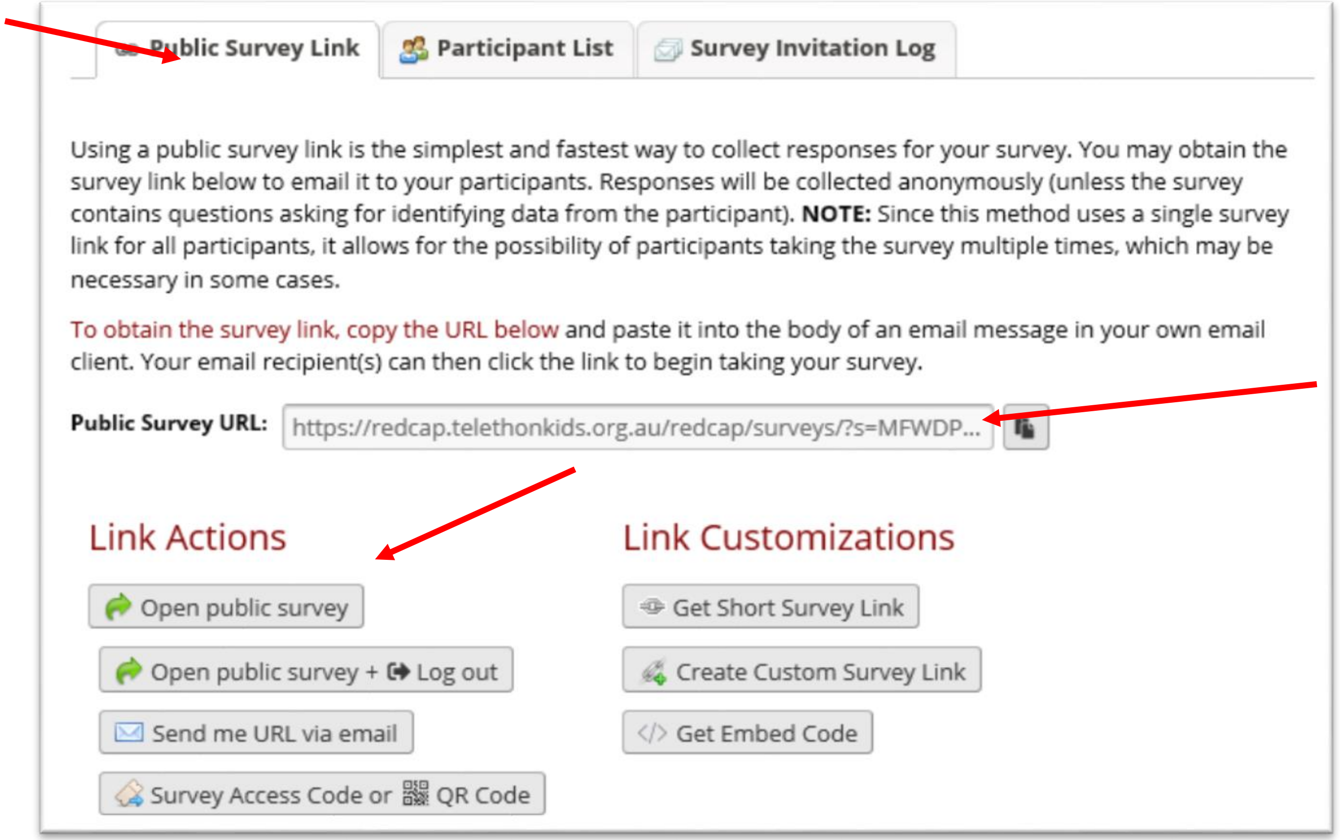
Public Survey Link: Using the Public Survey Link is the simplest and fastest way to collect responses for your survey. Responses will be collected anonymously (unless the survey contains questions asking for identifying data from the participant). NOTE: Since this method uses a single survey link for all participants, it allows for the possibility of participants taking the survey multiple times, which may be necessary in some cases but may also be problematic; REDCap does not keep track of which respondents have taken the survey and which have not since the respondent's emails are not captured within the system.

The Public Survey Link *can* be used for longitudinal data collection as long as the 'Designated an email field to use for invitations to survey participants' has been enabled on the Project Setup page under 'Enable optional modules and customizations,' and the initial survey collects the respondent's email address.

Participant List: The Participant List option allows you to send a customized email to anyone in your list and track who responds to your survey as participants are sent individualised links. It is then possible to identify an individual's survey answers by including an 'identifier' for each participant (this feature must first be enabled on the Participant List page).

Public Survey Link (non-longitudinal data collection)

Click on 'Survey distribution tools' under Data Collection (left-hand menu) on the Project Setup page. This will take you directly to the Public Survey Link page.

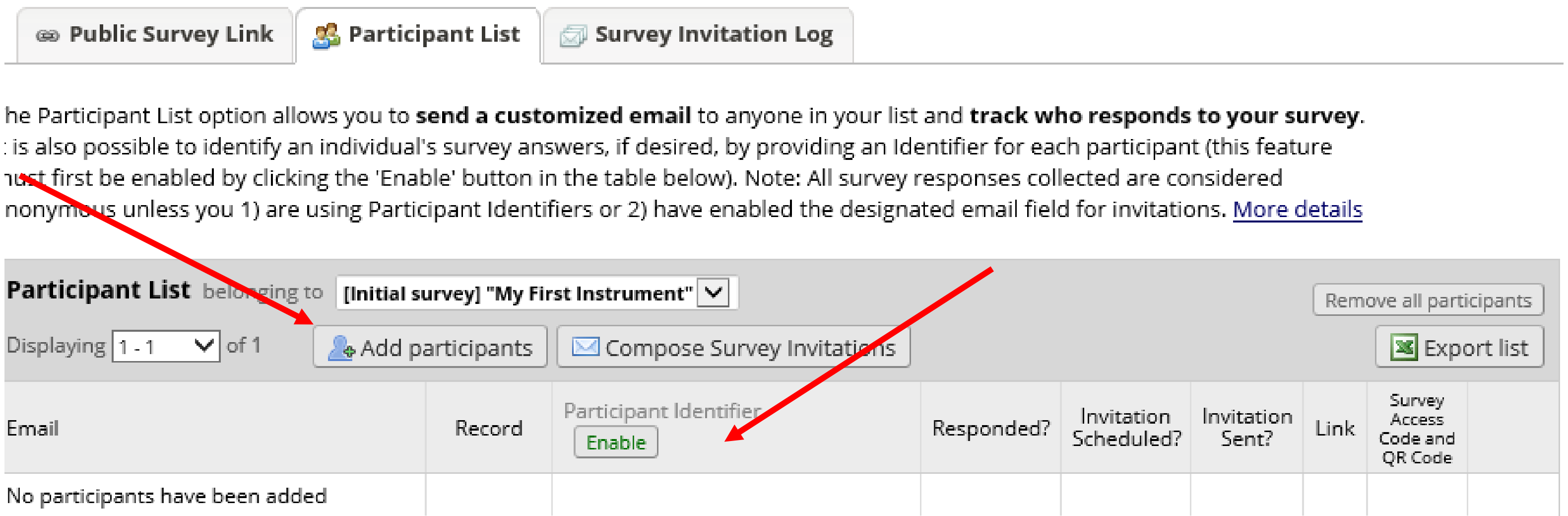


To view what the survey will look like to respondents, click on 'Open public survey.' The 'Public Survey URL' is the link that you would provide to all the desired respondents. This can be emailed to the participants, posted on a website or recruitment letter, saved to a desktop/device, or opened while the respondent is present.

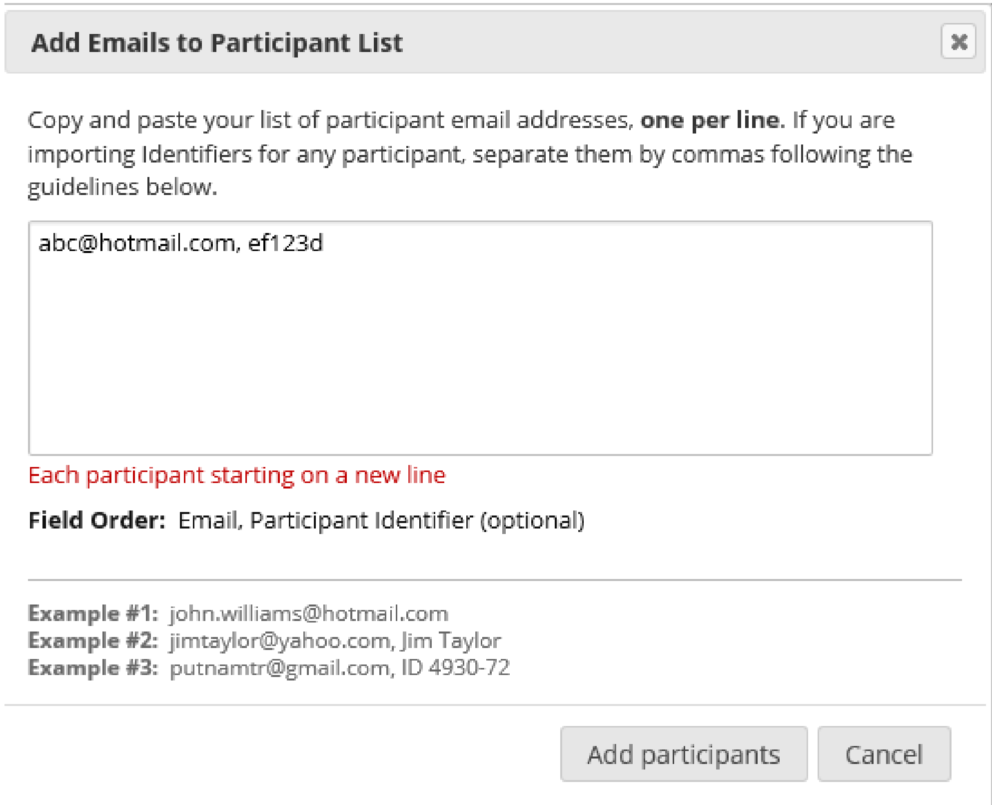
Participant List (non-longitudinal data collection)

Click on ‘Survey distribution tools’ under Data Collection (left-hand menu) on the Project Setup page. Click on ‘Participant list’.

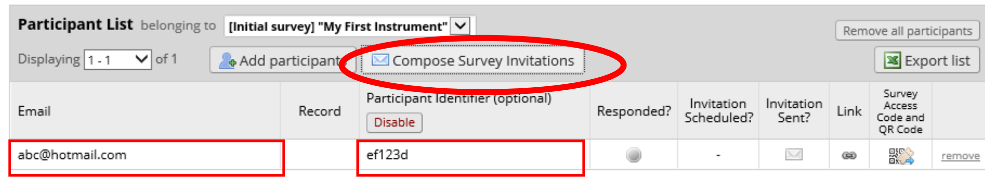
Participant Identifier: If you need to be able to identify which survey response belongs to which respondent, click on ‘Enable’ next to Participant Identifier. Note: Once you send out the surveys you cannot enable this option for the invites that have already been sent out so the responses will be anonymous. To add people to the Participant List, click on ‘Add participants.’



If not using the 'Participant Identifier,' add the email addresses of the respondents, one per line (Example# 1). If using the 'Participant Identifier,' add the email addresses of the respondents, one per line, as well as the participant's identifier (Example # 3). Click on 'Add participants' when all emails have been entered.

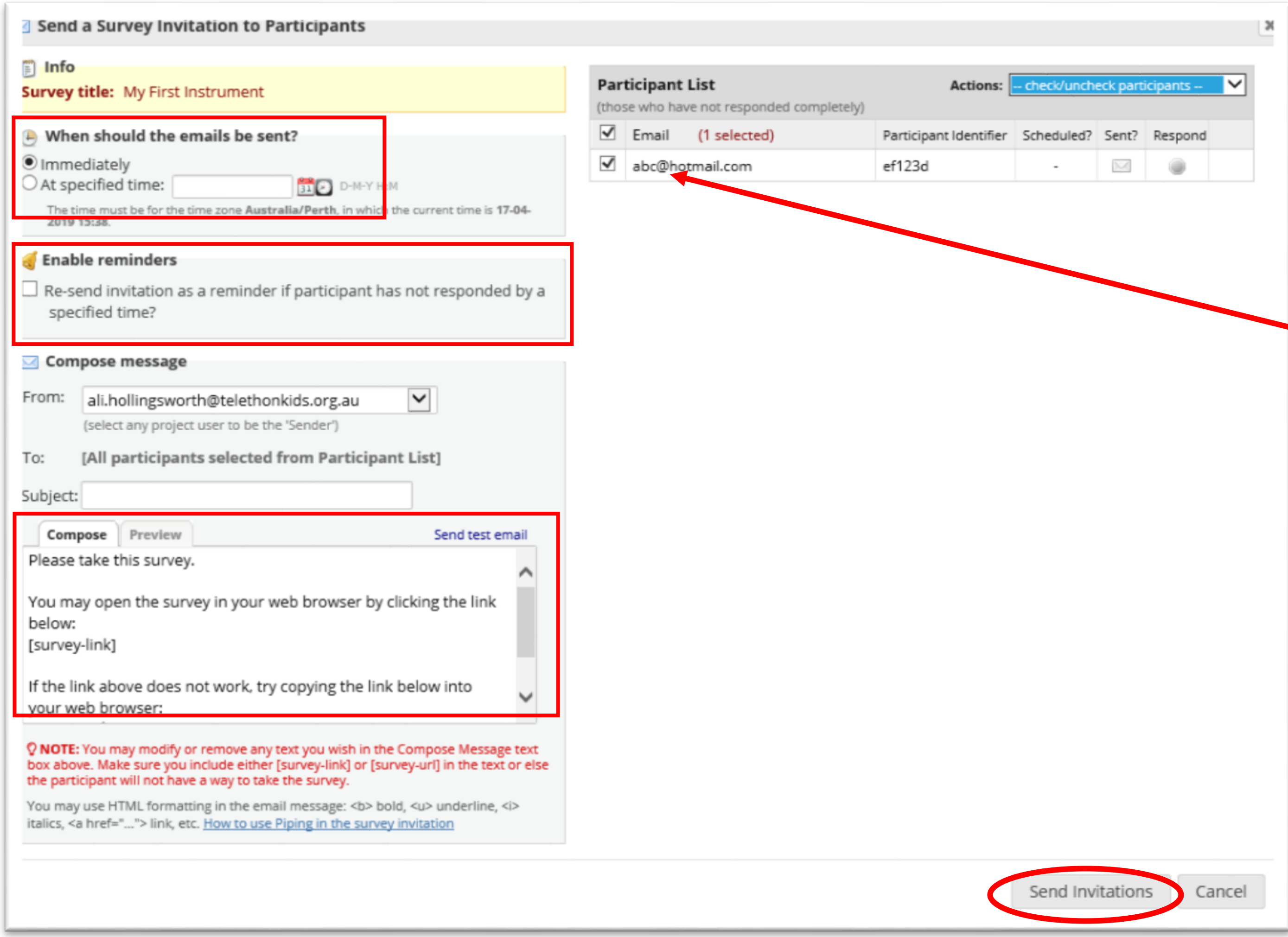


To send the survey to those on the Participant List, click on 'Compose Survey Invitations.'



The Compose Survey Invitations page is where you set up when the survey should be sent (immediately vs. a specific date and time), reminder emails if the participant has not responded by a specified time and the email that will go out with the survey invitation.

Note: Reminder emails must be set up before the survey is sent out and cannot be set up retroactively. If you forget to set up reminders, you'll have to re-send the survey to the participant if they do not respond.



email addresses with a tick under the 'Participant List' heading are the email addresses that will be sent the invitation to the survey. You can uncheck an email address if you do not want an invitation to be sent to this address

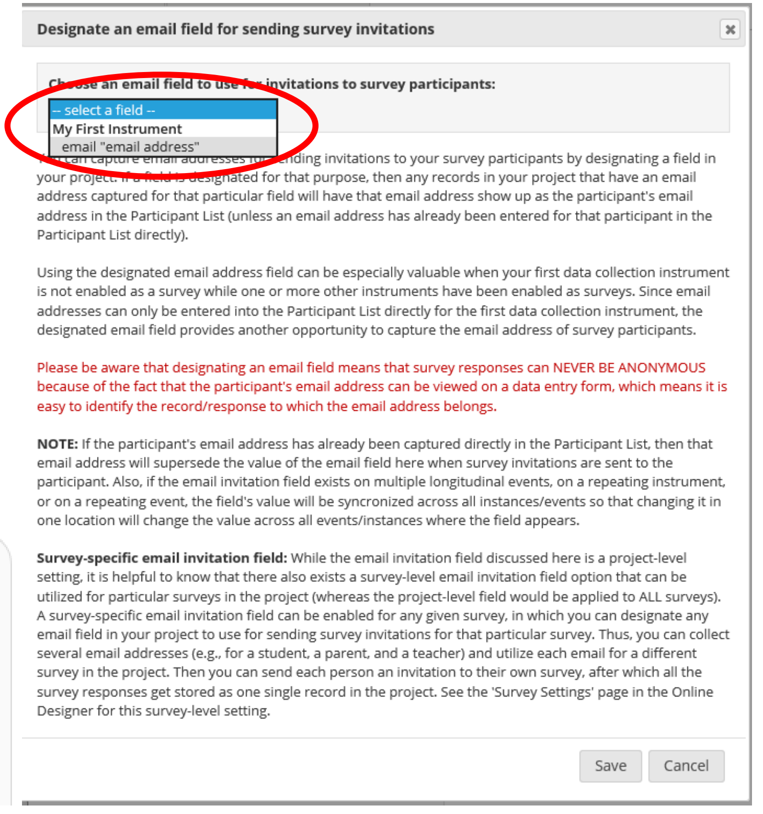
The

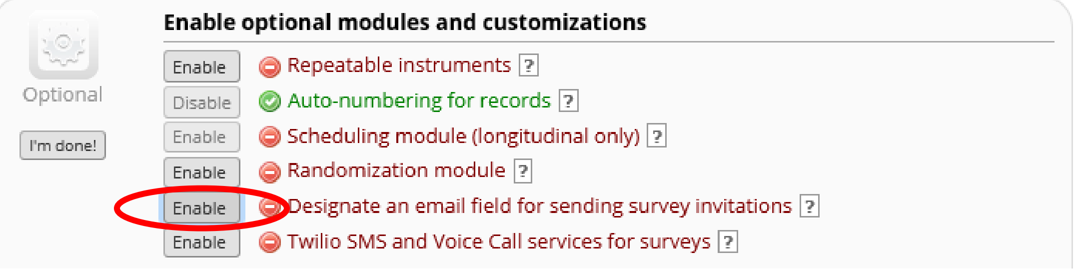
Click on 'Send Invitations' when finished. The survey invites have now been sent! You can go back to the Participant List page to see who has responded to the survey, if an invitation has already been sent and the unique survey link for that participant. The grey bubble under 'Responded' will turn green when the survey has been submitted. If there is an envelope icon with a green arrow under 'Invitation Sent' then the invitation has already been sent to the individual. To view the unique survey link for the individual, click on the icon under the 'Link' column. To remove an individual from the Participant List, click on 'remove' in the far-right column.

Public Survey Link (longitudinal data collection)

You can use the Public Survey Link for collecting longitudinal data, and have all the surveys linked to the individual, but only if you are collecting the email addresses of the respondents in the initial survey and enable the ‘Designate an email field’ under Optional Modules and Customizations. The project must also be set up longitudinally, with at least 2 events.

On the Project Setup page > Enable optional modules and customizations > Enable: ‘Designate an email field to use for invitations to survey participants.’ Designate the email address field you are collecting on the first instance of the survey.





Participant List (longitudinal data collection)

You can use the Participant List for collecting longitudinal data, and have all the surveys linked to the individual, by entering the email addresses of the respondents into the Participant List and by enabling the ‘Designate an email field’ under Optional Modules and Customizations. The project must also be set up longitudinally, with at least 2 events

On the Project Setup page > Enable optional modules and customizations > Enable: ‘Designate an email field to use for invitations to survey participants.’ Designate the email address field you are collecting on the first instance of the survey.

Entering Data

Within REDCap every record is identified by a unique key: Study ID (aka Record ID or Subject ID). This key identifier is the first question on the first form (or survey). It is used by REDCap as the key variable to link all forms/events for a particular subject.

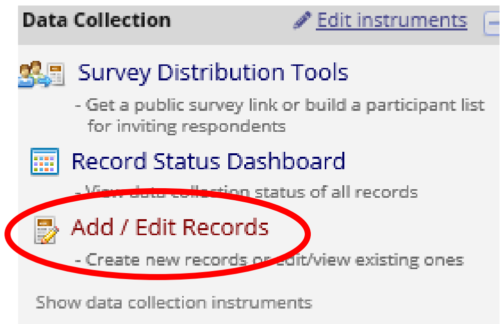
If multiple sites are involved in a study (and the Data Access Group feature is not being used), it is recommended to use conventions in order to group subjects by site. For example: 1 digit for the site and 3 digits for the subject number: Site 1, subject 1: Study ID = 1001 Site 2, subject 1: Study ID = 2001

There are multiple ways that data can be entered in to REDCap:

1. Data Entry within the web browser
2. Via a downloadable .pdf of instrument
3. Double Data Entry
4. Using the data import tool
5. Mobile data entry via the REDCap App

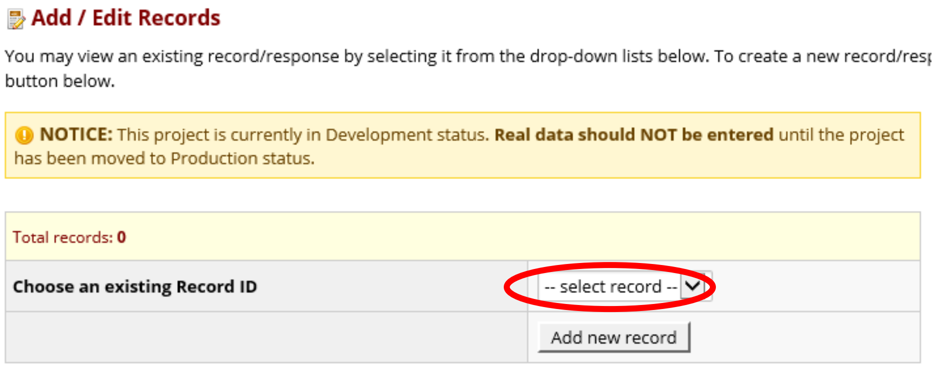
1. Data Entry within the web browser

Under the Data Collection menu on the side bar navigation menu, click Add/Edit Records



Once you are in the main "Add/Edit Records" page, you may create a new record by typing in a new Record ID (this will be automatically assigned if

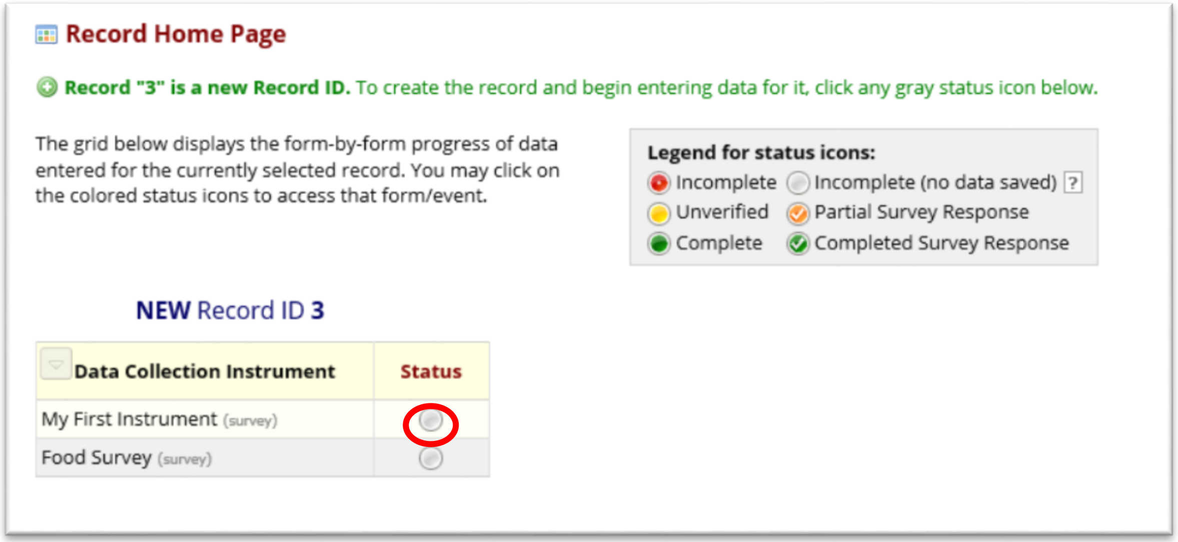
is enabled on the Project setup page), choose an existing record to edit, or search for a particular record by a field value (for instance, using the search field "Name" and typing "Jon Smith" into the search query). If you are employing multiple Arms in your study, the first two options sort the records into groups by Arm. To search for a record whose Arm you are not certain of, using the Data Search option is best.

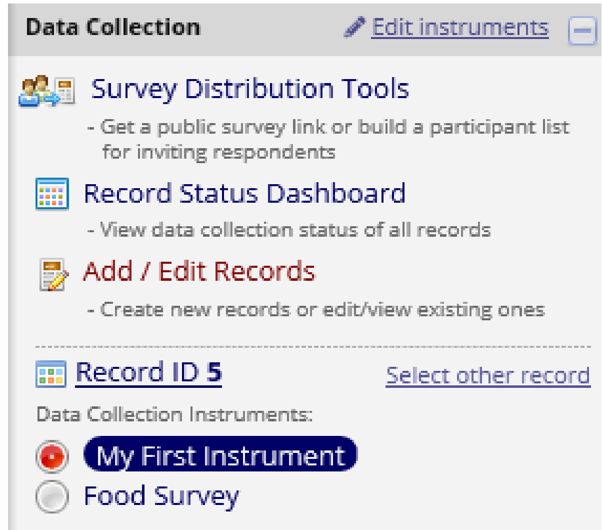


After you have added a new record, the Record Home page will display, showing the progress of data entry for the selected record. To begin entering data, click on the grey radio button of the form that you wish to enter data into to be taken to that form.

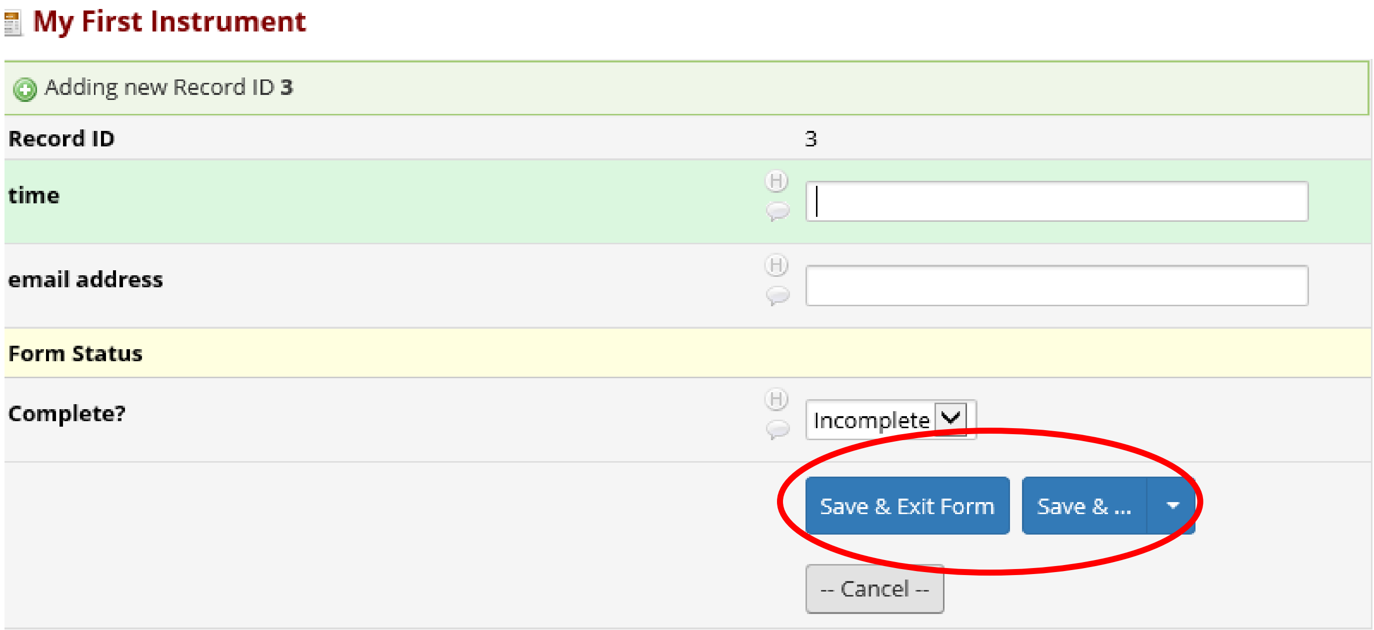
Records are entered one form at a time. Filling out a form will lead you to the next available form to be completed.

The menu to the left of the data entry form contains a list of all the forms to be filled out for that subject at the selected event.



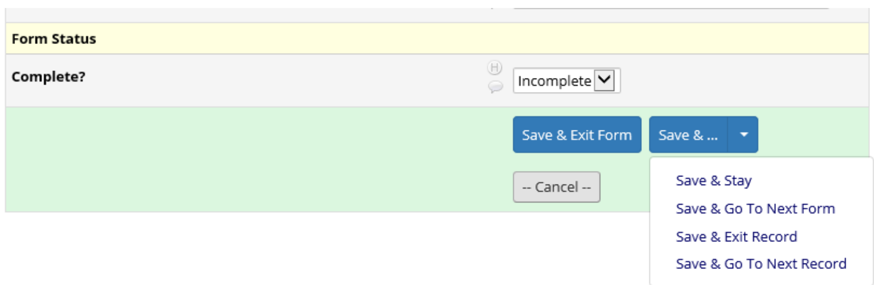


These are the forms that need to be filled out. You can skip ahead to any form by clicking on the radio button next to its name

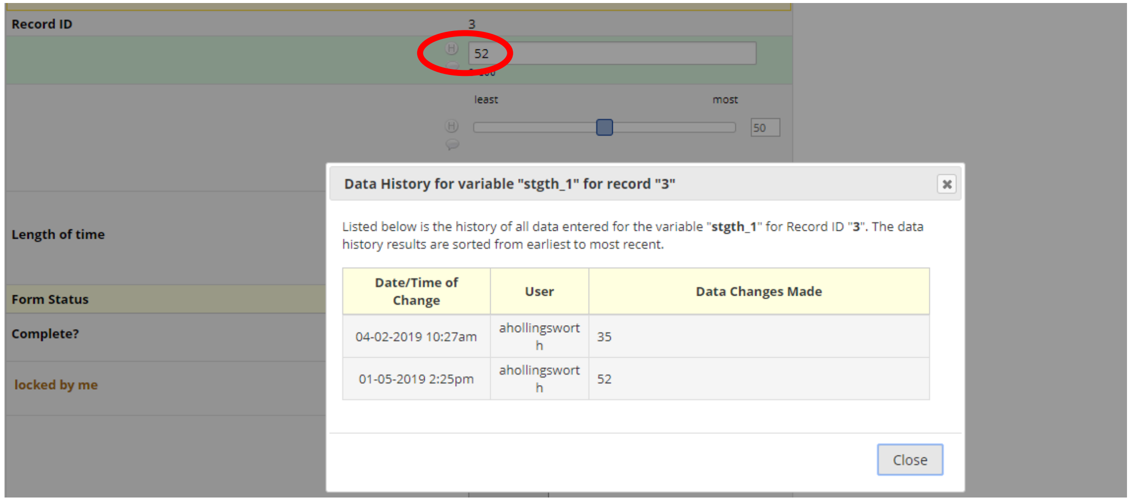


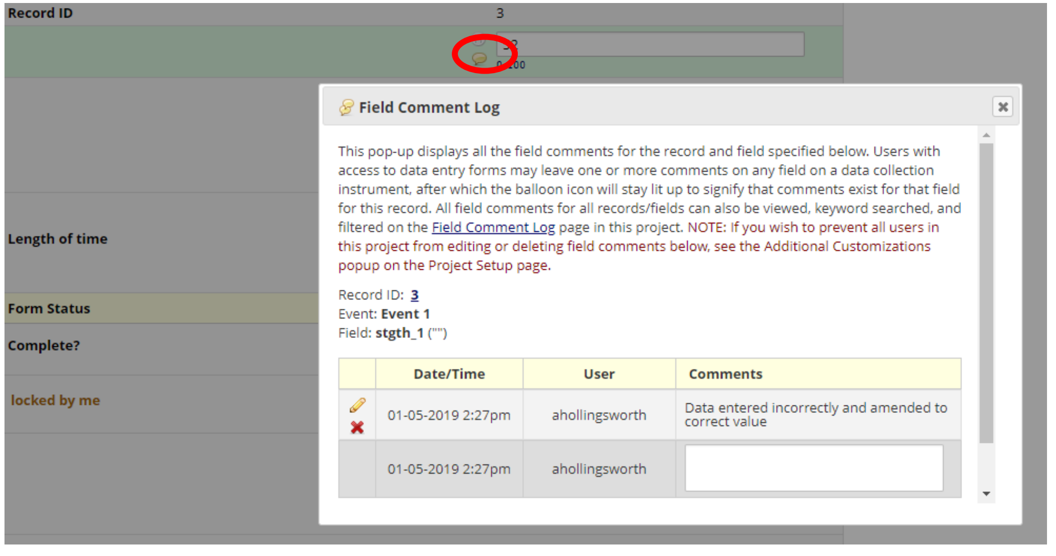
At the bottom of your data entry form, you have the option to mark the form as Incomplete, Unverified, or Complete. Incomplete forms will display a red icon where data entry has begun, Grey where no data has been saved for a form and which is the default status for all forms in a new record; the yellow icon indicates Unverified, and green indicates Complete.

Clicking **"Save and Stay"** will save your progress and keep you on the current page. Clicking **"Save and go to Next Form"** will save all data and take you immediately to the next form for that record, "**Save and go to Next Record**" will save all data and take you immediately to the next record. Clicking **"Save and Exit Record"** will save all data and return you to the "Add/Edit Records" main page. You may also lock forms for a record to prevent other users from editing existing information.



In your data entry screens (not including the survey submission screen), there is a small "H" and speech bubble appearing beside each field. The "H" tracks the history of all recorded data values for that particular variable. The speech bubble is the Field Comment Log, which allows users to make comments on particular fields, and lights up yellow when a comment exists for a field.



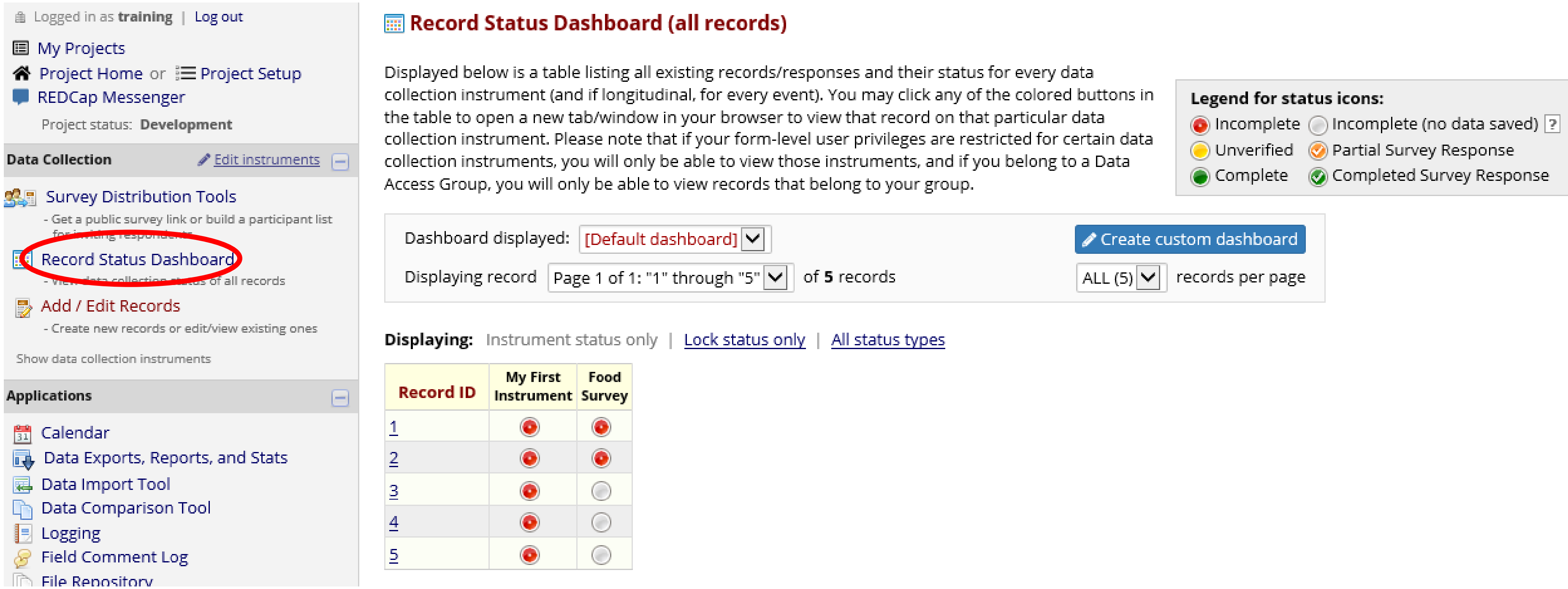


Record Status Dashboard

The second way to view/edit existing records is to go to the “Record Status Dashboard.” If your project contains a lot of records, the Record Status Dashboard makes it easier to find the record you’re looking for. It also displays all the form statuses, making it easier to see which subjects have Incomplete or Unverified data collection forms.

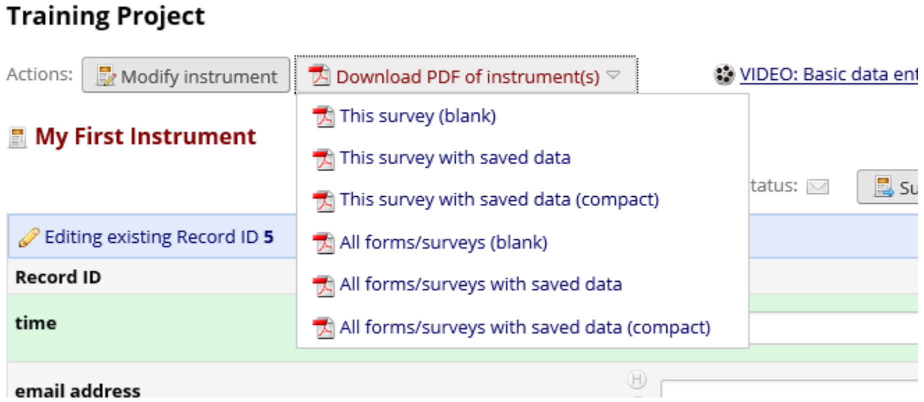
This is a table listing all existing records/responses and their status for every data collection instrument. From here you can select what particular record you want to edit or add to. For Longitudinal Studies, the layout of the table is determined by what instruments you have associated with your defined events. The Record Status Dashboard is by Record ID for every row, and an instrument as part of an Event for every column.

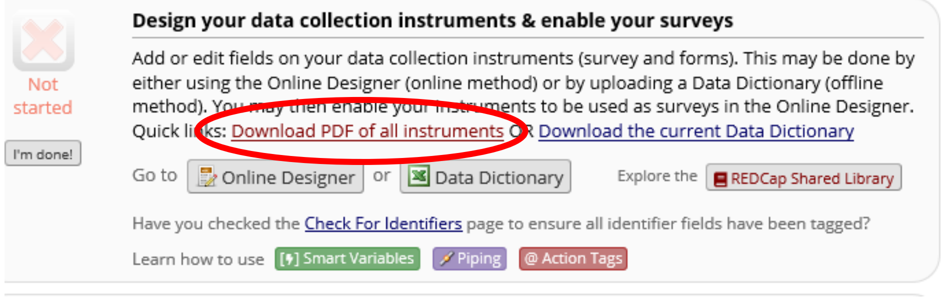
Note: instruments not assigned to an event are not displayed on the Record Status Dashboard



2. **Via a downloadable .pdf of instrument**

If you require paper copies of the forms for data entry to take place on paper, you can download a copy of selected or all forms which are a replica of the on-line version of the form. This can be accessed by the 'Download PDF of Instruments' option at the top of each form or via the project setup page





3. Double Data Entry

If you are using the paper copy of the forms to capture data, then you may wish to consider having the double data entry function enabled on your project to ensure quality data collection.

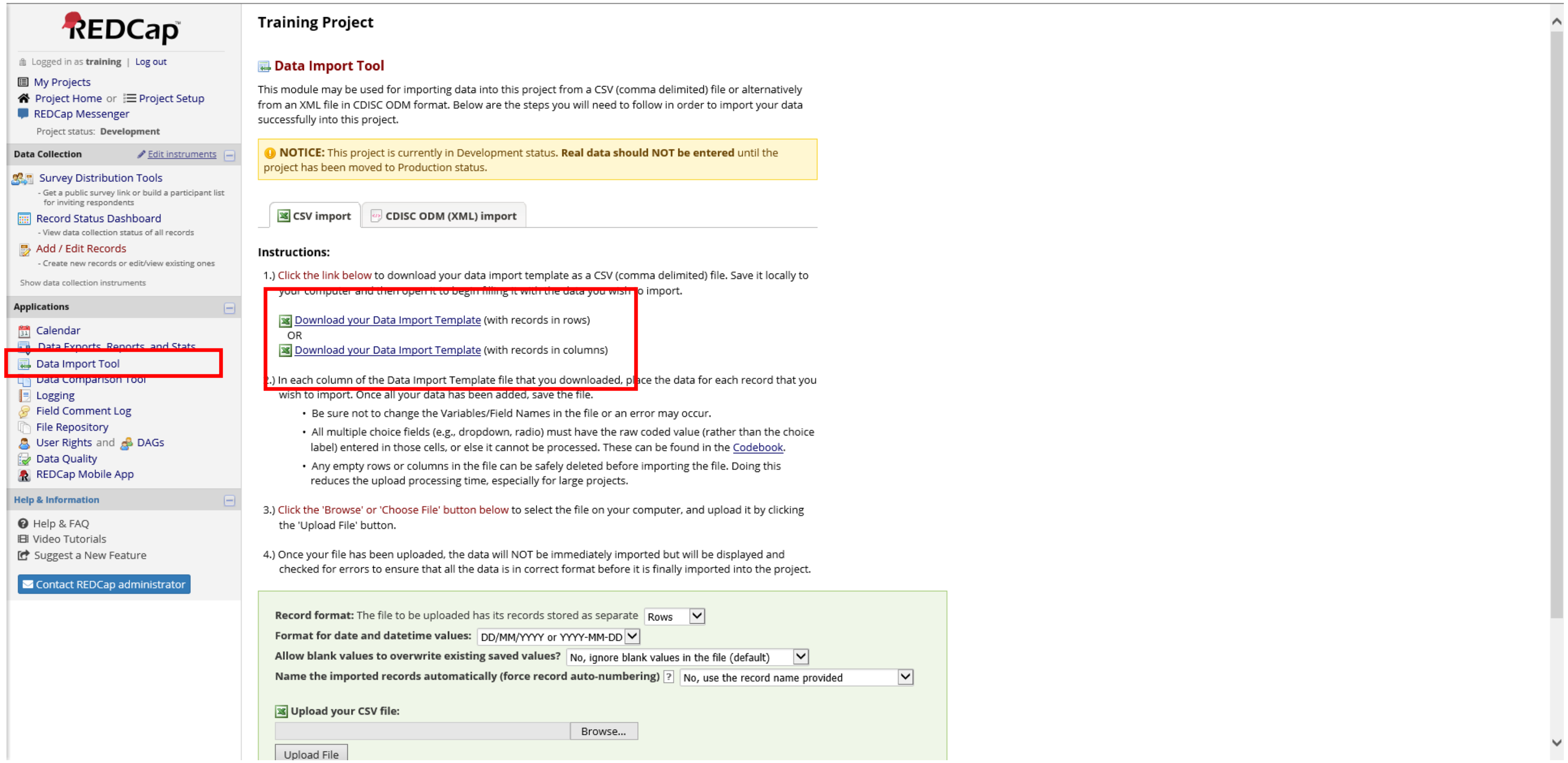
Double data entry is a process where 2 people independently enter the information for the same record and then a 3rd person reviews the data using the data comparison tool to verify the correct information where there are discrepancies between both sets of data entry and merges the data into a 3rd correct instance.

When this option is enabled, two data entry people will enter data, but instead of saving their data as normal, the Study ID (or unique record identifier) will have either a "--1" or "--2" appended to it, thus marking it as the record entered by data entry person 1 or 2. This is how the data entry people can enter data for the same subject/patient without having a duplicate record. Because all the records entered by the two users will end in the "--#" format, those users can only view the data that they themselves have entered. The "--#" format on the records are hidden from those two users, so to them everything appears as it normally would. However, Reviewers will be able to see the "--#" appended to the records when viewing them. When Reviewers choose to merge the two records entered by the data entry people, the new "third" record is saved without the "--#" appended to the end of the record name. The double data entry feature can be turn on by the REDCap Administrator only.

The double data entry module needs to be turned on through project settings by a REDCap administrator prior to any data collection and users are assigned roles through the user rights page to restrict access for those entering and reviewing data.

4. Using the Data Import Tool

Data can be imported into REDCap from a CSV file, using the data import tool. REDCap generates a template with all columns. Data must be copied into this template; columns may be removed but the first column must always be kept (e.g. study_id). During data import, data can be added or modified but cannot be deleted.



5. Mobile data entry via the REDCap App

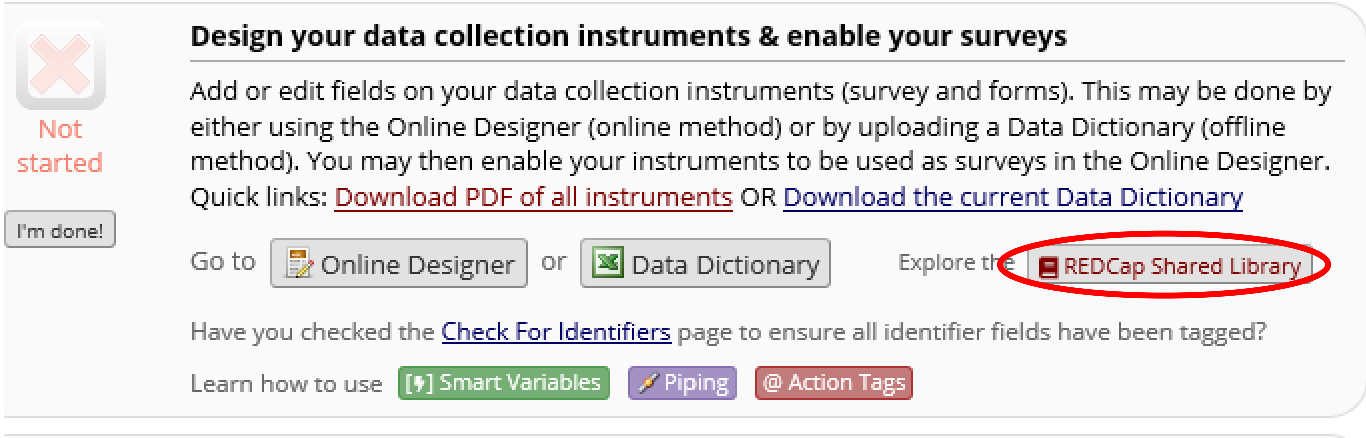
Using the Mobile App (compatible with both Android and iOS devices), data can be entered off line, saved to the local device and then synced with the project when internet is available. Using the mobile app allows user to enter and review data ‘on the go’.

The app is a companion app so the project must also be available on a web browser, and the mobiles device must be linked with projects to which you have access.

The REDCap shared library

The Shared Library can be accessed from the home page of your Project Setup

The REDCap Shared Library is a repository for REDCap data collection instruments and forms that can be downloaded and used by researchers at REDCap partner institutions. Curated instruments highlighted with a star ★have been approved for inclusion by the REDCap Library Oversight Committee (REDLOC) after review for research relevance, accuracy in function and coding and copyright issues. Other instruments and forms are shared by individuals or groups from consortium institutions on "as-is" basis.

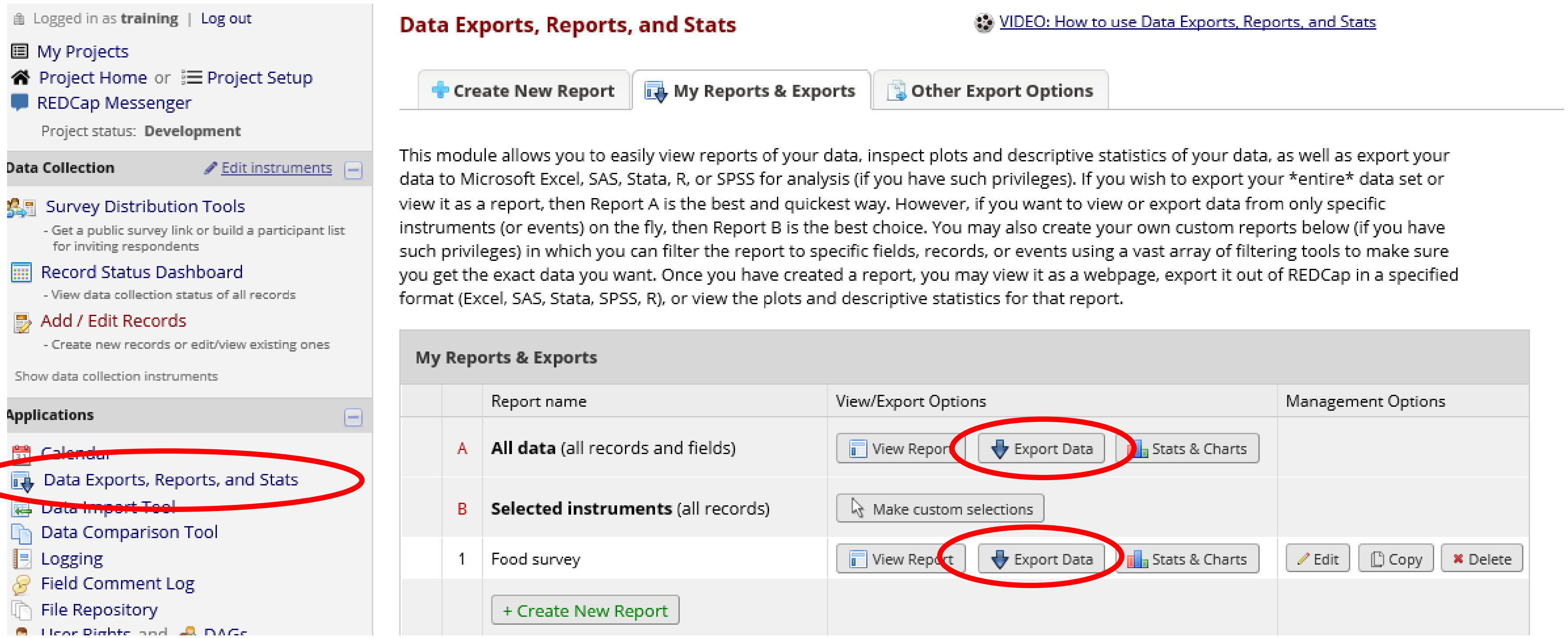


In the Shared Library, you can browse and search through a collection of data entry forms that have been uploaded by other users. Upon finding a form that sounds useful or interesting, you may view it as a web page or PDF and decide whether or not to incorporate it into your project as a new data form. Some forms may want you to agree to a "Terms of Use," which generally simply requests that you do not claim any of their forms as original works.

Exporting Data

This module allows you to easily view reports of your data, inspect plots and descriptive statistics of your data, as well as export your data to Microsoft Excel, SAS, Stata, R, or SPSS for analysis (if you have such privileges). If you wish to export your entire data set or view it as a report, then Report A is the best and quickest way. However, if you want to view or export data from only specific instruments (or events) on the fly, then Report B is the best choice. 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.

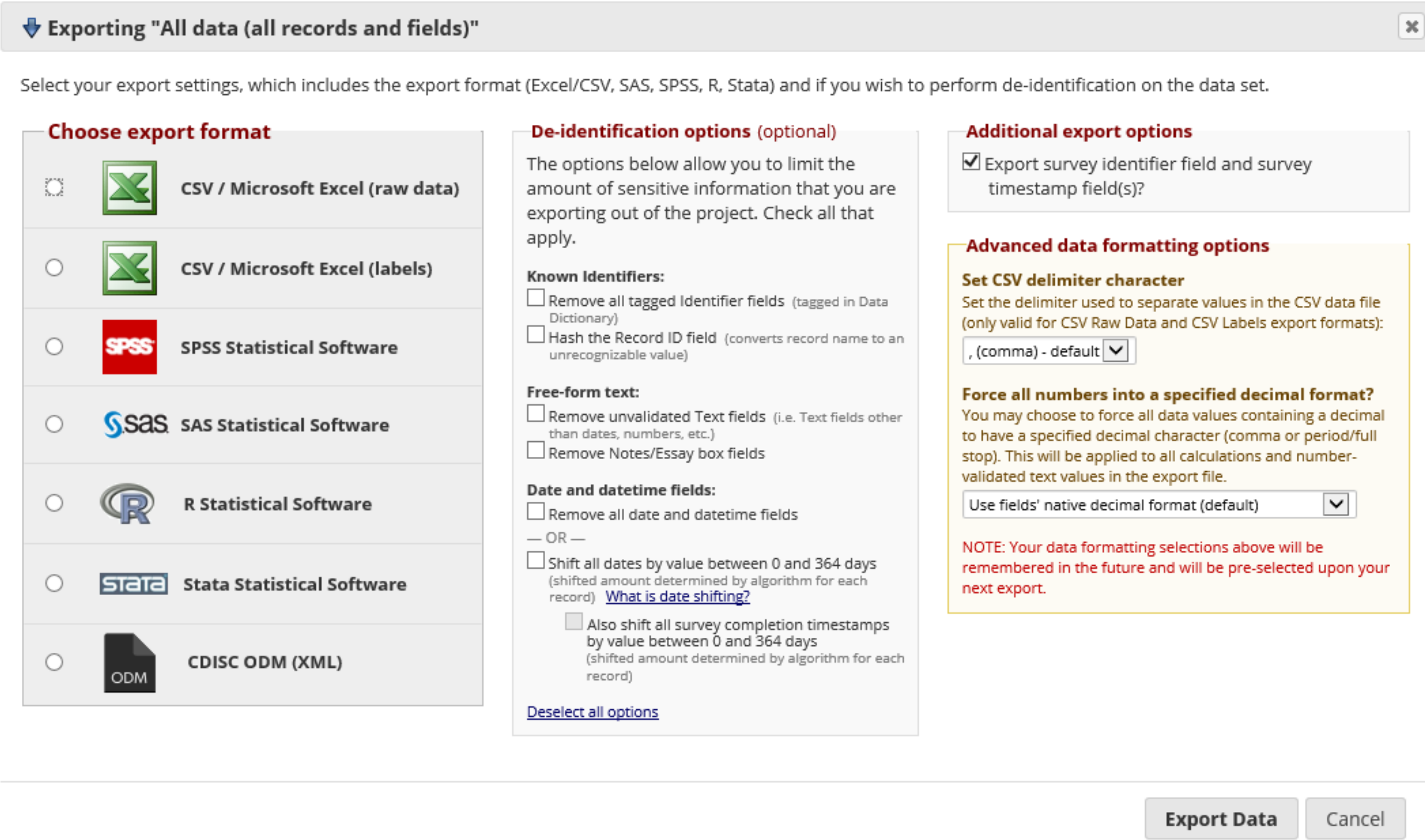
Click on "Export Data," either in the All data (all records and fields) row or the row next to your report name.



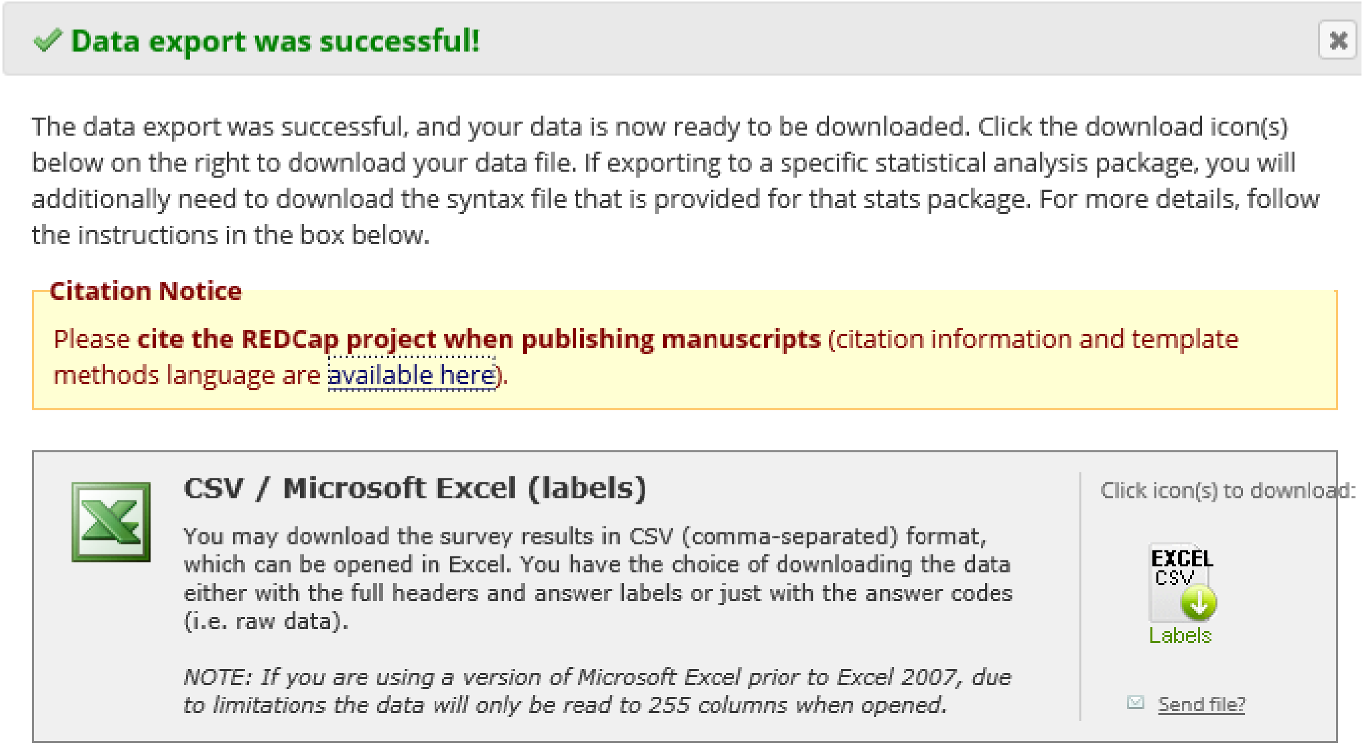
Choose the format for the data export (Excel, SPSS, SAS, R STATA or CDISC ODM (XML))

(Optional) To de-identify the data (i.e., if you have “full data set” export privileges but need to give a de-identified dataset to your statistician) click on the “Remove all tagged identifier fields” option. If your project uses the subjects’ MRN as the Record ID, also click on the “Hash the Record ID field.”

Click on “Export Data.”



Click on the data file to download the data.

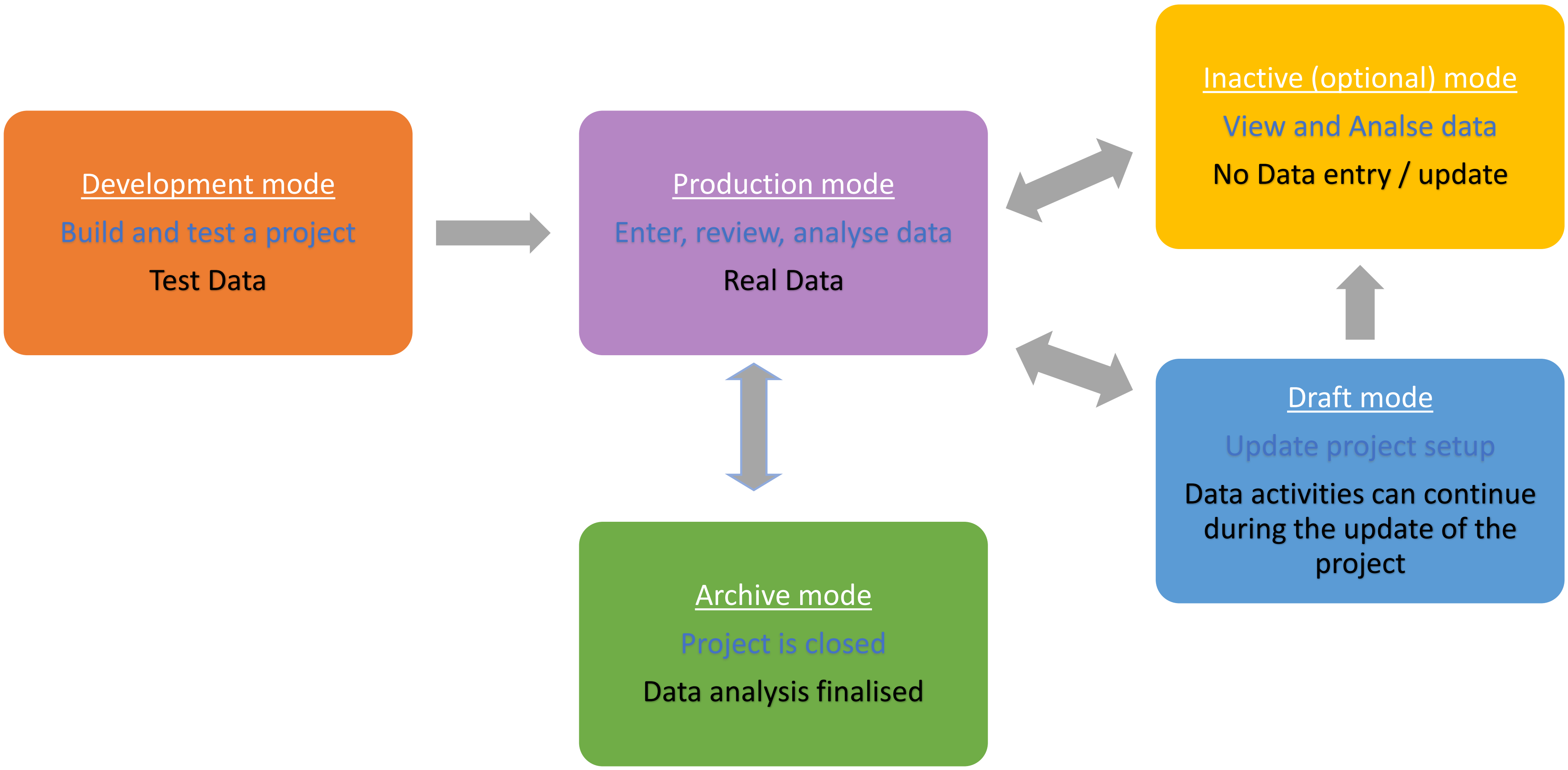


REDCap development lifecycle

Your project will begin in Development mode. This is the stage of designing and testing your data capture instruments. In this stage modifications can be made freely. Once the project is ready to be deployed a request must be made to redcap@telethonkids.org.au, this is automated via the REDCap system, for the project to be moved to the production stage. Prior to making this request, you should have fully tested the instruments, data validation, branching logic and workflow, to be certain that the data collection instruments and project structure are finalised and fully functional.

Once a project has been moved to production, real study data can be collected. Changes made once the project is in production require additional checks to ensure data integrity is maintained and real (already collected) data not modified or deleted.

To modify a project with 'production' status, the project must firstly be set to 'Draft Mode'. Changes to the database made whilst in draft mode need to be reviewed and approved by a REDCap administrator before they can be moved to production. Submission of changes to the REDCap administrator, for review and action, is an automatic process once 'Submit changes for Review' has been selected.


Development mode
Build and test a project
Test Data
Production mode
Enter, review, analyse data
Real Data
Inactive (optional) mode
View and Analse data
No Data entry / update
Draft mode
Update project setup
Data activities can continue during the update of the project
Archive mode
Project is closed
Data analysis finalised