



Government of Western Australia
Child and Adolescent Health Service



Research Skills Workshop 2020 CAHS Research Education Program

Intermediate REDCap

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The REDCap Data Dictionary

Using the Data Dictionary to create/edit forms

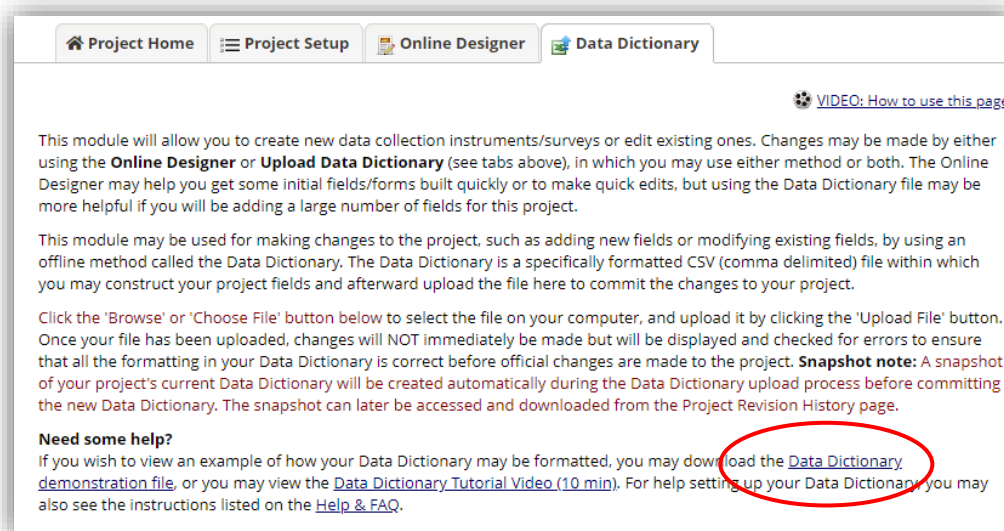
Within REDCap, data collection forms can be created using either the Online Designer, a Microsoft Excel spreadsheet, or a combination of both. Whichever method you use, what you're creating is referred to as the data dictionary, a description of all the field (variable) names, field types, possible values etc. contained within your project.

Compared to the online designer, where changes are made within each form, variable by variable, the data dictionary method allows you to create new data collection forms/surveys and make changes to these forms using a spreadsheet.

When you first begin using REDCap, the online designer is a good place to start to get a feel for how to create forms, it is also suitable when making minor changes. With experience using REDCap, you might find it is easier to create a Data Dictionary in Excel, and upload it into REDCap, especially if you will be adding a large number of fields to your project. You will not have to create similar variables individually as in the Online Designer, you can take advantage of using Excel's copy/paste functionality.

Creating forms

To learn how to create a data dictionary in Excel, a demonstration file with coding examples can be downloaded from the Data Dictionary tab of any REDCap project.



Data Dictionary Excel Spreadsheet Columns

This section describes the function of each column in the data dictionary spreadsheet, and whether it is required or optional. Note: The term "Column" here refers to Excel spreadsheet data dictionary columns. Also, the terms "field" and "variable", as used here, are essentially interchangeable. Both terms refer to a unique item of data to be collected and analysed. "Field" is a database term, while "variable" is a data analysis term.

Column A – Field Name

Required

1. Variable/Field names specify the variable name that will be used in reporting, data export, and data analysis. They are not displayed on the data entry form.
2. The first variable on the first form must be the record identifier (e.g. Participant ID) because it will be used by REDCap as a key variable linking forms for a particular record. The default field name is “Study_ID”. Demographics is normally the first form, but this is not required.
3. Field names may contain lowercase letters, numbers, and underscores, but no spaces or special characters.
4. Field names should always start with a letter.
5. Field names must be unique, and cannot be repeated within a database, even in different forms.
6. In general, variable names should be as short in length as possible while maintaining meaning to researchers. Remember they do not need to be too descriptive because the description will be included in the Field Label. A common example is the use of “dob” as a variable name, with the corresponding field label of “Date of Birth”.
7. The recommended character length for a field name is 26 and the maximum is 100.
8. When using the Online Designer, REDCap automatically assigns a default field name based on the field label. It is recommended that you double check the default field name and modify if necessary.
9. Remember that if you change a variable name in one place, you must change it everywhere it is used, e.g. calculations, branching logic, automated survey logic.
10. Remember that if you change a variable name, you will lose all data entered under the old variable name.

Column B – Form Name

Required

1. Form Names correspond to individual data entry forms in the project.
2. Form names must be lowercase letters, numbers and underscores in the Excel spreadsheet, but will be displayed in REDCap with initial capitals. If your form name contains more than one word, connect the words with an underscore, such as “form_name”. The underscore will appear as a space in REDCap.
3. All variables in a form must be in adjacent rows in the data dictionary. For example, you cannot have a variable in row 6 be in the “demographics_form”, a variable in row 7 be in the “first_visit” form, and then a variable in row 8 back in the “demographics_form”.
4. Forms will appear in the data collection section of REDCap in the order they appear in the data dictionary.
5. Variables within a form will appear in the order they appear in the data dictionary.

Column C – Section Header

Optional

1. Use a Section Header to break up the data entry form into sections. When rendered, any text included in the header information will show up as a preceding line of text – with a yellow background.
2. Section Headers are used to visually separate items within a form, primarily to aid data entry. If you are entering data directly into REDCap while interviewing a study participant, you may also want to use Section Headers to display interview script between questions, e.g. to introduce a new topic.

Column D – Field Type

Required

1. Specifying the field type determines what types of responses are allowed, and how the data entry area for that field will be displayed.

2. Field types include

- a. text box – for capturing free text. The text field type should have validation (Column H) whenever possible. If the validation is “integer” or “numeric”, you should also include the allowable minimum and maximum values (Columns I & J) when possible. The text field type can also have suggested choices listed in Column G.
- b. notes box – for capturing free text. Although there is no limit to the number of characters you can store in the either text or notes field types, there is a limit to the number of characters displayed on the data entry form for each field type. Text boxes display about 30 characters and notes boxes display about 300 characters.
- c. calculated field - perform real-time calculations. Calculated variables display the result of a calculation based on responses to other variables. Data cannot be entered in calculated fields. Any variable in the database can be used in the calculated field regardless of data entry form. For longitudinal projects, you may need to specify the event name as well.
- d. drop-down list - dropdown list of choices. Use if there are a large number of choices and only one choice is allowed. Must also have response options (choices) defined in Column F.
- e. radio buttons - radio buttons for each choice. Use if there are a small number of choices and only one choice is allowed. Must also have response options (choices) defined in Column F.
- f. checkboxes – multi-selectable checkboxes. Use if multiple choices are allowed. Must also have response options (choices) defined in Column F.
- g. yes-no – radio buttons with yes and no options coded as No = 0 and Yes = 1.
- h. true-false - radio buttons with true and false options coded as False = 0 and True = 1.
- i. slider – visual analogue scale. Slider labels can be specified in Column F and slider numbers can be turned on in Column H.
- j. file upload - upload a document. This field type allows you to attach a document (e.g. signed consent form) to the record. Note, that the file repository of REDCap is used to upload a project document, not a record/subject document to the project (e.g. blank consent form or IRB protocol).
- k. descriptive text - text displayed with no data entry. Optional image/file attachment must be specified through the Online Designer.
- l. begin new section – section headers appear in yellow and can include optional descriptive text.

Column E – Field Label

Required

A Field Label (or variable label) is a word or phrase which should be more descriptive than the variable/field name. This is the text that will be on the form (instead of the variable name). For example the field name might be “dr_address” while the field label would be “Please enter the primary care physician’s address.”

Column F – Choices, Calculations, or Slider Labels

Required if field type is dropdown, radio, or checkbox, or calculation

1. All categorical field types (dropdown, radio, checkbox) must specify response options associating numerical values with labels.
2. Choices using dropdown, radio, or checkbox field types are stored as numerical values, but choices can be displayed as text in the data entry form. For dropdown, radio, checkbox field types, this column is used to specify both what is displayed on the data entry form and what is stored in the database. For example, if “0, No | 1, Yes” is entered in Column F, “No” and “Yes” will displayed on the data entry form and “0” and “1” will be stored in the database. The | (the ‘pipe’ character) is critical to separate options in the list. Numerical codes do not need to be consecutive and do not affect the order the text is displayed.
3. All calculated fields must specify the calculation here. Examples of calculation syntax can be found at the Help & FAQ link at the bottom of the left hand panel of any REDCap project screen.

4. Optional slider field labels can be specified here. The slider field allows you to label three anchor points: left, middle, and right. An example might be “Strongly Disagree”, “Neutral”, and “Strongly Agree.” These labels would be defined as follows in Column F: Strongly Disagree | Neutral | Strongly Agree

Column G – Field Note

Optional

1. Field notes are used to provide information to assist in data entry. They are mainly used to supplement the Field Label information. Examples are specifying the expected format of a validated field (e.g. phone number), or units (e.g. kg vs. lb).
2. The Field Note is rendered just below the field input element and shows up in small blue text.

Column H – Text Validation Type or Show Slider Number

Optional

1. Specifies data validation type for text box field type.
2. An error message is displayed if an entry does not match the expected format, and the entry is not saved to the database. In other words, the validation type is a hard validation.
3. **Data validation types for text box fields are email, integer, letters only, MRN (10 digits), number, phone, ssn, and zip code. In addition, there are several date and time validation formats.**
4. For slider field type, specifies whether to display or hide the value (1-100) selected on the slider. An entry of ‘number’ in this column will display the value

Columns I & J – Text Validation Min/Max

Optional

1. For text validation types of number, integer, or date, minimum and maximum acceptable values may be specified. You may use a min, max, neither or both for each individual field.
2. An error message, including the acceptable range, is displayed if the entry is out of range. However, the entry stored to the database regardless of whether or not the entry is out of range. In other words, the Min/Max validation is a soft validation.

Column K – Identifier?

Optional

1. If any of the fields are a Subject Identifier, then place ‘y’ in the cell. If not, simply leave the cell blank.
2. Tagging fields as Subject Identifiers will prevent lower-level users from exporting data for these fields from the database, depending on user rights.

Column L – Branching Logic

Optional

Branching logic can be applied to a field to specify whether or not it will be displayed, depending on values in other fields. For example, a question about pregnancy can be designated to be displayed only if the subject is female.

Column M – Required Field?

Optional

1. A field can be designated as “required” so that it must be completed before moving on to the next field. An error message is displayed if the field is left blank. However, the user can choose to ignore the error message and continue with data entry. In other words, this is a soft requirement.

2. If any of the fields require a value, then place 'y' in the cell. If not, simply leave the cell blank.

Column N – Custom Alignment

Optional

1. The location of text boxes or categorical responses (dropdown, radio, checkbox) can be specified as Right/Vertical, Left/Vertical, Right/Horizontal, Left/Horizontal.
2. The default setting, if not specified, is Right/Vertical. Right/Horizontal is specified as RH, Left/Vertical is specified as LV, and Left/Horizontal is specified as LH.

Column O – Question Number

Optional for surveys

REDCap can be set to auto-number questions on a survey. However, if you want a custom numbering scheme, you can specify each question number here. Any text in this column will be displayed as the question number.

Column P – Matrix Group Name

Required for matrix type fields

1. In order for different fields to be displayed in the same matrix/grid together, they must be given the same matrix group name. Otherwise they will get rendered as separate matrix groups.
2. Only letters, numbers, and underscores can be used in the name.

Column Q – Matrix Ranking

Optional for matrix type fields

A ranked matrix of fields is a matrix that can be used to 'rank' the choices within it so that no two fields in the matrix can have the same selected value for a given column. For example, if ranking is enabled for a matrix and a user then selects a choice for one field that has already been selected for another field, it will automatically deselect the value for that other field and display a quick message saying 'value removed!' to denote that the value was removed for the other field. This prevents any two fields from having the same selected value.

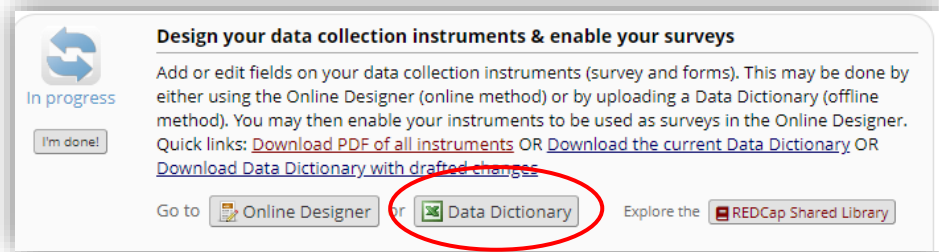
Column R – Field Annotation

Optional

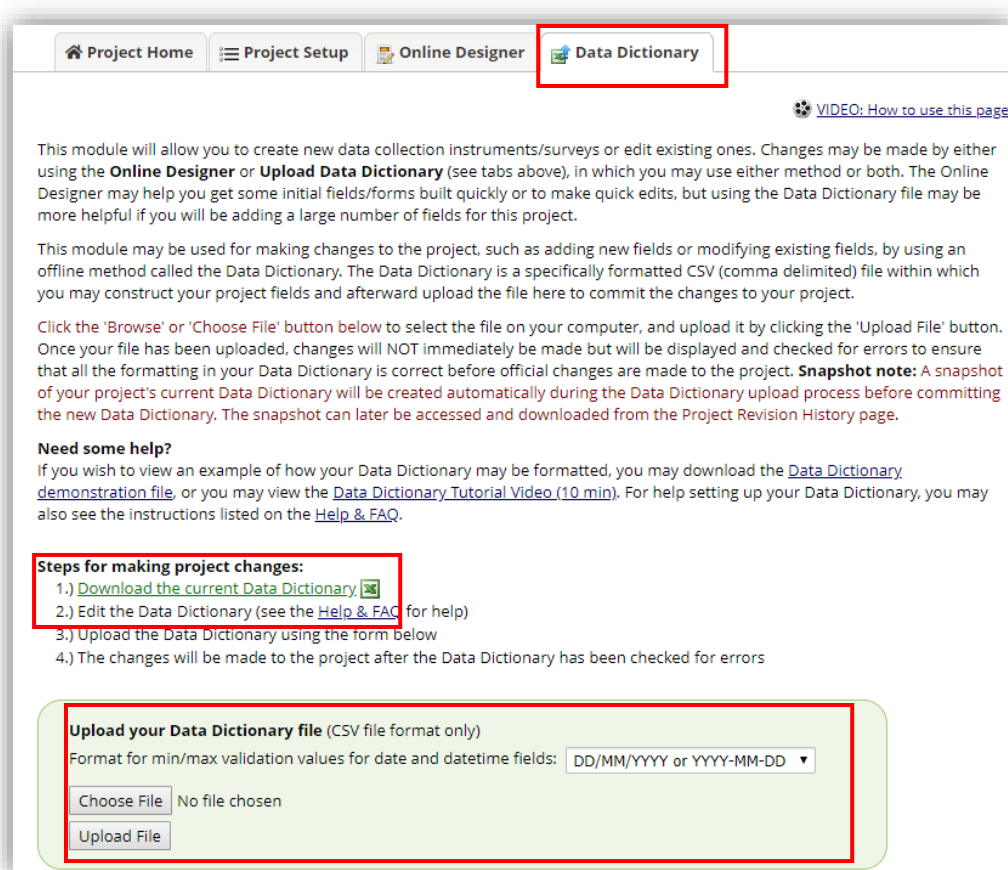
Field annotations can be used to add explanatory notes or commentary about a given field. This can be used for several purposes, such as for the bookkeeping of a project's field structure (as metadata about the given field) for reference purposes regarding what the field represents or how it should be used (during data entry, analysis, etc.). Field annotations are not displayed on any page but are merely for reference. Summarily, field annotations do not have a specifically defined purpose, so users may use them in whatever way they so choose.

Making changes to forms

For large or repetitive projects, you may need to make large-scale changes to your forms that would be difficult or tedious to perform with the Online Designer. The Data Dictionary is a CSV file version of your project, and serves as an efficient way to make large-scale changes using Excel.



To begin making changes to your project using the Data Dictionary, click on “Data Dictionary” on the home page of your Project Setup. This will take you to a ‘Data Dictionary’ tab, where you can download the data dictionary so that you can make changes to it.



Here is a sample excerpt from a Data Dictionary (with the columns expanded for readability):

A	B	C	D	E	F	G	H	I
Variable / Field Name	Form Name	Section Header	Field Type	Field Label	Choices, Calculations, OR Slider Labels	Field Note	Text Validation Type OR Show Slider Number	Text Validation Min T
record_id	my_first_instrument		text	Record ID				
todaydate	my_first_instrument		text	Date			date_dmy	
age	my_first_instrument		text	How old are you?				
email	my_first_instrument		text	email address			email	
initials	visit_details		text	Initials				
datevisit	visit_details		text	Date of Visit			date_dmy	
dob	visit_details		text	Date of Birth			date_dmy	
pre_term	visit_details		dropdown	Were you born preterm?	1, yes 2, no 3, don't know			
preterm_age	visit_details		text	How many weeks were you born				
consent_received	visit_details		yesno	Consent Received				
height_standing	visit_details		text	Height while standing (cms)				
height_sitting	visit_details		text	Height while sitting (cms)			number	50
weight	visit_details		text	Weight (Kgs)			number	5
chest_circumference	visit_details		text	Chest circumference (cm)			number	10
bp_sys	visit_details		text	Systolic blood pressure				
bp_dias	visit_details		text	Diastolic blood pressure				
heart_rate	visit_details		text	Heart Rate				
medname	medication_history		text	Name of Medication				
dose	medication_history		text	Dose & how often taken				
med_description	medication_history		text	What is this for?				
edu_current	education	Education	yesno	Are you currently studying or doing a course?				
edu_where	education		radio	What is the highest level of education you have completed?	1, At University 2, At TAFE College 3, Secondary School (High School) 4, Primary School 5, Marr Mooditj 6, Other			
edu_other_specify	education		text	Please Specify				
job_now	education	OCCUPATION & INCOME	checkbox	What are you doing now?	1, Studying full-time 2, Studying part-time 3, An apprenticeship 4, Working full-time 5, Working part-time 6, Retired			
job_now_other	education		text	Please Specify				
job_detail	education		descriptive	If you have a job of any kind, please indicate:				
job_title	education		text	Job Title				
job_description	education		notes	Job Description				
job_industry_code	education		radio	Industry Code	1, A - Agriculture, Forestry and Fishing 2, B - Mining 3, C - Manufacturing 4, D - Electricity, Gas, Water and Waste Services			
industry_code_other	education		text	Please Specify				
previous_job	education		yesno	Have you had a previous job?				

Each column in the data dictionary maps to a property in the online designer (see section *Data Dictionary Excel Spreadsheet Columns*).

Large-scale changes, made easier through the Data Dictionary, may include copying many fields (rows) into another form or changing the response options for a range of variables from being 1-4 to 1-5. For instance, if you wanted to copy rows 3 through 13 into form_2, you would simply highlight rows 3 through 13 in Excel (the entire rows), copy, paste into the appropriate position (ensuring you did not paste over any other rows), and change the Form Name (column B) to “form_2” for the newly pasted rows.

To re-upload the modified Data Dictionary, save the CSV file and re-upload it back in the Upload Data Dictionary window, by 1. Chose File and then 2. Upload File.

If REDCap notices any syntax errors it cannot read, it will prompt an error message alerting you to the issue. If there are no errors, it will ask for confirmation, ensuring that you know the new Data Dictionary will replace the old Data Dictionary (not append to it).

This module will allow you to create new data collection instruments/surveys or edit existing ones. Changes may be made by either using the **Online Designer** or **Upload Data Dictionary** (see tabs above), in which you may use either method or both. The Online Designer may help you get some initial fields/forms built quickly or to make quick edits, but using the Data Dictionary file may be more helpful if you will be adding a large number of fields for this project.

✔ **Your document was uploaded successfully and awaits your confirmation below.**

- No errors or warnings were found in the document.
- The uploaded data dictionary **contains 31 fields**, which will replace the 31 fields that currently exist in Draft Mode (excluding 'Form Status' fields, which are automatically generated by REDCap).

Are you ready to commit the changes to the project from the uploaded Data Dictionary?
(Click the button below to submit the changes.)

[Cancel](#)

TIPS:

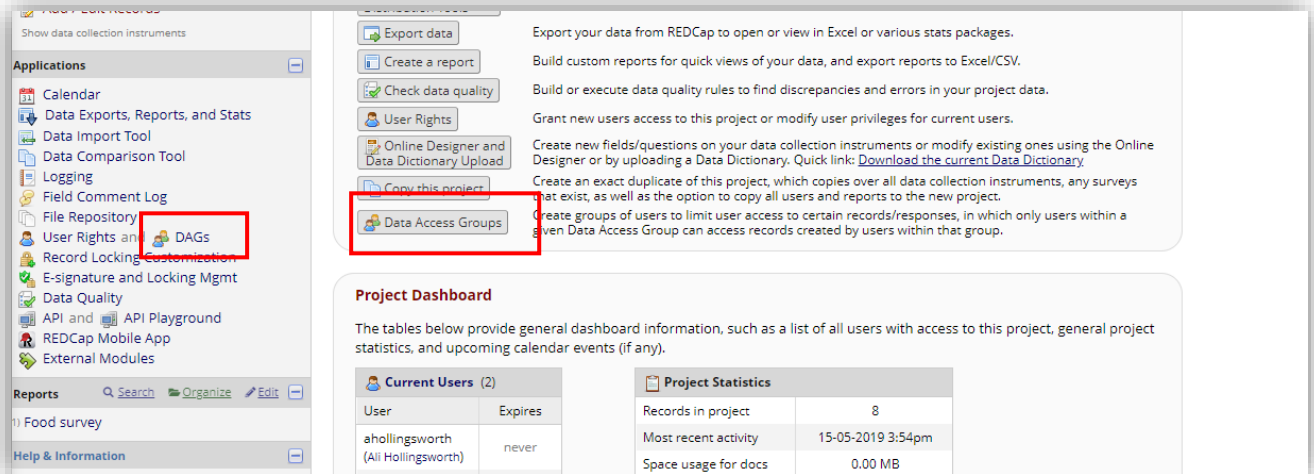
If you are making large-scale changes using the Data Dictionary, it may be helpful to save separate copies of your old Data Dictionary in case you discover any errors later on after uploading it (for instance, if you mistakenly deleted several fields that you did not intend to delete).

If you use non-English language characters in your field labels or choices, you will want to save using the "CSV UTF-8" format. Otherwise, non-English language characters will not display correctly.

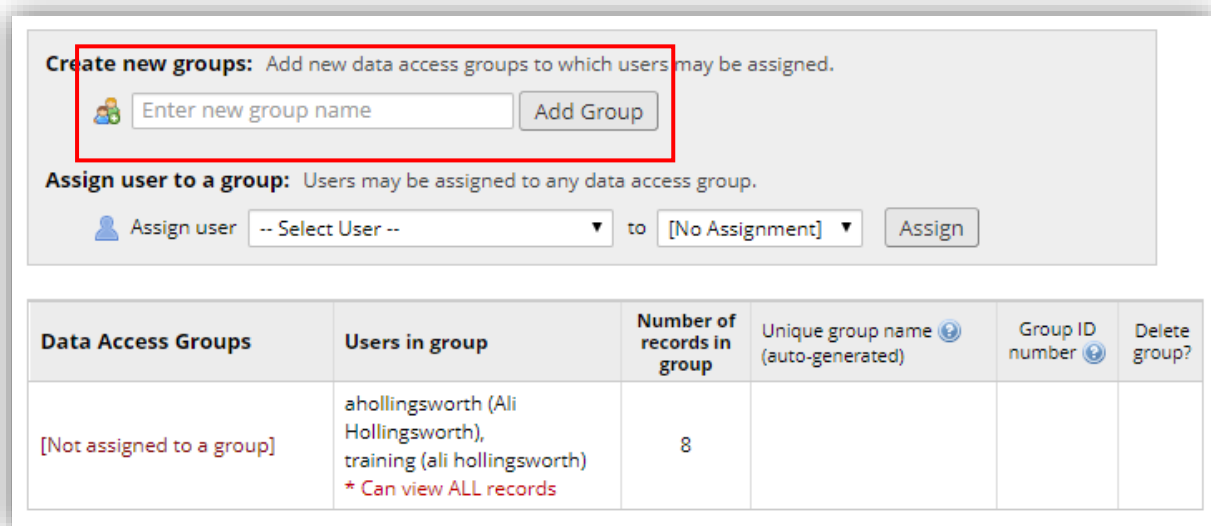
If changes are required once the project is in production, the project must first be put back to draft mode before a new data dictionary can be uploaded.

Project Administration – Data Access Groups

Data Access Groups (DAGs) restrict viewing of data within a database. A typical use of Data Access Groups is a multi-site study where users at each site should only be able to view data from their site but not any other sites. Users at each site are assigned to a group and will only be able to see records created by users within their group.



To create a Data Access Group for your project, enter the name of the new group in the “Enter new group name” text box and then click on the “**Add Group**” button.



You will then get a dialog box stating you have created your new group.



To rename an existing Data Access Group, simply click the group name in the table and type the new name. You can also delete the group at any time by clicking on the X under “Delete Group?”

Data Access Groups	Users in group	Number of records in group	Unique group name (auto-generated)	Group ID number	Delete group?
Perth Children's Hospital		0	perth_childrens_ho	55	✘
[Not assigned to a group]	ahollingsworth (Ali Hollingsworth), training (ali hollingsworth) * Can view ALL records	8			

You can assign a user to a Data Access Group by selecting the username and group name and then clicking the "Assign" button.

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

Assign user: to

✔ User "ahollingsworth" has been assigned to Data Access Group "Perth Children's Hospital"!

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

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

Assign user: to

Data Access Groups	Users in group	Number of records in group	Unique group name (auto-generated)	Group ID number	Delete group?
Perth Children's Hospital	ahollingsworth (Ali Hollingsworth)	0	perth_childrens_ho	55	✘
[Not assigned to a group]	training (ali hollingsworth) * Can view ALL records	8			

Once assigned to a Data Access Group, the user will be able to see ONLY the project records created by themselves and others in that group. This includes being able to view records on data entry forms, in reports, and in exported data sets. Users can be unassigned from a group by selecting the user name and selecting "No Assignment" and clicking on the "Assign" button.

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

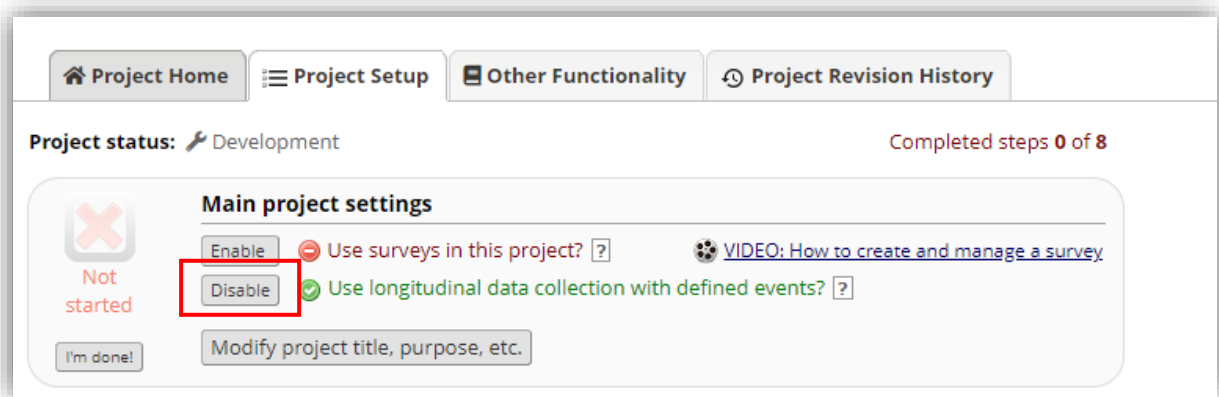
Assign user: to

✔ User "ahollingsworth" is no longer assigned to a Data Access Group!

What is a Longitudinal project?

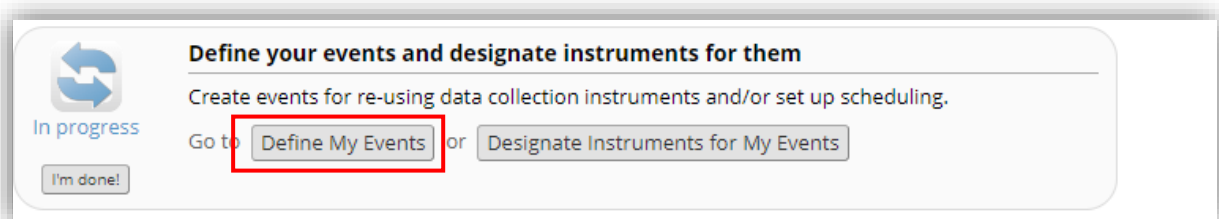
A longitudinal project is similar to a traditional data collection project in that multiple data entry forms are defined. The longitudinal model allows any data entry page to be repeated any given number of times across pre-defined timepoints, which are specified by the user before data is collected. So rather than repeating a data entry form multiple times in the Data Dictionary, it can exist only once in the Data Dictionary but be repeated N number of times using the longitudinal model.

In order to utilise the longitudinal study features of REDCap, you must have enabled the use of longitudinal data collection in your “Main project settings” options on your Project Setup home page.



Define Events

Once you have enabled the user of longitudinal data collection, a new module will appear in your main Project Setup page so that you may define your events and arms.



The Define My Events module allows you to define the “events” and scheduling intervals for your project that allow the utilisation of data collection forms multiple times for any given project record, as well as for generating new schedules to display on the calendar. An “event” may be a temporal event in the course of your project such as a participant visit or a task to be performed.

Click on 'Define my events' to set up the event schedule for your project.

Arm 1: Arm 1 +Add New Arm


Arm name: Arm 1 [Rename Arm 1](#)

	Event #	Event Name	Custom Event Label (optional)	Unique event name (auto-generated)
	1	Event 1		event_1_arm_1

Add new event

Descriptive name for this event

Custom Event Label (optional)
Example: [visit_date], [weight] kg

One event is defined as default for the project. You can edit the Event Name by clicking on  and renaming the event to one of your choice.

To add new events, provide an **Event Name** for that event, and then click the *Add new event*. Once events have been added, you can easily change their order by dragging and dropping the event using the up-down arrow icon on the far left for a given row in the table.

Arm 1: Arm 1 +Add New Arm


Arm name: Arm 1 [Rename Arm 1](#)

	Event #	Event Name	Custom Event Label (optional)	Unique event name (auto-generated)
	1	Screening Visit		screening_visit_arm_1
	2	Day 1		day_1_arm_1
	3	Day 7		day_7_arm_1
	4	Day 14		day_14_arm_1
	5	Follow-up		followup_arm_1

Add new event

Descriptive name for this event

Custom Event Label (optional)
Example: [visit_date], [weight] kg

The number of events you can define is limitless. If you wish to delete an event from the schedule, click  next to the event name you wish to remove.

The **Custom Event Label** is an optional field that be added to any event in your project. Custom Event Labels are similar to Custom Record Labels, in which they allow you to display data (via piping) from a given event in the event's table header when viewing the Record Home Page of a record. For example, if each event represents a single visit of a person, then if you are collecting the date in a field called 'visit_date' on each event, then you can set the Custom Event Label as '[visit_date]' for all

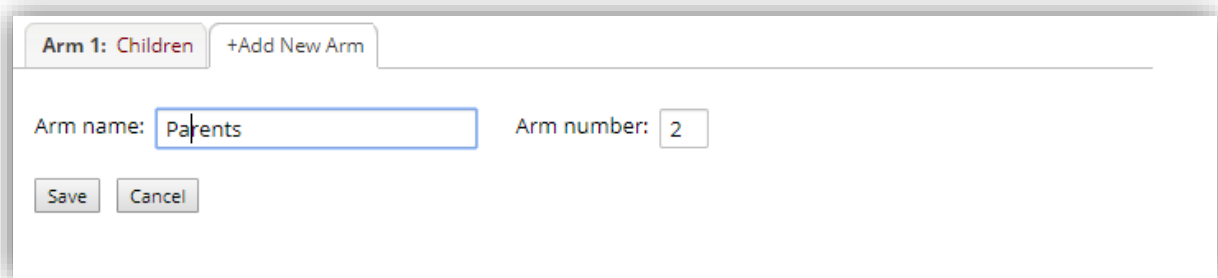
those visit events. This will provide useful context for each event when viewing all the events of the record. You can also get more advanced with the piping by using multiple fields and even static text. For example, '[visit_date], [weight] kg'.

Note the settings for “**Unique event name**”. These codes are used when importing and exporting longitudinal data.

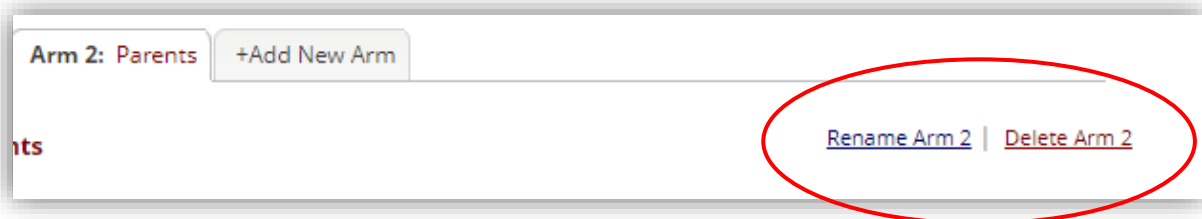
Adding Arms

This page is also where you are able to define your study’s Arms. If you have multiple treatment groups or multiple sample populations, you may want to utilise this feature. Arms can be custom named, and do not necessarily need to have the same forms/events as other Arms and can have as many events as you wish. This can allow you to easily group/block records. A single record may not belong to more than one Arm.

To add a new arm, click **+Add New Arm**.
Fill in the name of the arm and assign the arm a number.

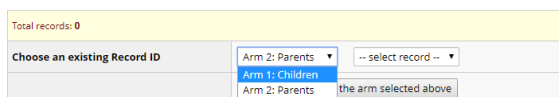


If you wish to rename or delete an arm you can do this by clicking Rename arm or delete arm at the top of the tab for that arm.



Creating a new record: arms

When creating a new record in a project where multiple arms are defined, you must select the arm appropriate to your new record before creating the record. For longitudinal projects where multiple Arms are defined, each arm functions essentially as a distinct project. Record identifiers are unique only within an arm.

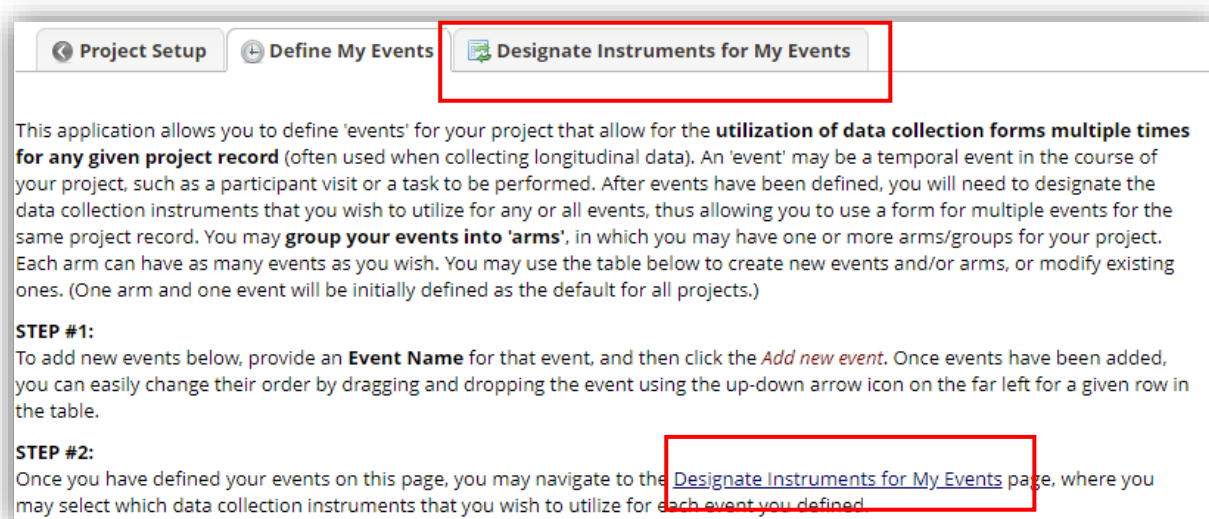
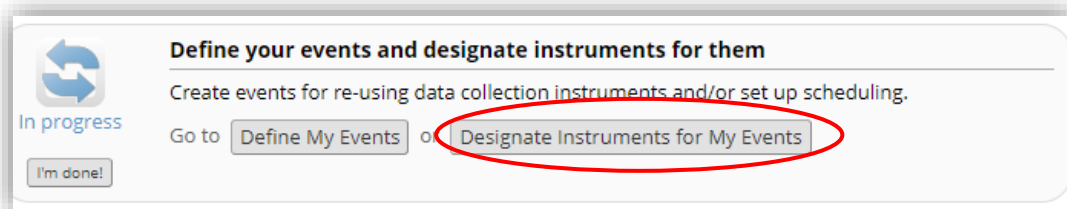


It is not possible to ensure that a record identifier is unique within the project, although REDCap does provide a warning when creating a new record with a record identifier that matches one from another arm.

Designating Instruments for My Events

Once you have defined your events (and Arms, if applicable), you must now designate instruments for your events.

To assign data collection forms to events, click the “Designate Instruments for My Events” button on the Project Setup page or on the “Define My Events” page.



The event setup page will open. Click “Begin Editing” to assign forms to each event that you defined. This allows you to enter data on any data collection form multiple times for any given project record. Any and all data collection instruments can thus be used for any event defined.

When you are finished making changes, click the “Save” button to finalise your changes.

In a longitudinal design, each form must be attached to at least one event

Arm 1: Children Arm 2: Parents

Arm name: **Parents**

 [Select All](#) | [Deselect All](#)

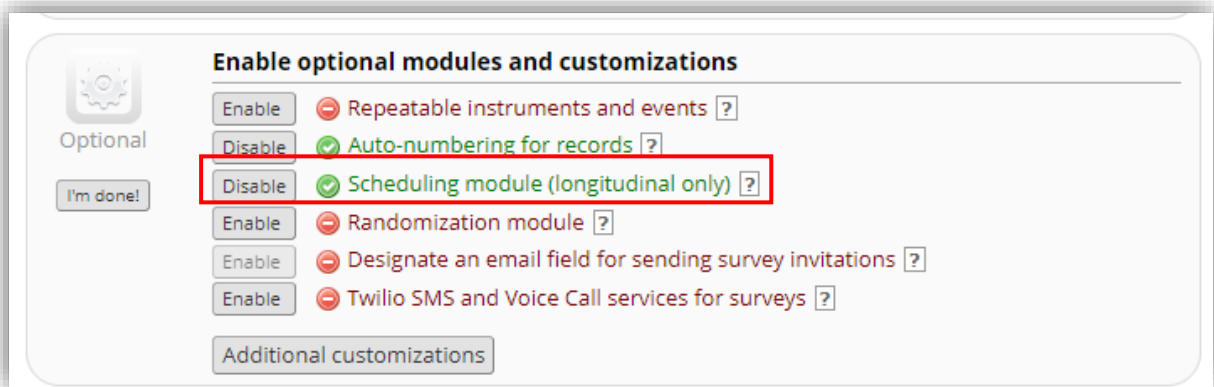
Data Collection Instrument	Enrollment (1)	Deadline to opt out of study (2)	First dose (3)	First visit (4)	Second dose (5)	Second visit (6)	Final visit (7)	Deadline to return feedback (8)
Demographics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contact Info	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Baseline Data	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visit Lab Data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Patient Morale Questionnaire	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Visit Blood Workup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Visit Observed Behavior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Completion Data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Completion Project Questionnaire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

When enabling longitudinal data collection in REDCap, the data entry views vary slightly to a classic or non-longitudinal project in that each instrument that you have designated to an event will be listed under that event on the record home page for each record ID.

Data Collection Instrument	Enrollment	Dose 1	Visit 1	Dose 2	Visit 2	Dose 3	Visit 3	Final visit
Demographics	<input type="radio"/>							
Contact Info	<input type="radio"/>							
Baseline Data	<input type="radio"/>							
Visit Lab Data			<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	
Patient Morale Questionnaire		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit Blood Workup			<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	<input type="radio"/>
Visit Observed Behavior			<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	<input type="radio"/>
Completion Data								<input type="radio"/>

Using the scheduling module

This module is only available when you have enabled longitudinal data collection in your project. The scheduling module can generate schedules for your project calendar that are auto-generated from project-defined events (Ex: visits, time-points). It enables you to generate an event schedule for each individual project record, typically a calendar of a participant's study visits.



With this optional customisation enabled, you will now see an additional column for 'Offset range' when defining the events for your project.

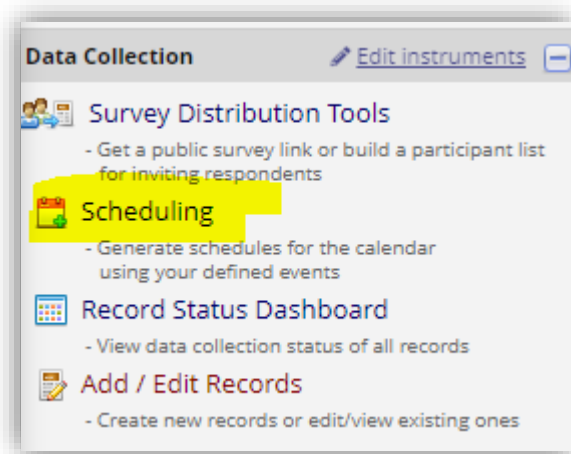
If your events are temporal (e.g., visits, tasks), you may use the Days Offset to provide a timeframe of all your events relative to the time of the first event defined. If you will be using the Scheduling module, the Days Offset will be used to generate a schedule based on a start date that you provide, and then that new schedule will be added to the Calendar. The Offset Range may be used to help you stay within a range of days, if needed, when scheduling is being done by changing it to a value other than 0. If your events are not temporal but are ordered, you may still use the Days Offset simply as a means of ordering your events.

	Event #	Days Offset	Offset Range Min / Max	Event Name	Custom Event Label (optional)	Unique event name (auto-generated)
	1	1	-0/+0	Screening Visit		screening_visit_arm_1
	2	2	-0/+0	Day 1		day_1_arm_1
	3	3	-0/+0	Day 7		day_7_arm_1
	4	4	-0/+0	Day 14		day_14_arm_1
	5	5	-0/+0	Follow-up		followup_arm_1
Add new event		<input type="text"/> Days	<input type="text"/> - <input type="text"/> 0 <input type="text"/> + <input type="text"/> 0	<input type="text"/>	<input type="text"/>	
		Convert from other units		Descriptive name for this event	Custom Event Label (optional) Example: [visit_date], [weight] kg	

Days Offset is the number of days from an arbitrary or specified 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 June 10th +/- 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.

Once both longitudinal data collection and the scheduling module are enabled, a new “Scheduling” tool will appear in the left-side menu. Assuming that you have already set up your Events with the correct “days offset” specifications, adding new Record IDs via ‘scheduling’ will automatically generate a schedule to add to the calendar with all events accordingly booked for that record. You may also generate a schedule for the remaining events on any existing record.



Create Schedule | **View or Edit Schedule**

The Schedule Generator will allow you to **generate a new schedule** based upon your Events and their Days Offset that have been defined on the [Define My Events](#) page. You may generate a schedule for a new or existing Record ID below by selecting a Start Date, which will be used as the starting point for projecting schedule dates using your Days Offset. Once scheduled, you may then view it in the [Calendar](#), after which, if desired, you may also perform data entry for that calendar event. You may create a new project record here while performing scheduling or you may choose a currently existing one that has not yet been scheduled.

Add new Record ID: **OR**

Start Date: D-M-Y

Select Arm:

Projected Schedule for "8" (NOTE: The dates below have NOT yet been scheduled.)

The projected schedule below was automatically generated for **Record ID "8"** based on your pre-defined Events for **Arm 1**. You may change the value of any dates generated below simply by clicking inside the date box and selecting a new date. Any dates generated below that fall on weekends will be listed in **red**. Click the **Create Schedule** button to finalize this schedule, which will then be added to the Calendar.

	Time (optional)	Date / Day of Week	Event Name
✘	<input type="text"/>	30-05-2019 Thursday	Enrollment
✘	<input type="text"/>	13-06-2019 Thursday Range: 10-06-2019 - 16-06-2019	Visit 1
✘	<input type="text"/>	29-06-2019 Saturday Range: 27-06-2019 - 03-07-2019	Visit 2
✘	<input type="text"/>	29-07-2019 Monday Range: 24-07-2019 - 31-07-2019	Visit 3
✘	<input type="text"/>	28-08-2019 Wednesday Range: 25-08-2019 - 31-08-2019	Final visit

NOTE: Clicking the **Create Schedule** button will additionally add "8" as a new Record ID.

✓ Successfully Scheduled "8"

Record ID "8" was successfully scheduled for the dates and times below and has been added to the [Calendar](#). You may now edit this schedule or add more information, such as changing the status (e.g., 'Cancelled', 'Confirmed') or adding descriptive notes, by clicking the [View or Edit Schedule](#) tab above.

Schedule for "8"		
Time	Date	Event Name
	30-05-2019 Thursday	Enrollment
	13-06-2019 Thursday	Visit 1
	29-06-2019 Saturday	Visit 2
	29-07-2019 Monday	Visit 3
	28-08-2019 Wednesday	Final visit

Once events have been successfully scheduled, they will automatically be added to the calendar.

Calendar

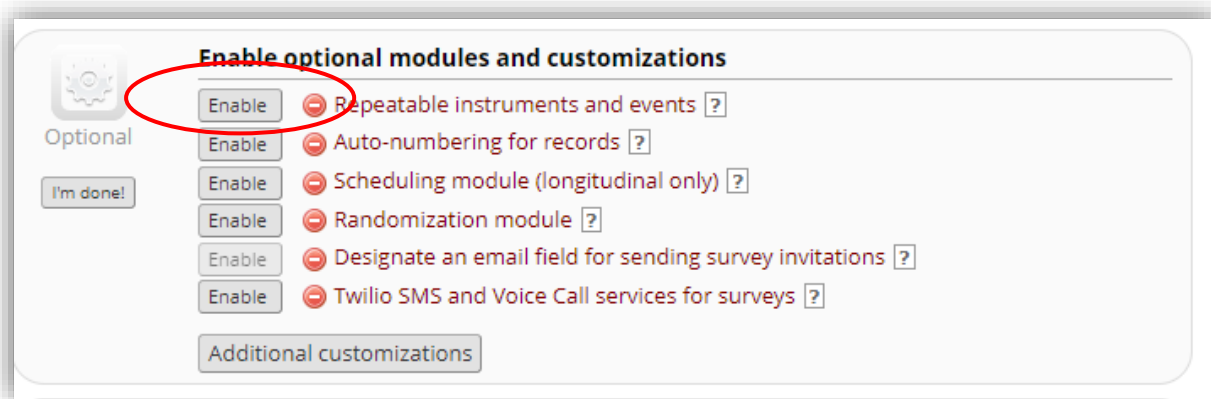
The Calendar application can be used as a project calendar within the project to help organise your schedule and keep track of any upcoming events. It will allow you to add or modify calendar events and then view them either in a daily, weekly, or monthly format below. To add a new note or calendar event to any day, click **+New** at the top of that day's box to begin entering the information. To remove an event from the calendar, click on the event and click 'Delete from Calendar'. The calendar may also be printed.

Day	Week	Month	Agenda			
◀ June 2019 ▶ Print Calendar						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						+ New 1
+ New 2 ☆ 3 (Enrollment)	+ New 3	+ New 4	+ New 5 ☆ 4 (Visit 1) ☆ 7 (Visit 1)	+ New 6	+ New 7	+ New 8
+ New 9 ☆ 5 (Visit 1)	+ New 10	+ New 11	+ New 12 ☆ 6 (Enrollment)	+ New 13 ☆ 8 (Visit 1)	+ New 14	+ New 15
+ New 16 ☆ 3 (Visit 1)	+ New 17	+ New 18	+ New 19	+ New 20	+ New 21 ☆ 4 (Visit 2) ☆ 7 (Visit 2)	+ New 22
+ New 23	+ New 24	+ New 25 ☆ 5 (Visit 2)	+ New 26 ☆ 6 (Visit 1)	+ New 27	+ New 28	+ New 29 ☆ 8 (Visit 2)
+ New 30						

Repeating Instruments

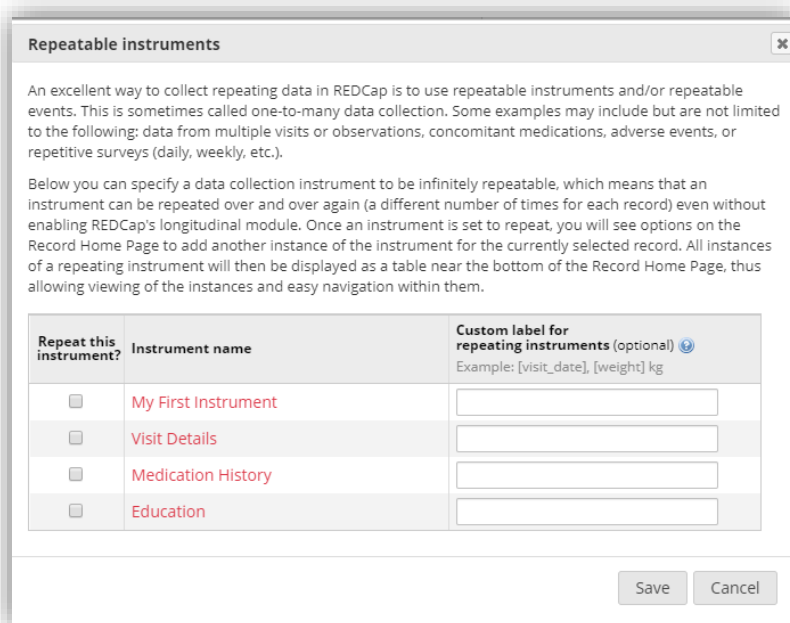
REDCap has the ability to repeat a data collection instrument or an entire event of instruments an unlimited number of times without having to specify the amount needed. A project can have one or more repeating parts. For example, if each record in a project represents a person, then one might have a repeating instrument for medications, one for family members, one for adverse events, and one for collecting data over multiple visits (or weekly surveys), so that each repeating element is connected to the overall record but can repeat independently of the other instruments. So if using repeating instruments or repeating events, each record in the project can have a different number of repeated instances of any given instrument or event. One record may have five medications, but another may have two or none, for example.

To use repeating instruments or events on your project, you must first enable it on the project setup page. It is the first option under the “Enable optional modules and customisations” section



When you click enable, you will get a popup window asking which instruments (and events, if the project is longitudinal) should be made repeatable.

If your project is classic (non-longitudinal), your popup will look something like this:



If your project is longitudinal your popup will look more like this:

Repeatable instruments and events

An excellent way to collect repeating data in REDCap is to use repeatable instruments and/or repeatable events. This is sometimes called one-to-many data collection. Some examples may include but are not limited to the following: data from multiple visits or observations, concomitant medications, adverse events, or repetitive surveys (daily, weekly, etc.).

Below you can specify a data collection instrument or a whole event of instruments to be infinitely repeatable, in which each repeating instrument or event can be repeated a different number of times for each record. You may set any event in the project to be repeatable *or* alternatively set selected instruments to be repeatable within an event. **The 'Repeat Entire Event' option means that all the event's instruments will repeat together and stay connected, whereas the 'Repeat Instruments' option implies that the instruments will repeat separately and independently from each other on that event.** Once an instrument or event is set to repeat, you will see options on the Record Home Page to add another instance of the instrument/event for the currently selected record.

Event Name	Repeat entire event or selected instruments?	Instrument name (select instruments to repeat)	Custom label for repeating instruments (optional) ⓘ Example: [visit_date], [weight] kg
✓ Enrollment	Repeat Entire Event (repeat ▾)	<input checked="" type="checkbox"/> Demographics <input checked="" type="checkbox"/> Contact Info <input checked="" type="checkbox"/> Baseline Data	<input type="text"/> <input type="text"/> <input type="text"/>
Dose 1	-- not repeating -- ▾	<input type="checkbox"/> Patient Morale Questionnaire	<input type="text"/>
Visit 1	-- not repeating -- ▾	<input type="checkbox"/> Visit Lab Data <input type="checkbox"/> Patient Morale Questionnaire <input type="checkbox"/> Visit Blood Workup <input type="checkbox"/> Visit Observed Behavior	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Dose 2	-- not repeating -- ▾	<input type="checkbox"/> Patient Morale Questionnaire	<input type="text"/>
Visit 2	-- not repeating -- ▾	<input type="checkbox"/> Visit Lab Data <input type="checkbox"/> Patient Morale Questionnaire <input type="checkbox"/> Visit Blood Workup <input type="checkbox"/> Visit Observed Behavior	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Dose 3	-- not repeating -- ▾	<input type="checkbox"/> Patient Morale Questionnaire	<input type="text"/>
Visit 3	-- not repeating -- ▾	<input type="checkbox"/> Visit Lab Data <input type="checkbox"/> Patient Morale Questionnaire <input type="checkbox"/> Visit Blood Workup <input type="checkbox"/> Visit Observed Behavior	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
		<input type="checkbox"/> Patient Morale Questionnaire <input type="checkbox"/> Visit Blood Workup	<input type="text"/> <input type="text"/>

Save Cancel

For a **classic (Non longitudinal) study**: If you have an instrument you would like to repeat, simply mark its checkbox in the “Repeat This Instrument?” column.

For a **longitudinal study**: You will see each event listed along with its designated instruments. If you would like to repeat every instrument in the event, you can select “Repeat Entire Event (repeat all instruments together)” from the dropdown menu “Repeat entire event or selected instruments?”. Repeating an event would allow a participant to repeat all instruments in the event. However, the participant could not pick and choose what instruments should be repeated, it would instead repeat them all at once, as if they were a package. In case the participant needs to choose to repeat only specific instruments on an event, the event should not be marked for repeat, only the instruments that could be repeated.

To enable the repetition of only some instruments within an event, select “Repeat Instruments (repeat independently of each other)” from the dropdown for the corresponding event name (in the “Repeat entire even or selected instruments?” column). Then, you check whichever instrument you want to be repeatable under the “Instrument name” column. Now the participants can create new instances of the selected instruments as needed independently from each other.

Creating and Editing Repeat Instances

1) By Event

To record a new instance of an event, navigate to Add/Edit Records and select the appropriate record. From there, you can select “+Add new” for any event that is a repeating event.

Data Collection Instrument	Enrollment (#1)	Enrollment (#2)	Enrollment (#3)
Demographics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contact Info	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Baseline Data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit Lab Data			
Patient Morale Questionnaire			
Visit Blood Workup			
Visit Observed Behavior			
Completion Data			
Completion Project Questionnaire			
Delete all data on event:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Notice, the event does not need to be completely filled out for you to add a new instance, but you cannot add a new instance if there is already an empty instance (no add new button on the 3rd instance above).

You can delete an instance by clicking the x at the bottom of the column (on the bottom row, “Delete all data on event”). You can alter each entry for a record just by clicking on the instrument and instance you want. For example: in the image above, you can complete the incomplete 2nd instance of the Contact Info by clicking on the red bubble. This takes you to a standard record entry page, but you will see an “(Instance #2)” next to the event name.

Contact Info

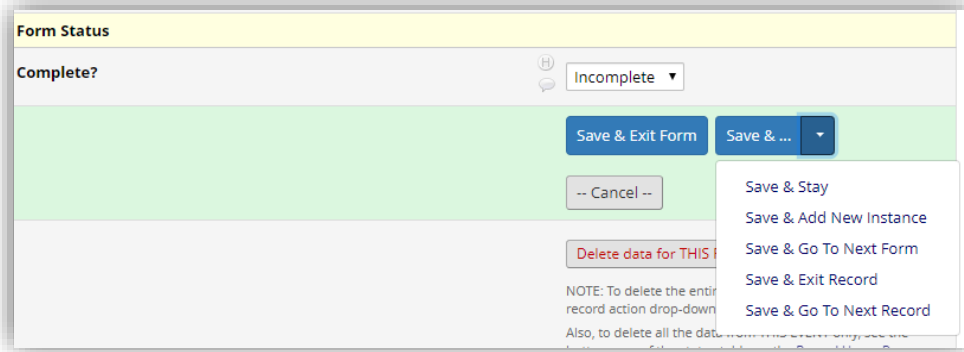
Editing existing Study ID 1

Event Name: **Enrollment** (Instance #2)

Study ID 1

2) By Instrument

When editing a repeating instrument, you have an additional save option “Save & Add New Instance”. An instance in REDCap is used where there are multiple occurrence of a single repeating instrument. Each occurrence or instance is given a number to identify it from other instances of that instrument at the same event.



Or you can add a new instance to an instrument from the record home page as long as the instrument is not empty (has not had any data saved). Do this with the plus button on the side of the instrument.



Or you can add an instance by 1) clicking a stack of multiple instances 2) and selecting the “+Add new” button at the bottom of the popup.

Data Collection Instrument	Enrollment (#1)	+ Add new (#2)	+ Add new Dose 1	Visit 1
Demographics	<input type="radio"/>	<input type="radio"/>		
Contact Info	<input checked="" type="radio"/>	<input type="radio"/>		
Baseline Data	<input type="radio"/>	<input type="radio"/>		
Visit Lab Data				<input type="radio"/>
Patient Morale Questionnaire			1 <input type="radio"/>	<input checked="" type="radio"/> +
Visit Blood Workup				
Visit Observed Behavior				
Completion Data				
Completion Project Questionnaire				
Delete all data on event:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

Repeating Instruments

Patient Morale Questionnaire

Visit 1

1	<input checked="" type="radio"/>
2	<input checked="" type="radio"/>

+ Add new

Once you create a few repeat instrument instances, you will see the entries below the primary record/instrument table. You can add a new instrument instance from these lists of repeating instruments too.

Study ID 1 successfully edited

Study ID 1

Data Collection Instrument	Enrollment (#1)	+ Add new (#2)	+ Add new Dose 1	Visit 1	+ Add new Dose 2	Visit 2	Dose 3	Visit 3	Fin vis
Demographics	<input type="radio"/>	<input type="radio"/>							
Contact Info	<input checked="" type="radio"/>	<input type="radio"/>							
Baseline Data	<input type="radio"/>	<input type="radio"/>							
Visit Lab Data				<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	
Patient Morale Questionnaire			<input type="radio"/>	<input checked="" type="radio"/> +	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visit Blood Workup				<input type="radio"/>		<input checked="" type="radio"/> +		<input type="radio"/>	<input type="radio"/>
Visit Observed Behavior				<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	<input type="radio"/>
Completion Data						<input type="radio"/>		<input type="radio"/>	<input type="radio"/>
Completion Project Questionnaire									<input type="radio"/>
Delete all data on event:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			

Repeating Instruments

Patient Morale Questionnaire

Visit 1

1	<input checked="" type="radio"/>
2	<input checked="" type="radio"/>

+ Add new

Visit Blood Workup

Visit 2

1	<input checked="" type="radio"/>
---	----------------------------------

+ Add new

Enabling Surveys for Repeating Instruments

If you have surveys enabled, you can also allow participants to create new instances of an instrument in the Survey Settings. This step must be done once an instrument has been set as a repeating instrument

Survey Termination Options:

(Optional) Auto-continue to next survey: Automatically start the next survey instrument after finishing this survey ?

— OTHERWISE —

Redirect to a URL
(Redirect to a webpage when survey is completed) Provide a full URL, e.g. <http://www.example.com/mypage.html>
[How to use Piping here](#)

— OR —

(Optional) Allow respondents to repeat the survey: Ask them to take the survey again upon completion, if they wish. ?

Set custom text for the button:

Location of the button on survey:

Survey Completion Text
(Displayed after survey is completed as 'thank you' text or as acknowledgement text)

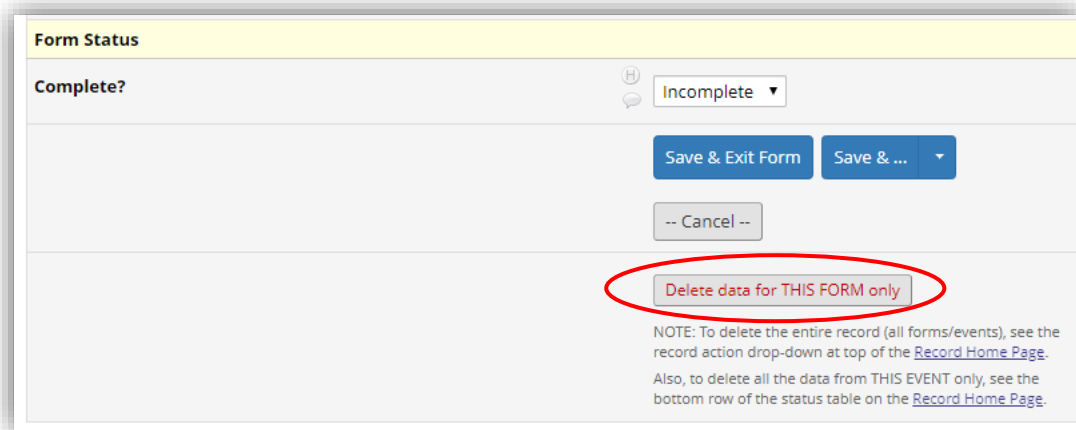
Thank you for taking the survey.
Have a nice day!

Once you enable the “Allow respondents to repeat the survey” option, you will see a looping arrow icon next to the survey from the Online Designer page. Below, we have allowed respondents to repeat the survey on our repeating instrument, “Food Survey”. This is the only instrument where the option is enabled for, so it is the only one with a looping arrow icon.

Instrument name	Fields	View PDF	Enabled as survey	Instrument actions	Survey-related options
My First Instrument	2			Choose action	Survey settings + Automated Invitations
Food Survey	7			Choose action	Survey settings + Automated Invitations
Exercise Survey	3			Choose action	Survey settings + Automated Invitations

When the repeat survey setting is enabled, it will display a button at the end of the survey so that the respondent can choose to enter another response for the survey, thus essentially allowing them to take the survey multiple times in a row. In this way, they will be able to enter as many responses for that same survey as they need. For example, if a REDCap project is aimed at mothers, and the repeating survey is for collecting data about each of the mother's children, the mother could complete the survey once for each child, thus allowing mothers with one child or six children to easily enter their data in a quick back-to-back fashion by repeating the survey.

As with the repeating events, you can delete entire events with the x at the bottom of the column, but you can only delete individual instances of instruments from their data entry page.



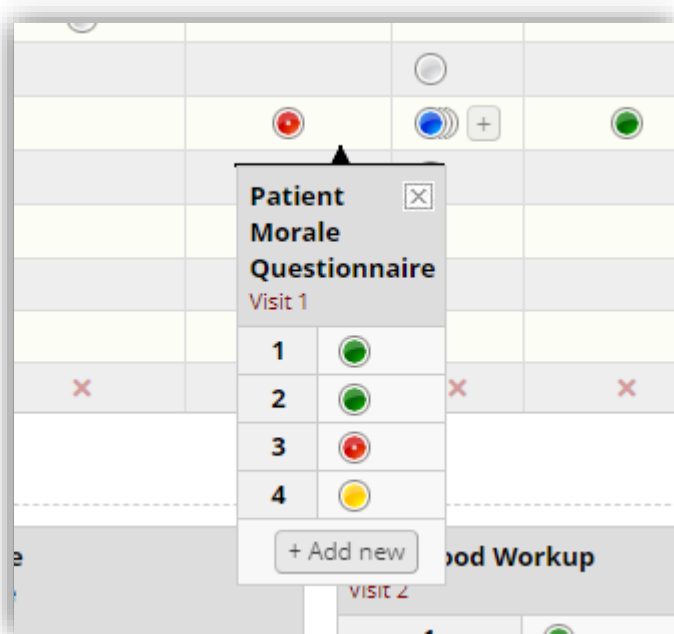
Viewing Repeating Instruments and Events

You can still navigate to Add / Edit Records to see the individual records. However, there are a few new icons to indicate when multiple instances are created. If there are multiple instances for an instrument there are now overlapping bubbles. There is a legend on the top right of the Record Status Dashboard which explains the new status.

Legend for status icons:

- Incomplete ● Incomplete (no data saved) ?
- Unverified ● ● ● Many statuses (all same)
- Complete ● ● Many statuses (mixed)

Notice if you click on the overlapping bubbles, a popup will appear displaying all of the saved instances of the instrument as well as an “+Add new” button to create a new instance.




Reports and Data Exports with Repeating Instruments and Events

If you wish to create a report that contains data from a repeating instrument or repeating event, a field named 'redcap_repeat_instance' will be included that represents the instance number, which is an auto-numbered value (starting with '1') that gets incremented each time the instrument/event is repeated. And if the report contains data specifically from a repeating instrument (as opposed to a repeating event), then a field named 'redcap_repeat_instrument' will additionally be included that represents the instrument name that denotes to which instrument the row of data belongs. These two fields will only be included automatically in the report or data export if data originates from a repeating instrument or event. Note: Each repeated instance of an instrument or event will be displayed as a new row in the report or export file. This means that if a medications survey is repeated three times for one record, for example, it will be displayed as three rows in the report.

Building more complex data entry forms

Using Branching Logic

Branching Logic, also known as skip logic, may be employed when fields in the database need to be hidden during certain circumstances. For example, it may be best to hide fields related to pregnancy if the subject in the database is male. If you wish to make a field visible **ONLY** when the values of other fields meet certain conditions (and keep it invisible otherwise), you may provide these conditions in the Branching Logic section in the Online Designer, shown by the double green arrow icon 


For basic branching, you can simply drag and drop field names as needed in the Branching Logic dialog box in the Online Designer. If your branching logic is more complex, you will create equations using the syntax described below. In the equation you must use the project variable names surrounded by [] brackets. You may use mathematical operators (=, <, >, <=, >=, <>) and Boolean logic (and/or). You may nest within many parenthetical levels for more complex logic.

You must **ALWAYS** put single or double quotes around the values in the equation **UNLESS** you are using > or < with numerical values (i.e., height, weight, BMI – text fields validated as a number).

Example: [weight] > 80 (the subject's weight is greater than 80 kg)

The field for which you are constructing the Branching Logic will **ONLY** be displayed when its equation has been evaluated as TRUE. Please note that for items that are coded numerically, such as dropdowns and radio buttons, you will need to provide the coded numerical value in the equation (rather than the displayed text label). See the examples below.

[sex] = "0"	Display question if sex = female (Female is coded as 0)
[sex] = "0" and [given_birth] = "1"	Display question if sex = female (Female coded as 0) and given birth = yes (Yes is coded as 1)
(([height] >= 170 or [weight] < 65) and [sex] = "1"	Display question if (height is greater than or equal to 170 OR weight is less than 65) AND sex = male (Male is coded as 1)
[last_name] <> ""	Display question if last name is not blank (if last name field has data)
[visit_date] = ""	Display question if visit date is blank (if visit date has no data)
[race] = "88"	Display question if race = other (Other coded as 88)
[race(88)] = "1"	Display question if 'Other race' is checked (Checkbox field type)

When you click on the  icon, you will be taken to the screen below. It is here that you will format the branching/skip logic.

Add/Edit Branching Logic

Branching Logic may be employed when fields/questions need to be hidden under certain conditions. If branching logic is defined, the field will only be visible if the conditions provided are true (i.e. show the field only if...). You may specify those conditions in the text box below for the Advanced Branching Logic Syntax or by choosing the Drag-N-Drop Logic Builder method, which allows you to build your logic in a much easier fashion by simply dragging over the options you want. You may switch back and forth between each method if you wish, but please be aware that since the advanced logic allows for greater complexity, it may not be able to be switched over to the Drag-N-Drop method if it becomes too complex.

Choose method below for the following field: **first_name - First Name**

Advanced Branching Logic Syntax How to use [Branching Logic](#) [Smart Variables](#)

Show the field ONLY if...

Test this logic on a record: -- select record --

OR

Drag-N-Drop Logic Builder

Displaying field choices for the following data collection instrument:
Demographics

Field choices from other fields
(drag a choice below to box on right)

- study_id = (define criteria)
- date_enrolled = (define criteria)
- last_name = (define criteria)
- address = (define criteria)
- telephone_1 = (define criteria)
- email = (define criteria)
- dob = (define criteria)
- age = (define criteria)
- ethnicity = Hispanic or Latino (0)

Drag → Drop →

Show the field ONLY if...

ALL below are true
 ANY below are true

Clear logic

Save Cancel

Select the form that the fields are coming from. You can select fields from multiple forms

Pick the ALL option if all fields need to be true, otherwise select ANY

Drag the fields you want to use in the logic to this box.

You will know which questions have Branching logic associated to them, as they will have in red text [Branching Logic exists]

Variable: first_name Branching logic: [date_enrolled] = "

First Name

The other method of configuring branching logic is to use the **Advanced Branching Logic Syntax**

You would use the Advanced Branching Logic Syntax for more complex branching logic

Tips:

- The logic gets applied to the field you want to hide
- Branching logic must be applied to each field. It cannot be applied at the form or section level. Section headers will be hidden only if all fields in that section are hidden.
- "ALL below are true" – EVERY field in the syntax must be true to show the field.

- “ANY below are true” – only ONE field in the syntax needs to be true to show the field.
- Even if using the advanced method, it can be helpful to drag the data fields you want to use into the “Show the field ONLY if...” box and then format the logic in the Advanced section.
- Branching logic will only hide questions, not entire data collection instruments. If you have a list of data collection instruments (DCIs) in a project (traditional) or event (longitudinal), you will see every form even if you hide all the fields with branching logic on that form. You'll have to click through the forms or "Save & Go to Next Form." A work around may be to add a descriptive text (reverse branching logic to show when all fields are hidden) that the form is not applicable to that specific record or just leave the form blank.
- For longitudinal projects (i.e. with multiple events defined), branching logic may utilise fields from other events (i.e. visits, time-points). The branching logic format is somewhat different from the normal format because the unique event name must be specified in the logic for the target event. The unique event name must be prepended (in square brackets) to the beginning of the variable name (in square brackets), i.e. [unique_event_name][variable_name]. Unique event names can be found listed on the project's Define My Event's page on the right-hand side of the events table, in which the unique name is automatically generated from the event name that you have defined (see below).

Define your events and designate instruments for them

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

In progress

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

I'm done!

Arm 1: Drug A +Add New Arm

Arm name: **Drug A**

[Rename Arm 1](#)

	Event #	Event Name	Custom Event Label (optional)	Unique event name (auto-generated)
	1	Enrollment		enrollment_arm_1
	2	Dose 1		dose_1_arm_1
	3	Visit 1		visit_1_arm_1
	4	Dose 2		dose_2_arm_1
	5	Visit 2		visit_2_arm_1
	6	Dose 3		dose_3_arm_1
	7	Visit 3		visit_3_arm_1
	8	Final visit		final_visit_arm_1

Add new event

- Special formatting is needed for the branching logic syntax in 'checkbox' field types. For checkboxes, simply add the coded numerical value inside () parentheses after the variable name:

[variablename(code)] To check the value of the checkboxes:

'1' = checked

'0' = unchecked

for example:

Where the 'gender' field has two options coded as '1' (Female) and '2' (Male):

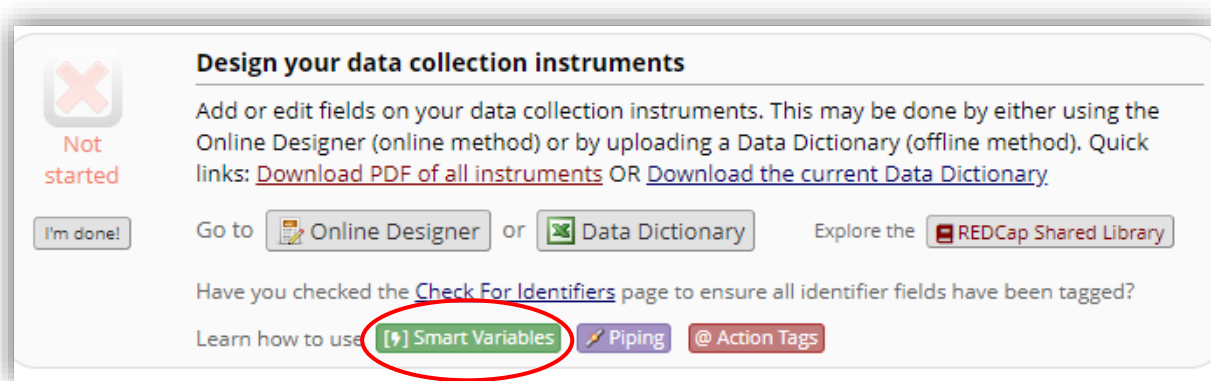
[gender(1)] = "1" Display question if Female is checked

Smart Variables

What are smart variables?

You can refer to other variables in REDCap by referencing their variable names. (e.g. [dob]) This is commonly used in features like branching logic, calculations and piping. Smart variables are an extension of that functionality. Instead of referencing a single static variable, smart variables allow you to reference other variables in a dynamic way. (e.g. instead of referring to medication variable in a specific event like “[baseline_arm_1][rx1]”, you can refer to it like [previous-event-name][rx1]. The meaning of that reference changes depending on the event you are in.) This allows you to build more elegant branching logic or calculations.

For a full overview of all types of smart variables, go to the project setup page of any project and click on the [Smart Variables](#) button.



How do you use smart variables?

Smart Variables can be used for...

- Calculated fields - using mathematical operations to calculate a numerical result
- Conditional logic - includes branching logic, advanced filters for reports, and logic for Survey Queue, Data Quality rules, Custom Record Status Dashboards, and Automated Survey Invitations
- Piping - using field notation to insert values into labels on a survey/form or inside a survey invitation

NOTE: While Smart Variables can be utilised in Data Quality rule logic, in many cases they will cause Data Quality rules to take much longer to complete.

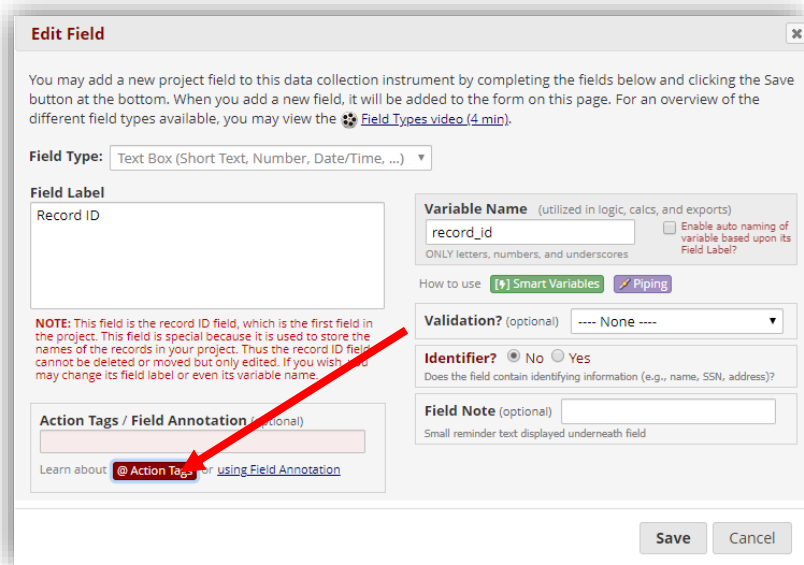
Action Tags

Action Tags are an excellent way to customise 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 box 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. For example by using the action tag @HIDDEN, the field to which the action tag is added will stay hidden even if branching logic attempts to make it visible.

To start using Action Tags, navigate to the Online Designer in a project. When adding or editing a field, add the action tag into the Action Tags / Field Annotation box by either clicking on "Add" next to the Action tag(s) you want to use or by typing them in manually. Some action tags need to be further configured while others do not need any additional configuration.

You can use as many action tags 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.

For example, you could create a field to capture today's date in a survey and use the @TODAY Action Tag to automatically populate with the date. Then, you could also add the @HIDDEN-SURVEY Action Tag to hide the field from view within the survey. The field would still be viewable in the data entry form



Edit 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
Record ID

Variable Name (utilized in logic, calcs, and exports)
record_id Enable auto naming of variable based upon its Field Label?
ONLY letters, numbers, and underscores

How to use: Smart Variables Piping

Validation? (optional) --- None ---

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

Field Note (optional)
Small reminder text displayed underneath field

Action Tags / Field Annotation (optional)
Learn about: @ Action Tags for using Field Annotation

Save Cancel

Add

@HIDDEN

Hides the field on the survey page, the data entry form, and in the REDCap mobile app. Field will stay hidden even if branching logic attempts to make it visible.

Calculated fields

A calculated field can perform real-time calculations based on the data from other fields. REDCap can make real-time calculations on data entry forms. For example, you could create a calculation based off the birthday field and date field in order to find out how old the participant was at the time of the survey.

Formatting calculated fields:

In order for the calculated field to function, it will need to be formatted in a particular way. This is similar to constructing equations in Excel or with certain scientific calculators. The variable names/field names used in the project's Data Dictionary can be used as variables in the equation, but you must place [] brackets around each variable. (Ex: [birth_date]) Please be sure that you follow the mathematical order of operations when constructing the equation or else your calculated results might end up being incorrect.

The mathematical operations available are:

- + Add
- Subtract
- * Multiply
- / Divide

Null or **blank** values can be referred to as "" or "NaN". Be careful to include the quotes around NaN.

Data Import and calculated fields

Data cannot be directly imported into calculated fields. If you are importing data to a field you have set up to calculate a value, follow these steps:

1. Temporarily change the field type to text
2. Import data
3. Change the field type back to a calculated field

However, when performing a data import (via Data Import Tool or API), REDCap will perform the calculations for any calculated fields that are triggered by the values being imported. For example, if you have a BMI field whose calculation is based off of a height field and a weight field, then if you perform a data import of height and weight values, it will automatically calculate the BMI for each record that is imported and also save those calculations and log them on the Logging page.

Conditional Logic within calculated fields

Conditional logic may also be used in a calculated field (Ex: an IF/THEN/ELSE statement) by using the function: **if (CONDITION, value if condition is TRUE, value if condition is FALSE)**

Note that all operands in CONDITION must be all numeric or all dates

This construction is similar to IF statements in Microsoft Excel. Provide the condition first (e.g. [weight]=4), then give the resulting value if it is true, and lastly give the resulting value if the condition is false. For example:

if([weight] > 100, 44, 11)

In this example, if the value of the field 'weight' is greater than 100, then it will give a value of 44, but if 'weight' is less than or equal to 100, it will give 11 as the result.

IF statements may be used inside other IF statements ("nested"). Other advanced functions (described below) may also be used inside IF statements.

Using calculated fields within longitudinal Projects

In longitudinal projects, fields from different EVENTS can be used in calculated fields. A calculated field's equation may utilise fields from other events (Ex: visits, time-points). The equation format is somewhat different from the normal format because the unique event name must be specified in the equation for the target event. The unique event name must be prepended (in square brackets) to the beginning of the variable name (in square brackets), Ex:

[unique_event_name][variable_name]. Unique event names can be found listed on the project's "Define My Events" page on the right-hand side of the events table, in which the unique name is automatically generated from the event name that you have defined.

For example, if the first event in the project is named "Enrollment", in which the unique event name for it is "enrollment_arm_1", then we can set up the equation as follows to perform a calculation utilising the "weight" field from the Enrollment event: [enrollment_arm_1][weight]/[visit_weight]. Thus, presuming that this calculated field exists on a form that is utilised on multiple events, it will always perform the calculation using the value of weight from the Enrollment event while using the value of visit_weight for the current event the user is on.

Add or Modify a Calculated Field

If you add a calculated field where data already exist in a form, the data must be re-saved for the calculation to be performed.

The Data Quality rule (rule H) will find and fix all incorrect values for calculated fields in a project. If any "calc" fields have ended up with incorrect values (whether due to field changes in the project or due to previous data imports), users can now run rule H not only to find any incorrect calculated values, but it will additionally display a button that, when clicked, will auto-fix ALL of them for the project admin.

Calculate the Difference Between Two Date or Time Fields

You can calculate the difference between two dates or times by using the function:

datediff([date1], [date2], "units", "dateformat", returnSignedValue) date1 and date2 are variables in your project.

Units

"y" years 1 year = 365.2425 days

"M" months 1 month = 30.44 days

"d" days

"h" hours

"m" minutes

"s" seconds

Dateformat

"ymd" Y-M-D (default) "mdy" M-D-Y "dmy" D-M-Y

- If the dateformat is not provided, it will default to "ymd".
- Both dates MUST be in the format specified in order to work

returnSignedValue

false (default) true

- The parameter returnSignedValue denotes the result to be signed 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).

Examples:

datediff([dob],[date_enrollee d],"d") Yields the number of days between the dates for the date_enrolled and dob fields, which must be in Y-M-D format.

datediff([dob],"05-31-2007","h","mdy",true) Yields the number of hours between May 31, 2007, and the date for the dob field, which must be in M-D-Y format. Because returnSignedValue is set to true, the value will be negative if the dob field value is more recent than May 31, 2007.

Advanced Functions

The table below lists advanced functions for calculated fields:

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. All operands in CONDITION must be all numeric or all dates!
datediff ([date1], [date2], "units", "dateformat", 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 "dateformat" parameter must be "ymd", "mdy", or "dmy", which refer to the format of BOTH date/time fields as Y-M-D, M-D-Y, or D-M-Y, respectively. If not defined, it will default to "ymd". The parameter "returnSignedValue" must be either true or false (lowercase) 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).
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: 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.

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.

Customising Text

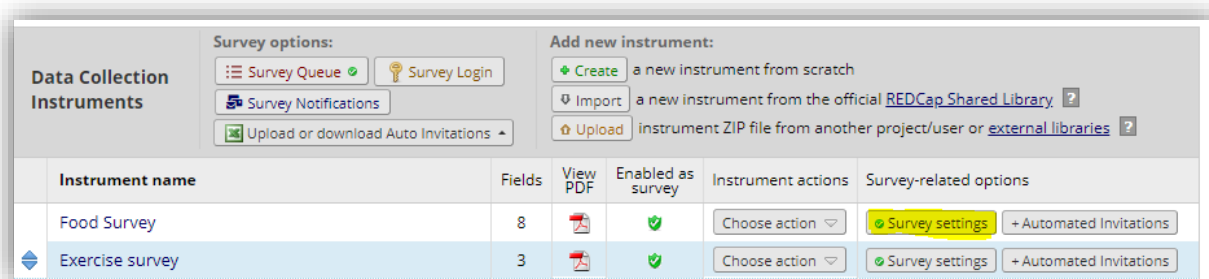
REDCap allows some customisation of form appearance using HTML code. These include font size, font colour, and spacing/indentation of field label text. Please note that not all HTML tags are honoured by REDCap.

There are two areas where you can control fonts:

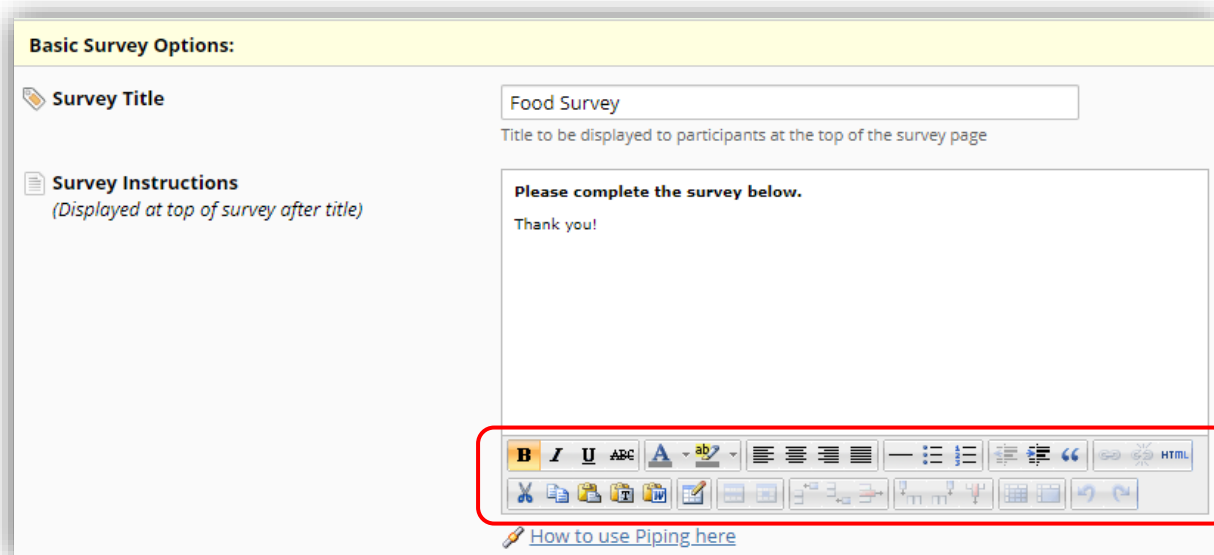
- the pre- and post-survey text (the text displayed at the beginning and end of your survey)
- the text of your survey questions and answers

Pre and Post Survey Text

To control the fonts in the pre- and post-survey text, click the “Survey settings” button, found in the “Online Designer” screen.



When you click on the “Survey settings” button, various survey settings are displayed. In the “Survey Instructions” and the “Survey Completion Text” sections of that screen, several font control buttons are provided for making highlighted text bold, italic, underlined, and strike-through.



Using HTML for styling text

REDCap supports the use of HTML tags to format text in question labels and response lists

- HTML tags are keywords (tag names) surrounded by angle brackets like <html>

- HTML tags normally come in pairs like and
- The first tag in a pair is the start tag, the second tag is the end tag
- The end tag is written like the start tag, with a forward slash before the tag name
- Start and end tags are also called opening tags and closing tags

Tags are “wrapped” around text to provide formatting instructions to the web browser.

To control the fonts in the text of your survey questions and answers, insert HTML tags as you are editing your survey questions.

Only certain tags are recognised. The tags are enclosed with less than and greater than < brackets > and may be written in capital or lower case letters. When you start a tag, you must also close the tag with a backslash (/).

For controlling fonts, you can use the following:

...

For example, the following:

This will be red italic text of size 20 and this is normal text

Will produce

This will be *red italic text of size 20* and this is normal text

You may also use the following tags to define paragraphs, anchors (web links), and line breaks:

<p>...</p>

<a>...

Note: that if you download your survey response data (Ex: for Excel, SPSS, etc.), any HTML tags that you inserted in your answer texts (Ex: for radio button answers) will be included in the answer texts that are downloaded. So you may want to limit your use of HTML tags in your answers. HTML tags used in your question texts will not be included in the download (they will be stripped out).

Additional Tags:

Center <center>text</center>

Bold text

Italic <i>text</i>

Underline <u>text</u>

Font face text

Font color text

Normal font <h2> text</h2>

Large font <h1> text</h1>

Xlarge font <h3> text</h3>

Indent <div style="margin-left: 20px">text</div>

Background Color <div style="background-color:aqua">color</div>

Background Color <p>green background</p>

Background Color <p>red background</p>

Visible line break <hr>

Invisible line break

Weblink Click here

Image

Table <table

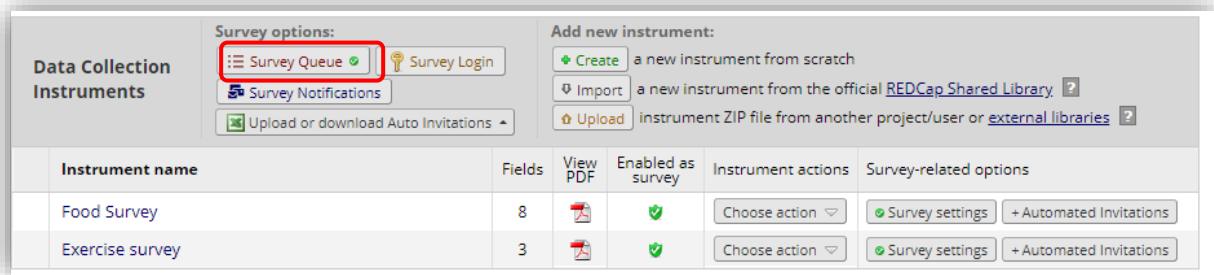
border="1"><tr><th>Month</th><th>Savings</th></tr><tr><td>January</td><td>\$100</td></tr><tr><td>February</td><td>\$200</td></tr></table>

Advanced survey options

Survey Queue

The Survey Queue displays a list of all of your surveys to a participant on a single page. The queue comprises all surveys that are to be completed (like a 'to-do' list) as well as the surveys that the participant has already completed. Surveys can be set to appear in the Survey Queue based upon 1) if the participant has completed a particular survey, and/or 2) if certain conditions are met (based upon data values). If any surveys have been activated in the Survey Queue, they will be displayed to the participant after completing a survey (displayed below the survey completion text on the page). The participant will only see in their queue the surveys they have already completed and the surveys that they are being requested to take next (based upon the criteria defined). The setup options allow you to set the conditions that determine when each survey will be displayed in the queue, and (optionally) you can provide custom text to display at the top of every participant's survey queue, in which you may customise the styling of the text with HTML tags or even utilise Piping to inject data values. Additionally, the 'auto start' feature is optional and can be used to take the participant immediately to the first incomplete survey in the queue if 'auto start' is enabled for that survey, in which it allows for more rapid survey-taking if the participant is completing several surveys in one sitting. NOTE: The first instrument survey is not displayed because it does not have a survey that comes before it for which to set conditions.

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



The screenshot shows the REDCap Online Designer interface. In the top left, there is a 'Data Collection Instruments' section. To its right, under 'Survey options:', the 'Survey Queue' button is highlighted with a red box. Other buttons in this section include 'Survey Login', 'Survey Notifications', and 'Upload or download Auto Invitations'. To the right of these, under 'Add new instrument:', there are buttons for 'Create', 'Import', and 'Upload', each with a brief description. Below these sections is a table of instruments.




Instrument name	Fields	View PDF	Enabled as survey	Instrument actions	Survey-related options
Food Survey	8			Choose action	Survey settings + Automated Invitations
Exercise survey	3			Choose action	Survey settings + Automated Invitations

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.

Set up Survey Queue

The Survey Queue displays a list of your surveys to a participant all on a single page, in which the queue comprises all surveys that are to be completed (like a 'to-do' list) as well as the surveys that the participant has already completed. [Tell me more](#)

[Add custom text to display at top of survey queue](#)

Activated?	Survey Title	Display survey in the Survey Queue when...	Auto start?
 Not activated <input type="button" value="Activate"/>	"My First Instrument"	<input type="checkbox"/> When the following survey is completed: -- select a survey -- AND <input type="checkbox"/> When the following logic becomes true: How to use this [age] > 30 and [gender] = "1" Test logic with a record: -- select record --	<input type="checkbox"/>
 Activated <input type="button" value="Deactivate"/>	"Food Survey"	<input checked="" type="checkbox"/> When the following survey is completed: "My First Instrument" AND <input checked="" type="checkbox"/> When the following logic becomes true: How to use this [consent]=1 (e.g., [age] > 30 and [gender] = "1") Test logic with a record: -- select record --	<input type="checkbox"/>
 Activated <input type="button" value="Deactivate"/>	"Exercise Survey"	<input checked="" type="checkbox"/> When the following survey is completed: "My First Instrument" AND <input checked="" type="checkbox"/> When the following logic becomes true: How to use this [consent]=1 (e.g., [age] > 30 and [gender] = "1") Test logic with a record: -- select record --	<input type="checkbox"/>

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 add your logic in the formula box. In the example, I want my second survey to start after my first survey is completed AND the participant's has consented. To do this, I added the variable for the consent field in the square bracket, the equal to sign and 1, which is the coded value for 'yes'

The participant 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 do this by going back to the Survey Queue settings and click the box underneath the Auto Start column.

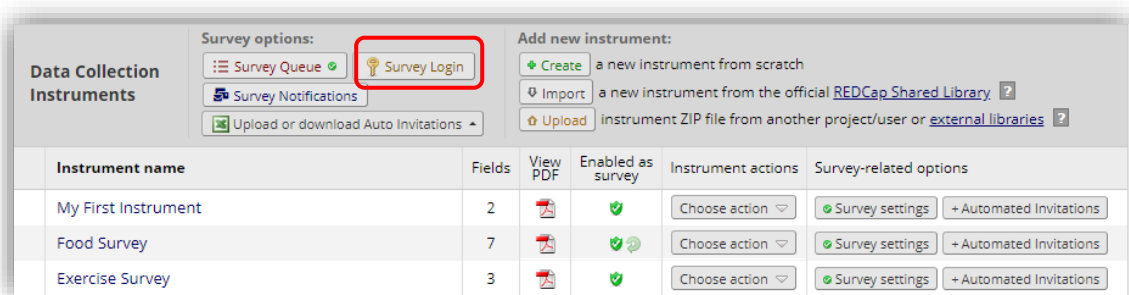
Note: It is important to test your survey queue prior to your project being moved into production! Take your survey a couple of times to ensure the survey queue logic is working correctly.

Survey Login

You can provide improved security to your surveys with a survey login page in which participants will be required to enter specified login credentials in order to begin a survey or if the “Save & Return Later” feature is enabled to a previously entered survey response. The Survey Login can be enabled for ALL surveys in a project or just selected surveys. For selected surveys, navigate to the Survey Settings page to enable. If Survey Login has been enabled and a record does not exist yet for the respondent (Ex: if they are beginning a Public Survey), then the survey page will display directly without the login page. However, once the record exists, the respondent will always be prompted to log in to the survey.

Note: If a survey has the "Save & Return Later" feature enabled, Return Codes will not be used to return to the survey, but it will use the Survey Login's login credentials instead.

To enable the Survey Login feature, navigate to “Online Designer” and click the “Survey Login” icon that is located above your data collection instruments. That will open up the Survey Login settings box. Use the drop down and select “Enabled”. You may choose one, two, or three fields in your project to be used as the login credential fields for surveys in your project.



Login Field # 1: Use the drop down and select a field from your project to be used as the login credentials. 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 user 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 respondent 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.

🔑 Survey Login ✕

You may enable a Survey Login page on one or more surveys that will force your survey respondents to authenticate (log in) on your surveys before they are allowed to view and complete the survey. [Tell me more](#)

Below, select the fields that you wish to serve as the login fields for the respondent to enter, as well as several other settings that control how the survey login is applied to the surveys in your project. NOTE: Once a respondent has logged in to a survey, they will not be prompted to enter their login credentials again if they return to that survey or begin another survey using the survey login within the following 30 minutes.

🔑 Enable Survey Login?	<div style="border: 2px solid red; display: inline-block; padding: 2px;">Enabled ▾</div>
Fields to display on the survey login form	
Login field #1 <small>➕ Add another login field</small>	<div style="border: 1px solid #ccc; padding: 2px;">-- select a field -- ▾</div>
Customizations for survey login	
Minimum number of fields above that are required for login	<div style="border: 1px solid #ccc; padding: 2px;">1 ▾</div>
Apply the survey login to all surveys in project?	<div style="border: 1px solid #ccc; padding: 2px;">All surveys ▾</div>
Custom error message: Provide a custom error message that will be displayed on the survey login form for when the user experiences issues, such as not being able to log in successfully, so that they may contact you for help. <small>EXAMPLE: "If you have any trouble logging in to the survey, please contact survey_admin@myinstitution.edu for help."</small>	<div style="border: 1px solid #ccc; height: 60px;"></div> <small>HTML may be used in order to add links or to add style to text.</small>
Security settings for survey login (optional)	
Number of failed login attempts before respondent is locked out for a specified amount of time, which is set below.	<input style="width: 80px;" type="text"/> 0 = Disabled
Amount of time respondent will be locked out after having failed login attempts exceeding the limit set above.	<input style="width: 80px;" type="text"/> Minutes, 0 = Disabled

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

🔑 Survey Login ✕

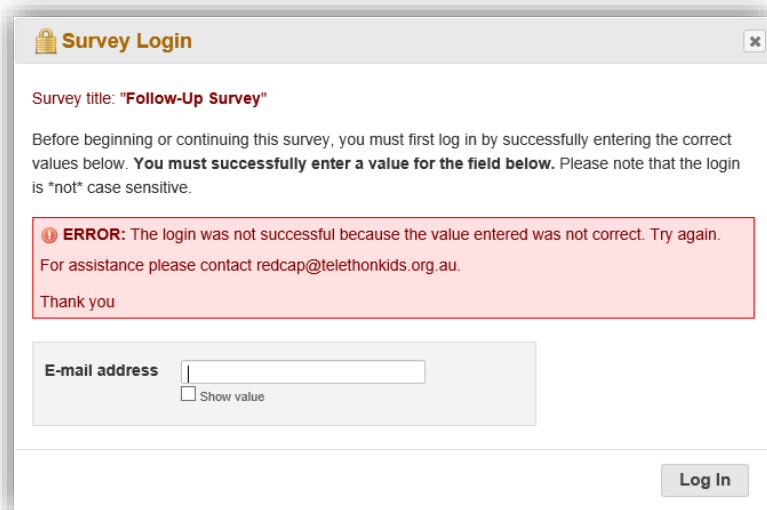
Survey title: **"Follow-Up Survey"**

Before beginning or continuing this survey, you must first log in by successfully entering the correct values below. **You must successfully enter a value for the field below.** Please note that the login is *not* case sensitive.

E-mail address

Show value

If they do not enter the correct Login code, they will receive this message:

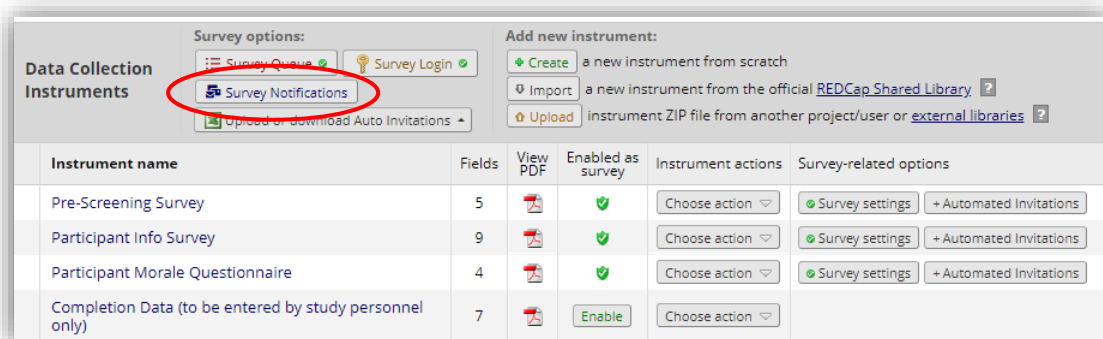


You may enable a Survey Login page on one or more surveys that will force your survey respondents to authenticate (log in) on your surveys before they are allowed to view and complete the survey. The respondent will log in to the survey by entering one or more known values for fields in the project (up to three) - e.g., last name, date of birth. These values must already be saved in the respondent's record in the project. Those values may have been entered or uploaded by a user in the project or may have been entered on a previous survey by the respondents themselves. If Survey Login has been enabled and a record does not exist yet for the respondent (e.g., if they are beginning a Public Survey), then the survey page will be displayed normally and the login page will not be displayed for them. However, once the record exists, the respondent will always be prompted to log in to the survey (with the exception of a Public Survey, which is the only place where Survey Login cannot be used).

Survey Notifications

Survey notifications can be used if you or other users wish to be notified via email every time a participant completes a survey. Note: The notification email message you receive from REDCap is hardcoded and cannot be changed.

To activate Survey Notifications, navigate to "Online Designer" and click the "Survey Notifications" icon that is located above your data collection instruments.



Email notifications for survey responses

If you or other users wish to be notified via email every time a participant completes a survey, select the users to be notified under each survey listed below by selecting their email address in the user's drop-down list, which may contain each user's primary, secondary, or tertiary email address for their REDCap account. To remove a user as a recipient for the survey notifications, change their email drop-down option to 'not selected', after which they will no longer receive notification emails for that survey.

Survey	Recipient email address	Notifications Enabled
Pre-Screening Survey		
rkhadka (Rakshya Khadka)	rakshya.khadka@telethonkids.org.au (Primar	<input checked="" type="checkbox"/>
training (ali hollingsworth)	-- not selected --	<input type="checkbox"/>
Follow-Up Survey		
rkhadka (Rakshya Khadka)	-- not selected --	<input type="checkbox"/>
training (ali hollingsworth)	ali.hollingsworth@telethonkids.org.au (Prima	<input checked="" type="checkbox"/>
Patient Morale Questionnaire		
rkhadka (Rakshya Khadka)	-- not selected --	<input type="checkbox"/>
training (ali hollingsworth)	-- not selected --	<input type="checkbox"/>

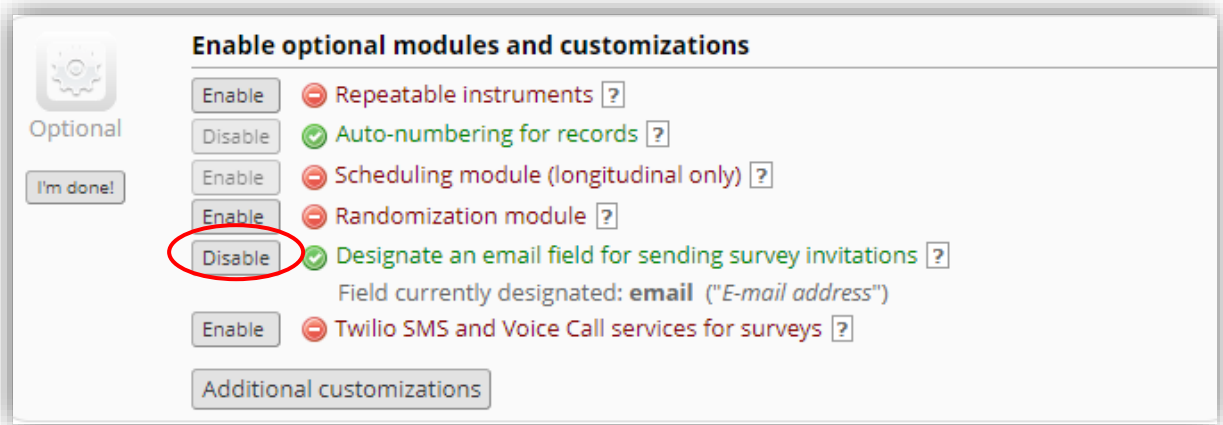
Close

Select the users to be notified under each survey listed. Use the drop-down list underneath the “Recipient Email Address” column and select each user to be notified by selecting their email address. Once you have selected an email address, the “Notifications Enabled” icon will turn green. To remove a user as a recipient for the survey notifications, change their email drop-down option to “not selected”, after which they will no longer receive notification emails for that survey.

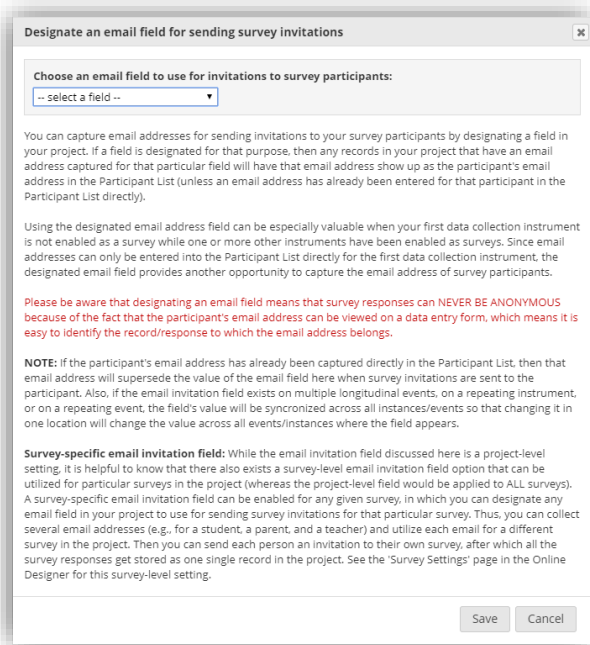
Automated Invitations

You can set up your survey invitations to be sent automatically by using Automated Invitations. Instead of adding your survey participants through the Participant List, the automated invitations can be scheduled to be sent automatically based upon specific conditions. To use this feature, you must first designate an email field to use for invitations to survey participants.

To use this feature, navigate to “Project Setup” and click the “Enable” button next to “Designate an email field to use for invitations to survey participants”.



That will open up the Designate an email field to use for invitations to survey participants settings box.



From the drop down menu, choose “email_address (“Enter your email address:”)” and then click “Save”. Note: If you enable this feature, your survey responses will not be anonymous since the participant’s email address can be viewed on the data collection form.

Navigate to “Online Designer” and click on the “Automated Invitations” icon beside the appropriate data collection instrument.

Instrument name	Fields	View PDF	Enabled as survey	Instrument actions	Survey-related options
Pre-Screening Survey	5		<input checked="" type="checkbox"/>	Choose action ▾	<input checked="" type="checkbox"/> Survey settings + Automated Invitations
Participant Info Survey	9		<input checked="" type="checkbox"/>	Choose action ▾	<input checked="" type="checkbox"/> Survey settings + Automated Invitations
Participant Morale Questionnaire	4		<input checked="" type="checkbox"/>	Choose action ▾	<input checked="" type="checkbox"/> Survey settings + Automated Invitations
Completion Data (to be entered by study personnel only)	7		<input type="checkbox"/> Enable	Choose action ▾	

That will open up the Define Conditions for Automated Survey Invitations settings box.

Define Conditions for Automated Survey Invitations ✕

Instructions: In this pop-up you may define your conditions for automated survey invitations that will be sent out for the survey (and event, if a longitudinal project) listed in the Info box below. [Tell me more](#)

Info

Survey title: Pre-Screening Survey

STEP 1: Compose message

From: (select any project user to be the 'Sender')

To:

Subject:

Compose Preview Send test email

Please take this survey.

You may open the survey in your web browser by clicking the link below:
[survey-link]

If the link above does not work, try copying the link below into your web browser:

NOTE: You may modify or remove any text you wish in the Compose Message text box above. Make sure you include either [survey-link] or [survey-ur] in the text or else the participant will not have a way to take the survey.

You may use HTML formatting in the email message: bold, <u> underline, <i> italics, link, etc.

[How to use Piping in the survey invitation](#)

STEP 2: Conditions

Specify conditions for sending invitations:

When the following survey is completed:

AND When the following logic becomes true:

(e.g., [age] > 30 and [gender] = "1")

[How do I use special functions?](#)

Test logic with a record:

Ensure logic is still true before sending invitation? ?

STEP 3: When to send invitations AFTER conditions are met

Send immediately

Send on next at time H:M

Send after lapse of time: days hours minutes

Send at exact date/time: D-M-Y H:M

OPTIONAL: Enable reminders

Re-send invitation as a reminder if participant has not responded by a specified time?

STEP 4: Activated?

Activate these automated invitations? In order for automated survey invitations to be sent using these specified conditions, it must be set to Active. You may make them Not Active (and vice versa) at any point in the future.

Active Not Active

Step 1: Compose Message

From: Use the drop down and select an email address

To: This will automatically include all participants who meet your criteria.

Subject: Enter an optional

Subject Message: Enter an optional message

Note: The survey link will be automatically included in the email message. You may use HTML formatting in the email message: bold, <u> underline, <i> italics, etc

Step 2: Conditions – Specify the conditions for sending the invitations

You may select “When the following survey is completed” and then use the drop down and select a survey. If you would like to add additional logic as to when the next survey should be displayed, use

the Boolean operator box and select AND/OR and then check the box next to “When the following logic becomes true” and then add your logic in the text box. For an example, you may want your second survey to start after your first survey is completed AND the participant’s age is greater than 18. To do this, I would add my variable for the participant’s age field in square brackets and then the greater than sign and the number in quotations. [age] > 18.

If you would like REDCap to check the logic in real time prior to sending the message, click the box next to “Ensure logic is still true before sending invitation”. REDCap will re-evaluate the logic against the record’s data values whenever the record values are changed AFTER the invitation has been scheduled but BEFORE it has been sent to the respondent. If the logic is no longer true, the invitation will not be sent.

Step 3: When to send invitations AFTER conditions are met

You can choose between four different options for sending invitations. You can choose to: Send immediately, Send on the next X day at the X time, Send after lapse of time: X amount of days X hours X minutes or Send at the exact date/time.

Optional: Enable Reminders

Check the box if you would like the survey invitation to be sent as a reminder if the participant hasn’t answered in a specific amount of time. You may specify to send the reminder every day, every weekday, on a specific day, every x amount of day, hours and/or minutes or send the reminders at a specific date and time. You will also need to specify how many reminders should be sent. The limit is 5.

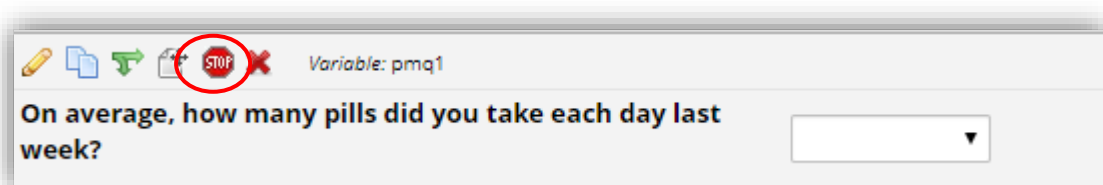
Step 4: Activated?


Once you are ready, click “Active” and then click “Save”

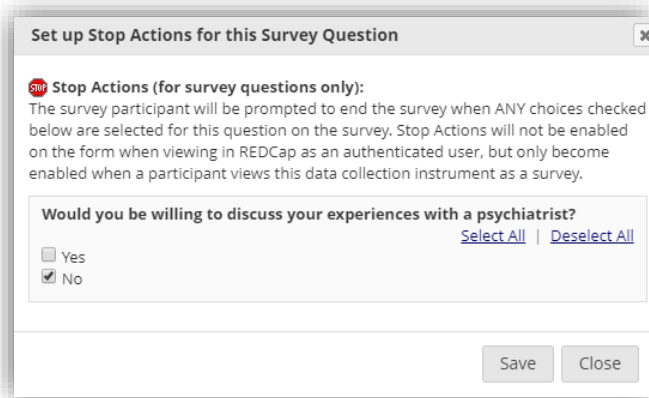
Stop Survey Action

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.

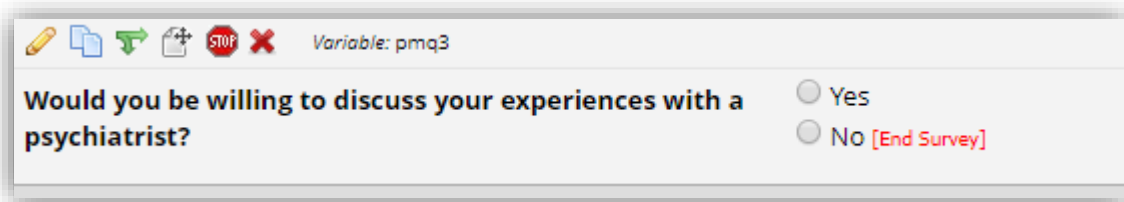
Once you have created one of the field types listed above and you have your data collection instrument set up as a survey, you will see a stop sign icon.



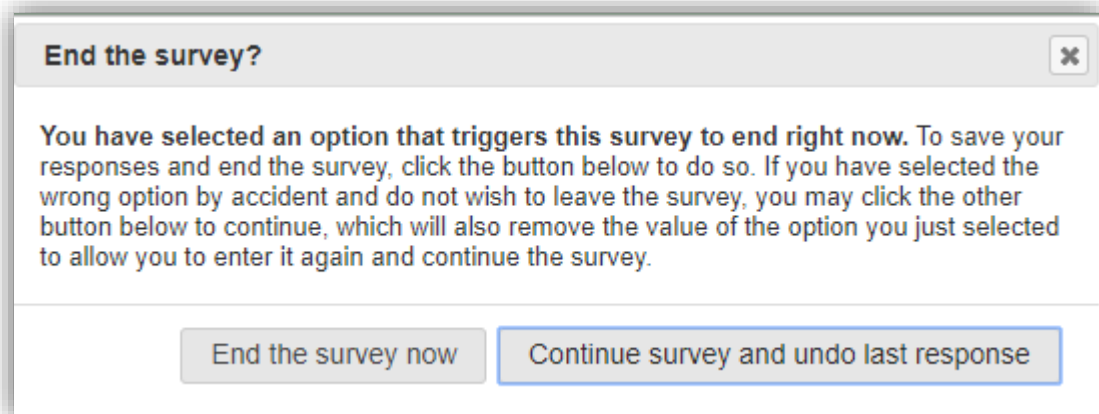
To add the Stop Survey logic, click on the  icon. The Stop Survey logic box will appear. Select the answer choice that should prompt the survey participant to end the survey and click “Save”. In this example, I want the survey participant to be prompted when they click No



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”.



Data Quality

The Data Quality application enables you to run tests on your project to check for discrepancies in your data. The “Data Quality Rules” table show some pre-defined data rules that you may utilise and run. You may also create your own rules or edit, delete, or reorder the rules you have already created.

Rule #	Rule Name	Rule Logic (Show discrepancy only if...)	Real-time execution [?]	Total Discrepancies	Delete rule?
A	Missing values*	-		Execute	
B	Missing values* (required fields only)	-		Execute	
C	Field validation errors (incorrect data type)	-		Execute	
D	Field validation errors (out of range)	-		Execute	
E	Outliers for numerical fields (numbers, integers, sliders, calc fields)**	-		Execute	
F	Hidden fields that contain values***	-		Execute	
G	Multiple choice fields with invalid values	-		Execute	
H	Incorrect values for calculated fields	-		Execute	

Add

Enter descriptive name for new rule
(e.g., Participants below age 18)

Enter logic for new rule
(e.g., [age] < 18)
[How do I use special functions?](#)

Execute in real time on data entry forms [?]

Execute Rules

The pre-defined rules listed in red text cannot be modified, reordered, or removed. They are there if you wish to use them. To find discrepancies for a given rule, simply click the “Execute” button next to it, or click the “Execute rules: All” button to run all the rules at once. The “Clear” button refreshes the view to the original state before any rules were executed.

Discrepancies

Once you click on the “Execute rules: All” link, you will see the following table:

Data Quality Rules ✔ Processing Complete! Execute rules:

Apply to:

Rule #	Rule Name	Rule Logic (Show discrepancy only if...)	Real-time execution <input type="checkbox"/>	Total Discrepancies	Delete rule?
A	Missing values*	-		51	view
B	Missing values* (required fields only)	-		0	view
C	Field validation errors (incorrect data type)	-		0	view
D	Field validation errors (out of range)	-		0	view
E	Outliers for numerical fields (numbers, integers, sliders, calc fields)**	-		0	view
F	Hidden fields that contain values***	-		0	view
G	Multiple choice fields with invalid values	-		0	view
H	Incorrect values for calculated fields	-		0	view

Enter descriptive name for new rule
(e.g., Participants below age 18)

Enter logic for new rule
(e.g., [age] < 18)
[How do I use special functions?](#)

Execute in real time on data entry forms [?](#)

Rules that identify discrepancies (Ex: where your project contains data for which the calculation expression returns False) are highlighted in red. This table provides you with a total number of discrepancies found for each rule and will allow you to view the details of those discrepancies by clicking the “View” link next to each module allows you to find discrepancies in your project data.

When you click on the “View” link, you will see the following table:

Rule: **Missing values***

Discrepancies found: **51**

Record	Discrepant fields with their values	Status	Exclude <input type="button" value="⬇"/>
1	"First Name" first_name = [no data]	Missing value	exclude
1	"Last Name" last_name = [no data]	Missing value	exclude
1	"Street, City, State, ZIP" address = [no data]	Missing value	exclude
1	"Phone number" telephone_1 = [no data]	Missing value	exclude
1	"Ethnicity" ethnicity = [no data]	Missing value	exclude
1	"Race" race = [no data]	Missing value	exclude
1	"Gender" sex = [no data]	Missing value	exclude
1	"Height (cm)" height = [no data]	Missing value	exclude
1	"Weight (kilograms)" weight = [no data]	Missing value	exclude
1	"On average, how many pills did you take each day..." pmq1 = [no data]	Missing value	exclude
1	"Using the handout, which level of dependence do ..." pmq2 = [no data]	Missing value	exclude
	"Would you be willing to discuss your experiences. "		

When you click the “View” button, it will show you the records that failed the data quality test. You can navigate to the record that contains the discrepant value by clicking on the value. When you

click on the value, your data form will open. Clicking “exclude” will mark a discrepant value as not to be included as a discrepancy in future executions of this rule.

If a discrepancy has been found for a given rule, any individual discrepancy in the list of results may be excluded from those results in the future. Excluding a result merely prevents it from being included in the count of discrepancies if the rule is executed again in the future. Excluded results can be accessed again by clicking the “view” link at the top of the results table for that rule, after which they can be unexcluded, if desired.

Add a new rule

You may also build and execute your own rules at the bottom of the table. Rules can be set up using a literal logic format (Ex: [age] > 18) that will be evaluated as a Boolean value (true or false) after an existing record's value for that field is substituted (Ex: assuming a record's value is 17 for “age”, 17 > 18 evaluates as false). The logic will be applied to all existing records in the project, and for any record for which the logic evaluates as true, it will return it as a discrepancy for that rule. Similar to branching logic and calculated fields, REDCap field names may be utilised in the rule logic by placing the variable name inside square brackets []. Also, for longitudinal projects, you may reference a field on one specific event by prepending the variable name in the logic with the unique event name in square brackets.

Your custom rules can include mathematical operations and also advanced functions to provide you with a great amount of power for validating your project data. You can also activate the real time execution of your custom rules to continually ensure the data integrity of your project.

The screenshot shows the 'Data Quality Rules' interface. At the top, there are buttons for 'Execute rules: All', 'All except A&B', and 'Clear'. Below that is a dropdown menu for 'Apply to: -- All records --'. The main table has columns for 'Rule #', 'Rule Name', 'Rule Logic (Show discrepancy only if...)', 'Real-time execution', 'Total Discrepancies', and 'Delete rule?'. The table lists rules A through H, each with an 'Execute' button. Below the table is a form to add a new rule. The 'Add' button is circled in red. The form has two input fields: 'Enter descriptive name for new rule' (with the example 'participants age over 18') and 'Enter logic for new rule' (with the example '[age]>18'). There is a 'Valid' indicator and a checkbox for 'Execute in real time on data entry forms'.

Rule #	Rule Name	Rule Logic (Show discrepancy only if...)	Real-time execution	Total Discrepancies	Delete rule?
A	Missing values*	-		Execute	
B	Missing values* (required fields only)	-		Execute	
C	Field validation errors (incorrect data type)	-		Execute	
D	Field validation errors (out of range)	-		Execute	
E	Outliers for numerical fields (numbers, integers, sliders, calc fields)**	-		Execute	
F	Hidden fields that contain values***	-		Execute	
G	Multiple choice fields with invalid values	-		Execute	
H	Incorrect values for calculated fields	-		Execute	

Enter descriptive name for new rule (e.g., Participants below age 18)

Enter logic for new rule (e.g., [age] < 18)

[How do I use special functions?](#)

Execute in real time on data entry forms

Add a new rule by entering a description of the rule and the calculation expression. Then click “Add”. If your expression includes a “less than” sign (<), make sure that you include a space after it (as shown above). Special functions may also be used within the logic as well (similar to functions in calculated fields), all of which are listed on the Help & FAQ page. If Data Access Groups exist for this project, then discrepancies will also be stratified according to their group (assuming the user viewing this page is not in a group). Any user within a Data Access Group will only be able to see the

discrepancies for their own group. Also, if users do not have user privileges to view or edit data on specific data entry forms, then they will not be able to view data from those forms if displayed in any results on this page as a data quality discrepancy.

Note: Although setting up a Data Quality custom rule may at times be very similar to constructing an equation for a calculated field, calc fields will ALWAYS have to result in a number, whereas the Data Quality custom rule must ALWAYS result with a TRUE or FALSE condition and NEVER a value.

Real Time Execution

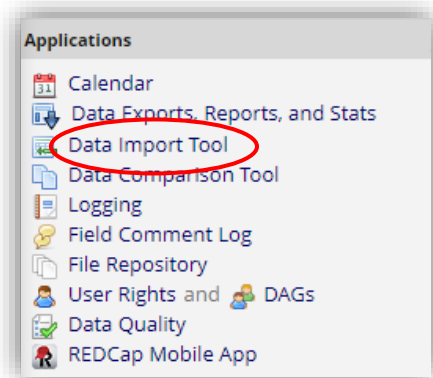
Checking the “Real-time execution” checkbox for any custom data quality rule will enable the rule to be executed invisibly on data entry forms whenever a user clicks the “Save” button to create or modify a record. After clicking “Save”, it will execute all relevant data quality rules invisibly (Ex: behind the scenes) and will display a warning pop-up message if any of the rules have been violated, in which it will display a list of the data quality rules that were violated and also display the fields involved with their data values. If no rules were violated, then it will save the record as usual and not display a pop-up message. Just like the results that are returned when executing rules on the Data Quality page itself, results displayed on data entry forms for “Real-time execution” can be excluded (if desired) so that they will not be displayed again if they are still in violation in the future.

Data Import Tool

Data from another source can be imported using the “Data Import Tool”. The “Data Import Tool” requires that data to be imported is in CSV (comma separated variables) format. The order of the fields or the number of fields being imported does not matter, except that the record identifier (Ex: Record ID) must be the first field. Below are the steps you will need to follow in order to import your data successfully into your project.

Import Template

- 1.) First download an import template file (CSV format). The template contains column headings labelled with the field names from your data dictionary, plus the form status indicator fields. Calculated fields are omitted from the template, you cannot import data into a calculated field, but calculated files can be updated following an import. To download, click the link to download your data import template as a CSV (comma delimited) file. Save it locally to your computer and then open it to begin filling it with the data you wish to import.



[Download your Data Import Template \(with records in rows\)](#)

OR

[Download your Data Import Template \(with records in columns\)](#)

Your template can be formatted with records in rows or records in columns. “Records in rows” is more common.

- 2.) In each column of the Data Import Template file that you downloaded, place the data for each record that you wish to import. Once all your data has been added, save the file.
 - Be sure not to change the Variables/Field Names in the file or an error may occur.
 - Also, for all of the “dropdown” or “radio” fields in the project, you must make sure that the numerical value (rather than the text value) is entered in those cells, or else it cannot be processed.
 - Any empty rows or columns in the file can be safely deleted before importing the file. Doing this reduces the upload processing time, especially for large projects.
- 3) Click the “Browse” or “Choose File” button below to select the file on your computer, and upload it by clicking the “Upload File” button.
- 4) Once your file has been uploaded, the data will NOT be immediately imported but will be displayed and checked for errors to ensure that all the data is in correct format before it is finally imported into the project.

Depending on your type of project (longitudinal) and Data Access Group assignments, you may see the following screen:

How to assign records to Data Access Groups:

Since this project has Data Access Groups and since you are not in a group, you are able to assign or re-assign records to groups. You may assign records to groups by utilizing the 'redcap_data_access_group' field in your data import file, in which you will provide a unique group name for each record. A list of all the unique names for each Data Access Group are listed on the [Data Access Groups](#) page.

How to import records for events:

In order to import records for longitudinal projects such as this one, you must use the 'redcap_event_name' field in your data import file, in which you will provide a unique event name for each record. This will tell it which event that the data belongs to for that record. A list of all the unique names are listed on the [Define My Events](#) page. If the 'redcap_event_name' field is not specified for every record being imported, it will display an error.

When you are ready to import the data, click the “Browse” or “Choose File” button to select the file on your computer, and upload it by clicking the “Upload File” button.

Record format: The file to be uploaded has its records stored as separate Rows

Format for date and datetime values:

Allow blank values to overwrite existing saved values?

Name the imported records automatically (force record auto-numbering)

Upload your CSV file:

MBWimport_2...0_1502.zip

Error Correction

If there are any errors detected when the file is uploaded, you will see the following screen:

Errors were detected in the import file that prevented it from being loaded.

There is 1 error (shown in red in the error table below) in this dataset. Please correct any errors and upload the file again.

ERROR DISPLAY TABLE			
Record	Field Name	Value	Error Message
			The following fields were not found in the project as real data fields: washout_time2

You will need to go and correct all of the errors shown on the error table in red. After you have corrected all the errors, you can upload the file again.

Upload Summary

REDCap does not import the data from your file immediately. First it parses your file and displays a summary view. The summary view (Key for Data Display Table) highlights what will be done with each data point in your import file. Note: Data can be imported into your project to create or update records. You cannot delete data using the “Data Import Tool”: blank values in an import file will not overwrite existing data values.

✔ Your document was uploaded successfully and is ready for review.
 You are now required to view the Data Display Table below to approve all the data before it is officially imported into the project. Follow the instructions below.

Instructions for Data Review

The data you uploaded from the file is displayed in the Data Display Table below. Please inspect it carefully to ensure that it is all correct. After reviewing it, click the 'Import Data' button at the bottom of this page to import this data into the project.

KEY for Data Display Table below

- Black text = New Data
- Gray text = Existing data (will not change)
- Red text = Data that will be overwritten
- Red box = error
- Orange box = warning

DATA DISPLAY TABLE

record_id	redcap_repeat_instrument	redcap_repeat_instance	redcap_event_name	my_first_instrument_complete	file_name	trial	timestamp	washout_time	mbw_quality	breaths	target_2_5
1 (existing record)			visit_1_arm_1								
1 (existing record)	mbw	1	visit_1_arm_1			1	2018-02-08 07:24	63.890625	4	29	25
1 (existing record)	mbw	2	visit_1_arm_1			2	2018-02-08 07:28	60.65625	1	25	22
1 (existing record)	mbw	3	visit_1_arm_1			3	2018-02-08 07:33	54.21875	2	23	17
2 (existing record)			visit_1_arm_1								
2 (existing record)	mbw	1	visit_1_arm_1			1	2018-02-08 07:28	60.65625		25	22
2 (existing record)	mbw	2	visit_1_arm_1			2	2018-02-08 07:28	63.890625		29	25

Do you wish to import the new data (displayed above) into the project?
 (Click the button below to import the data.)

[Cancel](#)

After you click the "Import Data" button, you will see the import successful screen:

✔ **Import Successful!** 11 records were created or modified during the import.

The data you uploaded from the file was successfully imported into the project. If you wish to import more data, you may use the box above to select another file on your computer.

Importing to Checkbox fields

Checkbox groups are treated as separate fields named according to the field name specified plus a zero-based index. Below illustrates the import template for a checkbox field call Day of week, where Out of the 5 check boxes, the first and third are ticked.

Day of week				
Monday day_of_week__1	Tuesday day_of_week__2	Wednesday day_of_week__3	Thursday day_of_week__4	Friday day_of_week__5
Checked (1)	Unchecked (0)	Checked (1)	Unchecked (0)	Unchecked (0)

Importing to Date and DateTime Fields

Date values must be formatted as yyyy-mm-dd or dd/mm/yyyy Date/time values must be formatted as yyyy-mm-dd HH:MM[:SS] or dd/mm/yyyy HH:MM[:SS]

Calculated Fields

You cannot import data into a calculated field, but calculated fields will be updated following an import. Calculated fields are omitted from the import template. See the Calculated Field section for more detailed information.

Importing Data for Longitudinal Projects

When importing data into a longitudinal project, you must include a column that specifies the unique event name for each record. You can find the values to use on the “Define My Events” page from “Project Setup”.

Importing Data for Data Access Groups

When importing data into a project that utilises Data Access Groups, you must include a column that specified the “Data Access Group” (DAG) for each record. You can find the values to use on the “Data Access Groups” tab from “User Rights”.

Where the user performing the import is assigned to a DAG, records are automatically assigned to the user’s DAG. Such users cannot import records to other DAGs. Records can also be assigned and reassigned to a Data Access Group individually from their data entry forms following import.

Data Reporting

In the **Report Builder** application accessible from the left-side toolbar, you may view the results of a specific field or fields for all records in your project. The purpose of various reports can be to isolate records, identify groups, study certain demographics of your participant population, and more. The Report Builder allows a user to create customised reports that are queried in real time.

How to create a report:

Click on the “Data Exports, Reports, and Stats” hyperlink located on the left navigation bar.

Click on “Create New Report.”

Enter a Name for the Report.

User Access: All Users refers to all users that have access to the project. Custom User Access allows a user to restrict viewing access to certain users. • Note: If a particular report’s access is restricted from a user who has ‘Add/Edit Reports’ rights on the User Rights section, then that user will still be able to view and edit the report.

Name of Report: [Text Input Field]

Description (optional): [Text Area]
Displayed on page below report name
HTML may be used in order to add links or to add style to text. Expand

STEP 1

User Access: Choose who can edit and view this report

View Access: Choose who sees this report on their left-hand project menu [?]

All users – OR – Custom user access (Choose specific users, roles, or data access groups who will have access)

Edit Access: Choose who can edit, copy, or delete this report (requires user to have 'Add/Edit/Organize Reports' privileges)

All users – OR – Custom user access (Choose specific users, roles, or data access groups who will have access)

STEP 2

Fields to include in report Quick Add Add all fields from selected instrument: -- choose instrument --

Field 1	Field 2	Instrument
record_id "Record ID"	Type variable name or field label	My First Instrument

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)

Select the fields to be included in the report. There are three (3) ways to add fields to the report:
-Quick Add is a checklist format of all the fields/variables within the project. A user can check the boxes for the variables individually

-Add all fields from the selected instrument is a quick way to add all the fields/variables from a particular form.

-Dropdown list: click on the blue arrow, then the field to the left becomes a dropdown list of all the variables within the project.

-**Surveys:** if you would like the survey identifier (if used) and survey timestamp fields included in the report, then click the checkbox.

Filters (optional): This section allows a user to filter the report for certain information.

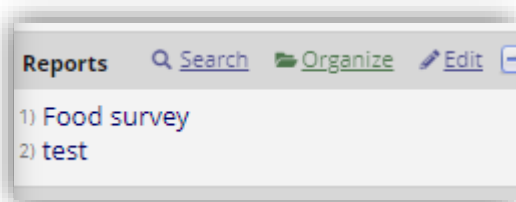
Live Filters (optional): Live filters can be used on the report page for filtering data in real time. Only multiple choice fields can be used with these filters. Up to three (3) live filters can be assigned.

Order the Results (optional): The results will automatically order by Record ID unless indicated otherwise.

Click on 'Save' for the report.

You may have multiple reports that you would like to generate for your project. This is easily tracked through REDCap. Each report is even given its own shortcut in the Reports Module (which will appear once you have created your first report).

Each report changes in real time as new data records (or surveys) are created for the project. Once more records are completed, you can go back to the same report and it will update accordingly



The REDCap Mobile App

The REDCap mobile app can be installed on a tablet or mobile device so that data may then be collected in an offline fashion on that device, after which it may then be synced back to this project on the REDCap server. The app is most useful when data collection will be performed where there is no internet service (e.g., no WiFi or cellular service) or where there is unreliable internet service. Once a user in the project is given 'REDCap Mobile App' privileges, they can navigate to the mobile app page on the project's lefthand menu and set up the project inside the mobile app on their device. Once the mobile project is set up on the device, the user can collect data (which is stored locally on the device), and then at some point sync that data back to this project on the REDCap server.

Once you download the app onto your device, there is also an in-depth manual within the app. Click "About the REDCap Mobile App" to see a brief summary and the option for a more detail manual. These are the steps for a high level view of how the Mobile App works.

1. Create and design project on your REDCap installation. Grant Mobile App Rights and get token
2. Set Up project. While online, set up the project on the app using a code provided in REDCap.
3. Collect data from participants. This can be done offline, or online (if internet access becomes available).
4. Send affected data to the REDCap server securely. New records are sent as a package; modified records have their values adjudicated against existing server values. The app user will then be given a chance to refresh the project. This step must be done online.
5. View and Analyse data. Once the data is uploaded to REDCap, it is a living part of the project.

Project Status

There are five categories also known as project statuses of a project. A project can exist in one of the following five categories at any given time:

Development

All projects when first created start in Development. In Development, you can design, build, and test your REDCap projects. All design decisions can be made in real time and are implemented immediately to your project. All survey and data entry features/functions can and should be tested. In this phase, no real data is entered.

Production

From Development, you will move your project to Production. At this point, you should have fully tested the workflow, data validation and branching logic. You should be certain that your data forms are finalised and fully functional. When you are ready to deploy your project, you will request to have your project moved into Production mode by clicking the button on the Project Setup page. This will send a notification to the REDCap Administrator that you are ready to deploy your project. Once your project is approved for Production, you will receive an email alerting you of your project's new status. All survey and data entry features/functions will be the same as they are in development with the exception of certain Project Setup features. In this phase, real data is collected. Moving your project to Production prior to collecting real study data ensures you are maintaining data accuracy and integrity.

Draft

When you enter production mode and find that you need to modify an element of your data entry forms, you may enter Draft Mode and submit the changes. Changes to your project configuration and setup are possible, but should be minor and infrequent. Some project and form design updates will require contacting a REDCap Administrator and/or submitting data collection instrument changes in Draft Mode. Changes to data collection instruments in Draft Mode are not made to your project in real time. After making updates, you must submit the changes for review. This post-production control process provides an additional check to ensure that data in your records are not modified, deleted, or overwritten unintentionally. From Production, you can move the projects in the following status on the Project Setup > Other Functionality page:

Inactive

Inactive mode is only available once a project is already in Production mode; it is not available in Development mode. Under the "Other Functionality" tab of the project dashboard, you can move your project to inactive status. Ideally, you would move the project to inactive status when data collection is complete, but you would still like to export and analyse the records you have collected. This will disable most project functionality, including access to individual records, but the data will remain available for export and analysis. In this phase, the project is essentially complete. Your project will still be accessible from your My Projects List, but you will see a red "Inactive" icon next to it. Once inactive, the project can be moved back to production status at any time by clicking the "Other Functionality" tab and click "Move to production status". Since your project was already approved for Production, it does not need another approval; it will be immediately placed back in Production.

Archive

Once you are finished with a project, you may archive it. Unlike the Inactive mode, a project can be moved to Archive mode whether it is in Development or Production mode. You can also move a project into Archive mode directly from Inactive mode. Move the project to archive mode if data collection is complete and/or you no longer wish to view it on My Projects List. Similar to Inactive mode, this will disable most project functionality. The project can only be accessed again by clicking

the Show Archived Projects link at the bottom of the My Projects page. Once archived, the project can be moved back to production mode at any time by clicking the “Other Functionality” tab and click “Move to production status”.

Making Changes to a Project in Production

If a Production database must be modified, follow these rules to protect your data:

- (1) Do not change existing variable names (e.g. demo_date, labs_calcium, survey_firstname), or data stored for those variables will be lost. To restore data that has been lost in this way, revert to the previous/original variable name(s).
- (2) Do not change existing form names (e.g. Demographics, Labs, Survey) via a data dictionary upload or form completeness data will be lost. Form names may be changed within the Online Designer without data loss.
- (3) Do not modify the codes (numbers before the answer choices) and/or answer choices for existing Multiple Choice – Drop-down List (Only One Answer), Multiple Choice – Radio Buttons (Only One Answer), or Checkboxes (Check All That Apply) fields or existing data will be lost and/or disassociated.
- (4) Changing from a Text Box (Short Text) or Notes Box (Paragraph Text) to any other type of field will result in a loss of your existing data in those fields.
- (5) Any changes to the structure of the database, such as modifying or adding events or adding forms to events in a longitudinal project, enabling surveys, can only be approved by the REDCap Administrators.

Steps for Making Changes to a Project in Production

1. Download a copy of the Current Data Dictionary and a copy of the project’s existing data via a data export (‘Data Exports, Reports, and Stats’).
2. Select ‘Online Designer’ on the Project Setup page.
3. Click on Enter Draft Mode.
4. Click on the form(s) that need changes made and make the changes just as you would while in Development mode.
5. After making all of the changes, go back to the Online Designer page and click on “Submit Changes for Review”.
6. If you want to view all of your changes before you submit them click on “View detailed summary of all drafted changes.” If you want to remove the changes you made, click on “Remove all drafted changes”.
7. If the changes will not affect existing data in any way, the changes will be automatically applied once you submit them.
8. Otherwise, the REDCap Team will receive a copy of your changes to approve and contact you about them if needed.

Logging

The “Logging” application is where you can view audit trail information. (Ex: a log of data changes in your project) You can view and reconstruct a history of record creations, updates, deletions, and review the activity of your project users.


By clicking the “Logging” tool in the left-hand toolbar, you can view the entire audit trail throughout the life of the project. Each event’s category and specific change is listed along with the time/date and user’s username. The logging box is easily filterable, and can even be downloaded to a singular CSV file if need be.

The “Logging” report shows you all changes made to your project, including data exports, data changes, and the creation or deletion of users. (Ex: when changes were made, who made them, what kind of changes were made). If a user is adding or changing data, REDCap will show you what the change was and which record it was in. You can also filter the log by the type of events.

Note: You can see when people have created users and have created roles; or deleted or updated them, you can see where data has been put in records, and then you can see record created/updated only, and it also shows record locking and e-signature and page views.

You can use this to track what a specific user has done, or you can use it track the history of a specific record. The logging feature is a very useful tool if you are trying to backtrack how something was created or maybe where something went wrong in your project.

You can download the entire logging record by clicking,

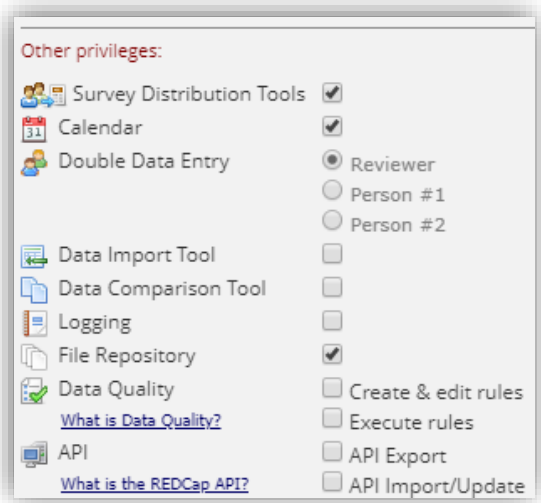
 [Download entire logging record to Microsoft Excel \(CSV\)](#)

but be aware this make time for large files.

Double Data Entry

As a preventive measure, REDCap prevents users from entering duplicate records. However, some projects may need to enter data twice for each record as a means of ensuring quality data collection by later comparing the records. This can be done using the “Double Data Entry” module. The “Double Data Entry” module needs to be enabled by the REDCap administrator prior to any data being collected in the project. When you contact the REDCap Administrator, be sure to include the name of your project. When the module is enabled, REDCap collects data differently than normal. It allows you to designate any two project users or roles as “Data Entry Person 1” and “Data Entry Person 2”, which is done on the “User Rights” page. You will first need to create new roles for Data Entry 1 and Data Entry 2, which is also done on the “User Rights” page.

Add the necessary user rights to this role. Under “Other privileges:” you will see Double Data Entry privileges




Once both roles have been created, you will need to add users to the role.

Once designated, either of these two users can begin entering data independently and they will be allowed to create duplicate records. They will not be able to access each other's data and only normal users (called Reviewers) will be able to see all three copies of the data. Once each designated data entry person has created an instance of the same record, both instances can then be compared side by side using the "Data Comparison Tool" and merged into a third instance.






Esignatures

The "E-signature and Locking Management" application gives you various views of the "Lock/E-Sign" status of your data entry forms. E-signatures are an extension of the record locking/unlocking functionality.

The table shown will display all existing records in the project with their status as locked or e-signed for all data entry forms. Forms that do not allow locking will not be displayed. You may use the "Actions" links to filter the table in various ways to show or hide rows based on criteria related to its locking or e-signature status. You may click the View Record link to view that record on the data collection instrument, which will open in a new window. If you would like to export the table as a file in CSV format, simply click the "Download the table below as Microsoft Excel (CSV)" link.

 [Download the table below as Microsoft Excel \(CSV\)](#)

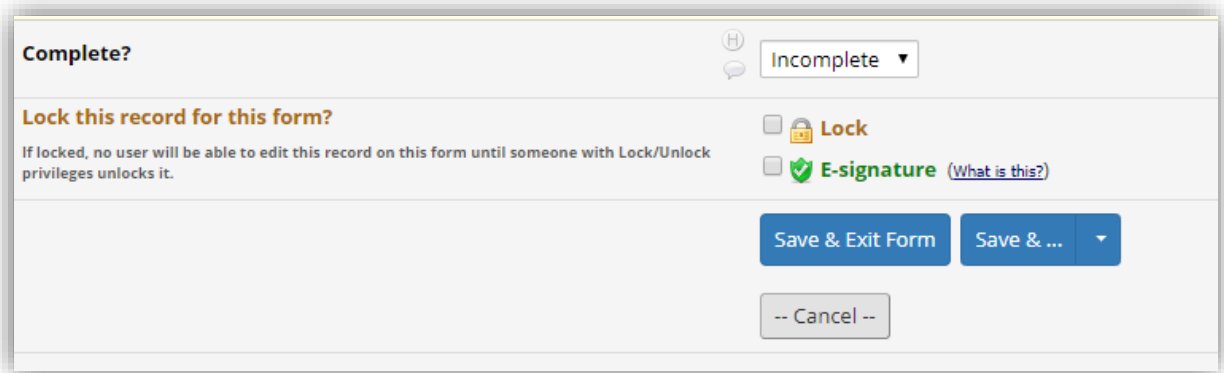
Actions: [SHOW ALL ROWS](#) | [Show timestamp / user](#) | [Hide timestamp / user](#) | [Show locked](#) | [Show not locked](#) | [Show e-signed](#) | [Show not e-signed \(excludes N/A\)](#) | [Show both locked and e-signed](#) | [Show neither locked nor e-signed \(excludes N/A\)](#) | [Show locked but not e-signed \(excludes N/A\)](#)

All Records				
Record	Form Name	Locked?	E-signed?	
1	My First Instrument			View record
1	Visit Details			View record
1	Medication History		N/A	View record
1	Education			View record
2	My First Instrument			View record
2	Visit Details			View record
2	Medication History		N/A	View record
2	Education			View record
3	My First Instrument			View record
3	Visit Details			View record
3	Medication History		N/A	View record
3	Education			View record
4	My First Instrument			View record
4	Visit Details			View record

To activate the E-signature option on a form, you must first use the “Record Locking Customisation” application to display the E-signature option on data collection instruments. Note: Only users with “Lock/Unlock” user privileges can access the “Customisation Module for E-signatures and Record Locking Functionality” page and they are the only ones who can lock and unlock records for a specific form.

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
<input checked="" type="checkbox"/>	My First Instrument	<input checked="" type="checkbox"/>	<input type="text"/> <input type="button" value="Save"/>	
<input checked="" type="checkbox"/>	Visit Details	<input checked="" type="checkbox"/>	<input type="text"/> <input type="button" value="Save"/>	
<input checked="" type="checkbox"/>	Medication History	<input type="checkbox"/>	<input type="text"/> <input type="button" value="Save"/>	
<input checked="" type="checkbox"/>	Education	<input checked="" type="checkbox"/>	<input type="text"/> <input type="button" value="Save"/>	

The E-signature option is displayed to users that have the e-signature privileges on forms for which the esignature option is enabled. Once a data collection instrument has been locked for a given record in the project, a person with e-signature privileges may then apply an e-signature to that form. The e-signature option appears as a check box that says E-signature, which appears just above the “Save Record” button and immediately below the Locked check box.



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 authorised (Ex: By a user with e-signature privileges).

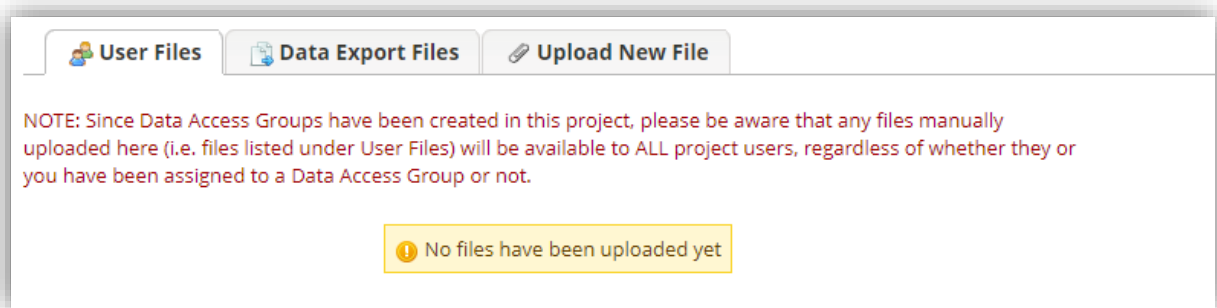
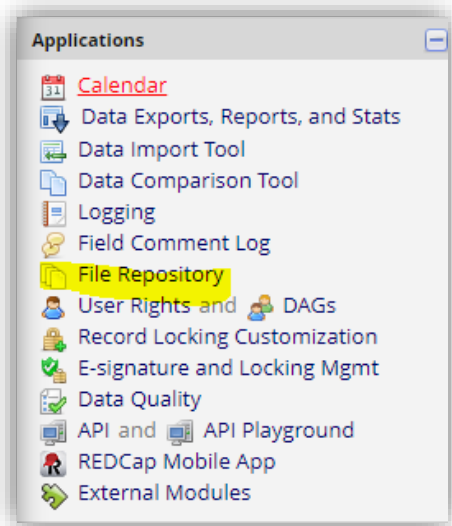
Note: Anyone with locking privileges (even if lacking e-signature authority) will negate the e-signature on a form when unlocking the record, after which data changes can be made to the record. The e-signature can be re-applied after such data changes.

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.

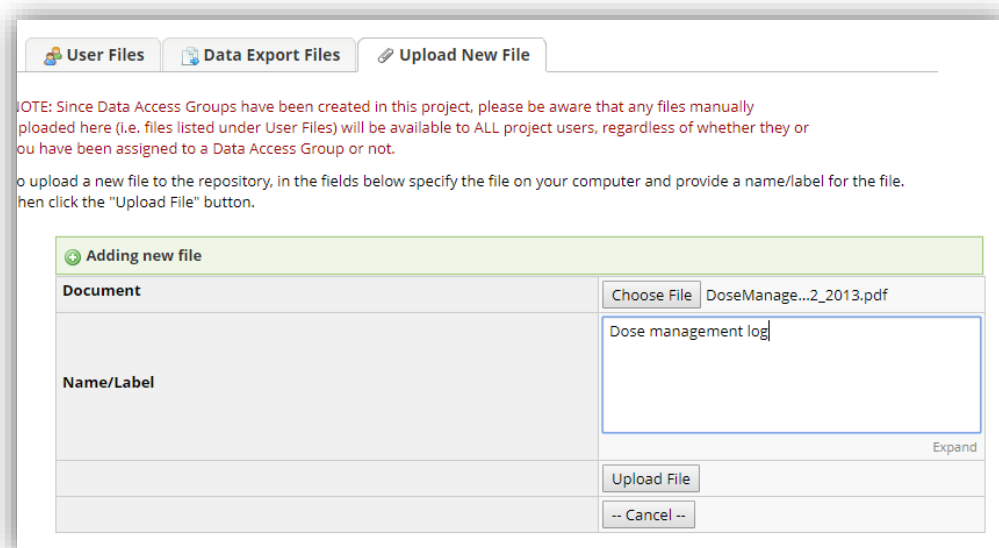
Similar to the record locking functionality, the e-signature history is also stored in REDCap's data audit trail on the Logging page. If someone wishes to view the historical record of e-signatures in the project, they may do so by filtering the audit log by “Record locking & e-signatures” either for a specific record or for all records in the project.

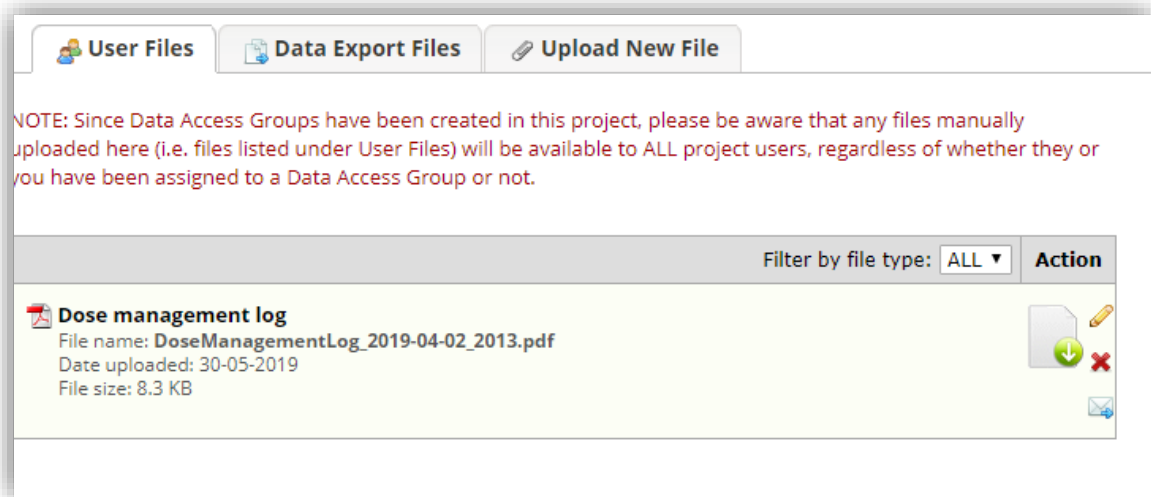
File Repository

The File Repository can be used for storing and retrieving project files and documents (Ex: protocols, instructions, announcements). You can upload files here to save for retrieval later, or you may download previously uploaded files in the file list. Whenever a data export is performed, the resulting data and syntax files are stored here.



To upload a new file to the repository, click on the “Choose File” button and specify the file on your computer. Then provide a name/label for the file and click the “Upload File” button.





- The four Actions are:



Download file



Edit label



Remove file



Send the file to anyone using Send-It

All files will be visible to and all actions can be performed by any user that is given access to the “File Repository” module.

Record Identifiers

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, but provided there are no records in your project, you are free to change the field name from “Record ID”.

Creating a new record

There are three ways that records can be created in your REDCap project:

1. Auto-numbered (includes projects where records are created by a survey)
2. Manual entry
3. Import

Record Auto-Numbering: Data Entry Forms Project With record auto-numbering switched on (Enable optional modules and customisations) records are created by clicking the “Add new record” button.

Choose an existing Record ID	-- select record -- ▾
	Add new record

If your project has multiple arms, you must select the appropriate arm before creating the record. The first data entry form will open and show the new record identifier. This identifier is not yet saved – it will be reused if you do not save the form and may change if another user creates a new record while you have the data entry form open.

Record Auto-Numbering: Survey Project

All survey-only projects have auto-numbered records because there is no necessity for survey forms to include any identifier. Click on “Add new record” to create the new record on a data entry style form. The record creation is associated in the log with the user that created it.

Manual Entry of Record Identifier

With record auto-numbering switched off (Enable optional modules and customisations) records are created by entering the new record identifier into the text entry box. The first data entry form will open and show the new record identifier. The new record (and its identifier) is not saved until you save the data entry form. If your project has multiple arms, you must select the appropriate arm before creating the record.

Choose an existing Record ID	-- select record -- ▾
Enter a new or existing Record ID	<input type="text"/>