

Importing Data to Illinois REDCap

There may be times when a research team will need to import existing data into REDCap. While it is possible to manually enter the data in the REDCap system, this can be time-consuming and increases the opportunity for error in data entry. As such, people may prefer to import the data at one time instead.

Uploading data into REDCap:

1. Build the project in REDCap, including all fields, validations, events, and so forth.
2. Select “Data Import Tool” under “Applications.”
3. On the “CSV import” tab, download one of the data import templates and save it to your computer.
 - a. It is recommended to download the template “with records in rows,” and these instructions are written for using the “with records in rows” template.
4. Map your data onto the data import template, ensuring that it matches the data structure as defined by the codebook.
 - a. The codebook can be found on the “Project Home” page under “Quick Tasks.”
 - b. Some items to check when entering data into the data import template:
 - i. The values entered are valid. This means the values are included in a range of expected numbers or are a legitimate code for a coded variable.
 - ii. If data is longitudinal, the correct event needs to be identified for each piece of data.
 1. All defined events must exist in the project prior to data import.
 2. The data import template will include a column titled “redcap_event_name.” The event name for each row of data needs to be specified here.
 - a. Event names can be found on the “Define My Events” page, accessible through the “Project Setup” page. The event names are auto-generated and visible in the column titled “Unique event name.”
 3. For each record, enter data chronologically and in consecutive rows. For example:

record_id	redcap_event_name	age	marital
1	year_1_arm_1	20	1
1	year_2_arm_1	21	2
1	year_3_arm_1	22	2
2	year_1_arm_1	36	2
2	year_2_arm_1	37	3
3	year_1_arm_1	51	2
3	year_2_arm_1	52	2
3	year_3_arm_1	53	2

4. Longitudinal data can be unbalanced; in other words, there can be an unequal number of observations across events. If you do not have data

for an event, do not include a row for that record and event. In the example above, there are only two waves of data for Record 2, and Record 2 has no row for year_3_arm_1.

- iii. If data utilizes repeatable instruments and/or events, the correct number of repeatable instruments and/or events need to be included in the import file and data needs to be entered into the correct instrument and/or event.
 1. For repeatable instruments:
 - a. All instruments that will repeat must be enabled as such prior to data import.
 - b. The data import template will include columns titled “redcap_repeat_instrument” and “redcap_repeat_instance.”
 - i. “redcap_repeat_instrument” is the name of the instrument that will repeat. It will be the name of the instrument, but with no capital letters and underscores instead of spaces. For instance, if the instrument is called “Exercise Survey,” the name in the spreadsheet will be “exercise_survey.”
 - ii. “redcap_repeat_instance” is the number of the repeating instance (e.g., 1, 2, 3).
 - c. For each record, enter data numerically ascending and in consecutive rows. For example:

record_id	redcap_repeat_instrument	redcap_repeat_instance	ex_today	minutes
1	exercise_survey	1	1	75
1	exercise_survey	2	0	0
2	exercise_survey	1	1	60
2	exercise_survey	2	1	45
2	exercise_survey	3	0	0
3	exercise_survey	1	0	0
4	exercise_survey	1	1	30

2. For repeatable events:
 - a. All events that will repeat must be enabled as such prior to data import.
 - b. The data import template will include columns titled “redcap_event_name,” “redcap_repeat_instrument,” and “redcap_repeat_instance.”
 - i. “redcap_event_name” is the name of the event that will repeat. Event names can be found on the “Define My Events” page, accessible through the “Project Setup” page. The event names are auto-generated and visible in the column titled “Unique event name.”
 - c. For each record, enter data numerically ascending and in consecutive rows. For example:

record_id	redcap_event_name	redcap_repeat_instrument	redcap_repeat_instance	date	healthy
1	weekly_surveys_arm_1		1	1/1	0
1	weekly_surveys_arm_1		2	1/8	1
1	weekly_surveys_arm_1		3	1/15	1
1	weekly_surveys_arm_1		4	1/22	1
2	weekly_surveys_arm_1		1	1/3	1
2	weekly_surveys_arm_1		2	1/10	0
3	weekly_surveys_arm_1		1	1/3	0
3	weekly_surveys_arm_1		2	1/10	0
3	weekly_surveys_arm_1		3	1/17	0
4	weekly_surveys_arm_1		1	1/4	1

- d. Even if you are not using repeatable instruments with repeatable events, the data import template will still include a “redcap_repeat_instrument” column. This is because repeatable instruments and events are enabled at the same time. If you are not using repeatable instruments, this column should be left blank when importing data.
 - c. If you are importing data that was collected from another institution’s REDCap, you can export the data from that instance of REDCap by downloading (or having a user at the other institution download) the “CSV / Microsoft Excel (raw data)” file from the “Data Exports, Reports, and Stats” under “Applications”
 - i. The “raw data” file exports the data with the variable names in the first row. The “labels” file exports the data with field label in the first row. For instance, the “raw data” file will export the record ID column as “record_id,” while the “labels” file will export the record ID column as “Record ID.” Downloading the “raw data” file makes the import simpler.
5. On the “Data Import Tool” page, navigate to the green box at the bottom to upload the CSV file.
 - a. Set the “Record format” to rows.
 - b. Complete the other questions in the upload window (date formatting, overwriting data, and auto-numbering records).
 - c. Select “Choose File” and select the file to upload.
 - d. Select “Upload File.”
6. The data **does not** automatically upload into REDCap. First, it must be reviewed and approved.
 - a. Review the data by reviewing the “Data Display Table” according to the instructions and key provided in the “Instructions for Data Review” box.
 - b. If there are any errors or warnings that need to be fixed, return to the data import CSV file and correct the data there, before returning to Step 5.
7. When the data in the “Data Display Table” is accurate, scroll to the bottom and select “Import Data.”
8. It is advised to move the project to production before importing all data.
9. Import the rest of the data by following steps 4-7 above.

10. The data will be imported, and a green box will notify you of how many records were created or modified during the import.

If you have a particularly large dataset, you may need to import the data in stages. If you have trouble uploading a large dataset, follow these steps:

1. Before uploading data at Step 5.d above, break the data into smaller portions by record number by creating several CSV files for import. For example, in the first file, you may choose to upload records 1-5,000, the second file would upload records 5,001-10,000, and so forth. Ensure each record has a **unique record identifier** so that no records will overwrite one another.
2. Upload the data in segments according to 4-7 until all the data has been uploaded.
 - a. If an import fails, you may need to reduce the number of datapoints per import file and try again. Consider reducing the number of records (the “length” of the file) and/or the number of variables (the “width” of the file) if you are having difficulties.

Importing project structure and data into REDCap:

This process imports the data and the **project structure**, also called the project metadata. Project metadata includes project attributes, such as customized dashboards, events, and arms, as well as variable names and field labels. This is only an option if you are migrating a project from another institution’s instance of REDCap.

1. From the other organization’s REDCap instance, go the “Other Functionality” tab and select “Download metadata & data (XML).”
2. In your REDCap Illinois account, create a new project and select “Upload a REDCap project XML file (CDISC ODM format).”
3. Select the XML file downloaded in Step 1.
4. Select “Create Project.”
5. Go to “Online Designer” and make sure the forms or surveys function as needed.
6. Go to “Data Exports, Reports, and Stats” and “View Report” to review the imported data and ensure it is accurate.
7. Move the project to production.

Considerations for importing Excel files to REDCap:

- While importing Excel/CSV files, you may come across various errors. One type of error relates to calculated fields. You can ignore these errors because the quantities in the calculated fields will be calculated once the import is finished.
- Other errors may relate to validation issues. Make sure you follow the same validation formats in the Excel template that are established in Online Designer or the Data Dictionary (e.g., date format as M-D-Y, phone number formats as xxx-xxx-xxxx, etc.) for respective variables.
- REDCap will display one error at a time when importing data, displaying whichever error it hits first. Don’t get frustrated if you fix an error and then receive another error on the next import attempt! This is just the way REDCap operates to ensure the data import is accurate.