REDCap
Research Electronic Data Capture
@Yale

Managing Data in REDCap

Reports and Data Import/Export

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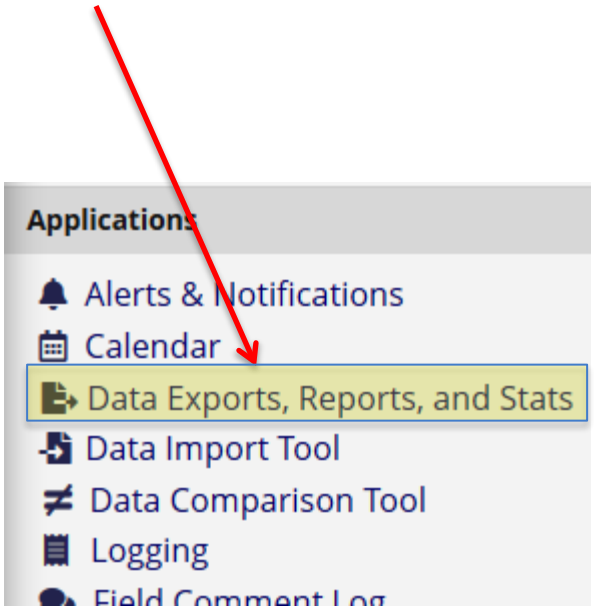
3/24/2022

Introduction and Learning Objective

- Learn how to set up a custom data report in REDCap with filters.
- Understand how to export data to statistical packages.
- Know how to import data to a REDCap project.
- Learn what an API is.

Data Exports, Reports, and Stats

how-to video



Data Exports, Reports, and Stats

VIDEO: How to use Data Exports, Rep

+ Create New Report | My Reports & Exports | Other Export Options

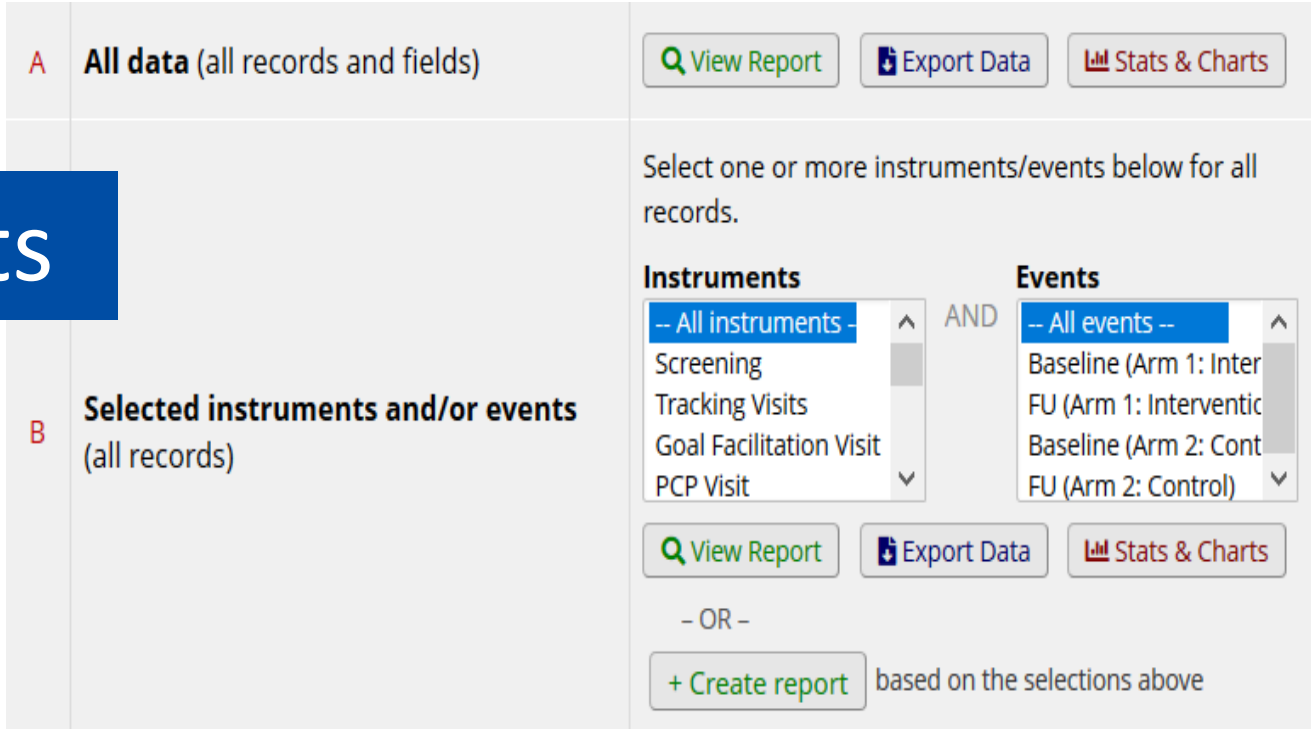
This module allows you to easily view reports of your data, inspect plots and descriptive statistics of your data, data to Microsoft Excel, SAS, Stata, R, or SPSS for analysis (if you have such privileges). If you wish to export you view it as a report, then Report A is the best and quickest way. However,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

My Reports & Exports

	Report name	View/Export Options
A	**All data** (all records and fields)	View Report | Export Data | Stats & Charts
B	**Selected instruments and/or events** (all records)	Make custom selections
1	Demographics	View Report | Export Data | Stats & Charts
	+ Create New Report	

Reports

Reports



Report A

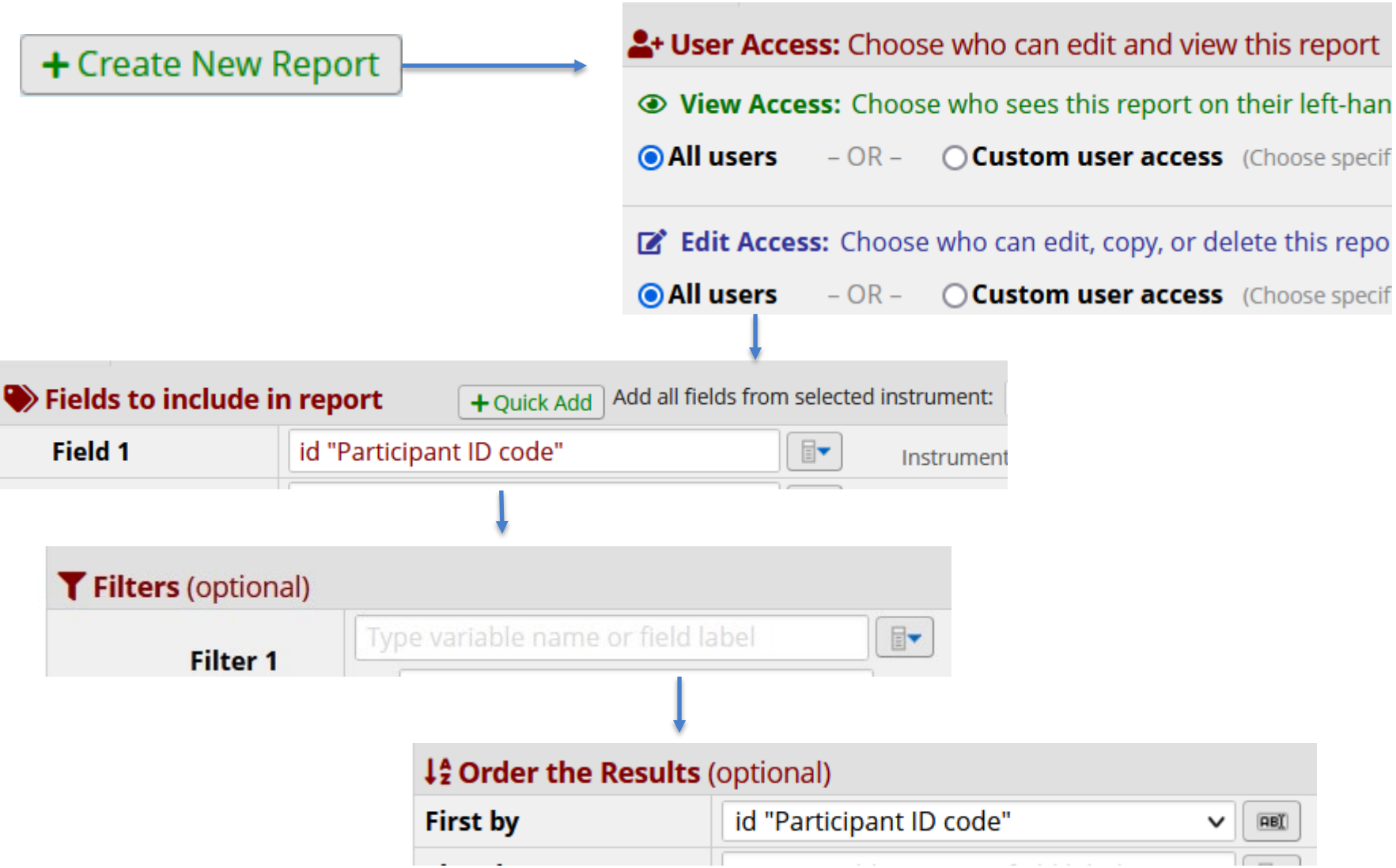
Good for exporting all data.

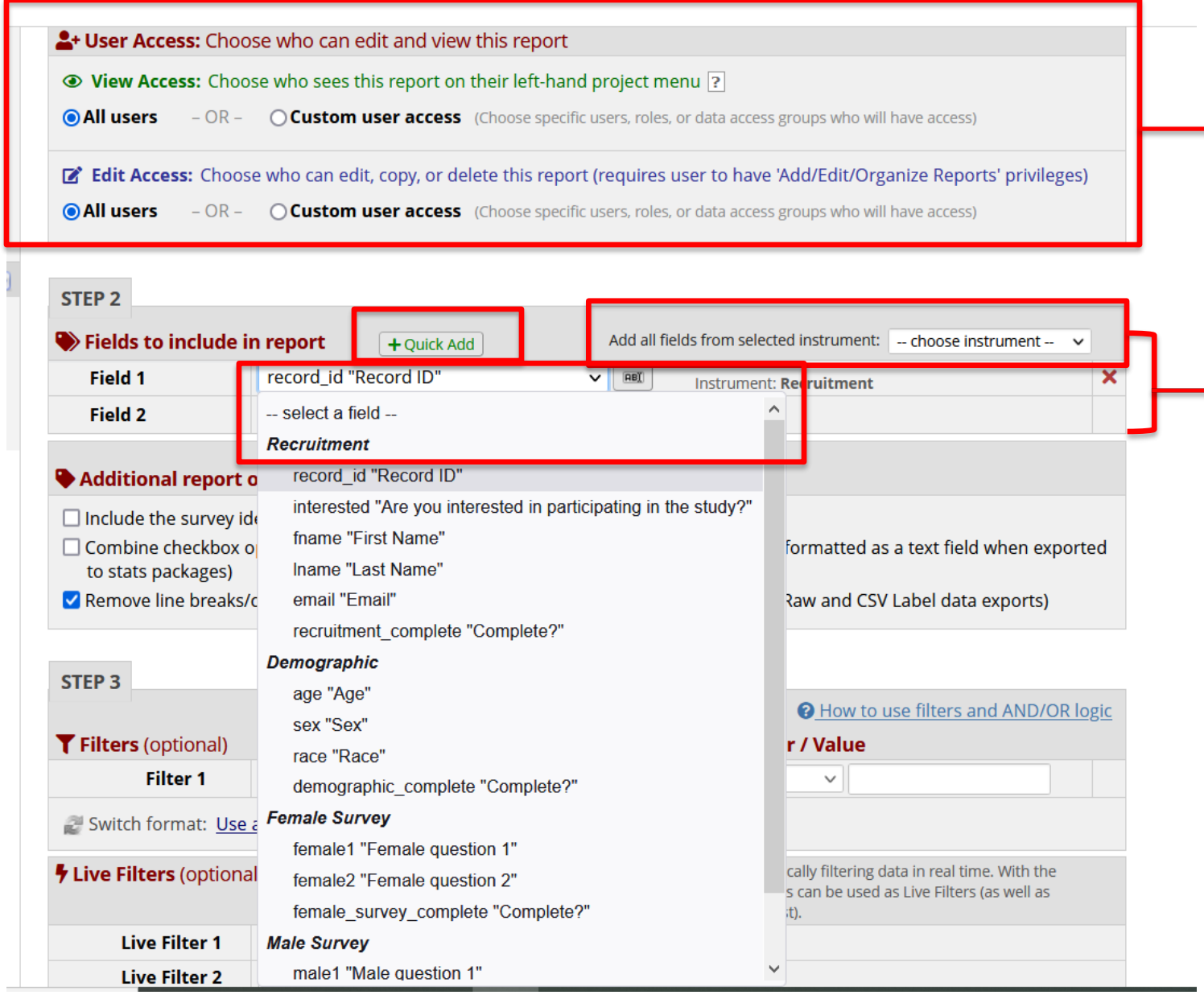
If you have a large project with many events and data, you may not be able to open report A.

Report B

Let you pick which instruments, events to include in your report. After you select the instruments and events, you can view the report or create a custom report based on the selections.

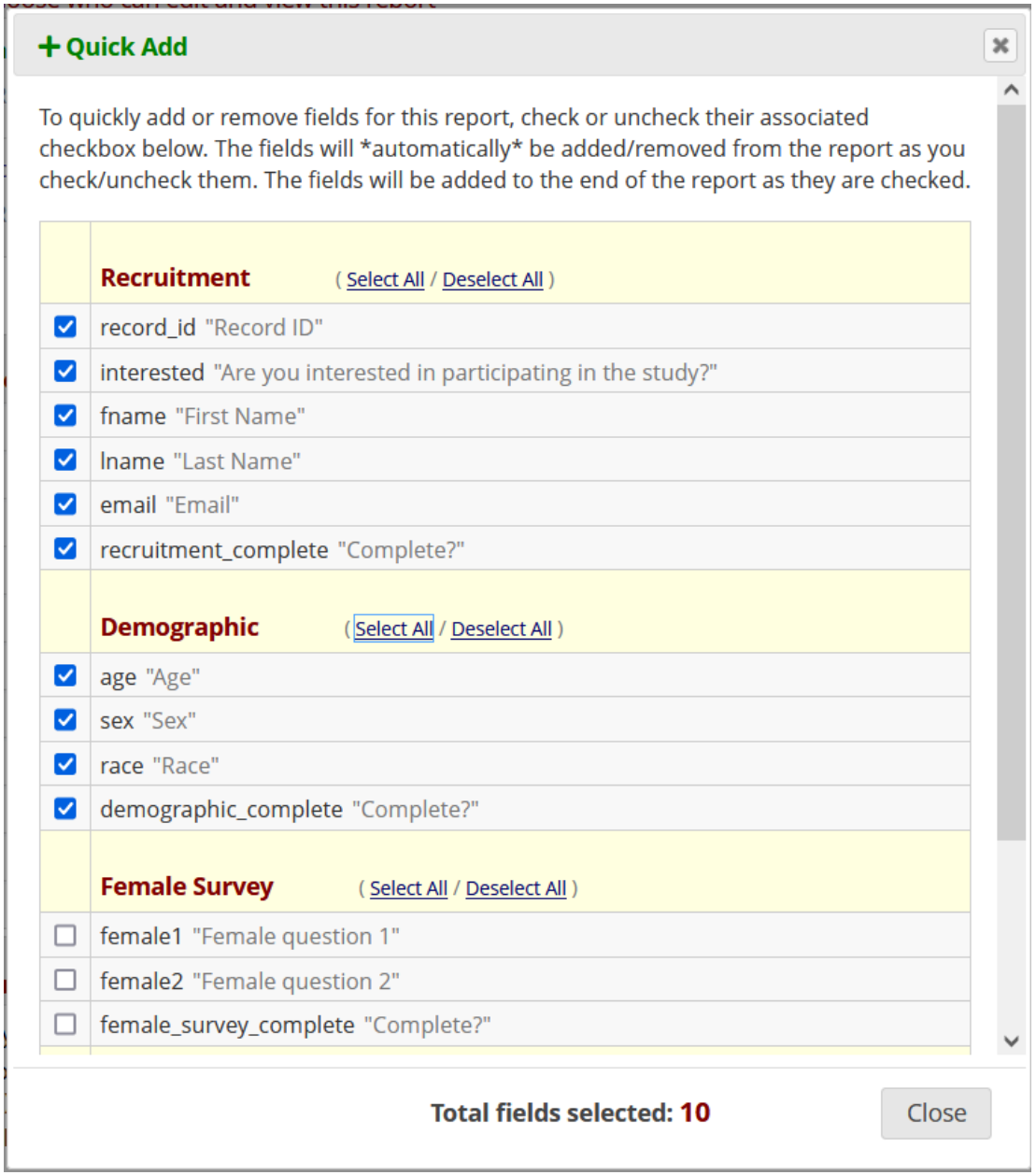
How to create custom reports





Set up user access settings

Three ways to select fields to include in the report


+ Quick Add
To quickly add or remove fields for this report, check or uncheck their associated checkbox below. The fields will *automatically* be added/removed from the report as you check/uncheck them. The fields will be added to the end of the report as they are checked.
Recruitment (Select All / Deselect All)
record_id "Record ID"
interested "Are you interested in participating in the study?"
fname "First Name"
lname "Last Name"
email "Email"
recruitment_complete "Complete?"
Demographic (Select All / Deselect All)
age "Age"
sex "Sex"
race "Race"
demographic_complete "Complete?"
Female Survey (Select All / Deselect All)
female1 "Female question 1"
female2 "Female question 2"
female_survey_complete "Complete?"
Total fields selected: 10
Close

Additional Report Options

Additional report options (optional)

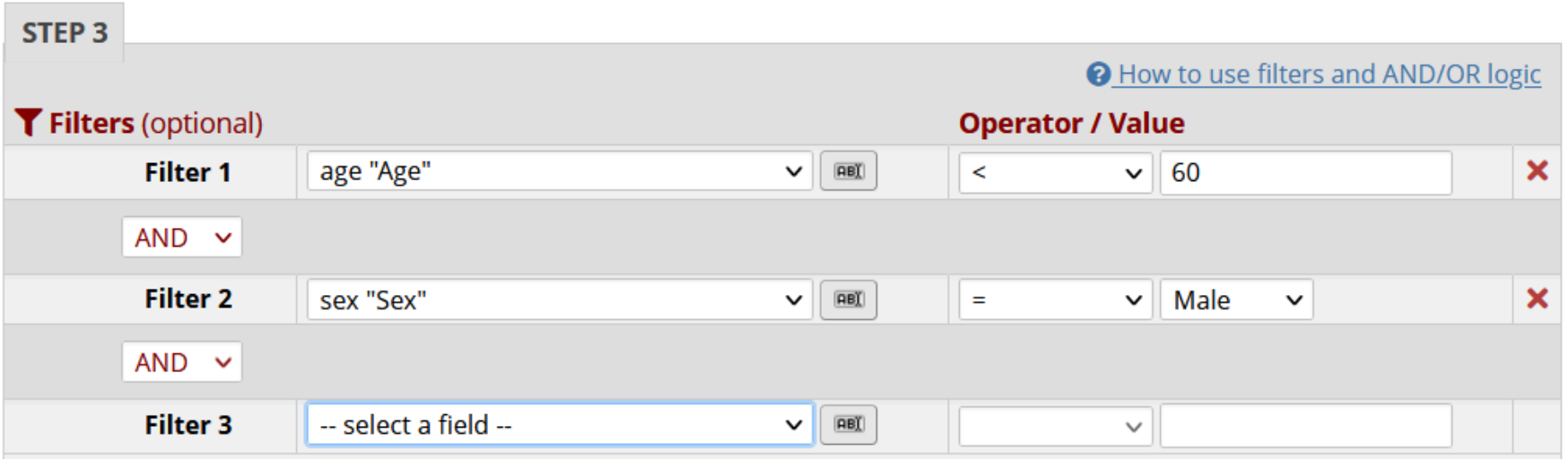
- [ ] Include the Data Access Group name for each record (if record is in a group)?
- [ ] Include the survey identifier field and survey timestamp field(s)?
- [ ] Combine checkbox options into single column of only the checked-off options (will be formatted as a text field when exported to stats packages)
- [ ] Display any Missing Data Codes in place of blank values (where applicable)
- [x] Remove line breaks/carriage returns from all text data values (only applicable for CSV Raw and CSV Label data exports)

Report Filters

How to set up report filters – Classic Project

Classic project:

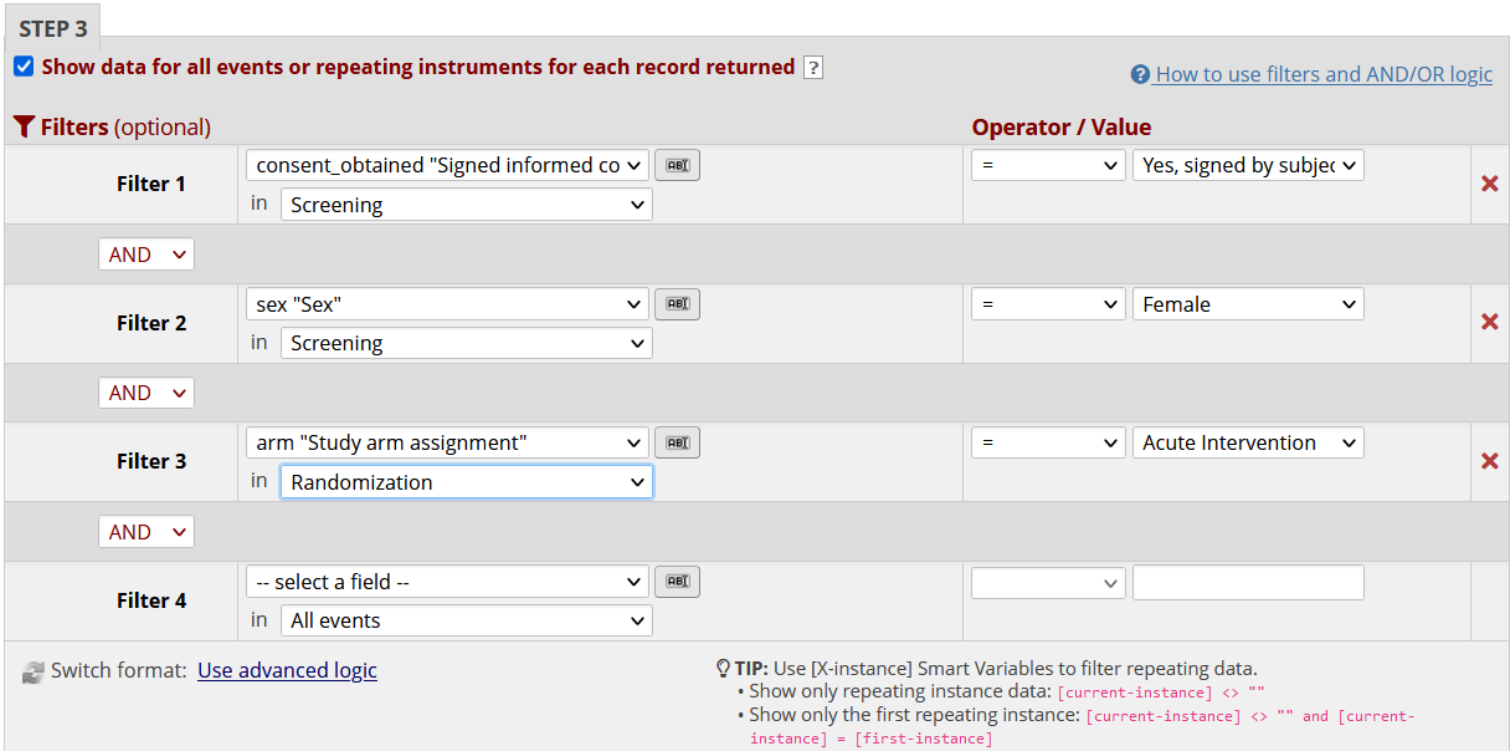
1. Choose the field and specify the operator and value for the first filter.
2. Select And/Or for the next filter
3. Choose field and specify the operator and value for the next filter



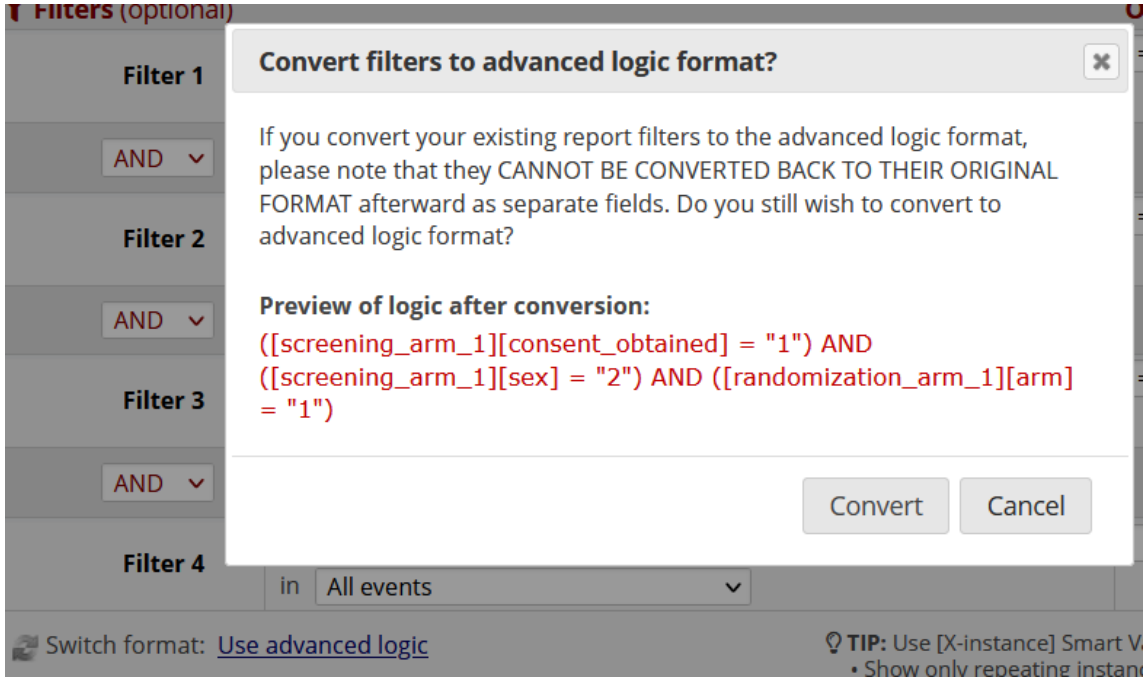
How to set up report filters – Longitudinal Project

Longitudinal project:

1. Data arranged by events. One row per event.
2. Need to specify the event when setting up filter.
3. Use advanced logic to set up complex filter.



How to set up report filters – Longitudinal Project



STEP 3

Show data for all events or repeating instruments for each record returned ?

Filters (optional)

Advanced filter logic: (e.g., [age] > 30 and [sex] = "1") How do I use special functions?

```
([screening_arm_1][consent_obtained] = "1") AND ([screening_arm_1][sex] = "2") AND ([randomization_arm_1][arm] = "1")
```

How to set up report filters – Longitudinal Project

STEP 3

☑ **Show data for all events or repeating instruments for each record returned** ?

Record ID record_id	Event Name redcap_event_name	Signed informed consent obtained (patient now enrolled in study) consent_obtained	Sex sex	Ethnicity ethnicity	Race race	Study arm assignment arm	Randomization Date random_date
124 Lname124, Fname124	Screening	Yes, signed by subject (1)	Female (2)	Not Hispanic or Latino (2)	White (5)		
124 Lname124, Fname124	Randomization					Acute Intervention (1)	01-08-2021
124 Lname124, Fname124	6 month						

STEP 3

☐ **Show data for all events or repeating instruments for each record returned** ?

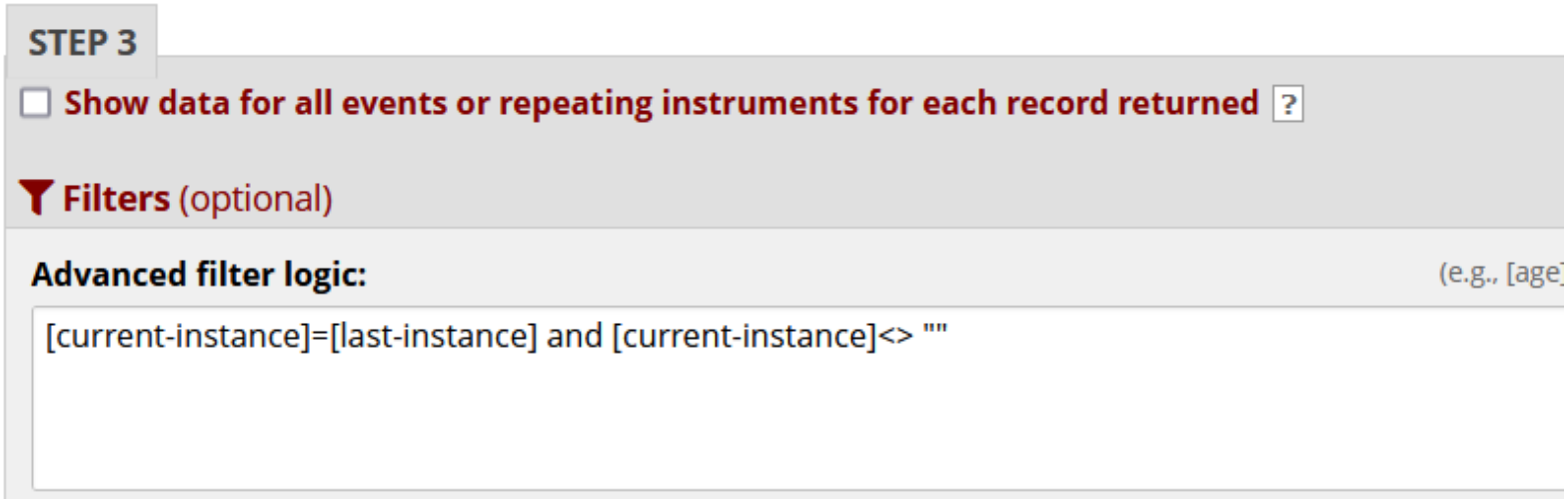
Record ID record_id	Event Name redcap_event_name	Signed informed consent obtained (patient now enrolled in study) consent_obtained	Sex sex	Ethnicity ethnicity	Race race	Study arm assignment arm	Randomization Date random_date
124 Lname124, Fname124	Screening	Yes, signed by subject (1)	Female (2)	Not Hispanic or Latino (2)	White (5)		
124 Lname124, Fname124	Randomization					Acute Intervention (1)	01-08-2021

How to set up report filters – Repeating form

Repeating form:

1. Use [X-instance] Smart Variables to filter repeating data
2. Show only repeating instance data: [current-instance] <> ""
3. Show only the first repeating instance: [current-instance] <> "" and [current-instance] = [first-instance]

<u>Example: Include only last instance of call log in the report</u>



How to set up report filters – Repeating form

Filter=[current-instance]=[last-instance]

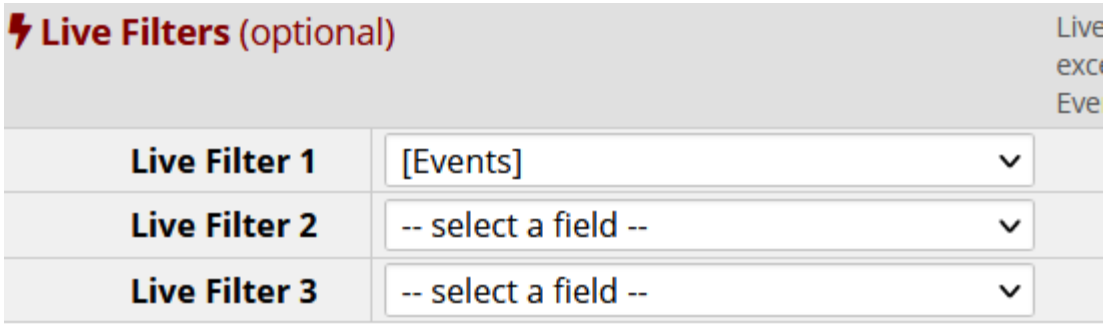
Study ID study_id	Event Name redcap_event_name	Repeat Instrument redcap_repeat_instrument	Repeat Instance redcap_repeat_instance	Date call_date	Time call_time	Day of Week call_day_week	Contact Method call_method
1 [redacted]	Baseline						
1	M1						
2	Baseline						
2	Baseline	Baseline Call Log	6	03-05-2021		Friday (5)	
3	Baseline						
4	Baseline						
5	Baseline						

Filter=[current-instance]=[last-instance] and [current-instance]<> ""

Study ID study_id	Event Name redcap_event_name	Repeat Instrument redcap_repeat_instrument	Repeat Instance redcap_repeat_instance	Date call_date	Time call_time	Day of Week call_day_week	Contact Method call_method
2 [redacted]	Baseline	Baseline Call Log	6	03-05-2021		Friday (5)	
7	Baseline	Baseline Call Log	1				Phone call (1)
10	Baseline	Baseline Call Log	2				
11	Baseline	Baseline Call Log	5	03-04-2021		Thursday (4)	Phone call (1)
12	Baseline	Baseline Call Log	4	03-02-2021		Tuesday (2)	Phone call (1)
13	Baseline	Baseline Call Log	1				Phone call (1)

Live Filters

- Dynamically filtering data in real time
- Fields that can be used for live filters: record id, multiple choice fields, events or data access group.



Live Filters

('records' = total available data across all designated events)

Live filters: [Events]

Subject ID subjectid	**Event Name** redcap_event_name	**Date of Insomnia Severity Index** isi_date	**1. Difficulty falling asleep** isi1	**2. Difficulty staying asleep** isi2	**3. Problems waking up too early** isi3	**4. How SATISFIED/DISSATISFIED are you with your CURRENT sleep pattern?** isi4	**5. How NOTICEABLE to others do you think your sleep problem is in t ... ring the quality of your life?** isi5
51	V0						
51	V1						
51	V2	09-14-2020	Mild (1)	Mild (1)	Mild (1)	Moderately Satisfied (2)	Somewhat (2)
51	V3						
51	V4	01-27-2021	None (0)	Mild (1)	None (0)	Very Satisfied (0)	A Little (1)

Live Filters

('records' = total available data across all designated events)

Report execution time: 0 seconds

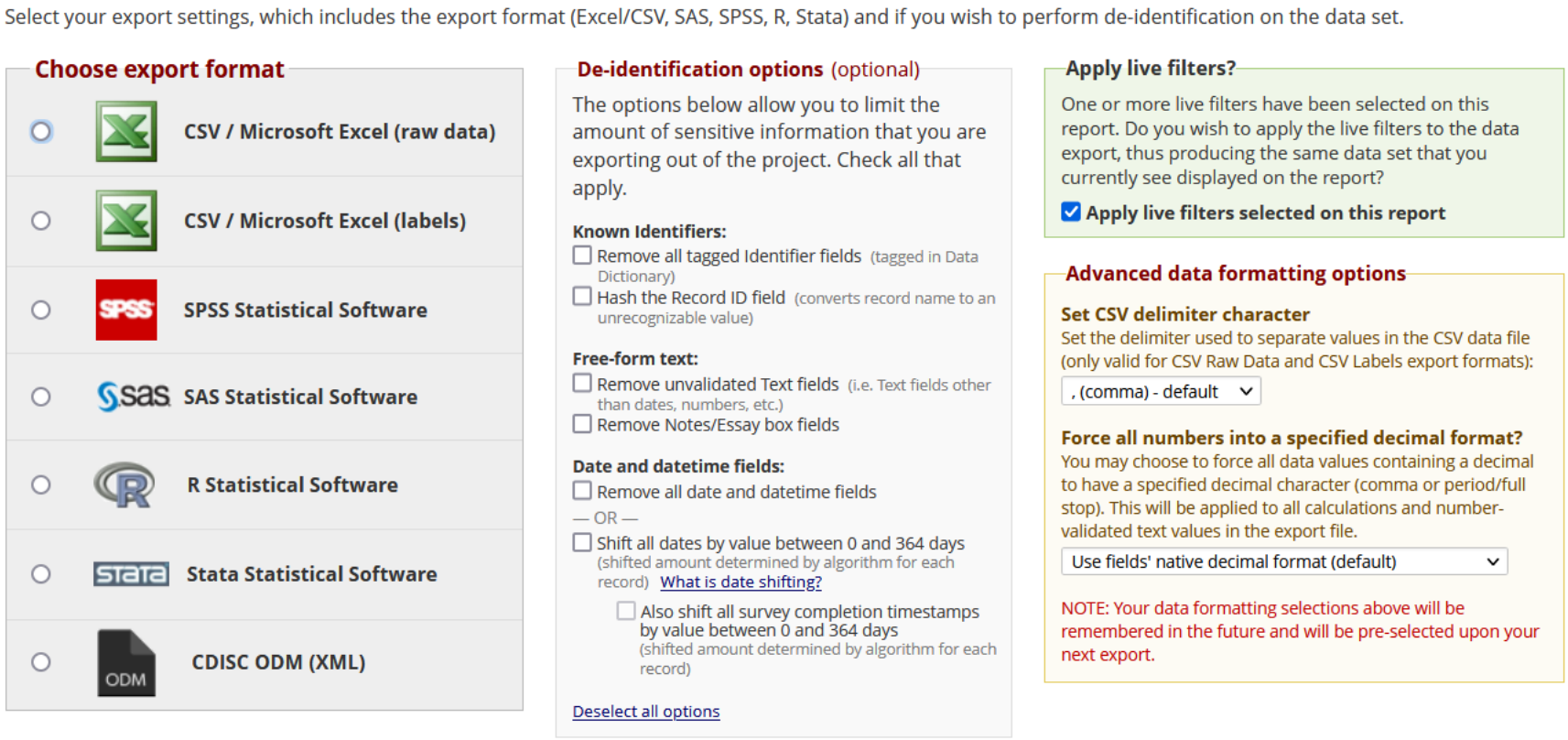
Live filters: V4 Reset

Subject ID subjectid	**Event Name** redcap_event_name	**Date of Insomnia Severity Index** isi_date	**1. Difficulty falling asleep** isi1	**2. Difficulty staying asleep** isi2	**3. Problems waking up too early** isi3	**4. How SATISFIED/DISSATISFIED are you with your CURRENT sleep pattern?** isi4	**5. How NOTICEABLE to others do you think your sleep problem is in t ... ring the quality of your life?** isi5
51	V4	01-27-2021	None (0)	Mild (1)	None (0)	Very Satisfied (0)	A Little (1)
231	V4	05-10-2021	Moderate (2)	Moderate (2)	Moderate (2)	Satisfied (1)	Not at all Noticeable (0)

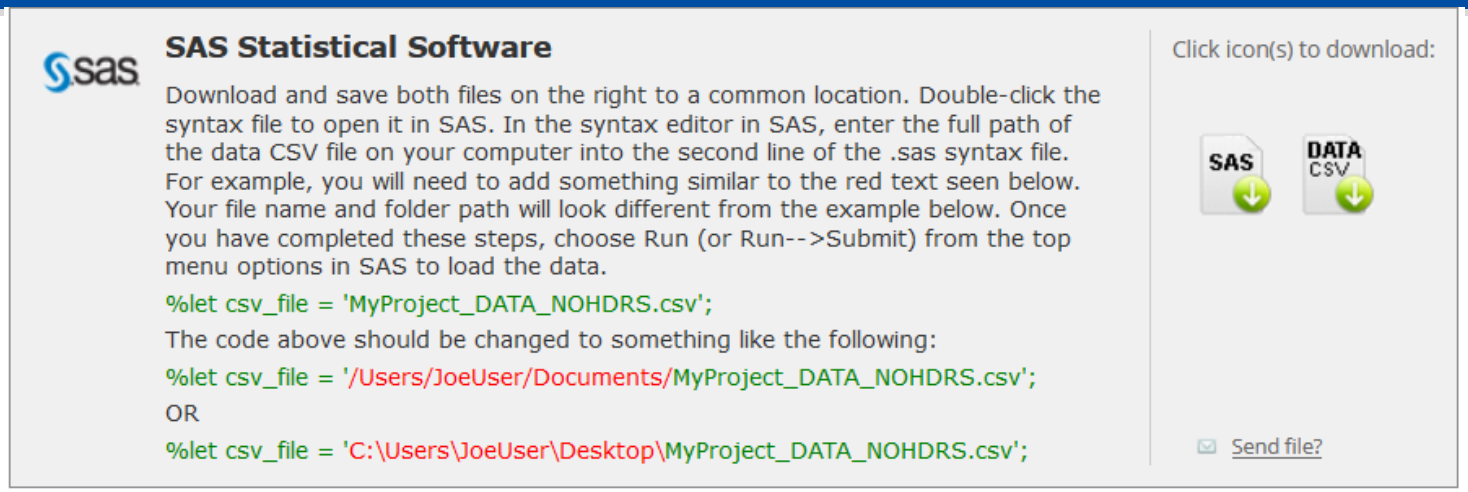
Data Export

Data Export

- Data can be exported to Excel, SAS, R, SPSS, STATA, XML.
- Options to remove identifiers from data export.



Exporting data to statistical program



SAS Statistical Software

Download and save both files on the right to a common location. Double-click the syntax file to open it in SAS. In the syntax editor in SAS, enter the full path of the data CSV file on your computer into the second line of the .sas syntax file. For example, you will need to add something similar to the red text seen below. Your file name and folder path will look different from the example below. Once you have completed these steps, choose Run (or Run-->Submit) from the top menu options in SAS to load the data.

```
%let csv_file = 'MyProject_DATA_NOHDRS.csv';
```

The code above should be changed to something like the following:

```
%let csv_file = '/Users/JoeUser/Documents/MyProject_DATA_NOHDRS.csv';
```

OR

```
%let csv_file = 'C:\Users\JoeUser\Desktop\MyProject_DATA_NOHDRS.csv';
```

Click icon(s) to download:

SAS DATA CSV

Send file?

- When exporting data to statistical program, REDCap will generate a syntax file and a CSV data file
- Download and save both files to a common location.
- Follow the instructions on the data export page to add the location of the CSV data file to the syntax file
- Run the code to import the data to the statistical program

QUESTIONS?

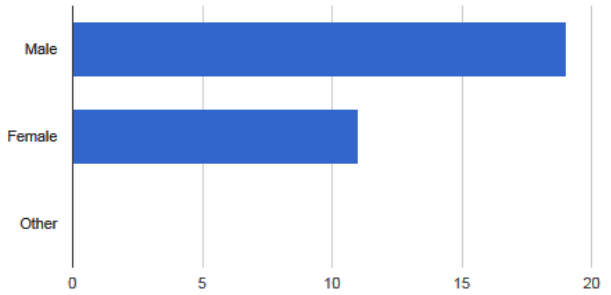
Stats and Charts

Stats and Charts

Gender Refresh Plot | View as Bar Chart

Total Count (N)	Missing	Unique
30	0 (0.0%)	2

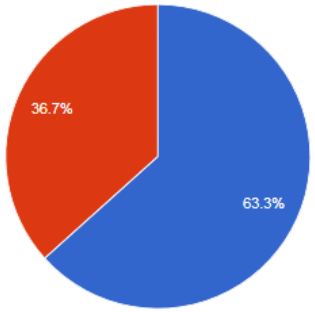
Counts/frequency: Male (19, 63.3%), Female (11, 36.7%), Other (0, 0.0%)



Gender Refresh Plot | View as Pie Chart

Total Count (N)	Missing	Unique
30	0 (0.0%)	2

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



	Report name	View/Export Options
A	**All data** (all records and fields)	View Report · Export Data · Stats & Charts

height < 150

DISPLAY OPTIONS

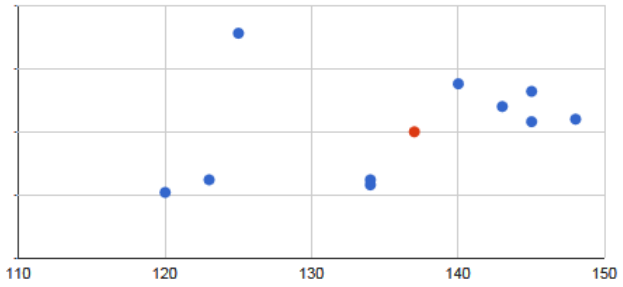
Optional: Select a record to overlay onto the plots below -- select record --

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

Height Refresh Plot

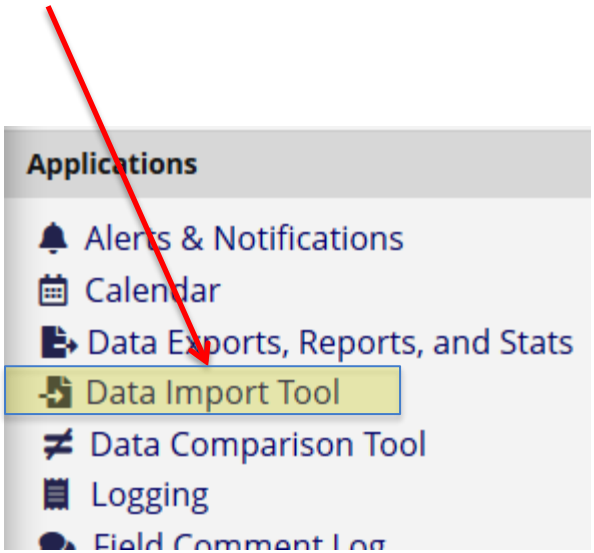
Total Count (N)	Missing	Unique	Min	Max	Mean	StDev	Sum	Percentile						
								0.05	0.10	0.25	0.50 Median	0.75	0.90	0.95
10	0 (0.0%)	8	120.00	148.00	135.70	10.13	1,357.00	121.35	122.70	127.25	137.00	144.50	145.30	146.65

Lowest values: 120, 123, 125, 134, 134
Highest values: 140, 143, 145, 145, 148



QUESTIONS?

Data Import



Data Import Tool

This module may be used for importing data into this project from a CSV (comma delimited) file or alternatively from an XML file in CDISC ODM format. Below are the steps you will need to follow in order to import your data successfully into this project.

CSV import | CDISC ODM (XML) import

Instructions:

1.) Click the link below 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)

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.
- All multiple choice fields (e.g., dropdown, radio) must have the raw coded value (rather than the choice label) entered in those cells, or else it cannot be processed. These can be found in the Codebook.
- 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.

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.

How to import data to project

- On the data import page, follow the instructions to download the data import template.
- Place the data for each record that you wish to import in the data import template. Once all your data has been added, save the file.
- All multiple-choice fields (e.g., dropdown, radio) must have the raw coded value (rather than the choice label)
- Delete any empty columns or rows to save processing time
- Follow the instructions to upload the file.
- Once the file is uploaded, the data will be displayed and checked for errors before it is imported

Data Import for Longitudinal Projects

- Longitudinal project
  - Must include '**redcap_event_name**' field in your data import file. A list of unique event names can be found on the define my event page.
  - redcap_event_name can be found on the 'Define My Events' page

	Event #	Days Offset	Offset Range Min / Max	Event Name	Custom Event Label (optional)	Unique event name (auto-generated)
	1	1	-0/+0	Event 1		event_1_arm_1
	2	2	-0/+0	Event 2		event_2_arm_1
	3	3	-0/+0	Event3		event3_arm_1

	A	B	C	D	E	F	G
1	record_id	redcap_event_name	age	screening_sex	race	test_date1	test_form_complete
2	5	event_1_arm_1	50	2	5	3/18/2020	2

Data Import for Repeating Form

- Repeating form
  - Must include '**redcap_repeat_instrument**' and '**redcap_repeat_instance**' fields in the import file. Repeat instrument name can be found in the codebook and the repeat instance is the instance number of your data.

Codebook:

	#	Variable / Field Name	Field Label *Field Note*
Instrument: **Test form** (test_form)			
	1	record_id	Record ID

CSV file to be imported:

	A	B	C	D	E	F	G	H	I
1	record_id	redcap_event_name	redcap_repeat_instrument	redcap_repeat_instance	age	screening_sex	race	test_date1	test_form_complete
2	1	event_1_arm_1	test_form	2	50	2	5	3/18/2020	2

Data Import for Repeating Form

- If importing repeating instances for a repeating event or repeating instrument, you may auto-number the instances by providing a value of 'new' for the 'redcap_repeat_instance' field in the dataset you are importing.
  - This is useful because it allows you to import such data without the need to determine how many instances already exist for a given repeating event/instance prior to the import.

Data Import for Data Access Group

- Data Access Group
  - When importing new record, you can assign data access groups to your records. Include the '**redcap_data_access_group**' field with your data import. A list of data access group names can be found on the data access group page.

Data Access Groups	Users in group	Number of records in group	Unique group name (auto-generated)	Group ID number	Delete group?
test1		1	test1	2292	✖
test2		1	test2	2293	✖

	A	B	C	D	E	F	G	H
1	record_id	redcap_event_name	redcap_data_access_group	age	screening_sex	race	test_date1	test_form_complete
2	2292-1	event_1_arm_1	test1	50	2	5	3/18/2020	2

QUESTIONS?

REDCap API

- 'API' stands for 'Application Programming Interface'
- REDCap API is an interface that allows external applications to connect to REDCap remotely
- Can be used for automated data imports/exports from a specified REDCap project
- API Token
  - Rather than using username/passwords, the REDCap API uses tokens as a means of secure authentication.
  - A token must be included in every API request.
  - Each user will have a different token for each REDCap project to which they have access.
  - Enable API Export/Import rights before requesting API token.

API Playground

- An interface that allows experimentation with the REDCap API without writing code.
- You can explore all the different API methods and their various options to customize a given API request
- You may even execute a real API request and see the exact response that REDCap returns from the request
- Example codes can be downloaded from API documentation page

Other Export Options

- Export entire project as REDCap XML file (containing metadata & data)
- ZIP file of uploaded files (all records)
- PDF of data collection instruments containing saved data (all records)

+ Create New Report | My Reports & Exports | Other Export Options

Below are some additional export options that are available for your project. Instructions for each type of export are provided. You may click the corresponding icon on the right to download the file for each.

Export entire project as REDCap XML file (containing metadata & data)

The entire project (all records, events, arms, instruments, fields, and project attributes) can be downloaded as a single XML file, which is in CDISC ODM format (ODM version 1.3.1). This XML file can be used to create a clone of the project (including its data, optionally) on this REDCap server or on another REDCap server (it can be uploaded on the Create New Project page). Because it is in CDISC ODM format, it can also be used to import the project into another ODM-compatible system.

REDCap XML

ZIP file of uploaded files (all records)

Uploaded files for all records in this project may be downloaded in a single ZIP file. This file contains any files uploaded for 'File Upload' fields/questions on a survey or data entry form. The ZIP file will contain a folder of all the files organized by record name and variable/field name and also contains an index.html file that serves as a table of contents for all the files. After downloading the ZIP file, extract all the files/folders to a directory on your local computer, after which you may double-click the index.html file inside to view a listing of the files using your web browser, or you may view the files directly by looking in the 'documents' folder. Click the icon to the right to begin downloading the ZIP file.

Note: If your project has a large amount of 'File Upload' fields/questions or records/responses, the resulting ZIP file may be very large in file size. Please be patient if the file takes time to download.

ZIP

PDF of data collection instruments containing saved data (all records)

The data for all records in this project may be downloaded in a single PDF file. This file contains the actual page format as you would see it on the data entry page or survey and includes all data for all records for all data collection instruments. Click the icon to the right to begin downloading the file. Also, you may optionally click the Compact option to download a PDF that excludes fields that have no data saved and excludes unselected multiple choice options. (Note: Section headers and descriptive fields will still be included.)

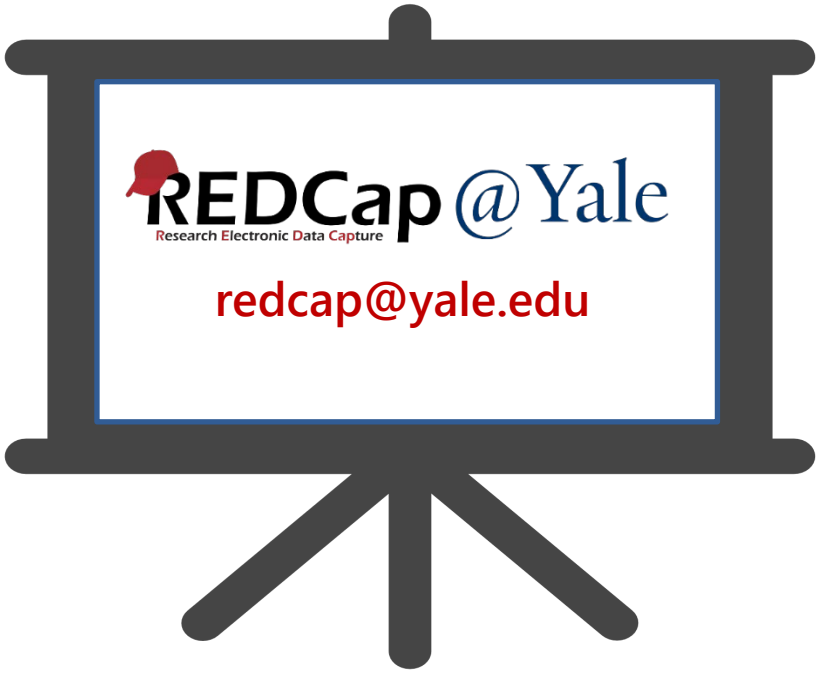
Note: If your project has a large amount of fields/questions or records/responses, the resulting PDF file may be very large both in file size and in page length. Please be patient if the file takes time to

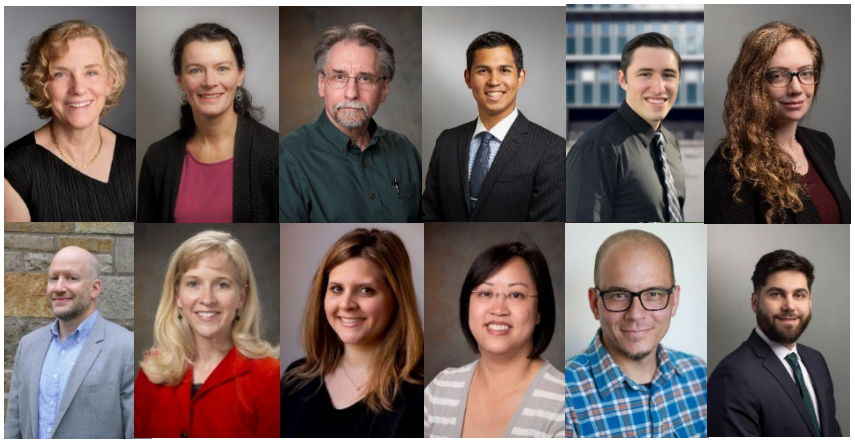
PDF

Compact PDF

QUESTIONS?

REDCap@Yale Team





Top Row

Denise Acampora
Katy Araujo
Peter Charpentier
Sumon Chattopadhyay
Kraig Eisenman
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Thank You!

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