Managing Data in REDCap

Reports and Data Import/Export

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Introduction and Learning Objective

- Understand instrument-level data viewing and export rights
- 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.
Instrument Level Data Viewing and Export Rights
Instrument-level Data Export Rights

- A user may be given "No Access", "De-Identified", "Remove All Identifier Fields", or "Full Data Set" data export rights for EACH data collection instrument.

- Pro’s
  - Easier to match a user's Data Exports Rights with their Data Viewing Rights.
  - Give you more granular control for allowing users to export data from your project.

### Privileges for Viewing and Exporting Data

Data Viewing Rights pertain to a user's ability to view or edit data on pages in the project (e.g., data entry forms, reports). Users with 'No Access' Data Viewing Rights for a given instrument will not be able to view that instrument for any record, nor will they be able to view fields from that instrument on a report. Data Export Rights pertain to a user’s ability to export data from the project, whether through the Data Exports page, API, Mobile App, or in PDFs of instruments containing record data. Note: Data Viewing Rights and Data Export Rights are completely separate and do not impact one another.

<table>
<thead>
<tr>
<th>Data Viewing Rights</th>
<th>Data Export Rights</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Access (Hidden)</td>
<td>No Access</td>
</tr>
<tr>
<td>Read Only</td>
<td>De-Identified*</td>
</tr>
<tr>
<td>View &amp; Edit</td>
<td>Remove All Identifier Fields</td>
</tr>
<tr>
<td>Edit survey responses</td>
<td>Full Data Set</td>
</tr>
</tbody>
</table>

- **Demographics**
  - No Access
  - Read Only
  - View & Edit
  - Edit survey responses

- **Age Screener**
  - No Access
  - Read Only
  - View & Edit

- **Preliminary Screen (survey)**
  - No Access
  - Read Only
  - View & Edit

- **Outcome of Preliminary Screen**
  - No Access
  - Read Only
  - View & Edit

- **Medical History (survey)**
  - No Access
  - Read Only
  - View & Edit

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REDCap@Yale
Instrument-level Data Viewing and Export Rights

Important note about instrument-level data viewing and data export rights

Development Project:
• When adding a new form to a development project -> all users automatically receive "Full Data Set" data export rights for the new instrument.

Production Project:
• When adding a new form to a production project -> all users will automatically receive "No Access" to data viewing and data export rights for the new instrument.

Remember to give your users view/edit/export rights to the new instrument after the production changes have been approved.
Reports
Data Exports, Reports, and Stats

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

<table>
<thead>
<tr>
<th>Report name</th>
<th>View/Export Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>All data (all records and fields)</td>
<td>View Report, Export Data, Stats &amp; Charts</td>
</tr>
<tr>
<td>Selected instruments and/or events (all records)</td>
<td>Make custom selections</td>
</tr>
<tr>
<td>Demographics</td>
<td>View Report, Export Data, Stats &amp; Charts</td>
</tr>
</tbody>
</table>

+ Create New Report
## Reports

<table>
<thead>
<tr>
<th>A</th>
<th>All data (all records and fields)</th>
<th>View Report</th>
<th>Export Data</th>
<th>Stats &amp; Charts</th>
</tr>
</thead>
</table>

| B | Selected instruments and/or events (all records) | View Report | Export Data | Stats & Charts |

Select one or more instruments/events below for all records.

**Instruments**
- All instruments
- Screening
- Tracking Visits
- Goal Facilitation Visit
- PCP Visit

**Events**
- All events
- Baseline (Arm 1: Intervention)
- FU (Arm 1: Intervention)
- Baseline (Arm 2: Control)
- FU (Arm 2: Control)

- OR -

+ Create report (based on the selections above)

---

**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

Create New Report

User Access:
- View Access: Choose who can edit and view this report
  - All users
  - Custom user access
- Edit Access: Choose who can edit, copy, or delete this report
  - All users
  - Custom user access

Fields to include in report
- Add all fields from selected instrument:
  - Field 1: id "Participant ID code"

Filters (optional)
- Type variable name or field label
  - Filter 1

Order the Results (optional)
- First by id "Participant ID code"
Set up user access settings

Three ways to select fields to include in the report
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
- 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
- age "Age"
- sex "Sex"
- race "Race"
- demographic_complete "Complete?"

### Female Survey
- female1 "Female question 1"
- female2 "Female question 2"
- female_survey_complete "Complete?"

Total fields selected: **10**
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)
- 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. Data arranged by records. **One row per record.**
2. Choose the field and specify the operator and value for the first filter.
3. Select And/Or for the next filter.
4. Choose field and specify the operator and value for the next filter.

**STEP 3**

<table>
<thead>
<tr>
<th>Filters (optional)</th>
<th>Operator / Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Filter 1</strong></td>
<td>age &quot;Age&quot;</td>
</tr>
<tr>
<td></td>
<td>&lt; 60</td>
</tr>
<tr>
<td>AND</td>
<td></td>
</tr>
<tr>
<td><strong>Filter 2</strong></td>
<td>sex &quot;Sex&quot;</td>
</tr>
<tr>
<td></td>
<td>= Male</td>
</tr>
<tr>
<td>AND</td>
<td></td>
</tr>
<tr>
<td><strong>Filter 3</strong></td>
<td>-- select a field --</td>
</tr>
</tbody>
</table>
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.

### Filters (optional)

<table>
<thead>
<tr>
<th>Filter 1</th>
<th>Operator / Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>consent_obtained &quot;Signed informed co&quot;</td>
<td>= Yes, signed by subjex</td>
</tr>
<tr>
<td>in Screening</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Filter 2</th>
<th>Operator / Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>sex &quot;Sex&quot;</td>
<td>= Female</td>
</tr>
<tr>
<td>in Screening</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Filter 3</th>
<th>Operator / Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>arm &quot;Study arm assignment&quot;</td>
<td>= Acute Intervention</td>
</tr>
<tr>
<td>in Randomization</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Filter 4</th>
<th>Operator / Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-- select a field --</td>
<td></td>
</tr>
<tr>
<td>in All events</td>
<td></td>
</tr>
</tbody>
</table>

**TIP:** Use (X-instance) Smart Variables to filter repeating data.
- Show only repeating instance: \([\text{current-instance}] <> ""\)
- Show only the first repeating instance: \([\text{current-instance}] <> "" \text{ and } [\text{current-instance}] = [\text{first-instance}]\)
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:**

\[
([\text{screening\_arm\_1}][\text{consent\_obtained}] = "1") \text{ AND } ([\text{screening\_arm\_1}][\text{sex}] = "2") \text{ AND } ([\text{randomization\_arm\_1}][\text{arm}] = "1")
\]
How to set up report filters – Longitudinal Project

**STEP 3**

1. **Show data for all events or repeating instruments for each record returned**

<table>
<thead>
<tr>
<th>Record ID record_id</th>
<th>Event Name recap_event_name</th>
<th>Signed informed consent obtained (patient now enrolled in study)</th>
<th>Sex</th>
<th>Ethnicity ethnicity</th>
<th>Race</th>
<th>Study arm assignment arm</th>
<th>Randomization Date random_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>124 Lname124, Fname124</td>
<td>Screening</td>
<td>Yes, signed by subject (1)</td>
<td>Female (2)</td>
<td>Not Hispanic or Latino (2)</td>
<td>White (5)</td>
<td>Acute Intervention (1)</td>
<td>01-08-2021</td>
</tr>
<tr>
<td>124 Lname124, Fname124</td>
<td>Randomization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>124 Lname124, Fname124</td>
<td>6 month</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. **Show data for all events or repeating instruments for each record returned**

<table>
<thead>
<tr>
<th>Record ID record_id</th>
<th>Event Name recap_event_name</th>
<th>Signed informed consent obtained (patient now enrolled in study)</th>
<th>Sex</th>
<th>Ethnicity ethnicity</th>
<th>Race</th>
<th>Study arm assignment arm</th>
<th>Randomization Date random_date</th>
</tr>
</thead>
<tbody>
<tr>
<td>124 Lname124, Fname124</td>
<td>Screening</td>
<td>Yes, signed by subject (1)</td>
<td>Female (2)</td>
<td>Not Hispanic or Latino (2)</td>
<td>White (5)</td>
<td>Acute Intervention (1)</td>
<td>01-08-2021</td>
</tr>
<tr>
<td>124 Lname124, Fname124</td>
<td>Randomization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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]

Example: Include only last instance of call log in the report
### How to set up report filters – Repeating form

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

<table>
<thead>
<tr>
<th>Study ID (study_id)</th>
<th>Event Name (recap_event_name)</th>
<th>Repeat Instrument (recap_repeat_instrument)</th>
<th>Repeat Instance (recap_repeat_instance)</th>
<th>Date (call_date)</th>
<th>Time (call_time)</th>
<th>Day of Week (call_day_week)</th>
<th>Contact Method (call_method)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Baseline</td>
<td>Baseline Call Log</td>
<td>6</td>
<td>03-05-2021</td>
<td></td>
<td>Friday (5)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Study ID (study_id)</th>
<th>Event Name (recap_event_name)</th>
<th>Repeat Instrument (recap_repeat_instrument)</th>
<th>Repeat Instance (recap_repeat_instance)</th>
<th>Date (call_date)</th>
<th>Time (call_time)</th>
<th>Day of Week (call_day_week)</th>
<th>Contact Method (call_method)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Baseline</td>
<td>Baseline Call Log</td>
<td>6</td>
<td>03-05-2021</td>
<td></td>
<td>Friday (5)</td>
<td>Phone call (1)</td>
</tr>
<tr>
<td>7</td>
<td>Baseline</td>
<td>Baseline Call Log</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Baseline</td>
<td>Baseline Call Log</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Baseline</td>
<td>Baseline Call Log</td>
<td>5</td>
<td>03-04-2021</td>
<td></td>
<td>Thursday (4)</td>
<td>Phone call (1)</td>
</tr>
<tr>
<td>12</td>
<td>Baseline</td>
<td>Baseline Call Log</td>
<td>4</td>
<td>03-02-2021</td>
<td></td>
<td>Tuesday (2)</td>
<td>Phone call (1)</td>
</tr>
<tr>
<td>13</td>
<td>Baseline</td>
<td>Baseline Call Log</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Phone call (1)</td>
</tr>
</tbody>
</table>
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)

<table>
<thead>
<tr>
<th>Subject ID</th>
<th>Event Name</th>
<th>Date of Insomnia Severity Index</th>
<th>1. Difficulty falling asleep</th>
<th>2. Difficulty staying asleep</th>
<th>3. Problems waking up too early</th>
<th>4. How SATISFIED/DISSATISFIED are you with your CURRENT sleep pattern?</th>
<th>5. How NOTICABLE to others do you think your sleep problem is in t ... ring the quality of your life?</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>V0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>V1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>V2</td>
<td>09-14-2020</td>
<td>Mild (1)</td>
<td>Mild (1)</td>
<td>Mild (1)</td>
<td>Moderately Satisfied (2)</td>
<td>Somewhat (2)</td>
</tr>
<tr>
<td>51</td>
<td>V3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>V4</td>
<td>01-27-2021</td>
<td>None (0)</td>
<td>Mild (1)</td>
<td>None (0)</td>
<td>Very Satisfied (0)</td>
<td>A Little (1)</td>
</tr>
<tr>
<td>Subject ID</td>
<td>Event Name</td>
<td>Date of Event</td>
<td>1. Difficulty falling asleep</td>
<td>2. Difficulty staying asleep</td>
<td>3. Problems waking up too early</td>
<td>4. How SATISFIED/DISSATISFIED are you with your CURRENT sleep pattern?</td>
<td>5. How NOTICEABLE to others do you think your sleep problem is in terms of quality of your life?</td>
</tr>
<tr>
<td>------------</td>
<td>------------</td>
<td>---------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>51</strong></td>
<td>V4</td>
<td>01-27-2021</td>
<td>None (0)</td>
<td>Mild (1)</td>
<td>None (0)</td>
<td>Very Satisfied (0)</td>
<td>A Little (1)</td>
</tr>
<tr>
<td><strong>231</strong></td>
<td>V4</td>
<td>05-10-2021</td>
<td>Moderate (2)</td>
<td>Moderate (2)</td>
<td>Moderate (2)</td>
<td>Satisfied (1)</td>
<td>Not at all Noticeable (0)</td>
</tr>
</tbody>
</table>

('records' = total available data across all designated events)
Report execution time: 0 seconds
Data Export
Data Export Formats

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

Select your export settings, which includes the export format (Excel/CSV, SAS, SPSS, R, Stata) and if you wish to perform de-identification on the data set.

Choose export format
- CSV / Microsoft Excel (raw data)
- CSV / Microsoft Excel (labels)
- SPSS Statistical Software
- SAS Statistical Software
- R Statistical Software
- Stata Statistical Software
- CDISC ODM (XML)

De-identification options (optional)
The options below allow you to limit the amount of sensitive information that you are exporting out of the project. Check all that apply.

- **Known Identifiers:**
  - Remove all tagged Identifier fields (tagged in Data Dictionary)
  - Hash the Record ID field (converts record name to an unrecognizable value)

- **Free-form text:**
  - Remove unvalidated Text fields (i.e. Text fields other than dates, numbers, etc.)
  - Remove Notes/Essay box fields

- **Date and datetime fields:**
  - Remove all date and datetiem fields
    - OR -
  - Shift all dates by value between 0 and 364 days (shifted amount determined by algorithm for each record). **What is date shifting?**
    - Also shift all survey completion timestamps by value between 0 and 364 days (shifted amount determined by algorithm for each record)

Apply live filters?
One or more live filters have been selected on this report. Do you wish to apply the live filters to the data export, thus producing the same data set that you currently see displayed on the report?
- [ ] Apply live filters selected on this report

Advanced data formatting options
- **Set CSV delimiter character**
  Set the delimiter used to separate values in the CSV data file (only valid for CSV Raw Data and CSV Labels export formats):
  - (comma) - default

- **Force all numbers into a specified decimal format?**
  You may choose to force all data values containing a decimal to have a specified decimal character (comma or period/full stop). This will be applied to all calculations and number-validated text values in the export file.
  - Use fields’ native decimal format (default)

NOTE: Your data formatting selections above will be remembered in the future and will be pre-selected upon your next export.
Exporting data to statistical program

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.

Here is an example of the code:

```sas
%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';
```
QUESTIONS?
Stats and Charts
Stats and Charts

### Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Total</th>
<th>Missing</th>
<th>Unique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>19</td>
<td>0 (0.0%)</td>
<td>2</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>0 (0.0%)</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0 (0.0%)</td>
<td>2</td>
</tr>
</tbody>
</table>

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

### Height < 150

#### DISPLAY OPTIONS
Optional: Select a record to overlay onto the plots below

- select record

#### Viewing options:
- Show plots & data
- Show plots only
- Show plots only

#### Height

<table>
<thead>
<tr>
<th>Total Count (N)</th>
<th>Missing</th>
<th>Unique</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>StDev</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0 (0.0%)</td>
<td>8</td>
<td>120.0</td>
<td>146.0</td>
<td>135.7</td>
<td>10.13</td>
<td>1.357</td>
</tr>
</tbody>
</table>

Lowest values: 120, 123, 125, 134, 134
Highest values: 140, 143, 145, 146

### Chart

- Bar chart for gender distribution
- Pie chart for gender distribution
- Scatter plot for height distribution
Using Aggregate Functions in Reports
### What are Aggregate Functions

**Smart Variables**

<table>
<thead>
<tr>
<th>Name of Smart Variable</th>
<th>Description</th>
<th>Example input</th>
<th>Example output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>[aggregate-min:fields:parameters]</strong></td>
<td>The minimum value of a field across all records in the project (including all events and/or repeating instances in all records). Multiple fields may be used and must be comma-separated.</td>
<td>[aggregate-min:age]</td>
<td>13</td>
</tr>
<tr>
<td><strong>[aggregate-max:fields:parameters]</strong></td>
<td>The maximum value of a field across all records in the project (including all events and/or repeating instances in all records). Multiple fields may be used and must be comma-separated.</td>
<td>[aggregate-max:age]</td>
<td>95</td>
</tr>
<tr>
<td><strong>[aggregate-mean:fields:parameters]</strong></td>
<td>The mean/average value of a field across all records in the project (including all events and/or repeating instances in all records). Multiple fields may be used and must be comma-separated.</td>
<td>[aggregate-mean:age]</td>
<td>100.1</td>
</tr>
<tr>
<td><strong>[aggregate-median:fields:parameters]</strong></td>
<td>The median value of a field across all records in the project (including all events and/or repeating instances in all records). Multiple fields may be used and must be comma-separated.</td>
<td>[aggregate-median:age]</td>
<td>57</td>
</tr>
<tr>
<td><strong>[aggregate-sum:fields:parameters]</strong></td>
<td>The sum of all values for a field across all records in the project (including all events and/or repeating instances in all records). Multiple fields may be used and must be comma-separated.</td>
<td>[aggregate-sum:age]</td>
<td>9451</td>
</tr>
<tr>
<td><strong>[aggregate-count:fields:parameters]</strong></td>
<td>The count of all values for a field across all records in the project (including all events and/or repeating instances in all records). Multiple fields may be used and must be comma-separated.</td>
<td>[aggregate-count:age]</td>
<td>68</td>
</tr>
</tbody>
</table>
Using Aggregate Functions in Report

<table>
<thead>
<tr>
<th>Name of Report:</th>
<th>Demographic Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set as &quot;public&quot;:</td>
<td>Enabling this feature below will auto-generate a public link for viewing the report without needing to log in to REDCap.</td>
</tr>
<tr>
<td>Description (optional):</td>
<td>Report is publicly viewable by anyone with the public link</td>
</tr>
</tbody>
</table>

- **Number of patients**: [aggregate-count:record_id]
- **Mean age**: [aggregate-mean:age]
- [stats-table:age]
Demographic Report

Number of patients: 8
Mean age: 46.67

<table>
<thead>
<tr>
<th>Age</th>
<th>Count</th>
<th>Missing</th>
<th>Unique</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Median</th>
<th>StDev</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>30</td>
<td>60</td>
<td>46.67</td>
<td>50</td>
<td>13.66</td>
<td>280</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Record ID</th>
<th>Event Name</th>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
<th>Contact Method (Check all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>record_id</td>
<td></td>
<td></td>
<td></td>
<td>Phone</td>
</tr>
<tr>
<td>1</td>
<td>Event 1</td>
<td>30</td>
<td>Female</td>
<td>White (5)</td>
<td>Checked (1)</td>
</tr>
<tr>
<td>2</td>
<td>Event 1</td>
<td>30</td>
<td>Male</td>
<td>Black or African American (4)</td>
<td>Checked (1)</td>
</tr>
<tr>
<td>3</td>
<td>Event 1</td>
<td>50</td>
<td>Female</td>
<td>Native Hawaiian or Other Pacific Islander (3)</td>
<td>Checked (1)</td>
</tr>
<tr>
<td>4</td>
<td>Event 1</td>
<td>60</td>
<td>Male</td>
<td>Asian (2)</td>
<td>Checked (1)</td>
</tr>
<tr>
<td>5</td>
<td>Event 1</td>
<td></td>
<td>Female</td>
<td>American Indian/Alaska Native (1)</td>
<td>Checked (1)</td>
</tr>
<tr>
<td>6</td>
<td>Event 1</td>
<td></td>
<td>Male</td>
<td>Asian (2)</td>
<td>Unchecked (0)</td>
</tr>
<tr>
<td>7</td>
<td>Event 1</td>
<td>50</td>
<td>Female</td>
<td>Native Hawaiian or Other Pacific Islander (3)</td>
<td>Checked (1)</td>
</tr>
<tr>
<td>8</td>
<td>Event 1</td>
<td>60</td>
<td>Male</td>
<td>Asian (2)</td>
<td>Checked (1)</td>
</tr>
</tbody>
</table>
QUESTIONS?
**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)
- 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

• Download data import template from the data import page

• 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
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:

<table>
<thead>
<tr>
<th>#</th>
<th>Variable / Field Name</th>
<th>Field Label</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Instrument</strong>: Test form <em>(test_form)</em></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>record_id</td>
<td>Record ID</td>
</tr>
</tbody>
</table>

CSV file to be imported:
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.

<table>
<thead>
<tr>
<th>Data Access Groups</th>
<th>Users in group</th>
<th>Number of records in group</th>
<th>Unique group name (auto-generated)</th>
<th>Group ID number</th>
<th>Delete group?</th>
</tr>
</thead>
<tbody>
<tr>
<td>test1</td>
<td></td>
<td>1</td>
<td>test1</td>
<td>2292</td>
<td></td>
</tr>
<tr>
<td>test2</td>
<td></td>
<td>1</td>
<td>test2</td>
<td>2293</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>record_id</td>
<td>redcap_event_name</td>
<td>redcap_data_access_group</td>
<td>age</td>
<td>screening _sex</td>
<td>race</td>
<td>test_date1</td>
</tr>
<tr>
<td>2</td>
<td>2292-1</td>
<td>event_1_arm_1</td>
<td>test1</td>
<td>50</td>
<td>2</td>
<td>5</td>
<td>3/18/2020</td>
</tr>
</tbody>
</table>
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.
Resources on REDCap@Yale Website

https://portal.redcap.yale.edu/resources/frequently-asked-questions

Features-Advanced

- Alerts and Notifications
  - What is REDCap API?
  - How do I set up an API to export data to SAS?
  - How do I set up an API to export data to R?
  - How do I request an API Token?
QUESTIONS?
REDCap@Yale Team

Top Row
Denise Acampora
Katy Araujo
Peter Charpentier
Sumon Chattopadhyay
Kraig Eisenman
Janet Miceli

Bottom Row
Brian Funaro
Mary Geda
Dana Limone
Sui Tsang
Jesse Reynolds
Tyler Hamilton
Thank You!

Further Questions: Contact us at REDCap@yale.edu
Extra Slides
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)
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.

**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.*

**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*