REDCAP
Importing, Exporting and Reporting(302)

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REDCap
Research Electronic Data Capture

Learning objectives

- Report building

- Exporting data from REDCap

- Importing data into REDCap

- Backup options
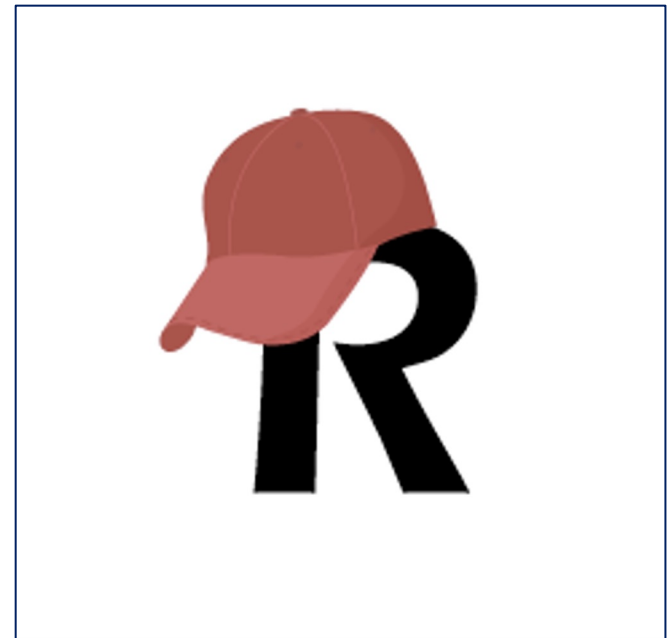
ITHS Focus

- Speeding science to clinical practice for the benefit of patients and communities.

- Promotes translation of scientific discovery by:
  - ❑ Fostering innovative research
  - ❑ Cultivating multi-disciplinary partnerships
  - ❑ Training the next generation of researchers

- More information: www.iths.org

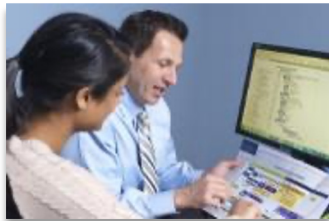**Laboratory** → **Clinic** → **Community**

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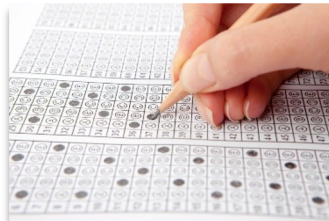
Report building in REDCap

| Name your Report | User Access | Select Fields | Filters | Order the Results |

Complete all steps to build reports

Report building

User Access

Select Fields

Filters

Order the results

Viewing your report

Longitudinal/Repeat Impact

User Access (Step 1)

Two options:

- All users (Default)
- Custom
    - Specific users
    - User roles
    - Data Access Groups (DAG's)
    - Combination of all the above

- Use "View user access list" to get an overview
- Useful to prevent "report overload"
- Take care with the "Add/edit reports" user right
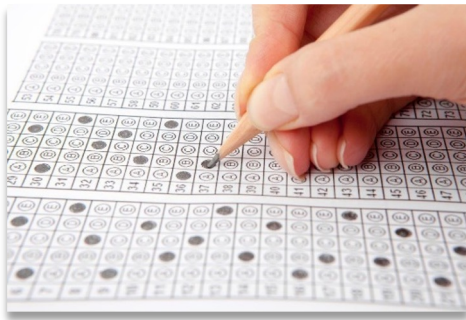
Report building

User Access

Select Fields

Filters

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Select Fields (Step 2)

- Four main ways of selecting fields
  - Field Lookup
  - Field Dropdown
  - Quick Add
  - By Instrument
- Order of field is modifiable by dragging and dropping
- Be careful with large numbers of variables
  - Will overload most browsers
  - Use the Report B option instead
  - Allows for selection based on:
    - Instruments
    - Events
    - Combination

Report building

Filters (Step 3)

Three main ways to filter:

- Logic based
  - Logic builder
  - Syntax based
- Event and/or DAG based
- Live Filters
  - Multiple choice fields
  - Events
  - DAG's
- "Show data for all events" option
  - Checked means "show entire record"
  - Unchecked means "only show specific events"

Report building

User Access

Select Fields

Filters

Order the results

Viewing your report

Longitudinal/Repeat Impact

Order your results

- Order by record ID (default)

    o Makes the other two sort options irrelevant

    o Is appropriate for most reports

- If ordering by other fields, be aware of:

    o Uniqueness of a variable

    o Ascending versus Descending

    o Interaction with live filters

    o Event order

- Ordering only impacts the report displayed in the browser and the initial form of any export.

- You can reorder things if you export the report.

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Report building

User Access

Select Fields

Filters

Order the results

Viewing your report

Longitudinal/Repeat Impact

Viewing your report

- Accessible through:

  - Data exports, Reports, and stats

  - Shortcuts in the left menu

- Record ID column contains a direct link to record home

- Expect a sparse matrix

  - Dark grey cells means that variable is not assigned to that event. These will always be blank.

  - Blank cells of other colors mean no data in that field

- If no records show up, check:

  - Filters

  - User access

- Reports will be re-run every time you access it

  - Account for this in the filter step if you want a static report.

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Longitudinal & repeat impact on reports

For longitudinal projects and repeatable instruments/events

- Classic projects
  - Single row of data per record
  - Smaller export files

Exports will have 1 row per record

- Longitudinal projects
  - 1 row per event, per record
  - Only if data is in the event
  - Sparse matrix

Exports will have multiple rows per record

- Repeatable instruments/events
  - 1 row per repeat, per record
  - Bigger exports files
  - Unwieldy reports
  - Very sparse matrix

Talk to your analyst/statistician

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Public Reports

Creates a public URL accessible to anyone with a link to view results

- Public Reports must meet certain requirements:

  - User submitting must have user rights privileges in project

  - Report does not have any identifier fields

  - User must have viewed the report to confirm it is correct

- User Agreement - You have a responsibility for your data

- Administrator approval required (1 business day policy for approval)

- Once approved you will not be allowed to modify your report. To modify you must remove the public setting and request approval from an administrator again.

Exporting data from REDCap

Exporting data

Reports

Formats

De-identification options

User rights

Large exports

Other export options

Formats

Seven options:

- CSV/Excel (Raw values)
    - Quick and dirty
- CSV/Excel (Labels)
    - Handy for qualitative data
- SPSS
- SAS
- R
- Stata (v13+)
- CDISC ODM (XML)
    - Only use if you know the format

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Exporting data

Reports

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De-identification options

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De-identification options

- Automatic if you have limited user rights

- De-identify by:

  o Known identifiers

  o Free form text

  o Date/time fields

    ▪ Remove all date/time fields

    ▪ Date-shift

      * Randomly adds a value between 0 and 364

      * Modifiable per project by administrators

      * Maintains context for the dates

      * Do not use with certain projects (Neonatal, recent dates)

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Exporting data

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User rights

REDCap will automatically limit what data you can see and export based on the following:

- General user rights:
  - o Which forms you can access
  - o De-identified vs identified export rights
- Data Access Group
  - o You'll only be able to export your own group
- Report level rights
  - o Limit who can build reports to certain users

* Defaults are fine for most projects, but take time to review if you are dealing with sensitive data

Exporting data

Reports

Formats

De-identification options

User rights

Large exports

Other export options

Large exports

- Large datasets can cause performance issues for:

    o Browsers

    o Statistical programs

    o Excel

- Exact cutoff depends on:

    o Nature of the data

    o Your computer's resources

    o The software's capabilities

- Consider doing multiple smaller exports (batching)

    o By record number

    o By sets of variables

    o By events

    o By Data Access Group

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Exporting data

Reports

Other export options

    ZIP Files

    PDF's

    Other options

ZIP Files

- Download on big ZIP file for all uploaded files

  - Can get really big, really fast

- Alternatives:

  - Download individual files by clicking on them in the record itself

  - Download all files for a specific record

    - Found in the record home page

  - View certain files in line with certain external modules

    - e.g., Image viewer, for PDF's, most picture formats

  - API calls

    - Write custom scripts to download sets of files

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Exporting data

Reports

Other export options

ZIP Files

PDF's

Other options

PDF's

Two different types of PDFs:

- Blank forms
    - Found in each form for any record

- Forms with data
    - All the data for all records
        - Found in the "other export options" menu
        - Will get really big, very fast
    - All data for an individual record
        - Found in the "record home page"
        - Under "Choose action for record"
        - Found in each form for any record
    - A PDF with data of an individual form
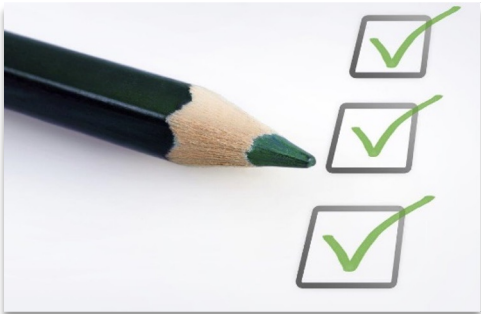   - Found in each form for any record

Exporting data

Reports

Other export options

ZIP Files

PDF's

Other options

Other options

- CSV downloads
  - o Event mappings
  - o Log files
  - o Return codes
  - o Participant survey links
- XML downloads
  - o Can be used to transfer a project between installations
  - o Full project download (data + metadata)
    - Found in the "other export options" tab
    - Found in the "other functionality" tab in the project setup page
  - o Metadata download
    - Found in the "other functionality" tab in the project setup page

Importing data into REDCap

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Data Import Tool

The Data Import Tool was meant to import legacy data into REDCap.

However, you can use it for other things too.

There are two main formats you can pick from:

CSV **(Comma Separated Values)**	*Most commonly used, Limited due to simplistic code*
CDISC ODM	*Only use if you don't need to modify things. Be careful with MS Office products due to XML nature.*

Coordinate variables

Record ID

Always required. Has to match current variable name of the record ID.
Listing existing record ID's will edit the record. New record ID's will create records.
You can have multiple rows with the same record ID.

Event ID

Only required for longitudinal projects.
Needs to match the unique event name in "Define my Events".

Repeatable instruments / instance

When uploading repeat instance: Use "new" to auto-number the instances.
For repeated events: Combine the "event name" with the "repeat instance" variables

For repeated instruments: Combine "repeat instrument" with "repeat instance"
If used in a longitudinal project, also include the "event name"

Data Access Group (DAG)

Allows you to define a Data Access Group for a record.
Completely optional when uploader is not part of a DAG.

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Batching

Basic requirements for any import

- Needs all the relevant coordinate variables
- Needs a header row *(always the first row)* with correct variable names
- Data needs to in the correct format for each variable
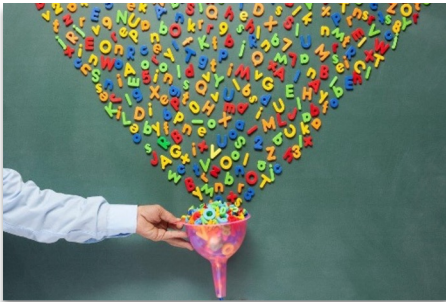
Full Uploads

- Entails your entire data set
- Can get very big, very fast
- Great for transferring data between projects

Partial Uploads

- Split up by:
  - Records, events and/or variables
- Great for quick and dirty uploads

Checkbox variables

The "odd duck" out

- Each checkbox variable gets spilt out in a number of sub variables
  e.g., "race" has 6 options, so it gets 6 sub variables.

- The sub variable header follows the format "variable name", 3 underscores, "raw value"

- Each checkbox sub variable only has two states:

  - Checked (represented by a "1")
  - Unchecked (represented by a "0")

- If left blank, REDCap will default to an "unchecked" state once a record is opened

- Pro tip: Download an import template to quickly get the headers for checkboxes

race___0	race___1	race___2	race___3	race___4	race___5	race___6
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

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Import options

Record format

Select which style of import file you want to use: rows (default) or columns.
REDCap raw values are always in the row format.

Date format

Select your favorite date format.
Key thing is to keep ALL dates in the import file consists with that format.

Blank values

Default: Ignore blank values

Optional: Allow blank values to "wipe" existing data

Force record auto-numbering

Default: Use the existing record id. Allows for overwrites and edits

Optional: Create new records based on the import file

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Double checking your work
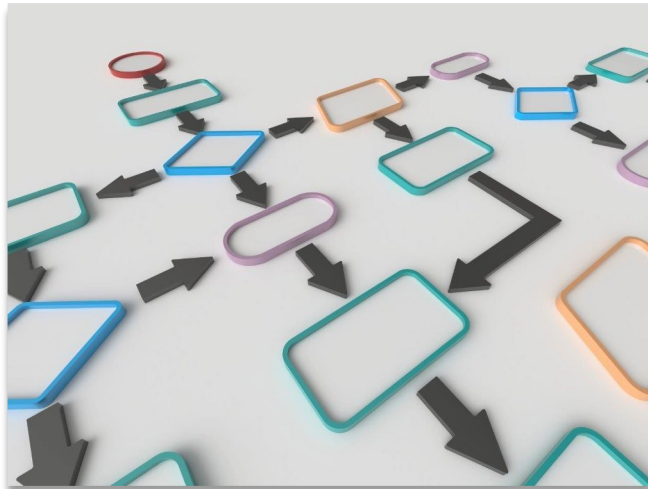
KEY for Data Display Table below

Black text = New Data

Gray text = Existing data (will not change)

(Red text) = Data that will be overwritten

Red box = error

Orange box = warning

REDCap will provide you with an overview:

- New records
- Edited fields
- Errors
    - Validation errors
    - Date errors
- Warnings
- Review and fix any errors
    - Fixes require re-uploading the file

* Always click "import Data" at the bottom of the overview to finalize the import.

REDCap will do this for you

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Practical examples of importing data

Importing legacy data

Classic use of the data import tool
Import data from an older source (excel, access, SQL database)

Seeding

Import only a number of record ID's. Useful if you want to control the number of records or the format of the record ID's.

Preloading information

Frequently used in combination with survey functionality.
Preload certain information (demographics, contact information etc) to prevent double data entry. Also useful for personalizing automatic survey invitations

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Record migration

If you want to move records between projects or arms, the data import tool will allow you to do this quickly and in bulk

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Backup options

- Full backup
    - Project setup page -> Other functionality -> "Download metadata & data (XML)"
    - Do not open in MS Office programs
- Partial Backups
    - Data
        - See previous export options
    - Metadata
        - XML download in the "Other functionality" page
        - Code book in project home page (read only)
        - Data dictionary (CSV) found in the project setup page
        - Longitudinal mappings
            * Arm mapping (CSV) found in "Define my events"
            * Event mapping (CSV) found in "Define my events"
            * Event-Instrument linking (CSV) found "Designate instruments for Events"
    - Logging (Read only)
        - Logging application, Field comment log, "Resolve issues" application

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Thank You!

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