Session 3: Build a project from scratch

Biostatistics Research and Support Unit (BRU)
IGTP

November, 2025

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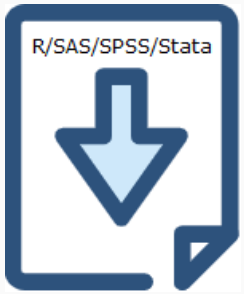

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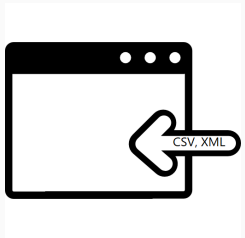


User Rights and DAGs

User Rights and DAGs

1. User Rights

 Definition

 Access

 Functionalities

 Access to the project

 Rights

 Visualization

2. DAGs

 Definition

 Access

 Functionalities

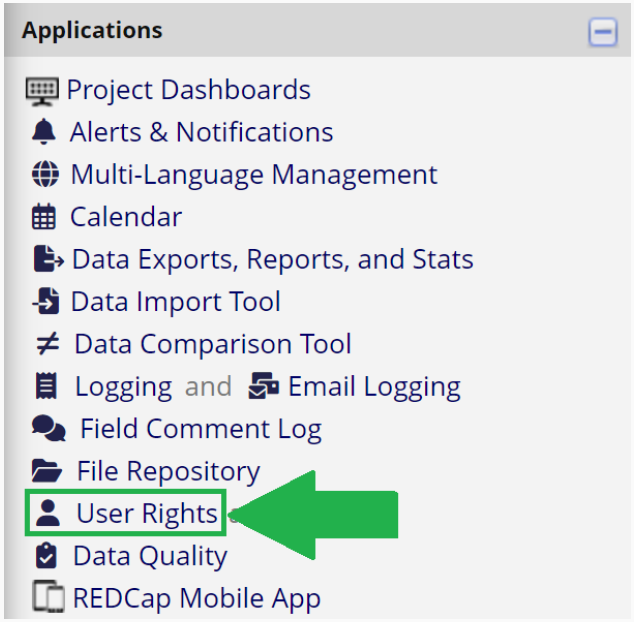
User Rights

Definition

They are used to grant users access to a project and manage personalised privileges and rights.

Access

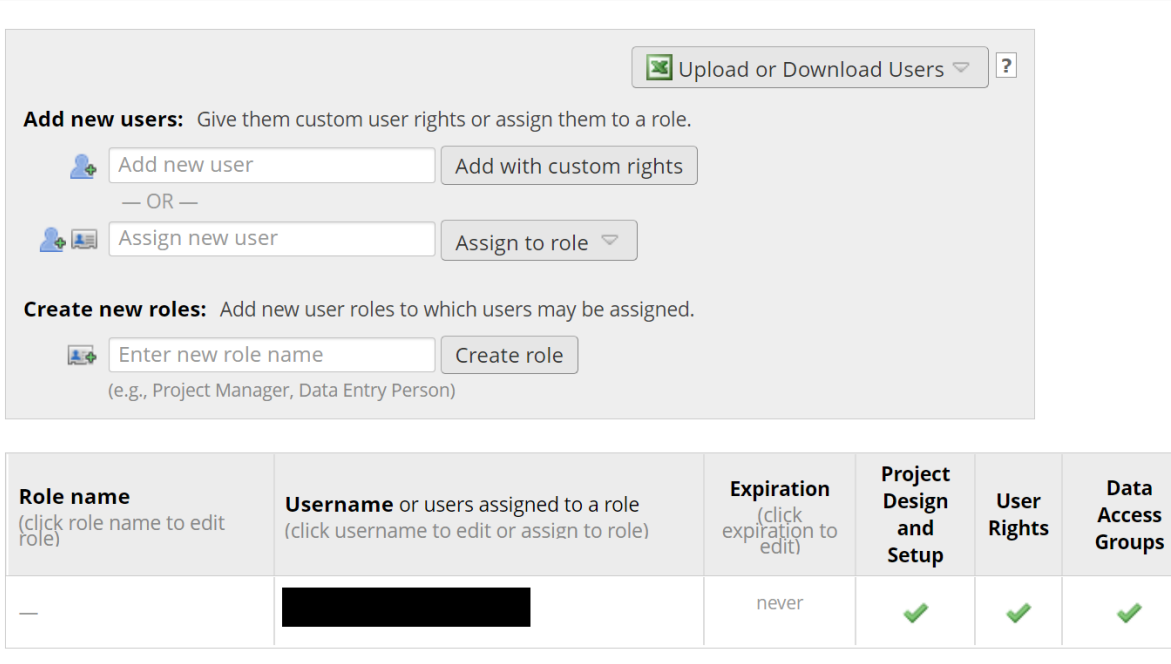
They can be found in the Project setup



User Rights

Functionalities

- Grant access to users
- Define user rights
- View user table:



Access to the Project

Steps to give a user access to your project:

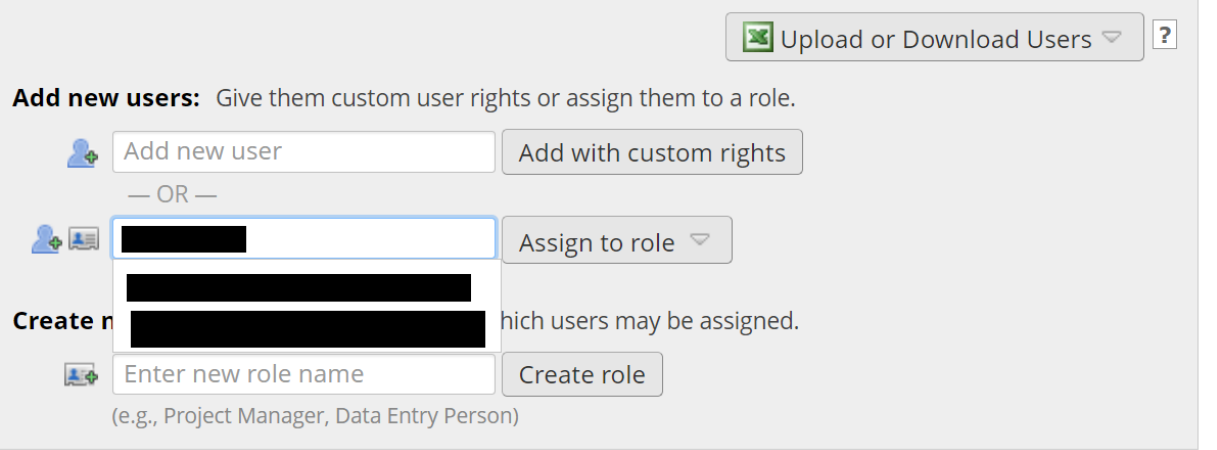
1. Create the user in the institution's REDCap:

   • This step is only necessary if the user has never been registered in the institution's REDCap.

   • An email address is required.

   • Only administrators can create users.

2. Assign the user to the project using the "Add new users" function:

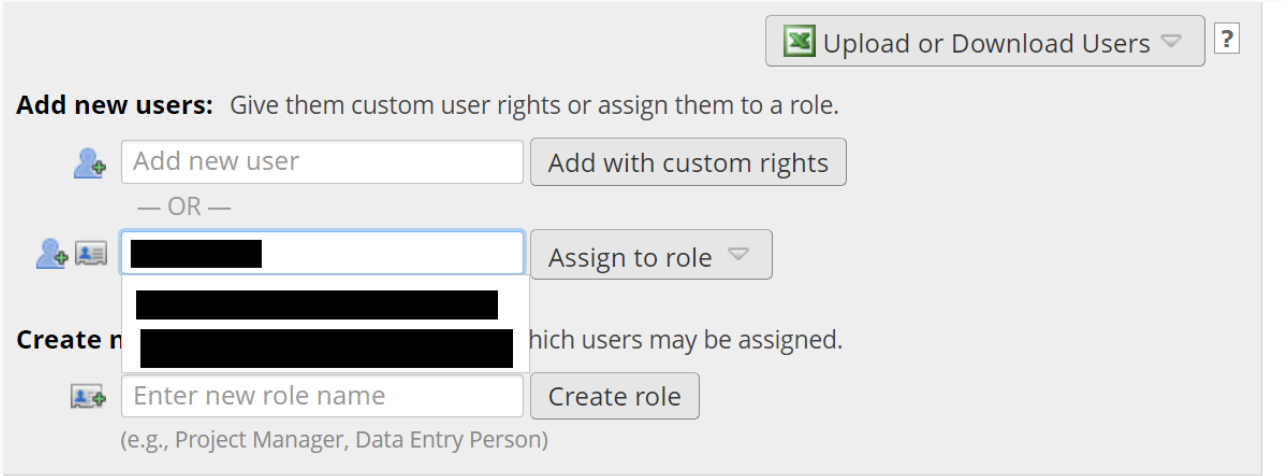


Rights

REDCap allows you to customize user rights for each project. There are two options for setting rights:

1. **Individually** .
   `Add new users >> Search user>> Add with custom rights` and define the rights you want the user to have.

2. **Roles**: This is useful when multiple users require the same set of rights. This allows you to quickly assign users to a predefined role.
   `Create new roles >> Write name of the role >> Create role` and define which rights this role will have.



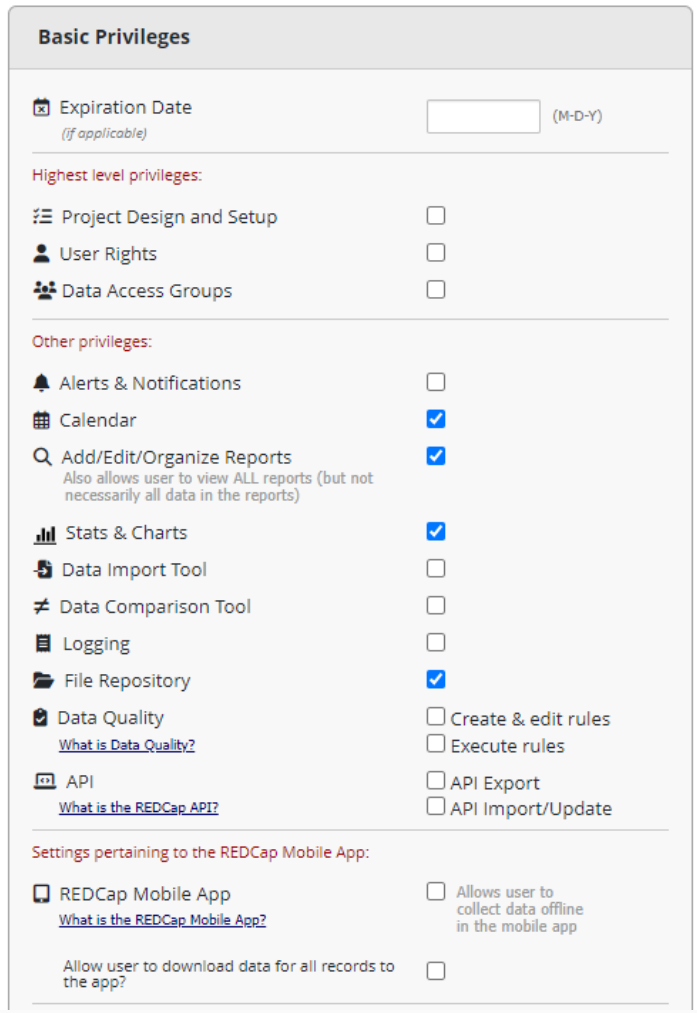
Permissions

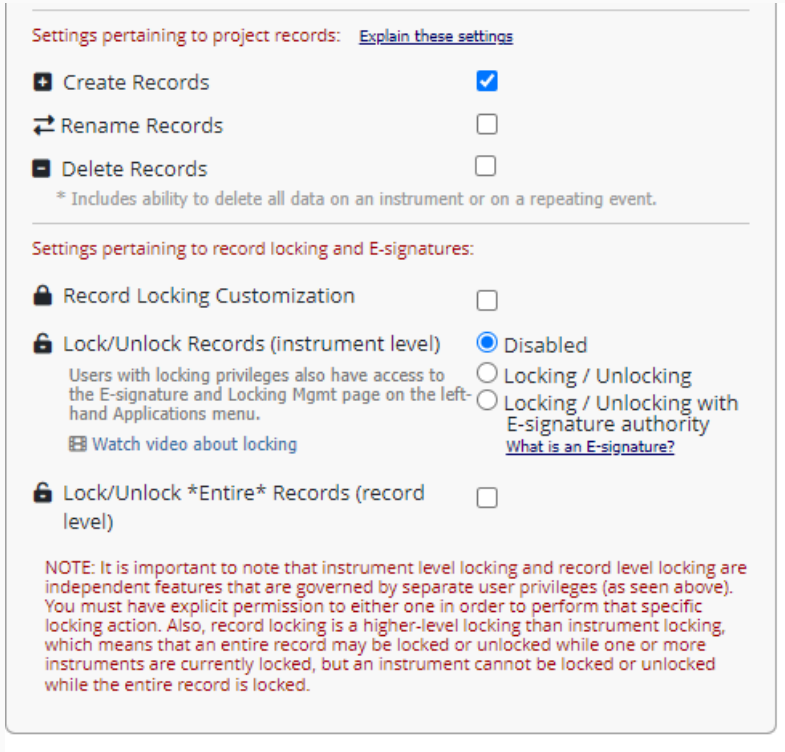
Rights can be grouped into three types:

1. Basic Privileges
2. Privileges for Viewing and Exporting Data
3. External modules rights

Rights

1. **Basic Privileges:** Refer to general project-level access. For example: creating/renaming/deleting records, accessing statistics, etc.





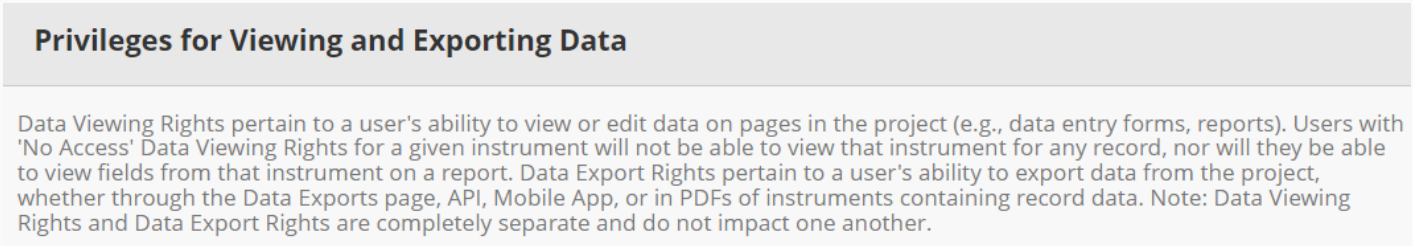
Rights

2. **Privileges for Viewing and Exporting Data:** Refer to access for specific instruments within the project. The rights are divided into:

1. Visualization rights

2. Data export rights

These rights are entirely independent of one another.

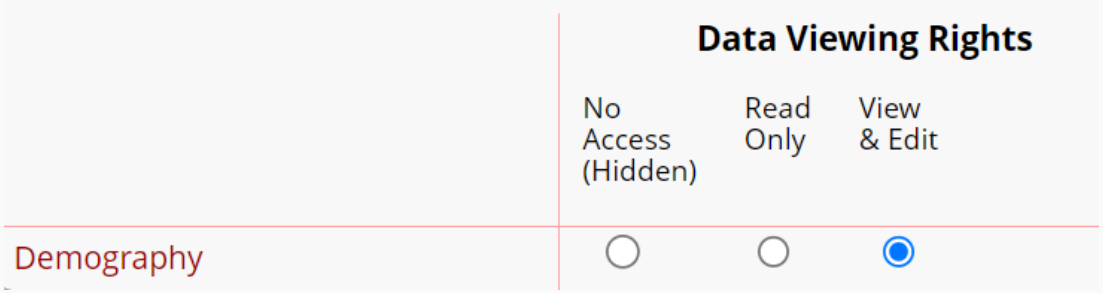


Rights

2.1 **Visualization rights:**

Allow an instrument to be:

- Completely hidden
- Viewed only
- Viewed and edited

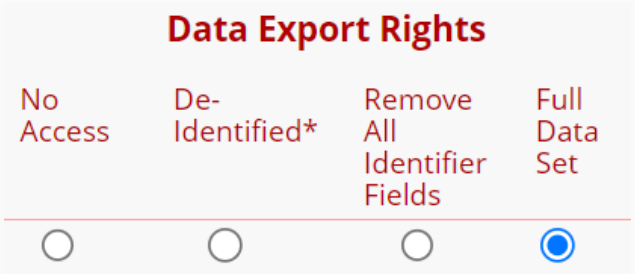


Rights

2.2. **Data export rights:**

Ability to export data from an instrument:

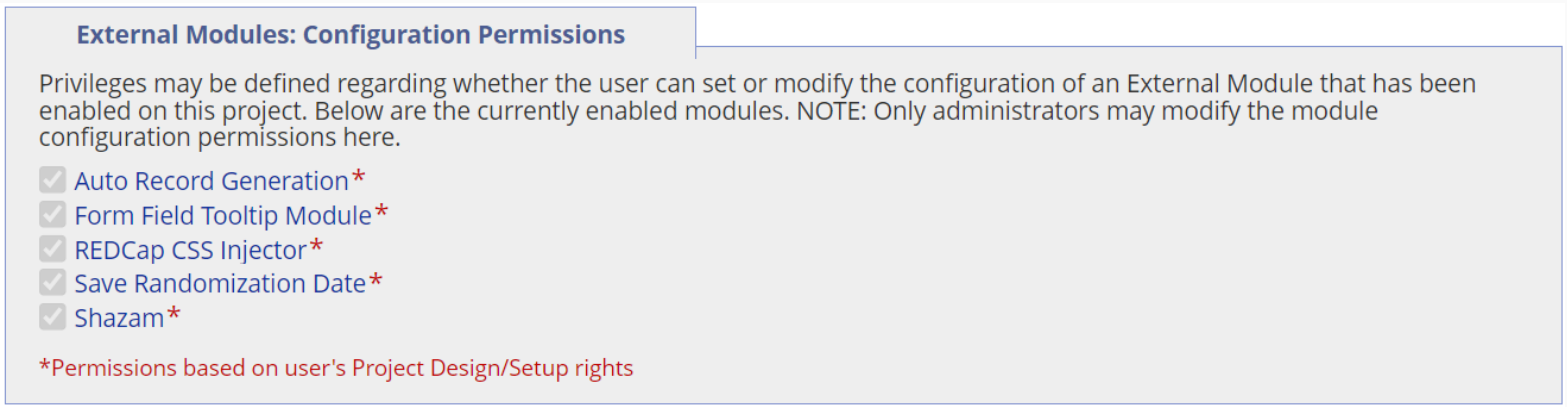
- Not allowed
- Remove all free text fields, dates, and identifiers
- Remove fields marked as identifiers
- Full data export



Rights

3. **External modules rights:**

This allows you to specify whether users can configure or modify the settings of an external enabled module in the project.



Remarks

- The following are the currently enabled modules
- Only administrators can modify external module configuration permissions
- Depend on the user's basic project rights

User visualizations

The **user table's** shows all users in your project along with their individual rights or assigned roles.

Role name (click role name to edit role)	**Username** or users assigned to a role (click username to edit or assign to role)	**Expiration** (click expiration date to edit)	**Data Access Group** (click DAG to assign user)	**Project Design and Setup**	**User Rights**	**Data Access Groups**
—	[redacted]	never	—	✓	✓	✓
—	[redacted]	never	Hospital 1	✗	✗	✗

Definition

DAGs (Data Access Groups) are used to limit access to specific records. Only users assigned to a particular DAG can access records created by users within the same group.

DAGs are useful for multicenter projects, as they ensure that users from one centre cannot access to data from another centre.

Remarks

- For data security reasons, your user account does not have access to the User Rights section.

Access

They are found in the Project setup

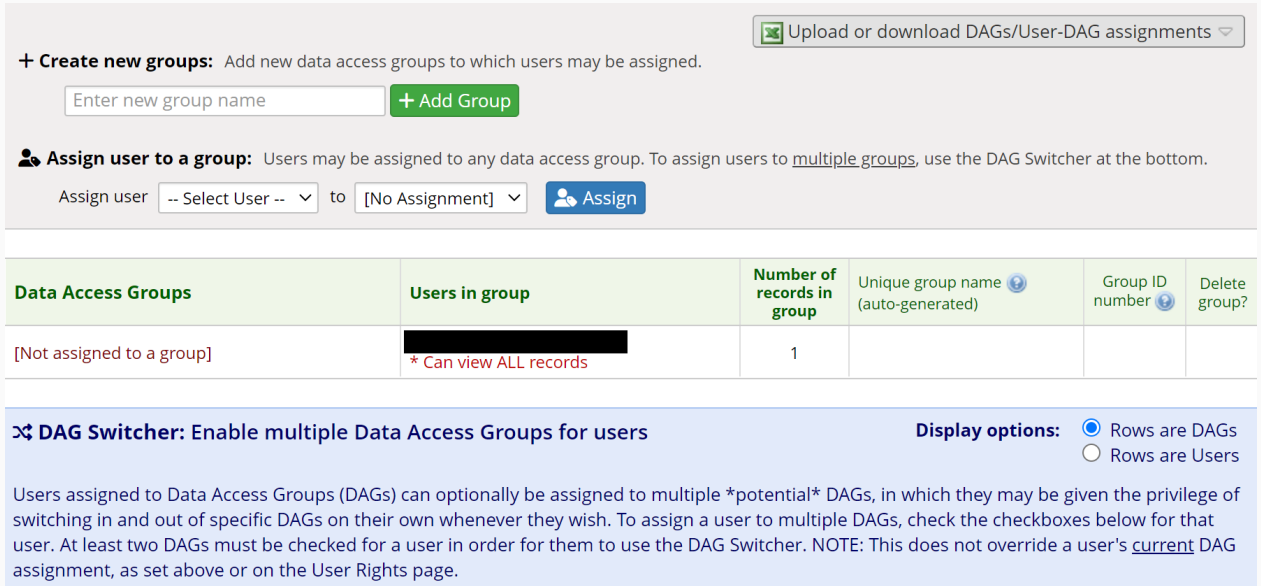
Functionalities

Create DAGs

Add users to a DAG

DAG table

DAG Switcher
Allows to add a user to more than one DAG



Data visualization

Data visualization

1. Reports

Definition

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2. View all available data

Definition

Access

Visualization

Functionalities

---

3. View a subset of the data

Definition

Access

Visualization

Functionalities

Activity

Definition

Reports in REDCap allow you to view the data in real time, either in table format or as basic descriptive and graphical statistics. You can:

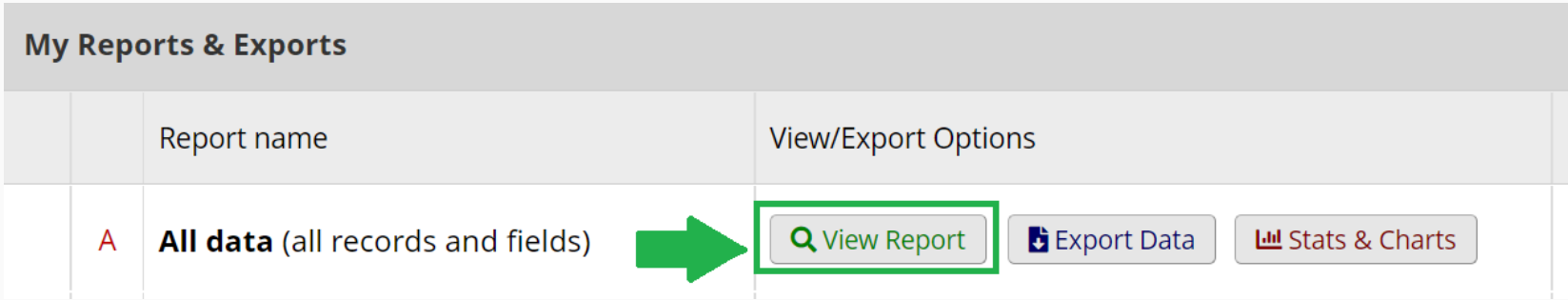
- View **all available data**.
- Create custom reports to view a **personalised selection of the data**.

View all available data

Access

1. Project setup
2. Data Exports, Reports, and Stats.

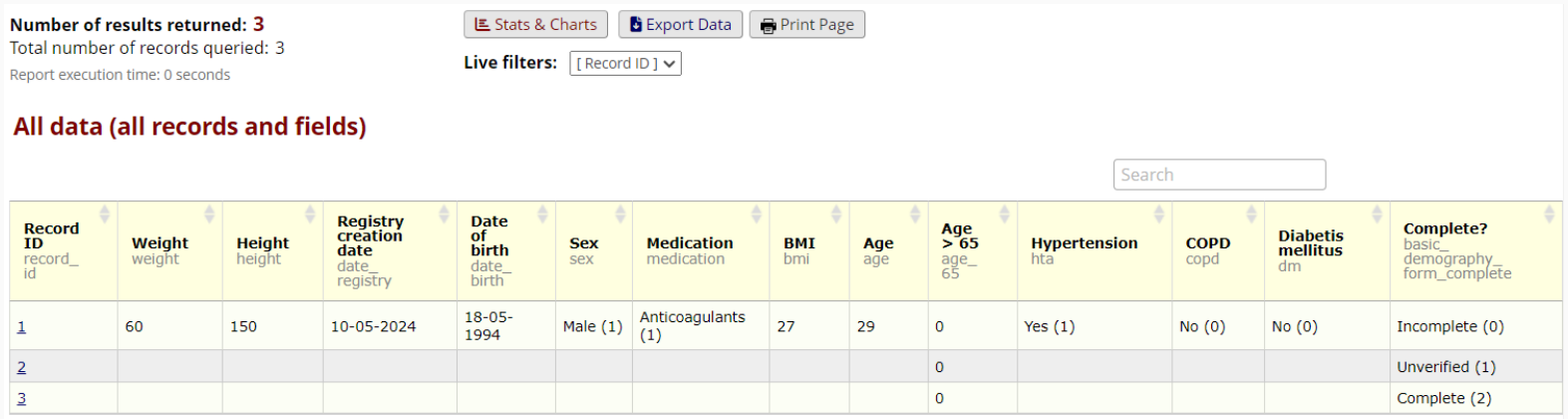
3. All data » View report



View all available data

Visualization

The fields are the columns and the individual records are the rows.



Number of results returned: 3
Total number of records queried: 3
Report execution time: 0 seconds

Stats & Charts | Export Data | Print Page

Live filters: [Record ID]

All data (all records and fields)

Search

Record ID record_id	Weight weight	Height height	Registry creation date date_registry	Date of birth date_birth	Sex sex	Medication medication	BMI bmi	Age age	Age > 65 age_65	Hypertension hta	COPD copd	Diabetis mellitus dm	Complete? basic_demography_form_complete
1	60	150	10-05-2024	18-05-1994	Male (1)	Anticoagulants (1)	27	29	0	Yes (1)	No (0)	No (0)	Incomplete (0)
2									0				Unverified (1)
3									0				Complete (2)

View all available data

Functionalities

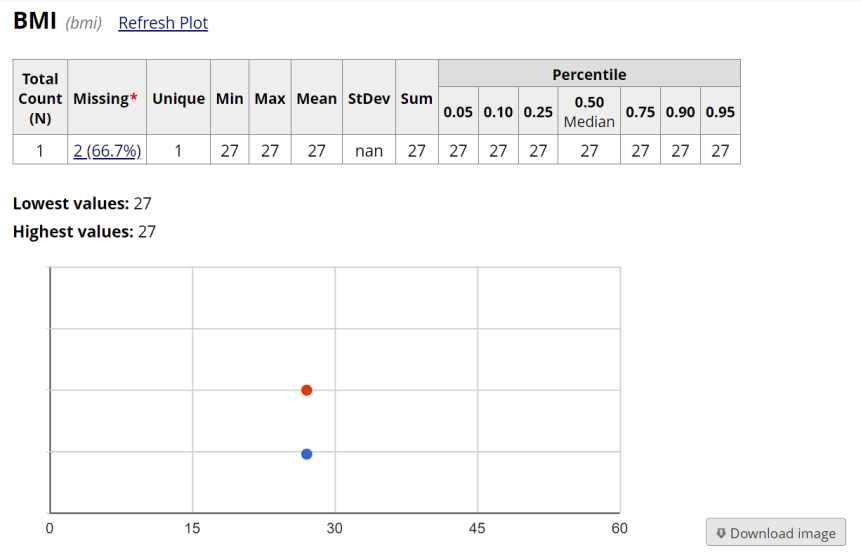
- You can sort the table by the value of a variable using the tabs on the side of the field.

Record ID record_id	**Weight** weight	**Height** height	**Registry creation date** date_registry	**Date of birth** date_birth	**Sex** sex	**Medication** medication	**BMI** bmi	**Age** age
1	60	150	10-05-2024	18-05-1994	Male (1)	Anticoagulants (1)	27	29
2								
3								

Functionalities

- Access the *Stats & Charts* module to obtain basic and graphical descriptions.

  Numerical variables: Basic descriptive statistics and dot plots.



BMI *(bmi)* 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
1	2 (66.7%)	1	27	27	27	nan	27	27	27	27	27	27	27	27

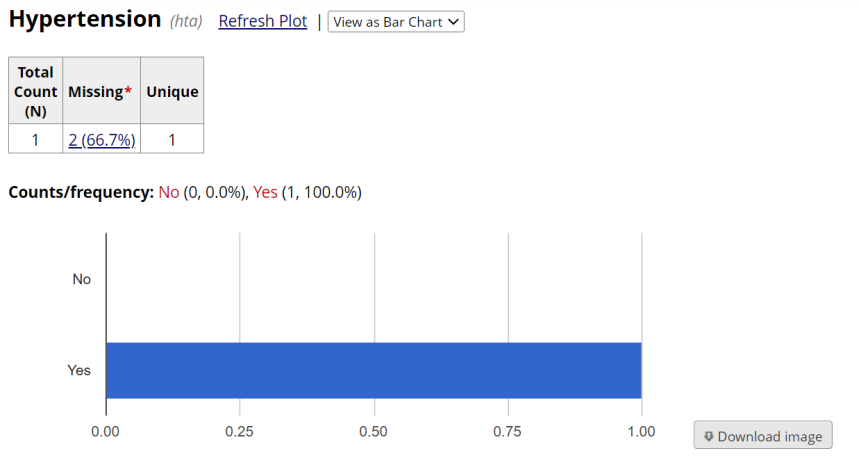
Lowest values: 27
Highest values: 27

Stats & Charts also provides links to records with missing data, and to those with the highest and lowest values.

View all available data

Functionalities

Categorical variables: Frequencies and bar graphs.



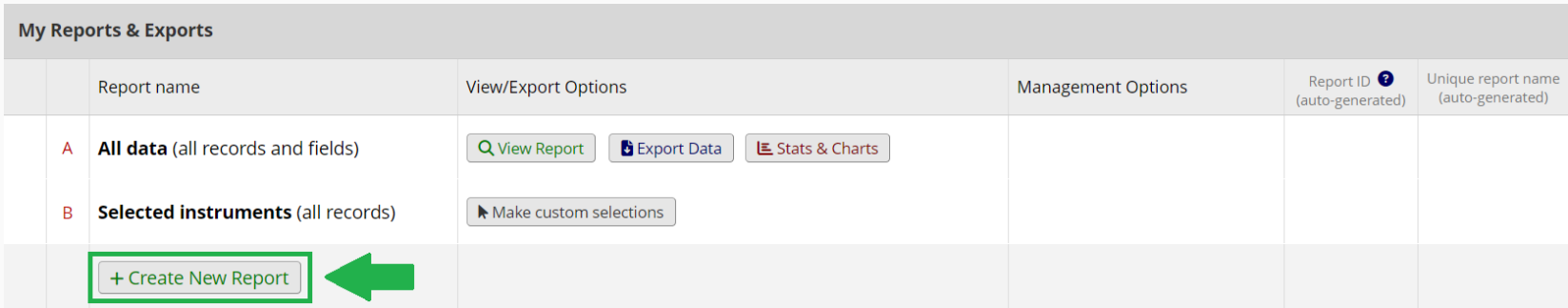
Stats & Charts provides links to records with missing values.

View a subset of the data

Access

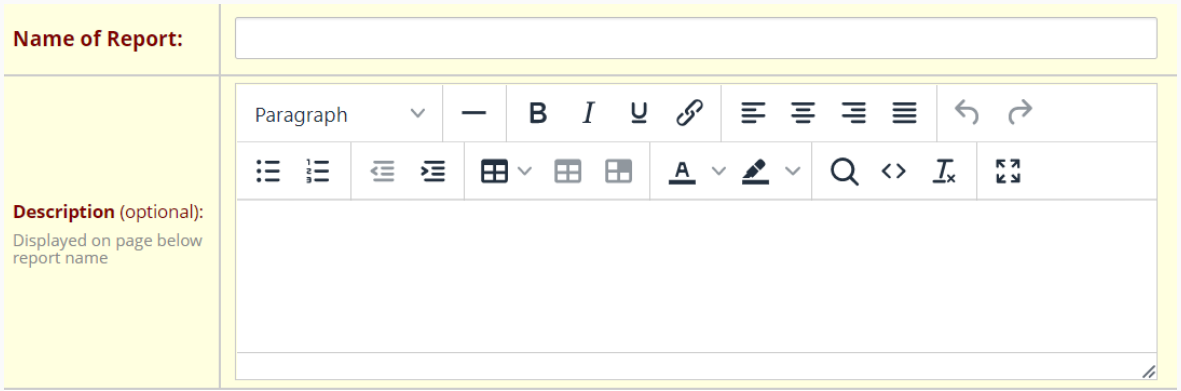
1. Project setup
2. Data Exports, Reports, and Stats.

3. Create New Report

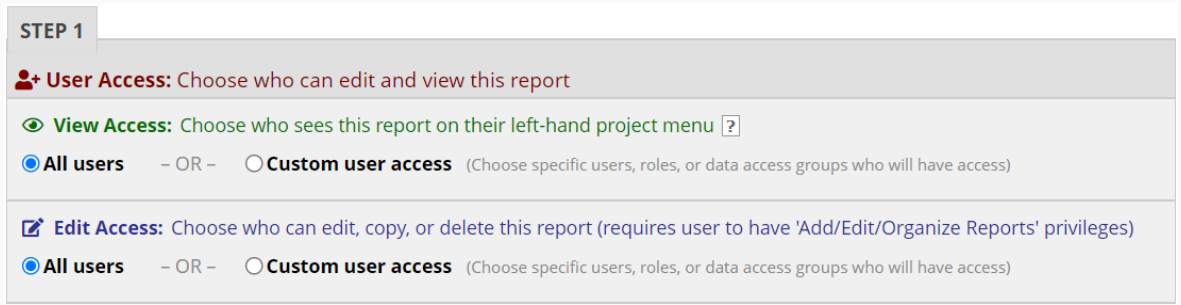


Functionalities

- **Report name**: You can name your report and include a description.



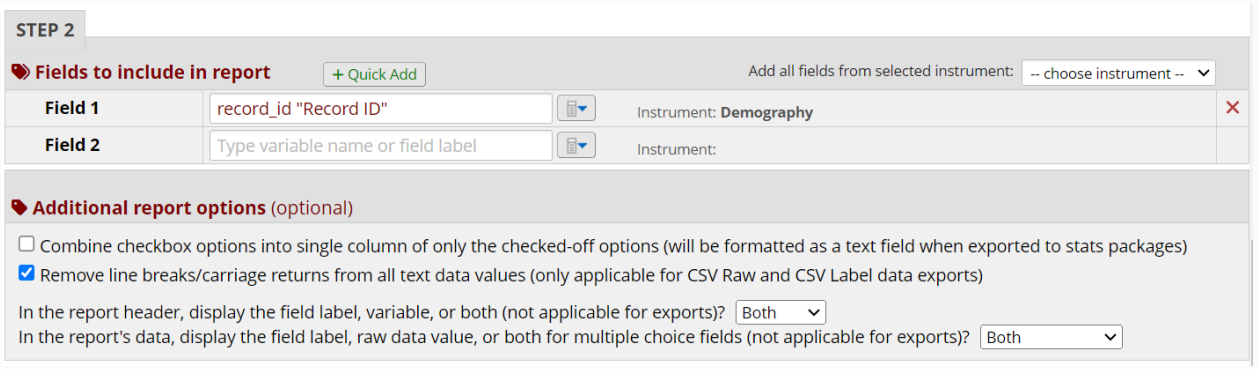
- **Users access**: You can select which users can view this report and which ones can edit it.



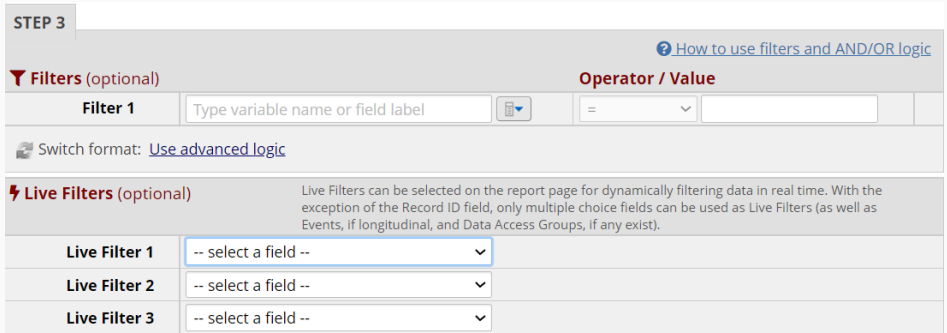
View a subset of the data

Functionalities

- **Fields**: Select which fields will be displayed in your report. You can add as many fields as you want.

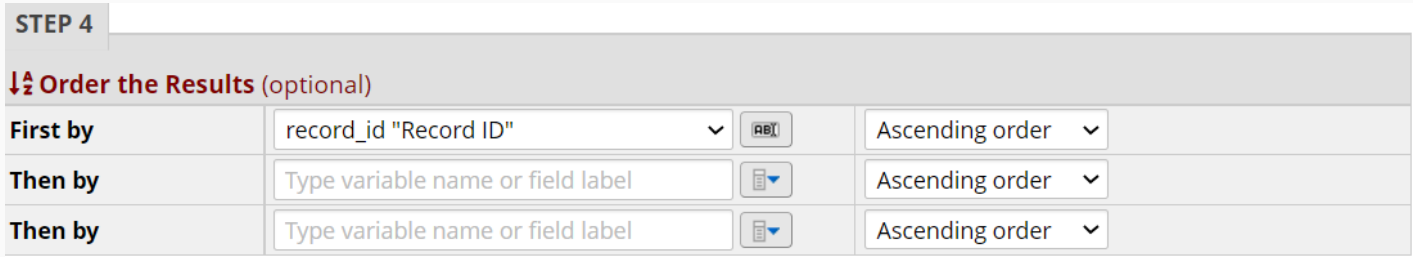


- **Filters**: you can filter the data in different ways, including complex logic and/or dynamic filters.



Functionalities

- **Order**: you can sort the report according to selected fields.



View a subset of the data

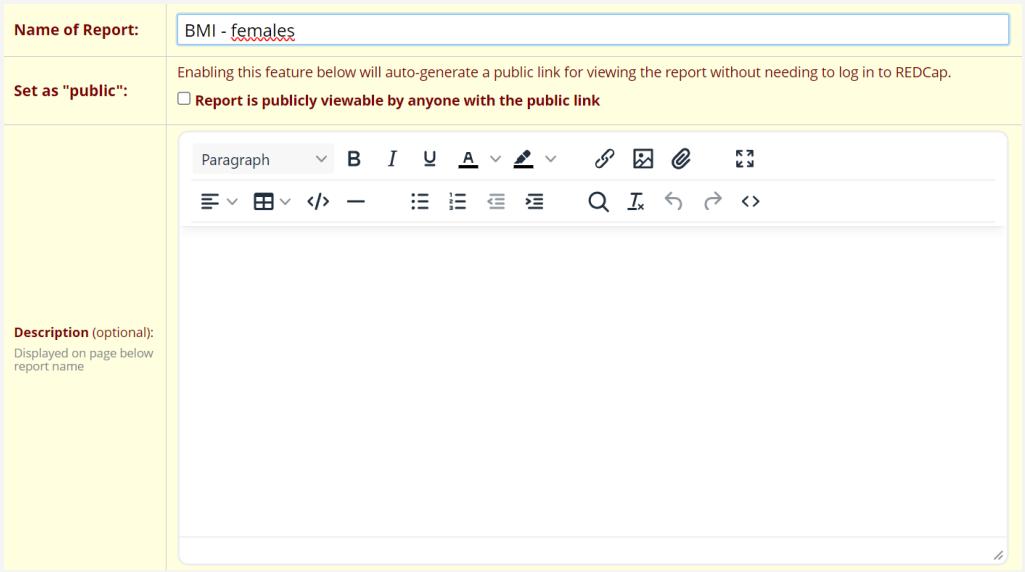
📖 Activity: Construction of a personalised report

Create a report named *BMI - females*. The report should display only the identifier and BMI of female participants. It must be visible to all project users and sorted from lowest to highest BMI.

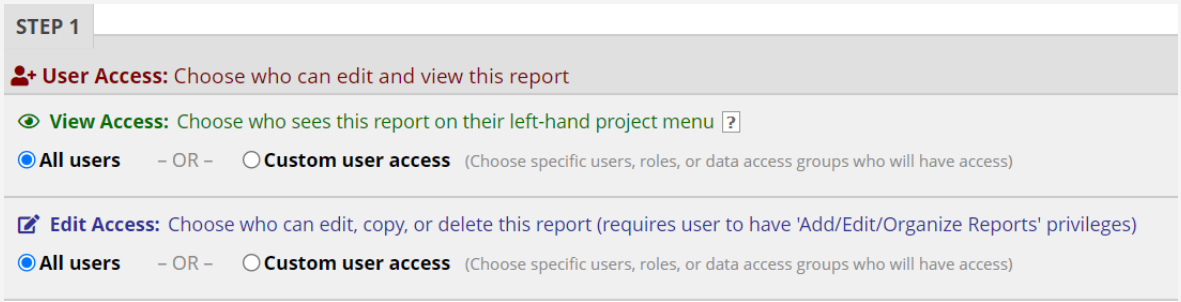
View a subset of the data

Solution

1. Report name: BMI - females



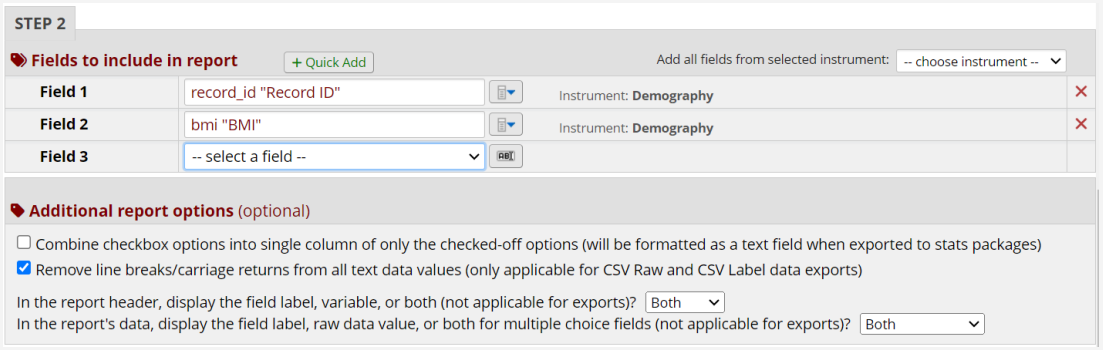
2. User access: All users



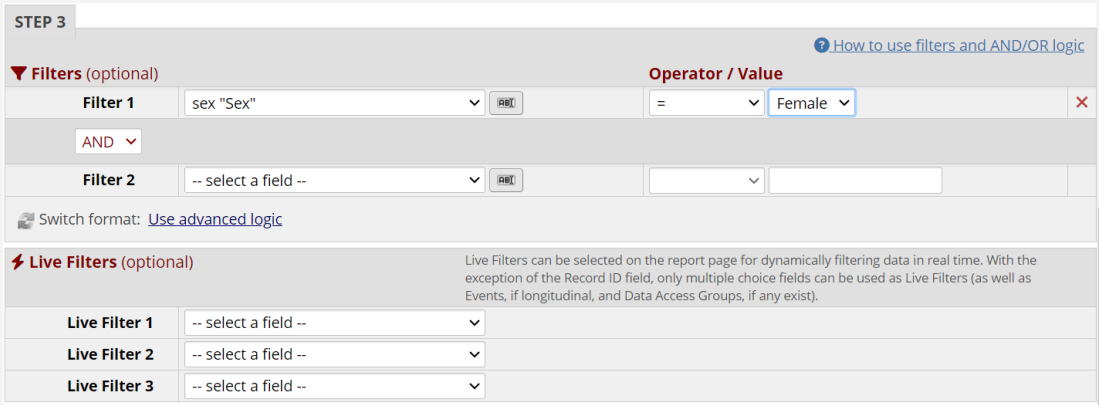
View a subset of the data

Solution

3 Fields: Record ID and BMI



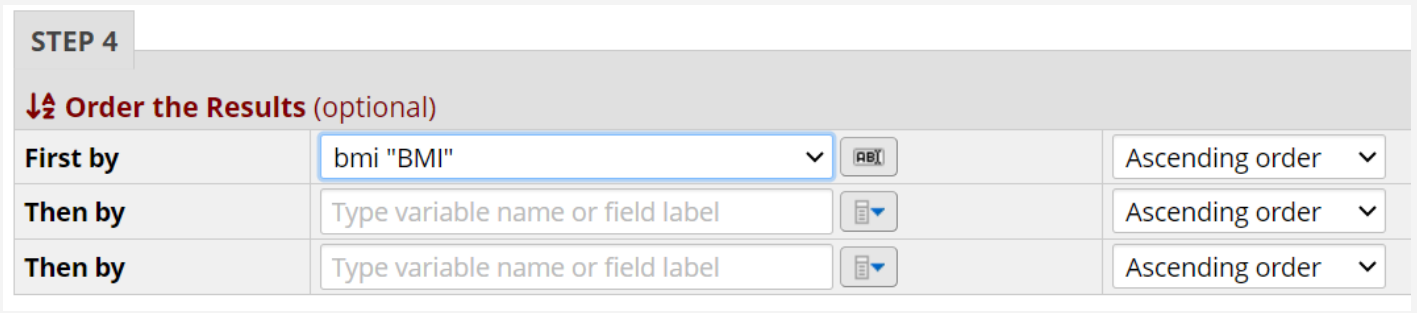
4 Filters: Females



View a subset of the data

Solution

5 Order: from lowest to highest BMI



Data exports

Data exports

1. Export

Access

Functionalities

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2. Formats

Options

Activity

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3. Confidentiality and Data Protection

Definition

Options

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4. Advanced options

Definition

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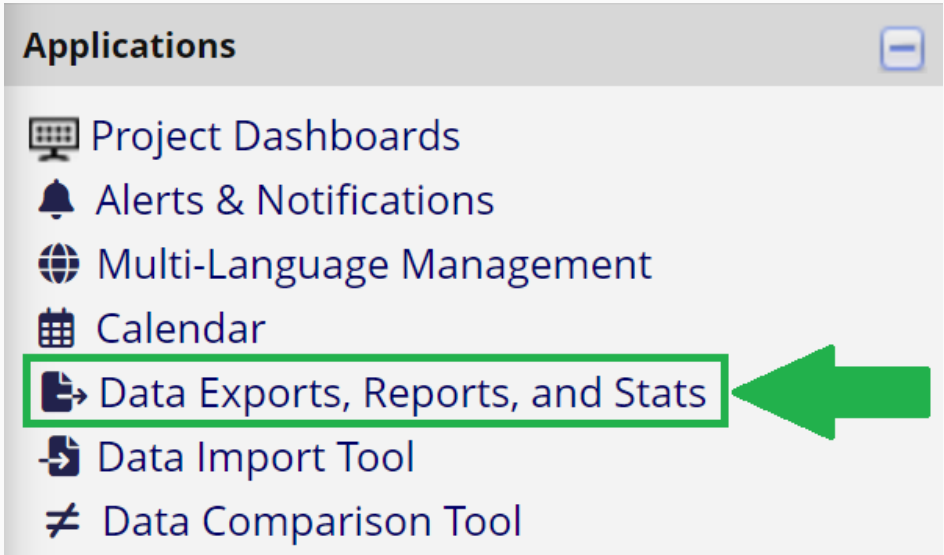
5. Additional options

Definition

Access

1. Project setup
2. Data Exports, Reports, and Stats.

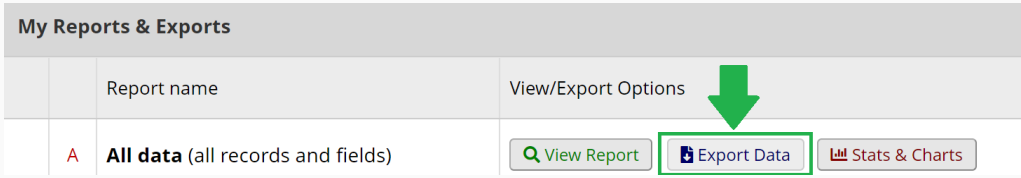


Data exports

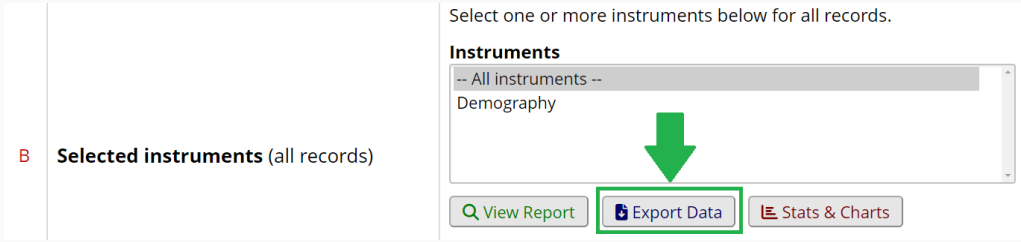
Access

3 You can export:

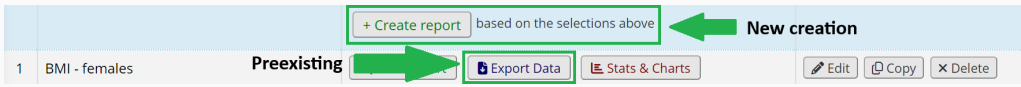
a. **All data** (all records): `All data >> Export data`



b. **Selected instruments**: `Selected instruments >> Export data`



c. **Personalized reports**: Newly created or pre-existing.



Functionalities

Formats

Confidentiality and Data Protection options

Advanced format options

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 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 datetime fields

— OR —

- Shift all dates by value between 0 and 364 days (shifted amount determined by algorithm for each record)

What is date shifting?

Deselect all options

Advanced data formatting options

Export blank values for gray Form Status?
All Form Status fields with a gray status icon can be exported either as a blank value or as "0" (Incomplete). Hint: Blank values are recommended if the data will be imported back into REDCap, in which this preserves the gray status icons for all the imported records.

Export gray Form Status fields with value of "0"

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.

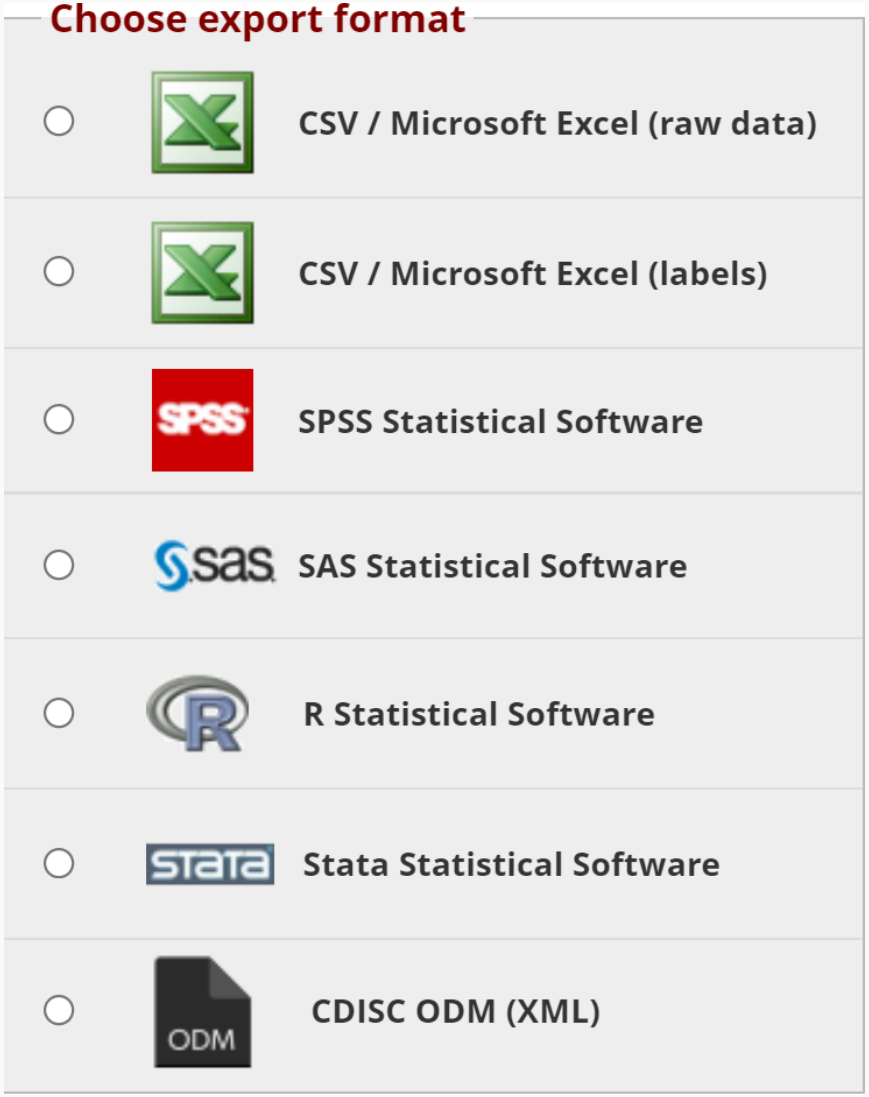
Use fields' native decimal format (default)

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

Formats

Options

CSV / Excel (raw values)
CSV / Excel (labels)
SPSS
SAS
R
Stata
CDISC ODM (XML)



Activity: Formats

1. Download the data in *CSV / Excel (raw values)* format and *CSV / Excel (labels)*. What is the difference?
2. Download the data in *R* format. What do you observe? Do you see a similar scenario when downloading in *SPSS* format?

Solution

1. **Download the data in *CSV / Excel (raw values)* format and *CSV / Excel (labels)*. What is the difference?**

- Data in *CSV / Excel (raw values)* format:

A	B	C	D	E	F	G	H	I	J	K	L
record_id	date_record	weight	height	date_birth	sex	menopause	medication___0	medication___1	medication___2	type_statines	bmi
1	16/10/2025	69	150	12/12/1996	1		0	0	0		30,6666667
2	09/10/2025	78	180	10/08/1950	0	1	0	0	0		24,0740741
3	09/10/2025	91	170	10/01/1940	1		0	0	0		31,4878893

In the category variables it returns the number assigned to each category.

Solution

1 **Download the data in *CSV / Excel (raw values)* format and *CSV / Excel (labels)*. What is the difference?**

- Data in *CSV / Excel (Labels)* format:

Record ID	Creation date of the record	Weight	Height	Date of birth	Sex	Menopause	Medication (choice=Statins)	Medication (choice=Anticoagulants)
1	16/10/2025	69	150	12/12/1996	Male		Unchecked	Unchecked
2	09/10/2025	78	180	10/08/1950	Female	Yes	Unchecked	Unchecked
3	09/10/2025	91	170	10/01/1940	Male		Unchecked	Unchecked
4							Unchecked	Unchecked

In the category variables it returns the labels of the categories.

Remarks

- You may notice that decimals are not displayed correctly: REDCap uses a dot for decimals (English format) by default, while Excel often uses a comma (Spanish format).
- Later, you will learn how to change the decimal point from a dot to a comma.
- For now, try opening the file in Notepad.

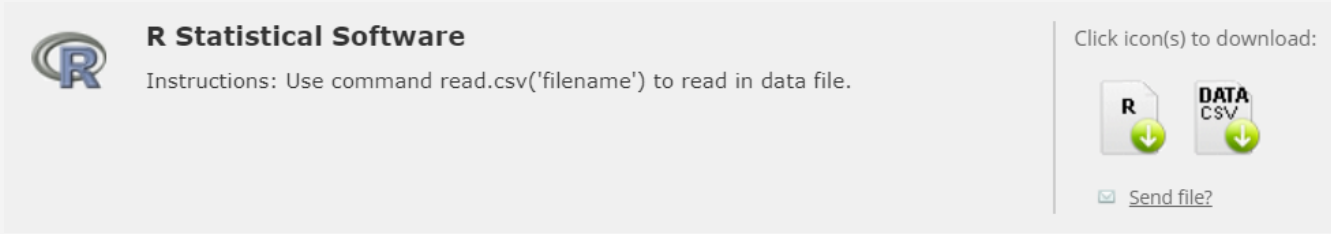
Solution

2 Download the data in *R* format. What do you observe?

- When downloading the data in *R* format, REDCap provide us with two files:

(1) *CSV / Excel (raw values)* and

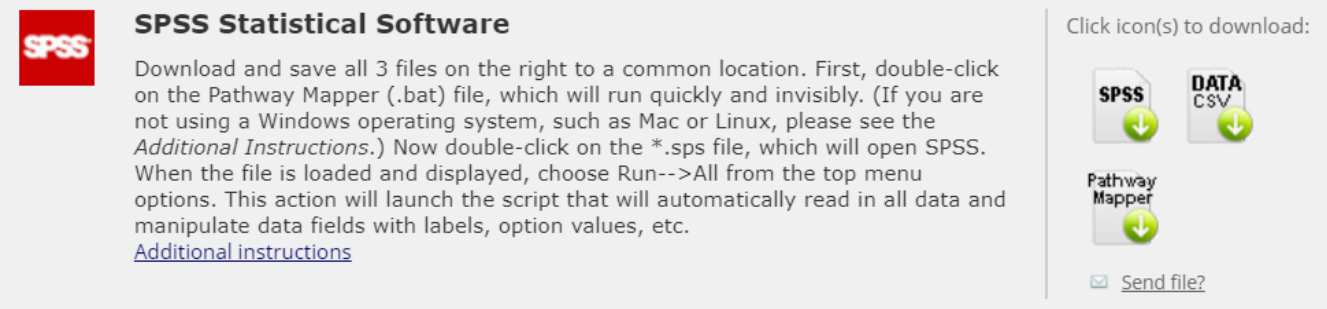
(2) *R* with code for the labels.



Solution

2 Do you see a similar scenario when downloading in *SPSS* format?

• When we download the data in *SPSS* format, REDCap provides us with three files:
(1) *CSV / Excel (raw values)*,
(2) *SPSS* with code for the labels and
(3) *Pathway Mapper* required for reading data in *SPSS*



R Package: REDCapDM

REDCapDM is an R package with a set of tools for managing data exported from a REDCap project.

REDCapDM 0.9.9.2000 Get started Reference Articles Changelog

REDCapDM

CRAN 0.9.9 | R-CMD-check passing | downloads 381/month | downloads 12K

`REDCapDM` is an R package that allows users to manage data exported directly from REDCap or through an API connection. This package includes several functions designed for preprocessing data, generating reports on queries like outliers or missing values, and performing a follow-up of each identified query. 'REDCap' (Research Electronic Data CAPture; https://projectredcap.org) is a web application developed at Vanderbilt University, designed for creating and managing online surveys and databases. The REDCap API serves as an interface allowing external applications to connect to REDCap remotely, and is used to programmatically retrieve or modify project data or settings within REDCap, such as importing or exporting data.

The REDCapDM website has a description of the package functions as well as access to the package vignettes.

Here you can access the published article in BMC Medical Research Methodology: REDCapDM: An R package with a set of data management tools for a REDCap project

Installation

The *release* version can be installed from CRAN.

```
install.packages("REDCapDM")
```

The *development* version can be installed from GitHub after installing the `remotes` package.

```
install.packages("remotes") # Run this line if the 'remotes' package isn't installed alr
remotes::install_github("bruigtp/REDCapDM")
```

Links
View on CRAN
Browse source code
Report a bug

License
Full license
MIT + file LICENSE

Citation
Citing REDCapDM

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https://bruigtp.github.io/REDCapDM

Definition

REDCap offers robust features for protecting confidential information and personal data. These features are essential for complying with current data protection legislation, such as the GDPR. They are also critical for safeguarding indirect identifiers (or quasi-identifiers). For instance, combining data such as date of birth, sex and profession could potentially allow an individual to be identified if the resulting group size is below a specified minimum number (e.g. fewer than 10 people meet those criteria).

Warning

- Do not enter personal data directly: Names, Surnames, E-mails, ID numbers, Clinical History Number and any other personal identifier.

Confidentiality

1. The project can be configured so that indirect personal data or any other data that the user wishes to keep confidential is not exported outside the project.
2. The project can be configured so that such data is automatically replaced with alternative values that remain useful for analysis within the study, thus avoiding the use of indirect personal data.

Options

Known identifiers

Delete fields tagged as identifiers.

Encode identifier

Free-form text

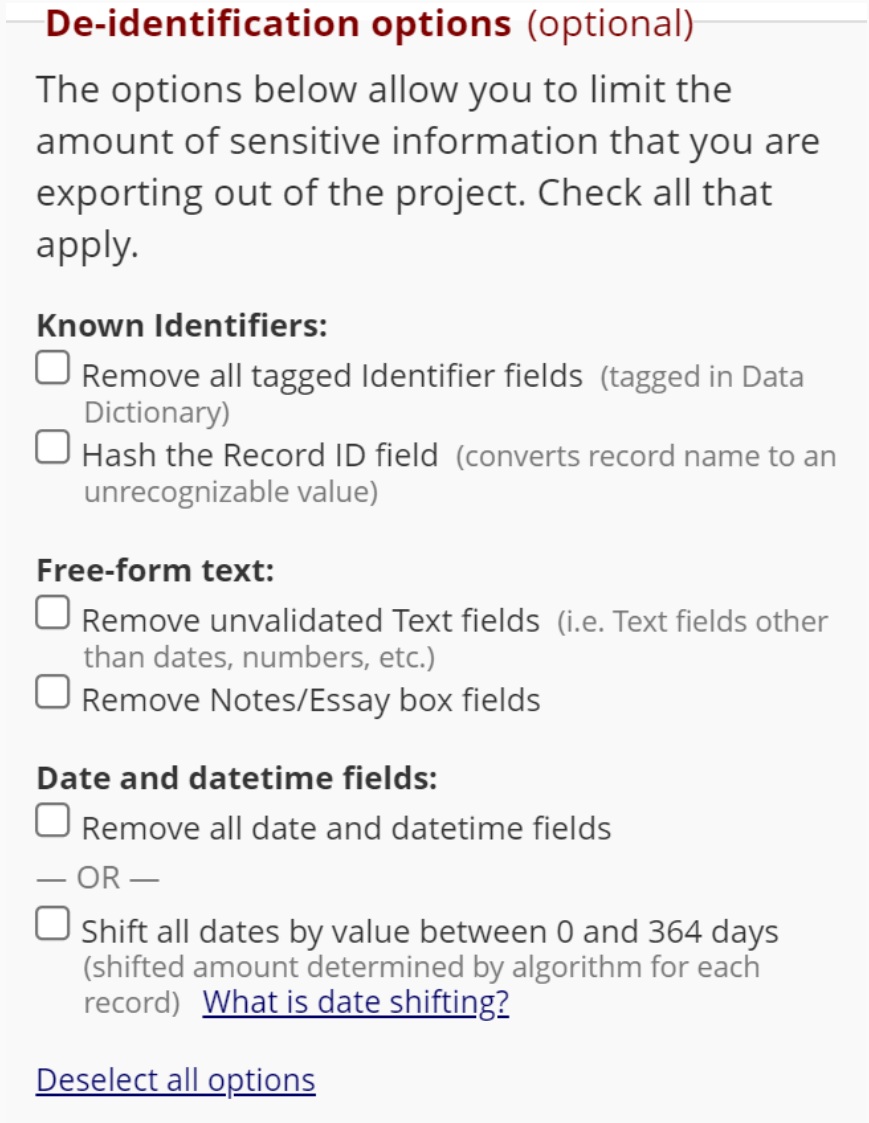
Delete unvalidated fields

Delete comments

Fields data

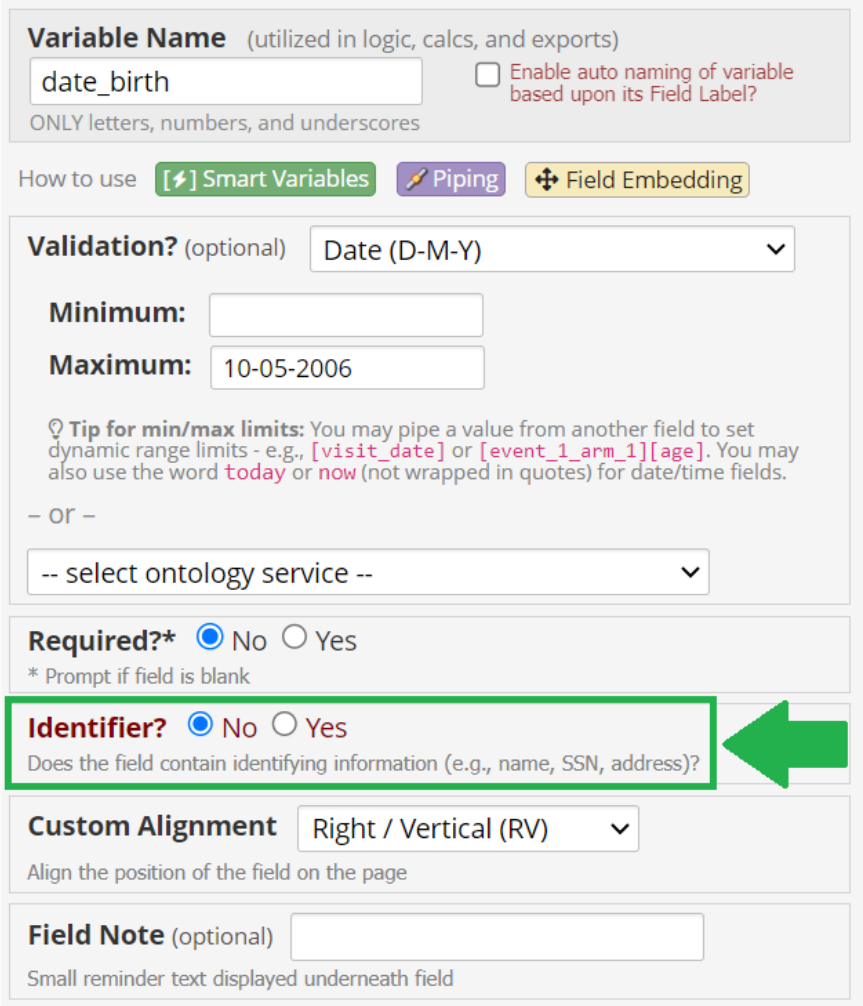
Delete date fields.

Delete date fields but keep the time intervals.



Options

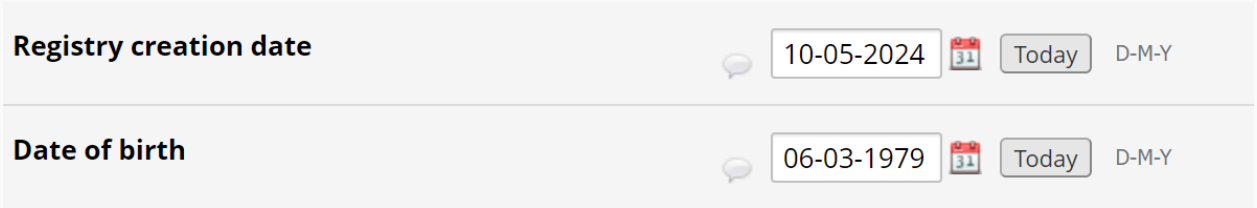
Identifier fields: REDCap allows you to tag any field as an identifier.



Options

Date fields: With REDCap, you can download dates shifted by a number between 0 and 365 days. By applying the same shift to all dates within a record, the differences between dates in that record remain unchanged.

Real data:



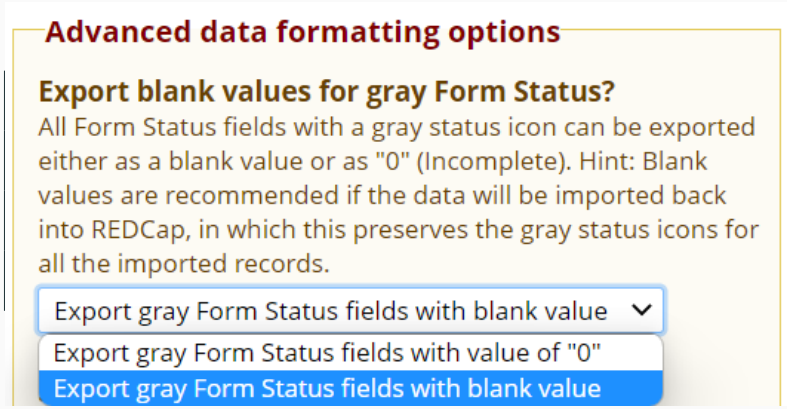
Displaced data:

record_id	weight	height	date_registry	date_birth
1	60	150	15/8/2023	22/8/1993

Definition

REDCap allows you to customize how values in blank fields of instruments marked as “grey” (incomplete) are exported. You can also modify the characters used as CSV separators and the default decimal symbol.

Values in blank fields
of grey instruments
These can be exported as either blank values or as ‘0’ (indicating incomplete).



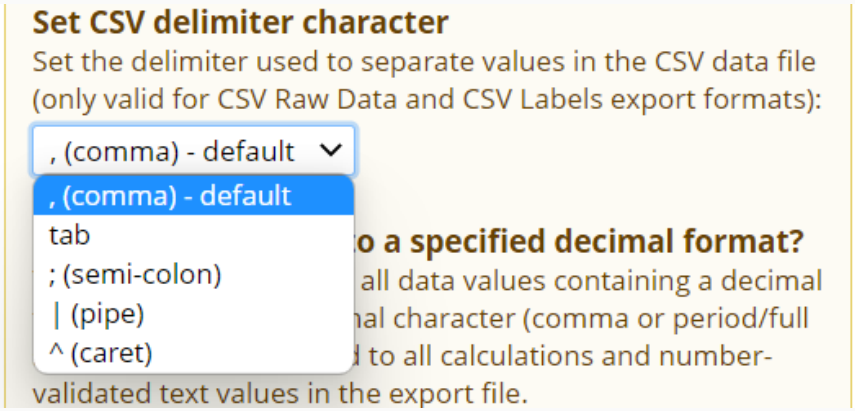
Remarks

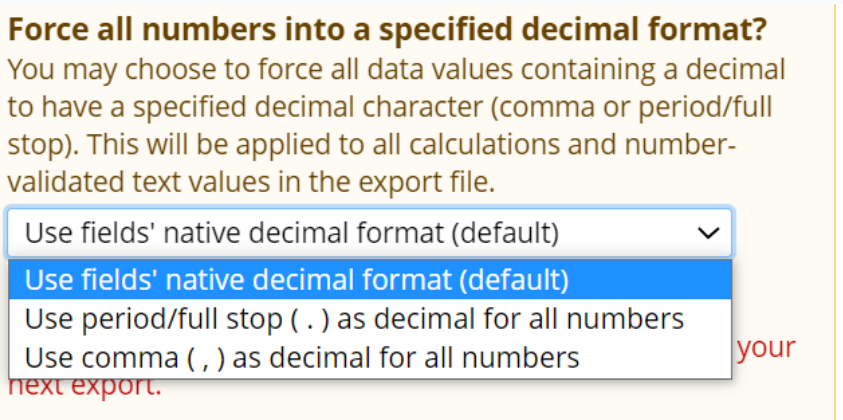
- Exporting blank values is recommended if you plan to import the data back into REDCap, since the grey status icons will be preserved.

Definition

CSV separator
You can change the delimiter used to separate variables/columns in the CSV file.

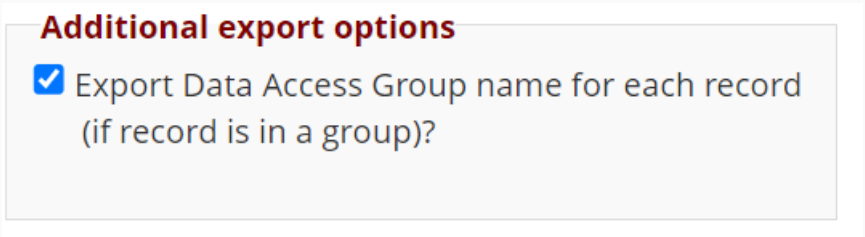
Decimal separator
You can change the symbol that indicates the decimals.





Definition

REDCap allows you to choose whether or not to export the name of the Data Access Group (DAG) associated with each record.



Data import

Data import

1. Access

Access

2. Formats

Options

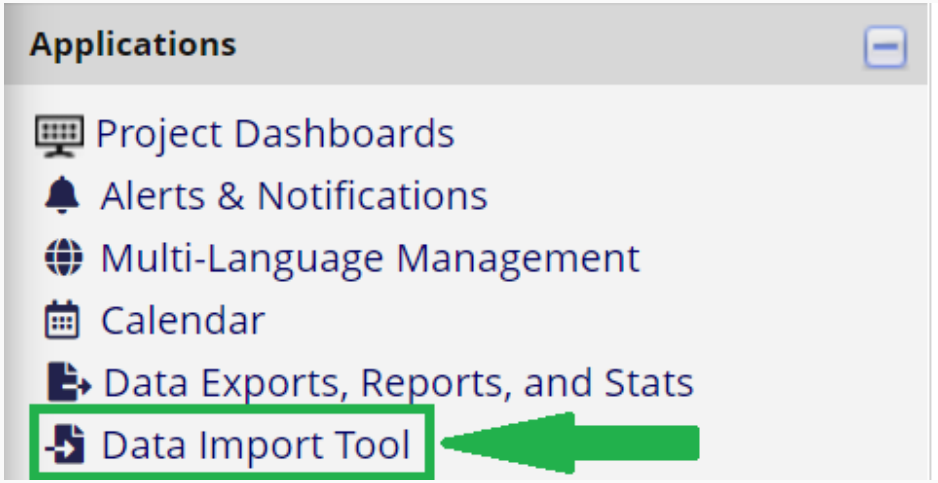
3. CSV/EXCEL import

Instructions

Advanced options

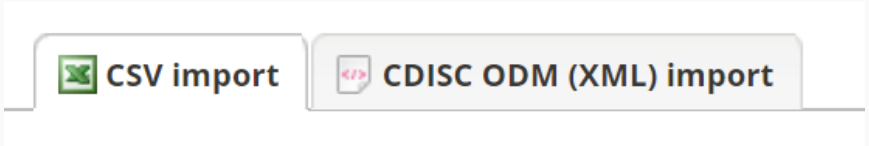
Access

1. Project setup
2. Data Import Tool.



Options

CSV / Excel
CDISC ODM (XML)



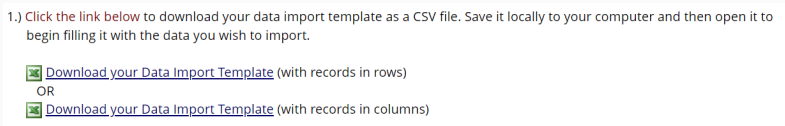
Remarks

- In this course you will only work with the CSV/EXCEL format.
- Actual data must not be entered until the project has been completed and moved to production status.

Instructions

1. Download the template

You can download the data import template as a CSV file. Click on one of the two links.



There are two options for downloading the template:

1. Records per row

	A	B	C	D	E	F	G	H	I	J	K	L
1	record_id	weight	height	date_registry	date_birth	sex	medication	hta	copd	dm	demography_complete	
2												
3												

2. Records per column

	A	B	C	D	E	F	G	H
1	Variable / Fie	Record	Record	Record	Record	Record	Record	Record
2	record_id							
3	weight							
4	height							
5	date_registry							
6	date_birth							
7	sex							
8	medication							
9	hta							
10	copd							
11	dm							
12	demography_complete							

Instructions

2. Enter the data in the template.

The following conditions must be met:

- Do not change variable names
- All structured fields must use encoded values (not labels).

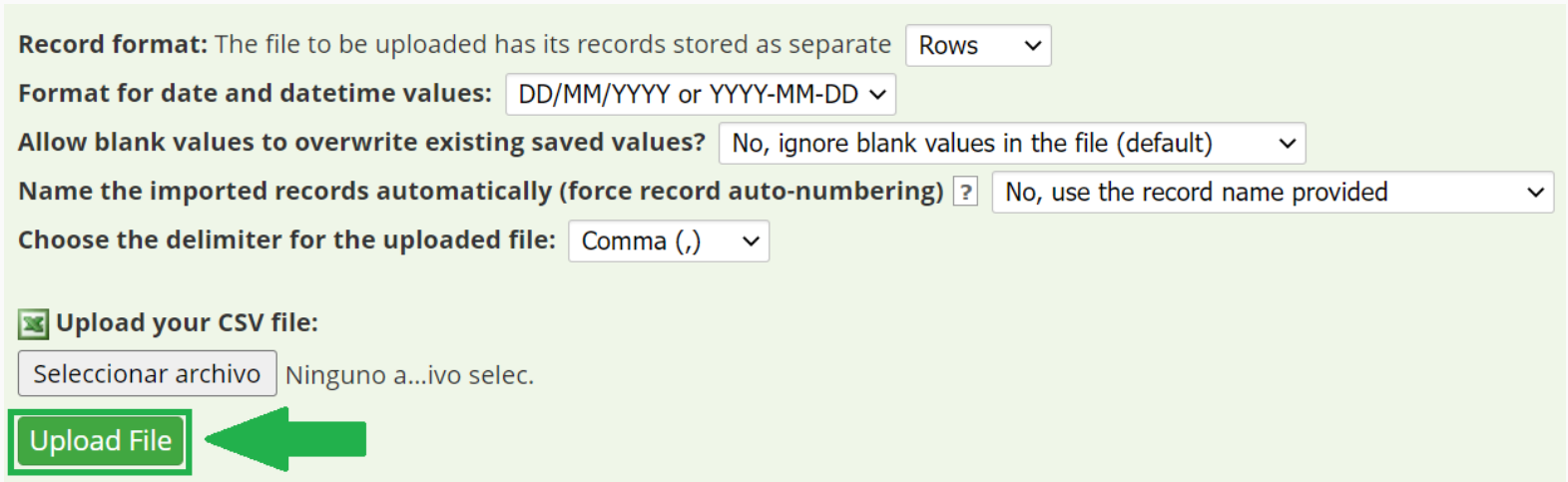
	A	B	C	D	E	F	G	H	I	J	K
1	record_id	weight	height	date_registry	date_birth	sex	medication	hta	copd	dm	demography
2	1	60	150	1/3/2024	5/19/2000	0	1	1	0	1	0

Warning

- To reduce import time, delete any empty rows or columns before importing.
- Using statistical software to prepare the data can be very useful.

Instructions

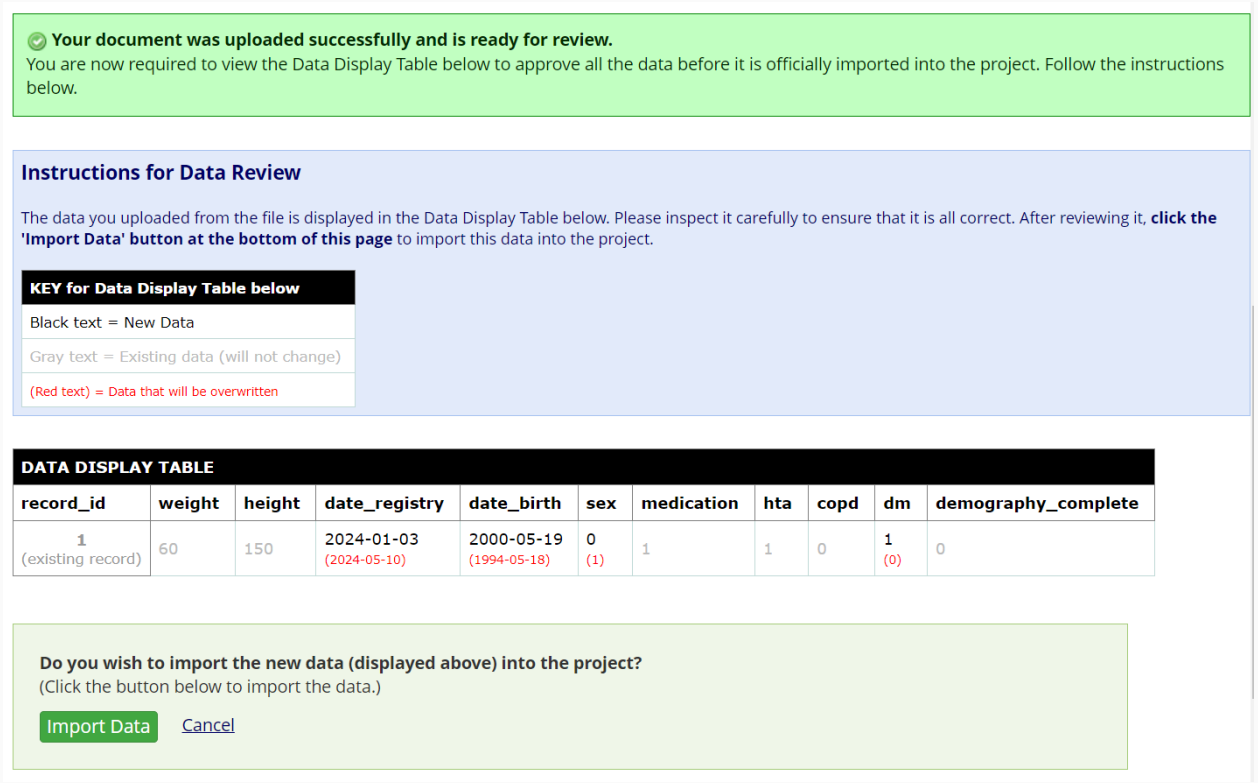
3. Data import



Instructions

4. Verification of data.

Once the file is uploaded, the data will not be imported immediately. Instead, it will be displayed and checked for errors to ensure that all the data is in the correct format before it is imported into the project.



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

DATA DISPLAY TABLE

record_id	weight	height	date_registry	date_birth	sex	medication	hta	copd	dm	demography_complete
1 (existing record)	60	150	2024-01-03 (2024-05-10)	2000-05-19 (1994-05-18)	0 (1)	1	1	0	1 (0)	0

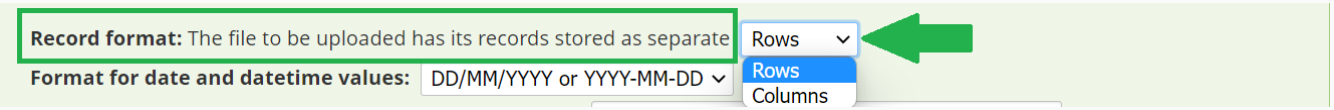
Do you wish to import the new data (displayed above) into the project?
(Click the button below to import the data.)

Import Data Cancel

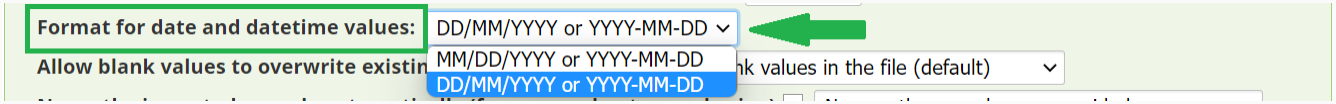
Advanced options

The data import options are:

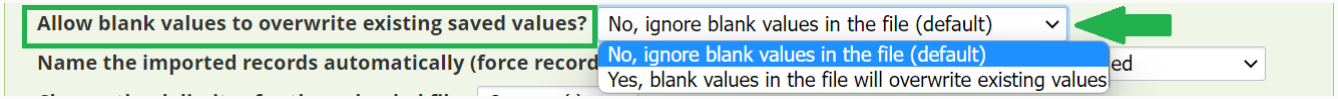
1. Record format: Rows or columns



2. Format of dates and times

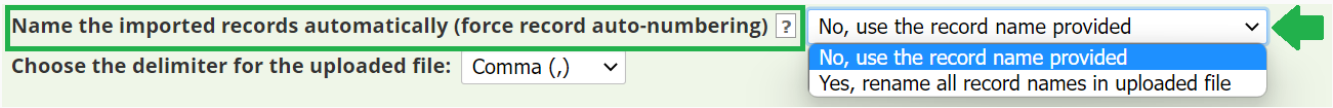


3. Allow or disallow blank values to overwrite existing values



Advanced options

4 Automatically rename identifiers or use the ones provided in the file.



5 Choose the separator: comma (,), tab, or semicolon (;).

Thank you and see you tomorrow!