Welcome to REASSURe documentation

Developed by the London School of Hygiene & Tropical Medicine (LSHTM) with support from UNICEF, this tool enhances the management and analysis of SMART Surveys. These surveys play a vital role in assessing nutritional status and mortality rates. Traditionally, SMART surveys have been analyzed using the ENA software, which allows for the analysis of only one survey at a time. This new tool has been created to optimize the process when analyzing multiple SMART surveys across different administrative levels. It efficiently applies ENA results to several surveys simultaneously and incorporates additional features to further improve the analysis and management capabilities.

This document will explain how you can run the app to obtain the results you expect.

Contents

Step 1: Access to R and RStudio

Both R and RStudio must be installed on your computer before moving on to Step 2.

If you already have RStudio on your computer, you can proceed directly to Step 2. If not, follow the instructions provided on this webpage: https://posit.co/download/rstudio-desktop/, or you can watch this YouTube video tutorial for a step-by-step guide: https://www.youtube.com/watch?v=H9EBlFDGG4k.

Step 1.1: Download R:

1. Copy and paste this link into your web browser: **https://posit.co/download/rstudio-desktop/**.
2. Follow the steps shown in Figures 1 to 5 to complete the installation.

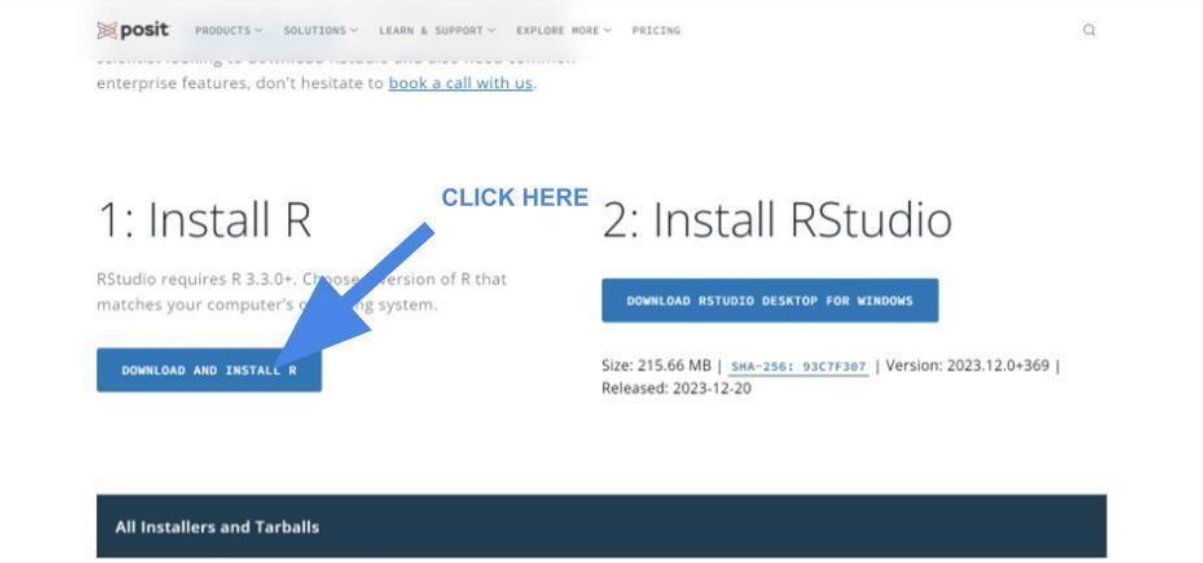


***Figure 1**: This screenshot shows the homepage where you can download RStudio.*

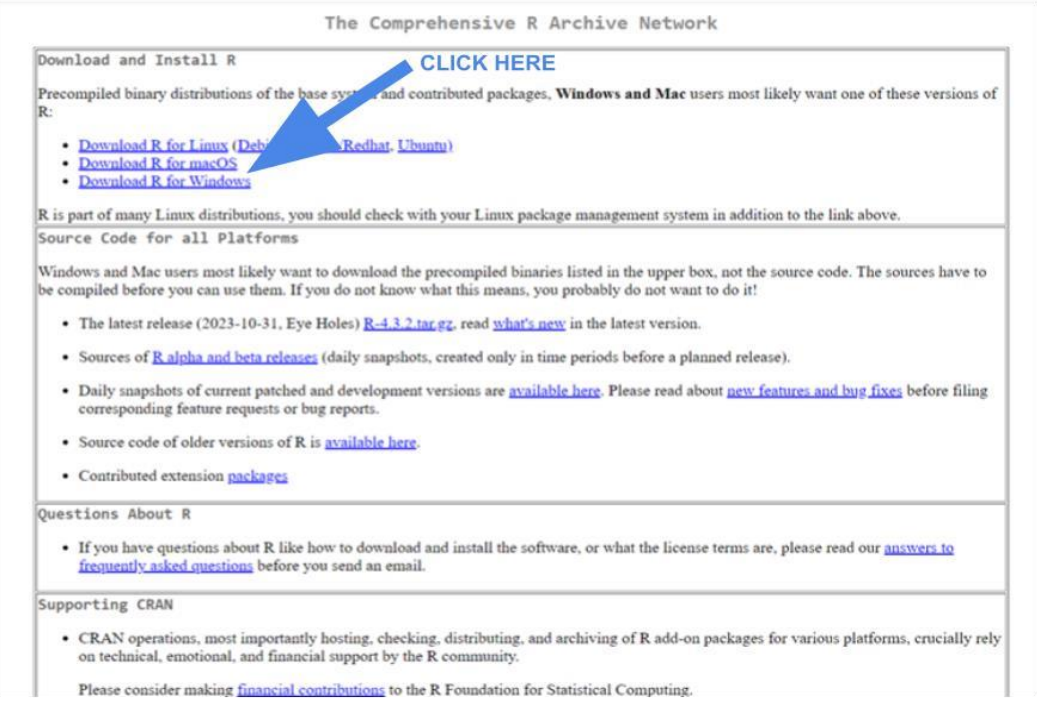


Figure 2: *After accessing the website, navigate to the section for downloading R*

Figure 3*. Continue following the instructions to select the appropriate version for your operating system.*

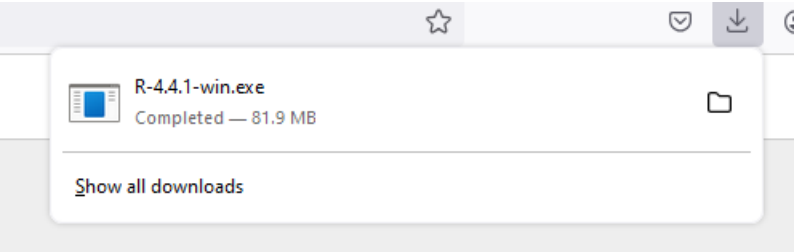


Figure 4: Once the .exe file is downloaded, double-click on it to start the installation process.

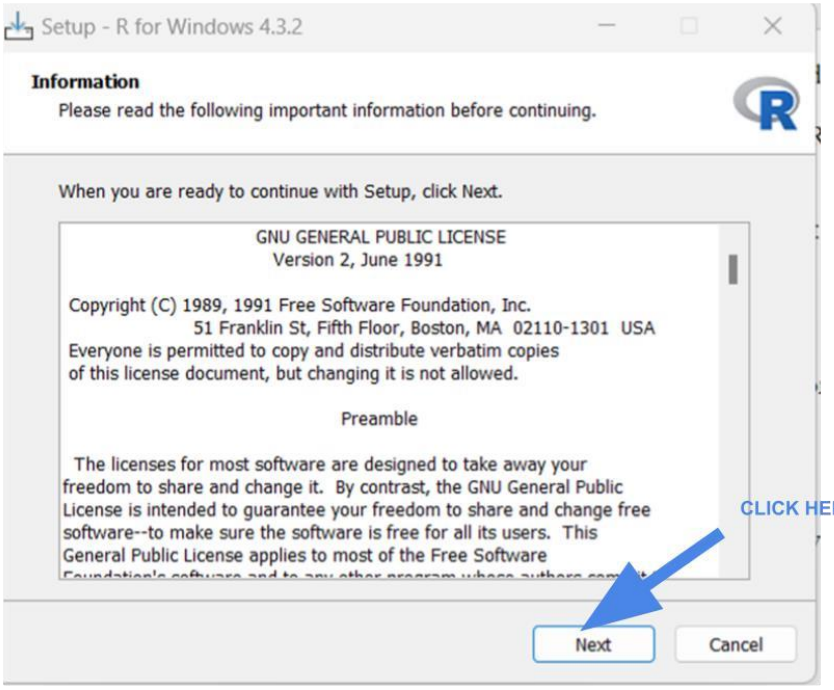


Figure 5: Click "Next" through the installation prompts until the installation is complete.

Step 1.2: Download RStudio:

1. Copy and paste this link into your web browser: https://posit.co/download/rstudio-desktop/.
2. Follow the steps shown in Figures 6 and 7 to complete the download.

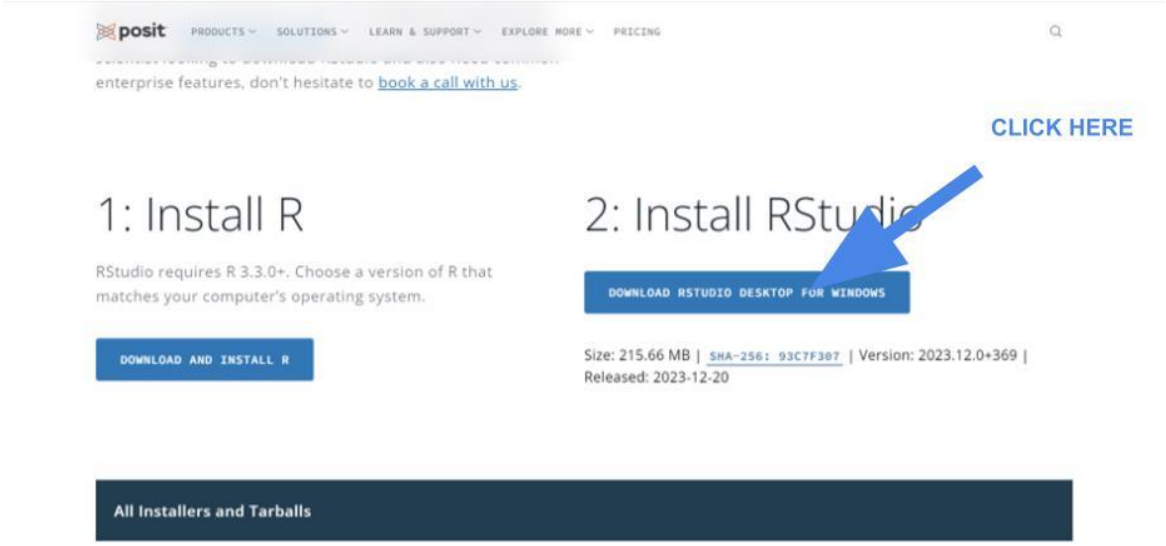


Figure 6: This screenshot shows the download page for RStudio, similar to the R page.

Figure 7: Once the file is downloaded, you will see this screen. Double-click to install.

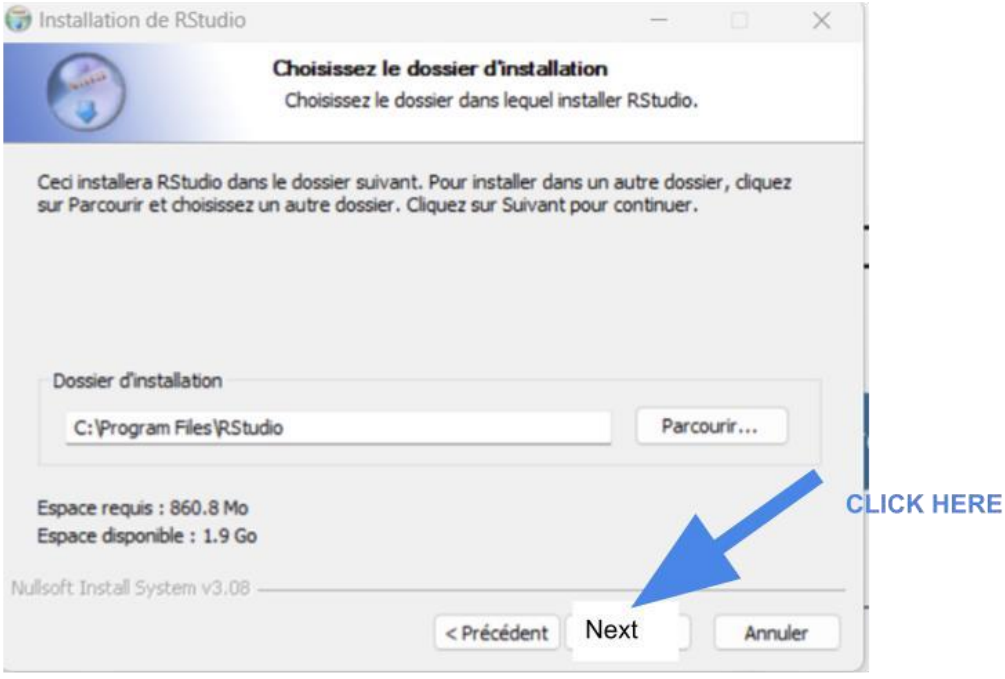


Figure 8: Click "Next" through the installation prompts until the installation is complete.

Step 2: Download REASSURE

Now that you have R and RShiny installed, you are ready to download the REASSURe app.

1. Copy and paste the following link into your web browser: https://github.com/yamnao/reassure_app

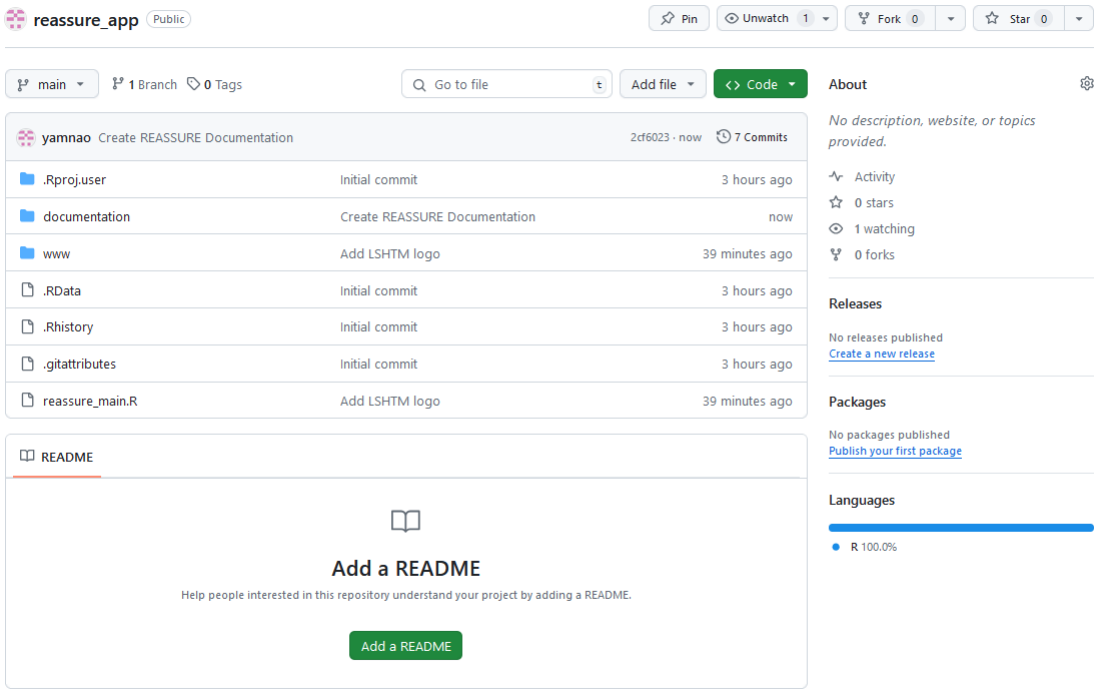
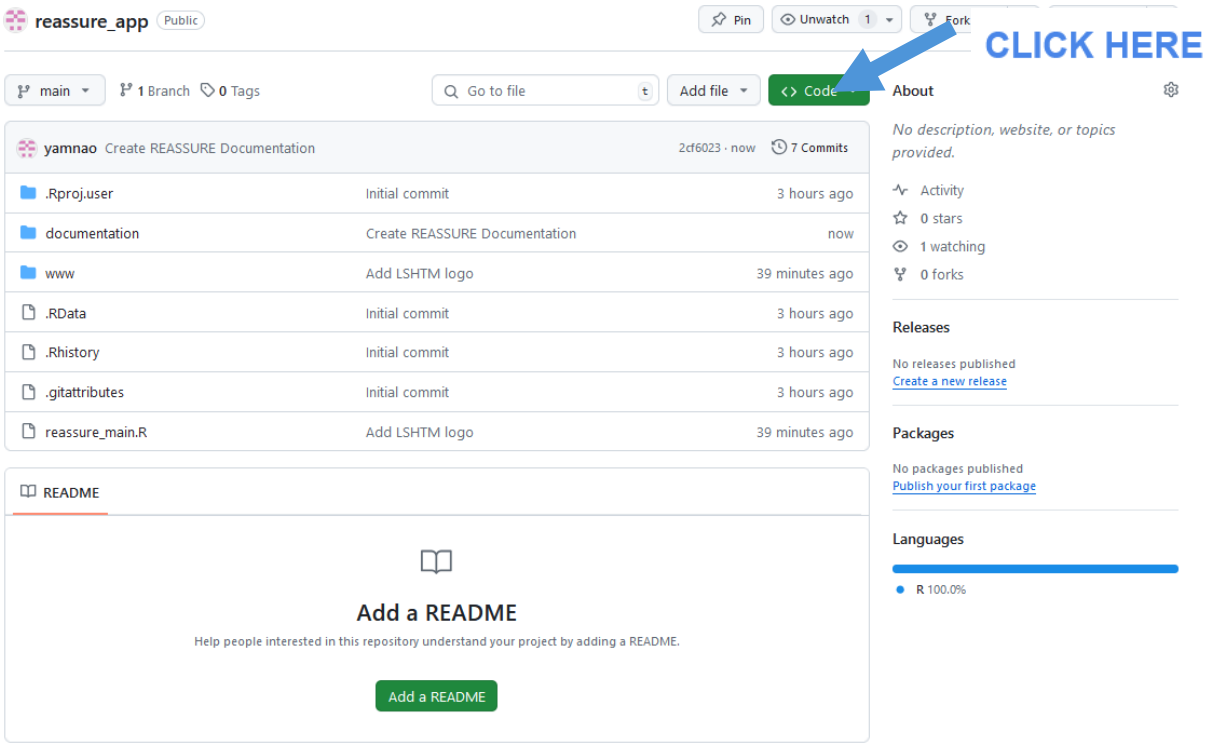


Figure 8: Github webpage containing the REASSURE app.

2. To download the App, please click on the "Code" button and then on "Download ZIP".



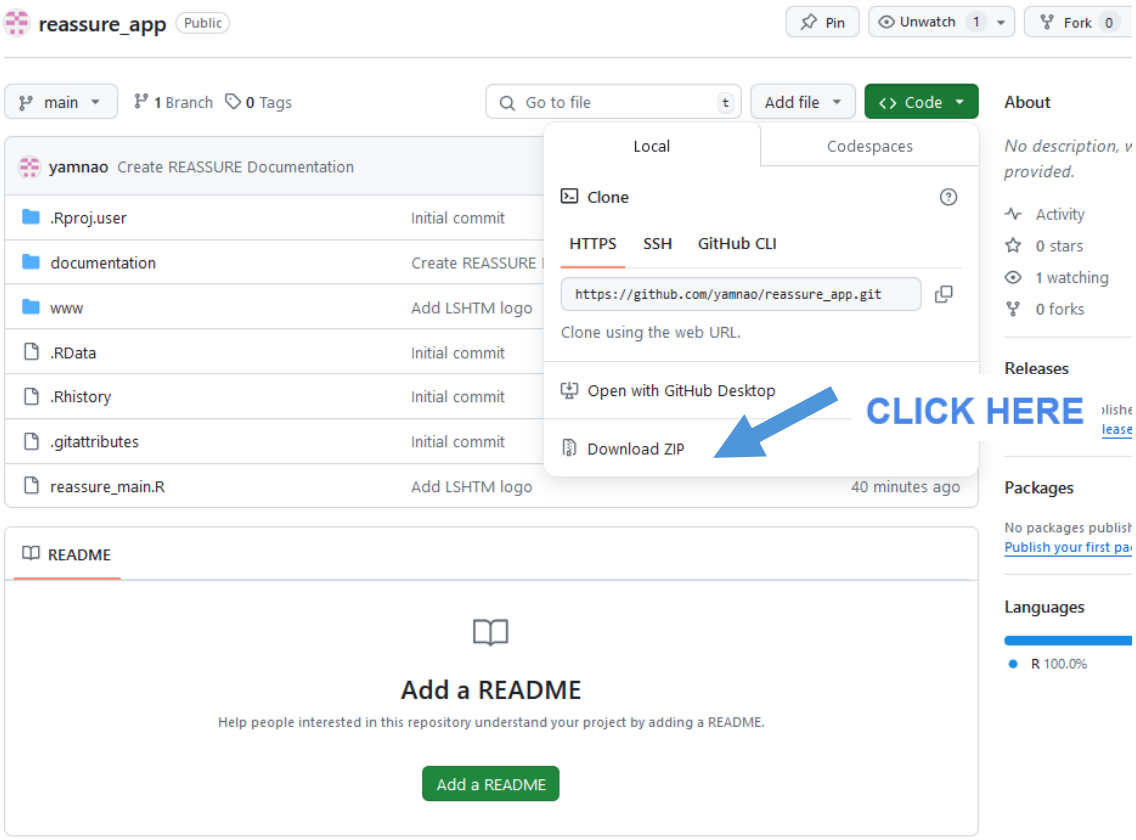


Figure 9: Download the ZIP file containing the REASSURE code.

3. Unzip the folder by extracting it.

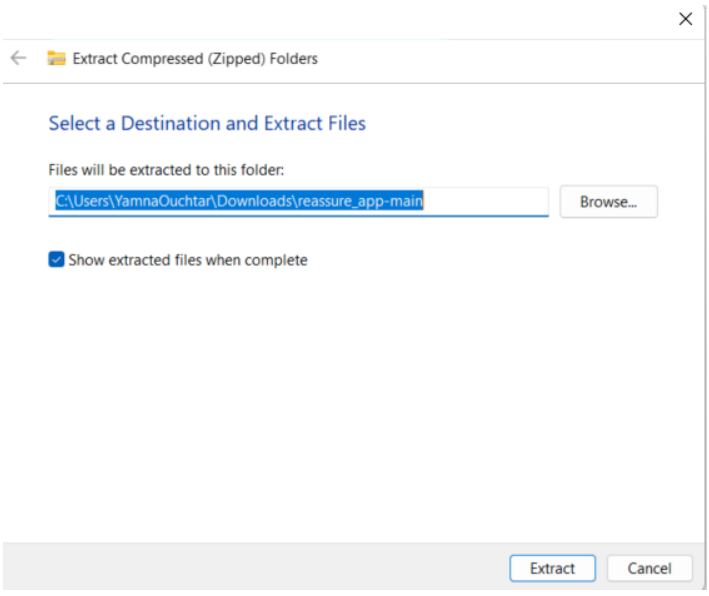


Figure 10: Unzip the file.

4. After unzipping the folder, locate the reassure_main file. Right-click on it, and select "Open with RStudio"

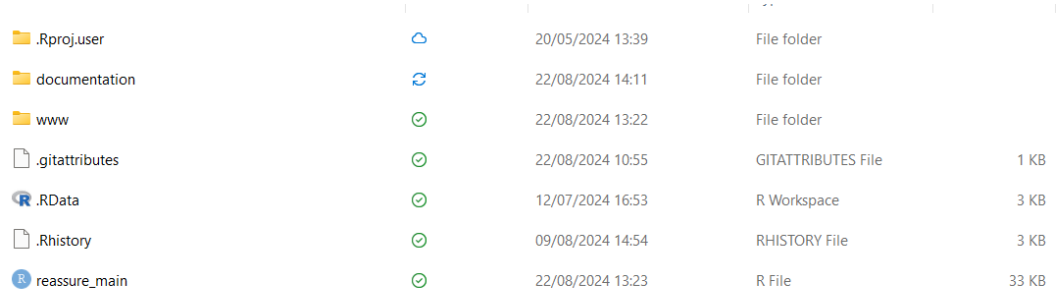


Figure 11: Open the reassure_main code using Rstudio.

5. The following window will appear.

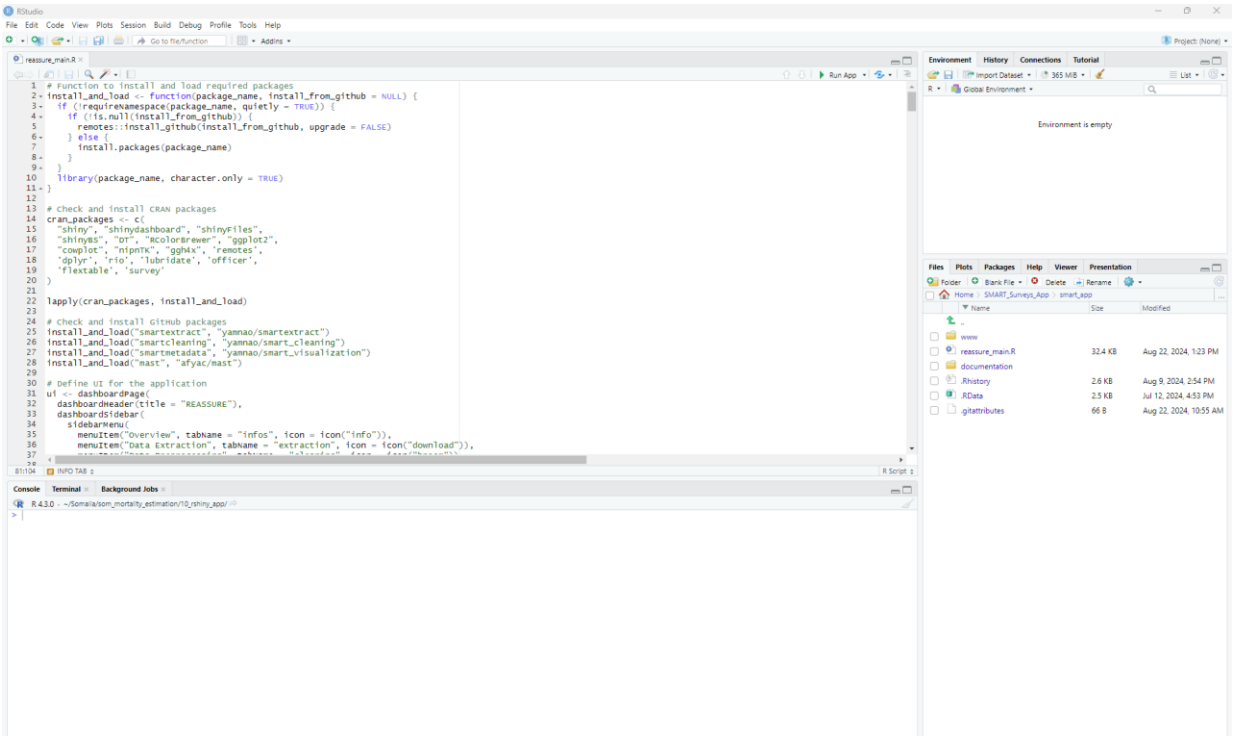


Figure 12: Overview of the REASSURE code.

Step 3: Run the App Locally

1. In RStudio, click on the "Run App" button.

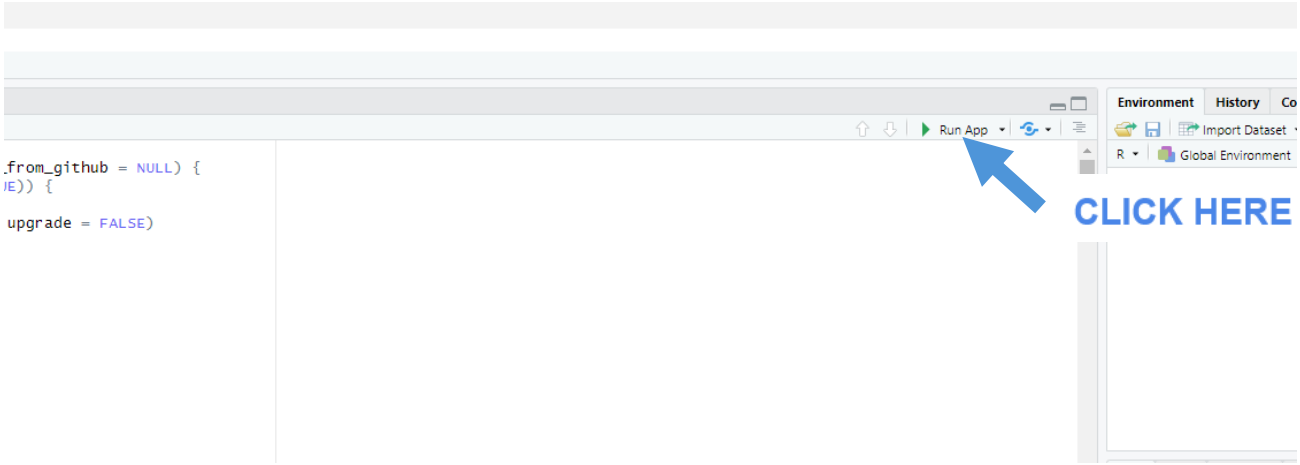


Figure 13: Click on the Run App button to run the REASSURE app from the Rstudio code.

NOTE: You may have a window pop up saying you need to install RSHINY. If this happens just click on **YES** and it will be installed. This may take a little time, but only happens the first time you run the app.

2. REASSURe App will appear.

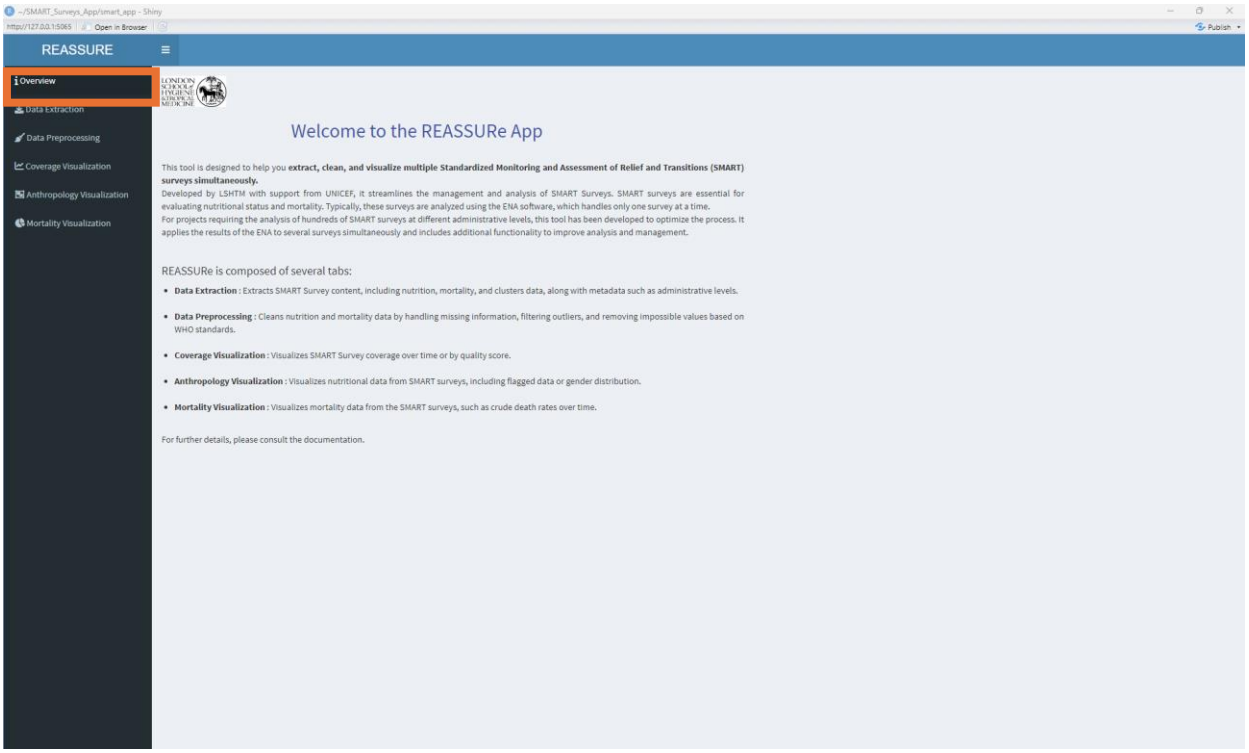


Figure 14: Overview of the REASSURE App.

Step 4: Understanding the different tabs

Tab 1: Extract SMART Survey Content

This section extracts the data from the .AS format so that it is ready for use by the rest of the application. It also allows users to correct the names of administrative regions, and to flag up reports whose dates are not possible.

1. Click on the **Data Extraction** tab

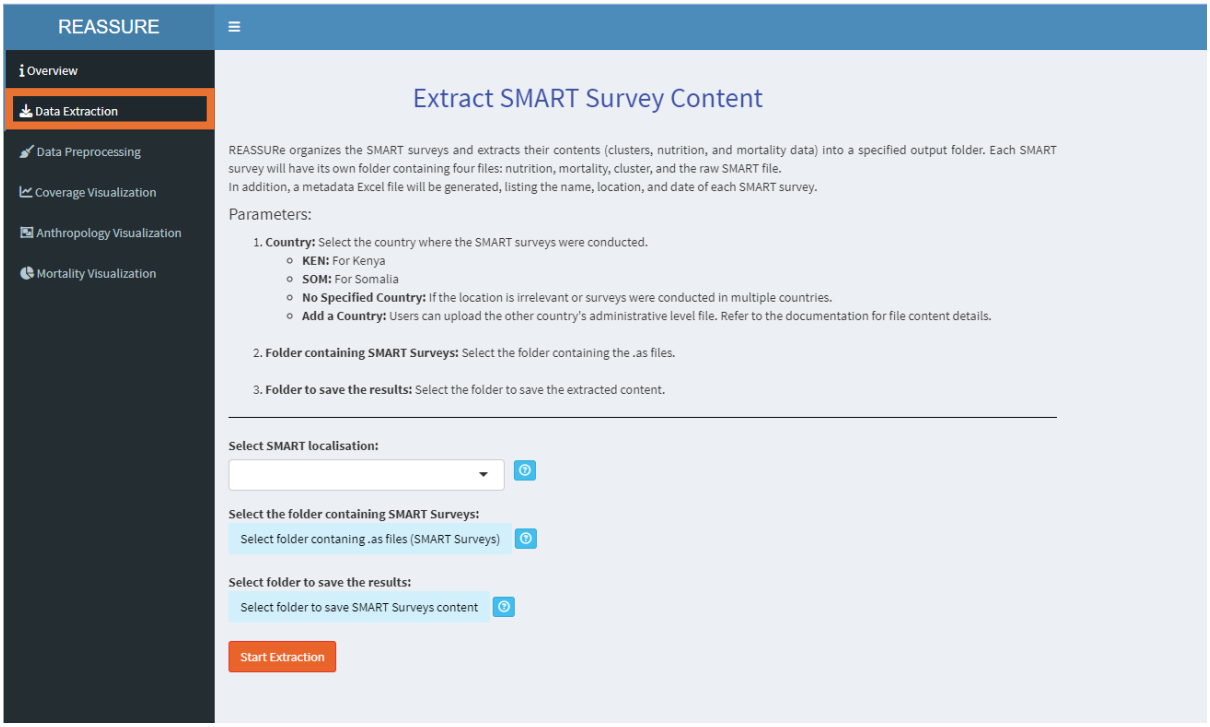


Figure 15: Overview of the Data Extraction tab.

2. Select the Country of the SMART surveys you want to extract:
   - **KEN** option: If the SMART survey was conducted in Kenya, select this option to filter and manage the data specific to Kenya.
   - **SOM** option: If the SMART survey was conducted in Somalia, select this option to focus on Somalia-specific data.
   - **No Specified Country** option: If you prefer not to specify a country, select this option. This can be useful for managing data that spans multiple regions or when country-specific analysis is not necessary.
   - **Add a Country** option: If the survey was conducted in a country other than Kenya or Somalia and you need to verify and refine the administrative levels information, please select this option. You will be required to provide administrative level data in the specified format. The country data should be organized in an Excel file with three distinct columns: eventual_name, right_name, and level. The level column may include designations such as admin1, admin2, or lhz. The "eventual_name" column accommodates various spellings of the administrative level, while the "right_name" column reflects the standardized spelling of the administrative level. In the initial file,

you may simply duplicate the name of the administrative area to establish a starting point.

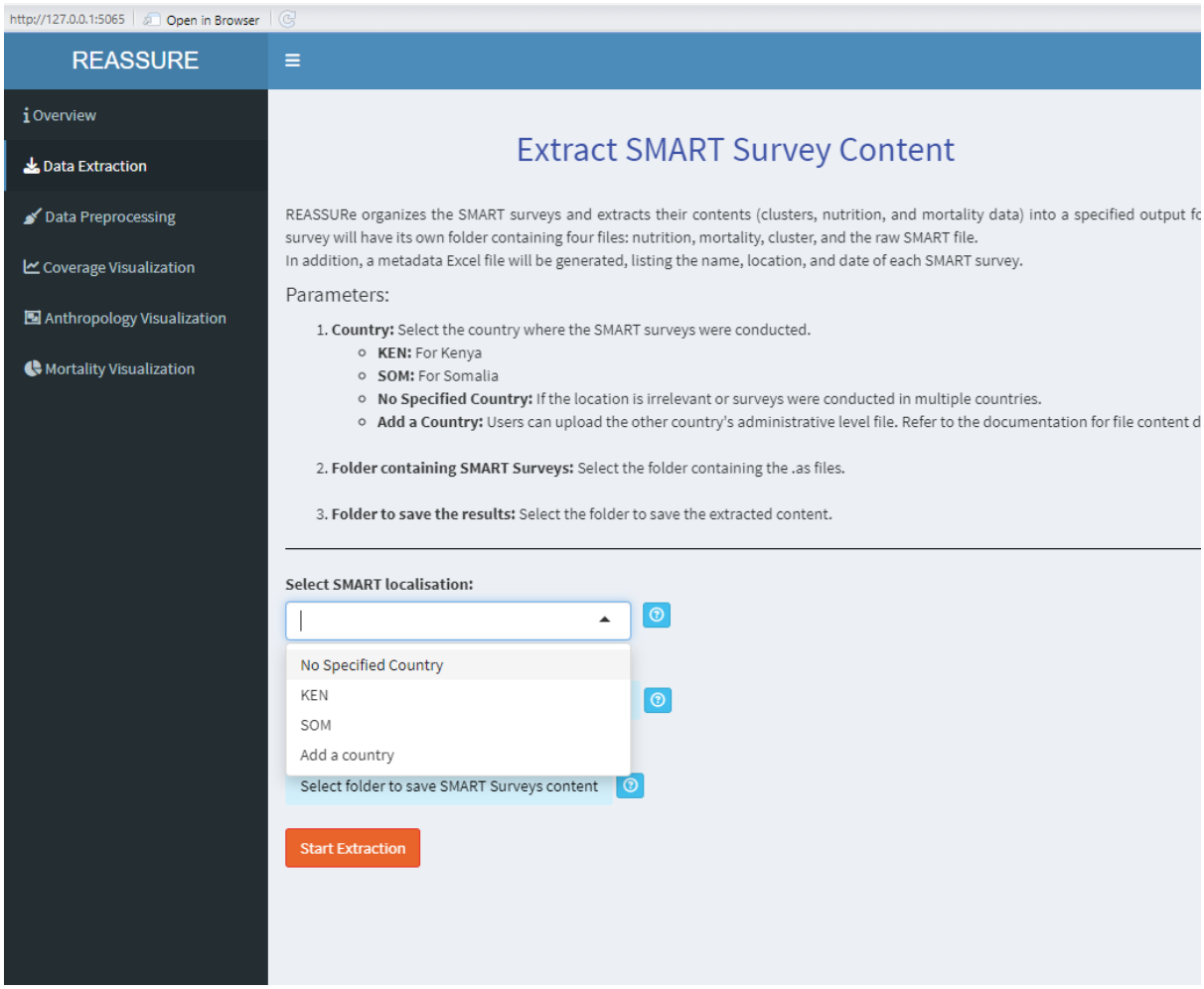


Figure 16: Select the localisation of the SMART surveys.

If you selected to option to add a new country, the following window will appear.

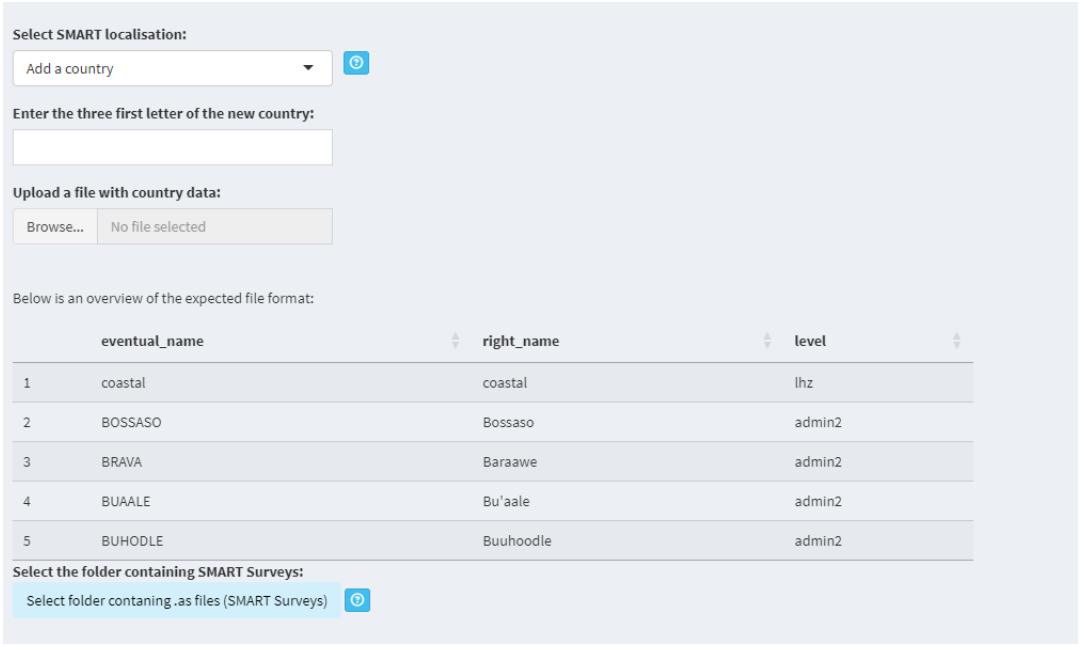
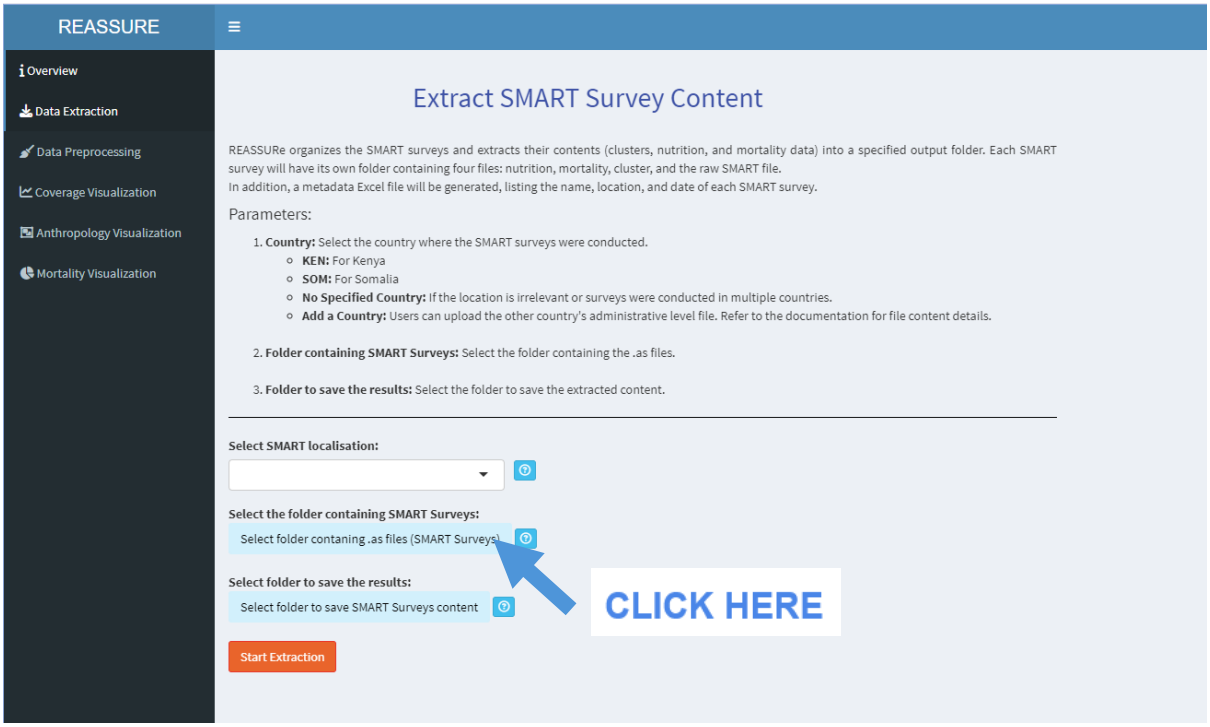


***Figure 17**. Add an excel file containing the list of adminstrative areas for the country where the SMART surveys have been conducted if you have selected the **Add Country** option.*

3. Select the folder containing the SMART Surveys i.e. the .as files.



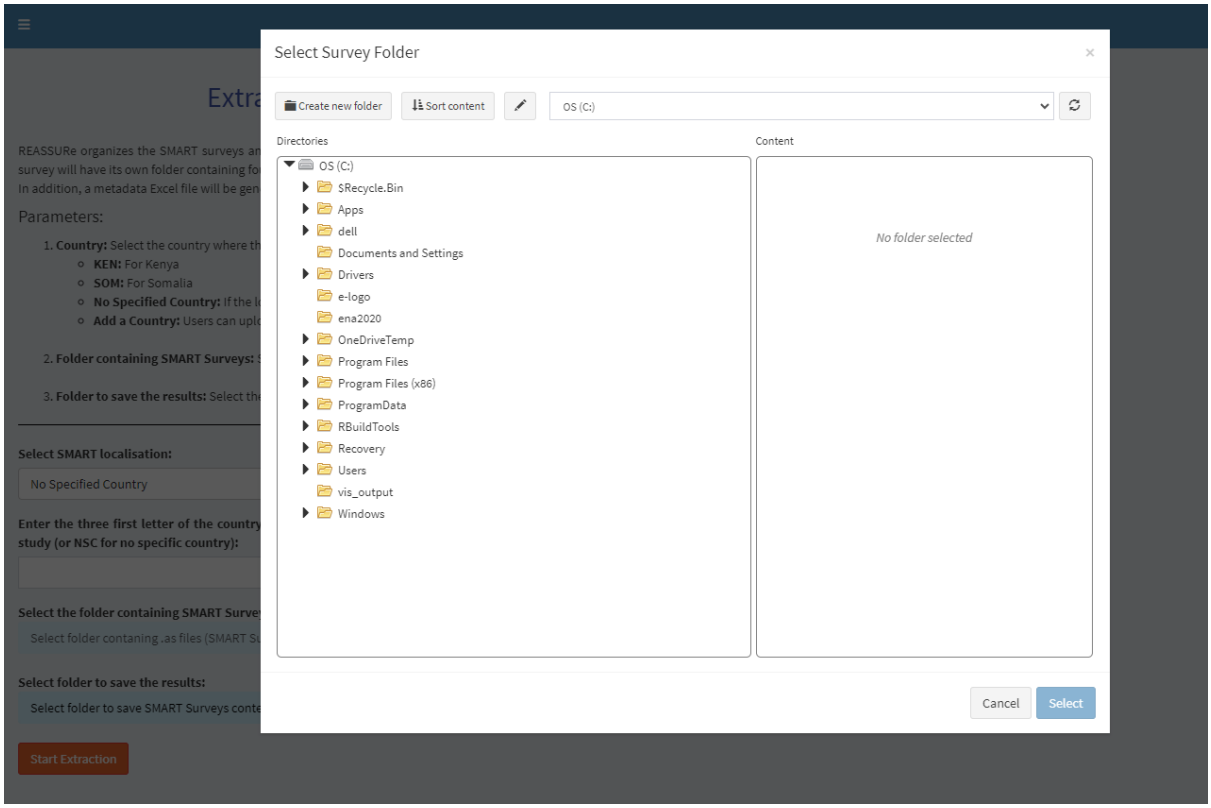


Figure 18. Select the path where the SMART survey have been saved.

4. Select the folder to save the different results.

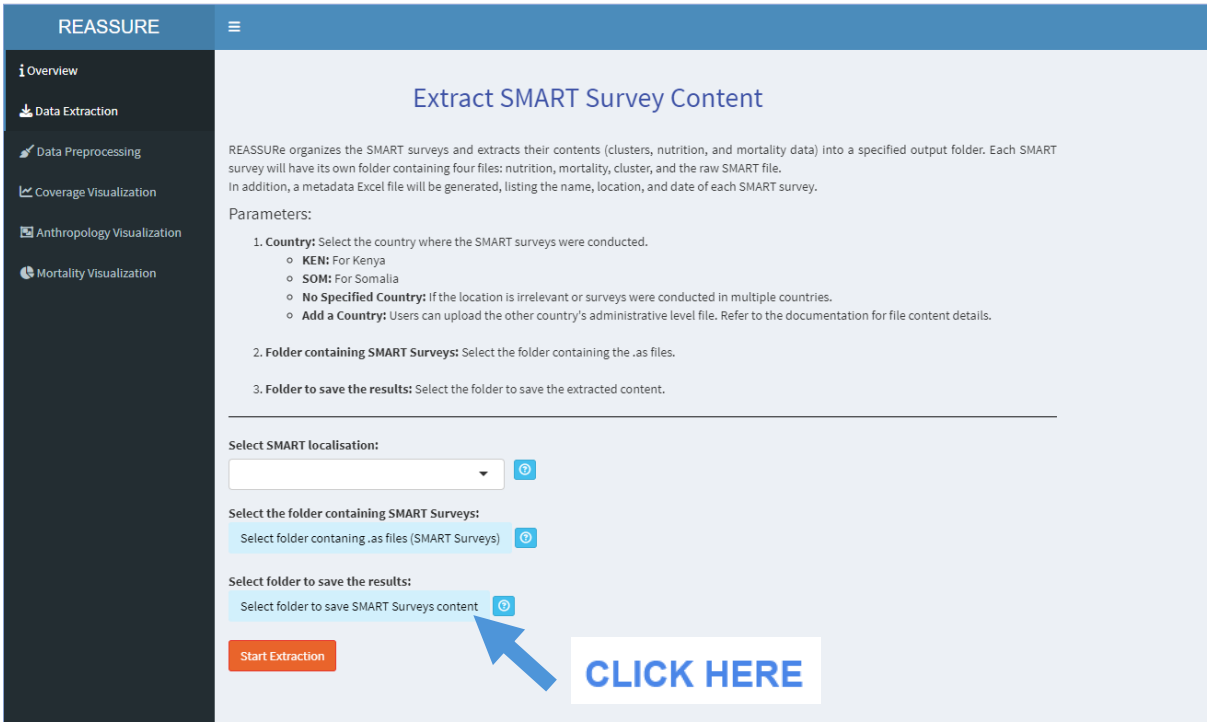


Figure 19. Select the path where the results will be saved

EXAMPLE of SMART Survey Extraction

1. Enter the different parameters.

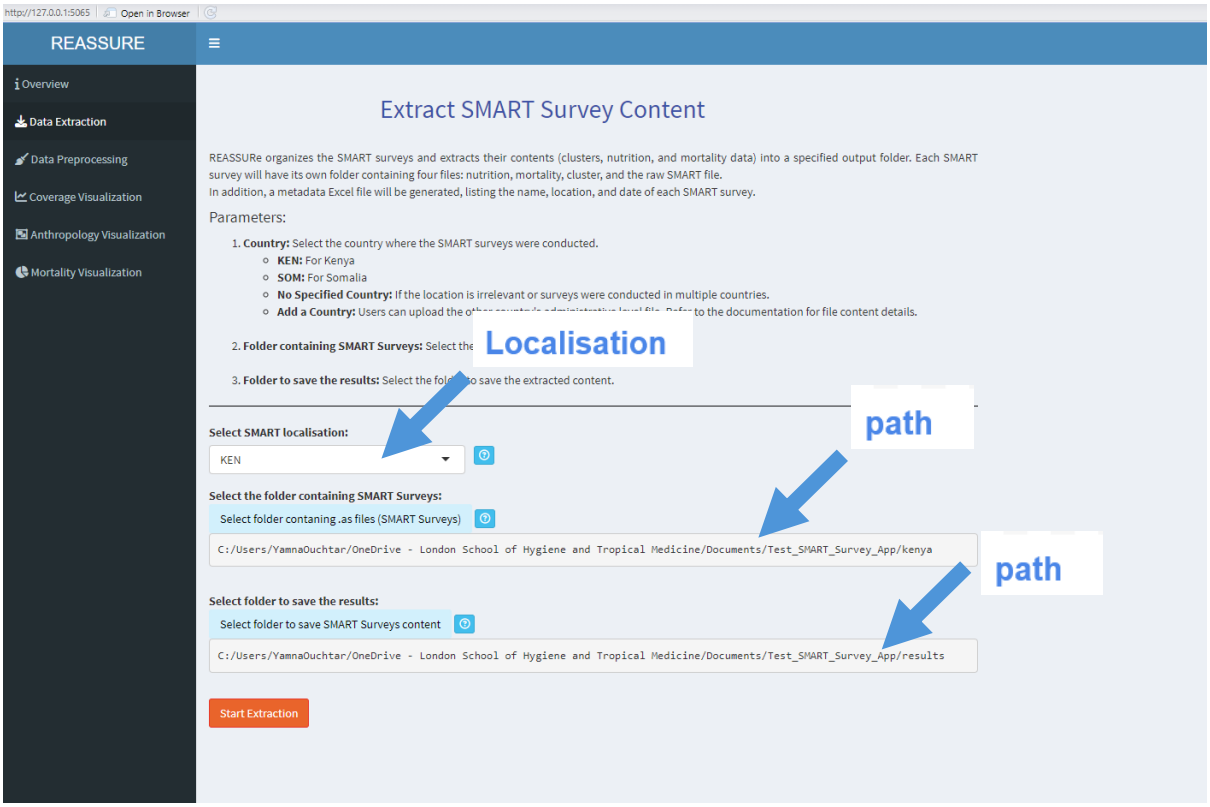


Figure 20. Example of the different parameters filled in the Data Extraction tab.

If the app cannot automatically find the correct administrative name, you will be prompted to manually select the appropriate location. If you know where the survey took place, select from the list of administrative areas. Else, select the '*Not Found*' option. This ensures that the data is correctly categorized and analysed according to its geographical context.

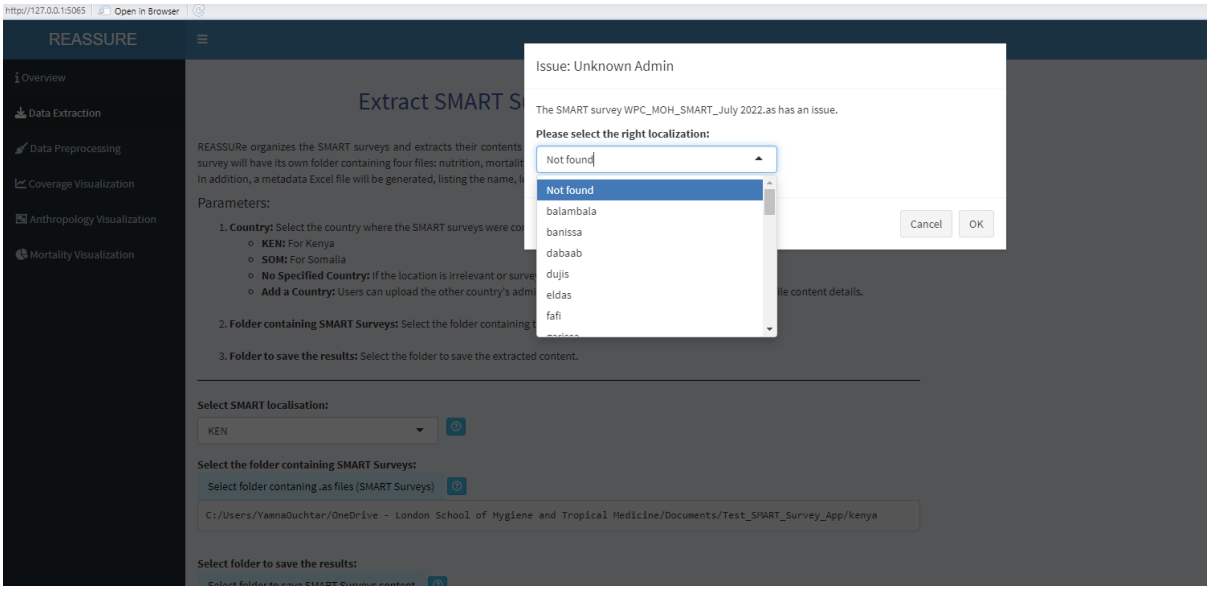


Figure 21. Example of the pop-up window that appears if one of the SMART surveys has not been located correctly.

2. Once all the SMART Survey have been extracted, you will see the following figures.

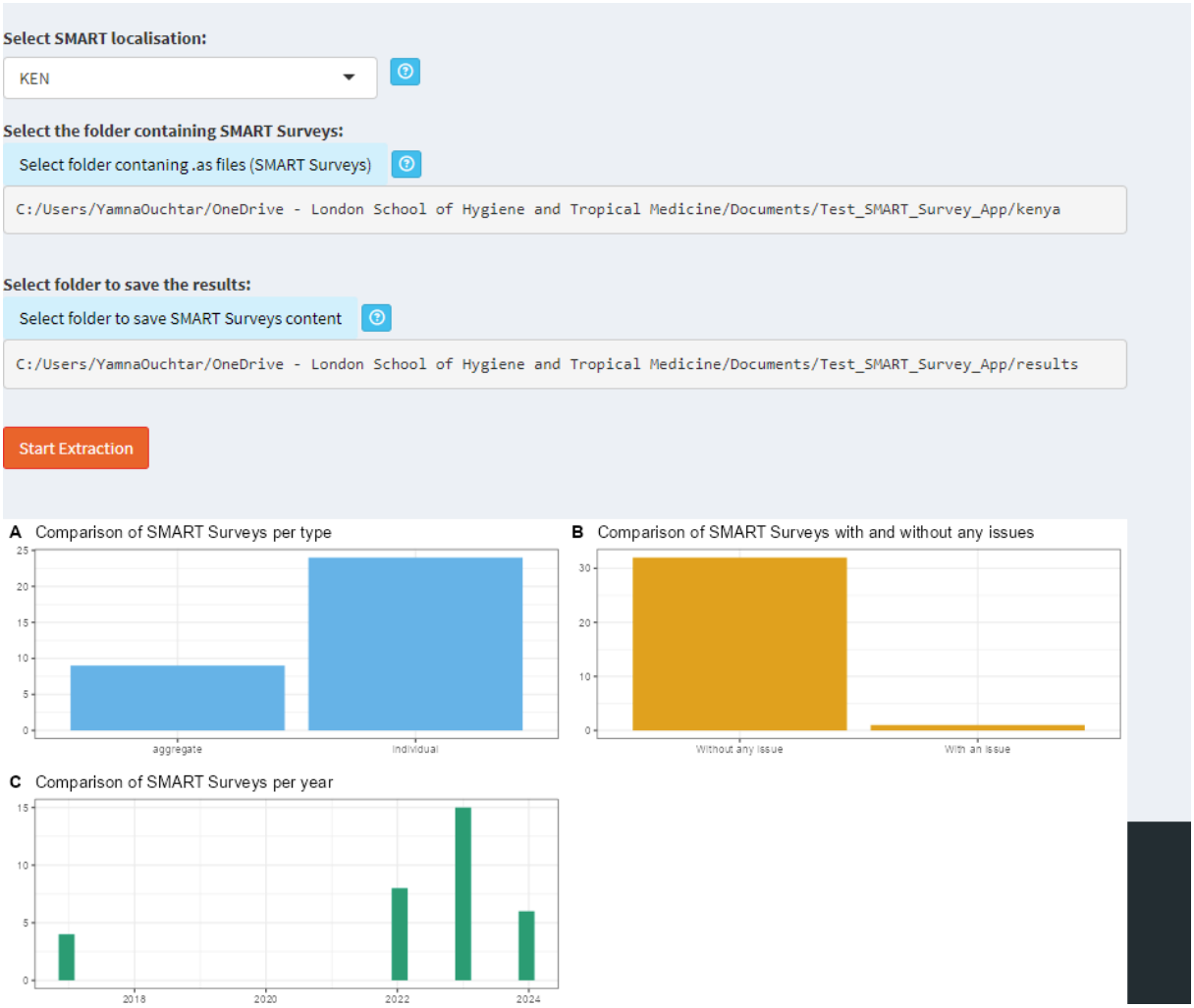


Figure 22. Example of the figures that will appear once extraction is complete.

3. In the folder where you saved the input, you will find a separate directory for each SMART Survey. Additionally, a folder named smart_with_issue will contain surveys with location or date issues. A metadata Excel file will also be created, summarizing the analyzed SMART surveys.

Figure 23. Example of different folders obtained after the extraction.

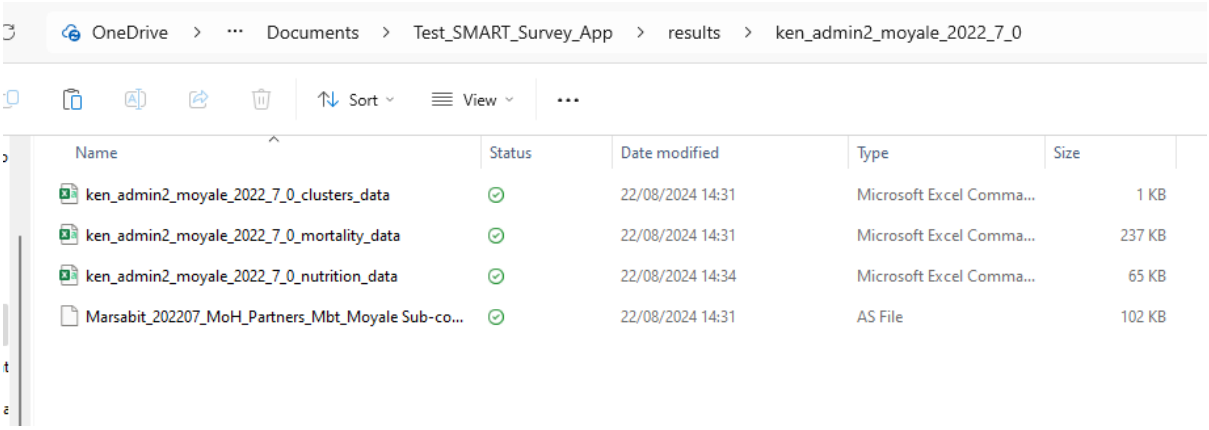


Figure 24. Example of information extracted from the SMART Survey and available in one repository: cluster data, mortality data, nutrition data, and the raw SMART survey file.

Tab 2: Cleaning SMART Survey Content

1. Click on the Data Preprocessing tab

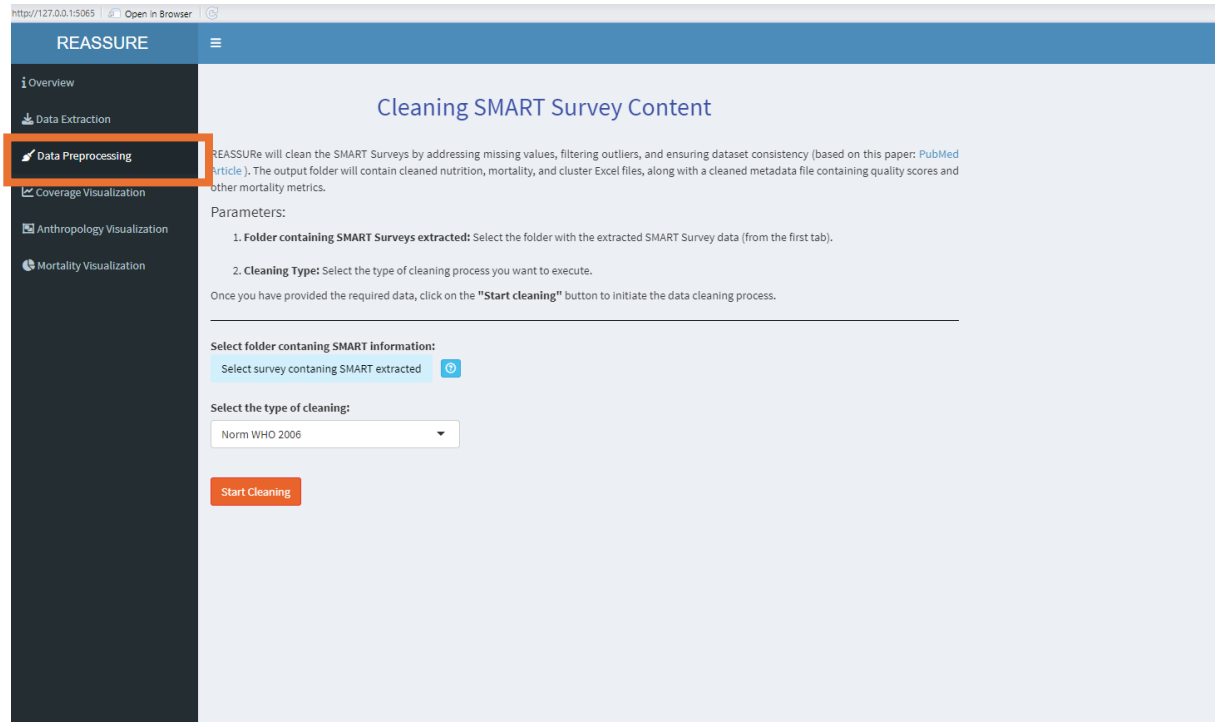


Figure 25: Overview of the Data Preprocessing tab.

2. Specify the location where the SMART surveys were extracted. If you have previously completed the extraction step, this path will be automatically filled out.

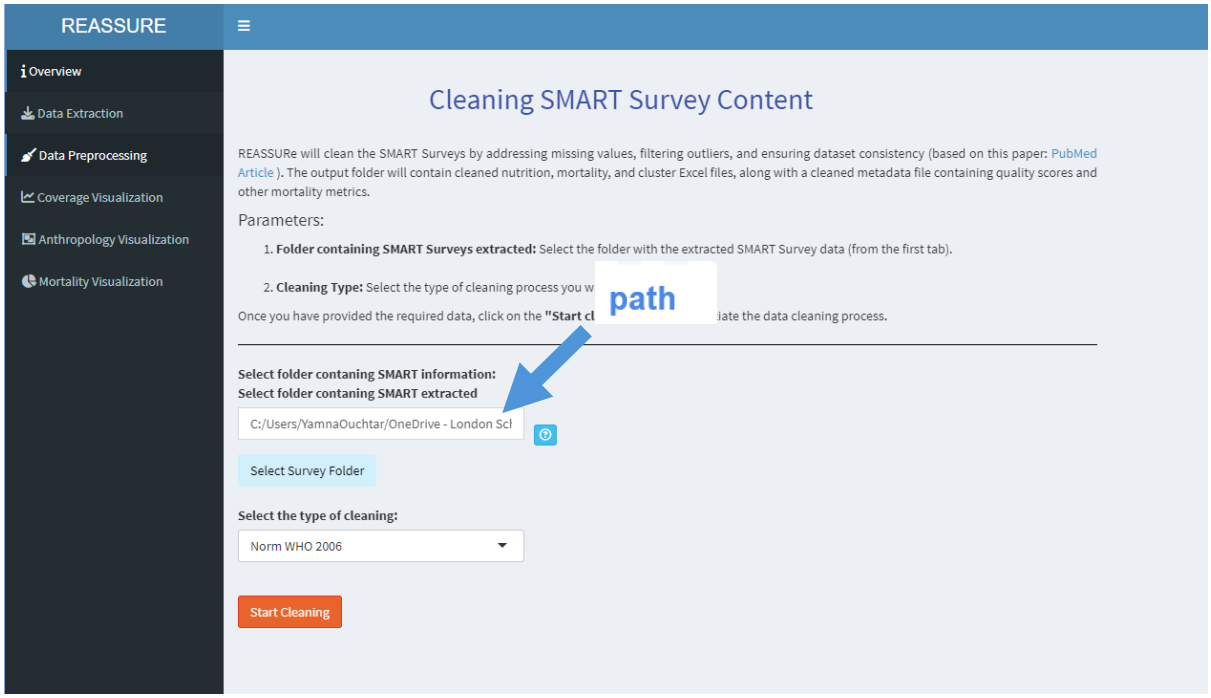


Figure 25: Overview of parameter to fill.

3. Choose the cleaning process you want to execute.

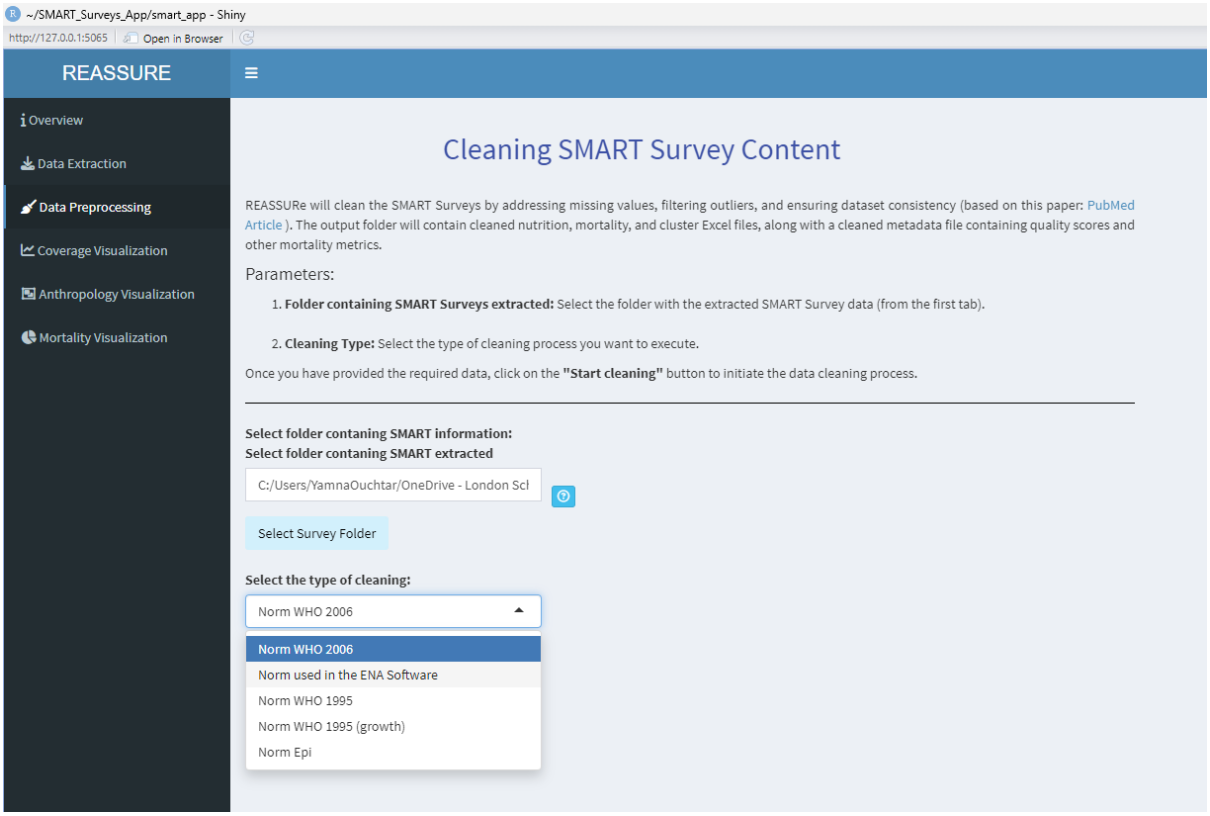


Figure 26: Overview of type of cleaning choices.

4. Once you have selected the parameters of your choice, click on 'Start Cleaning'. Once the process is completed, some figures will appear.

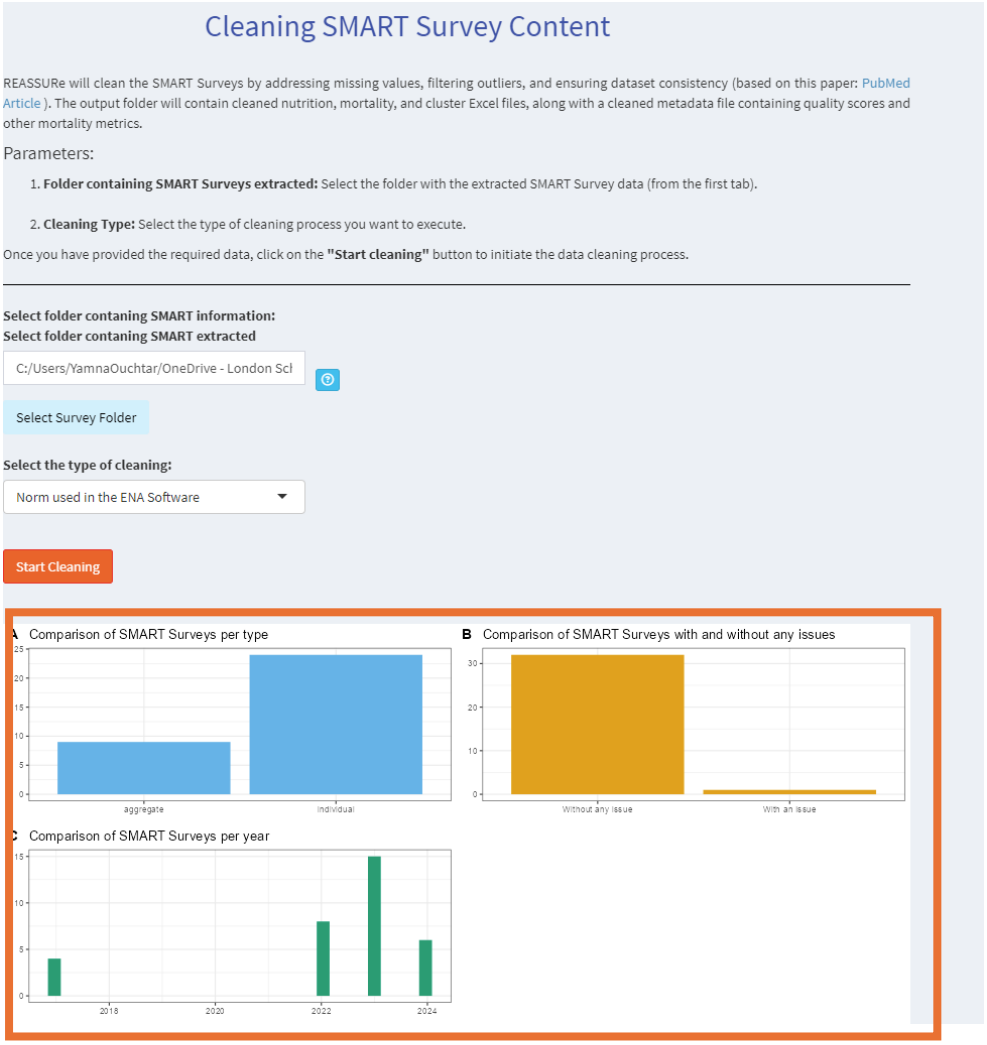


Figure 27. Example of the figures that will appear once cleaning is complete.

EXAMPLE of Cleaning SMART Survey Content

1. Below is an example of a folder you will obtain using the cleaning tab.

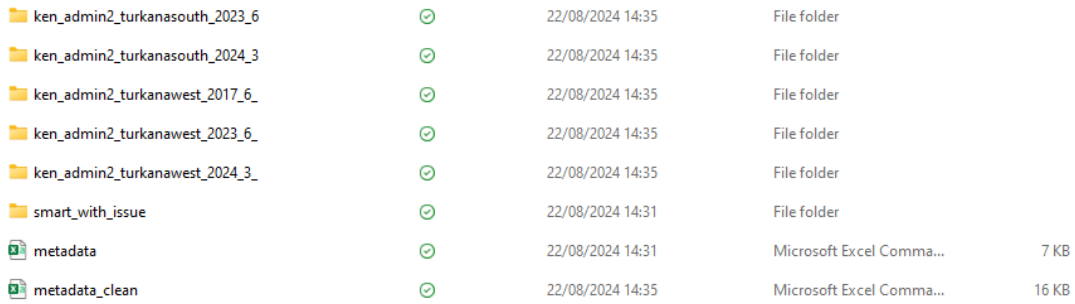


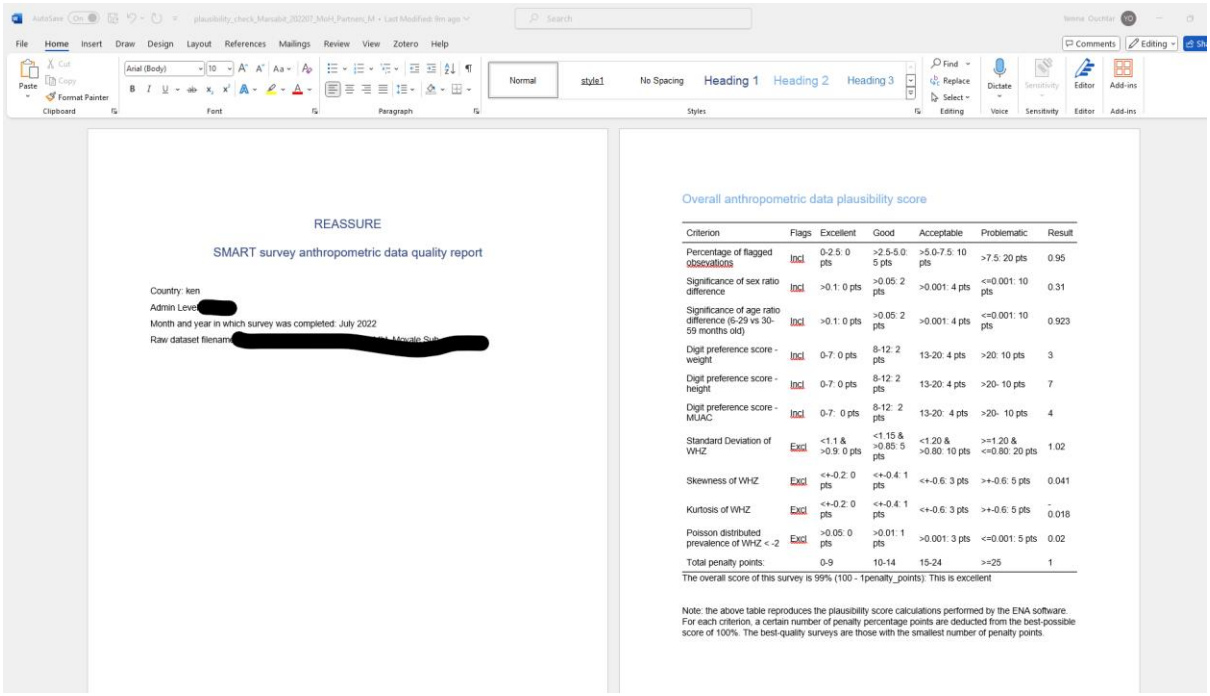
Figure 28. Example of different folders obtained after the cleaning.

2. In each folder, you will find the following Excel file.

Name	Status	Date modified	Type	Size
ken_admin1_wajir_2023_6_0_clusters_data	✓	22/08/2024 14:31	Microsoft Excel Comma...	1 KB
ken_admin1_wajir_2023_6_0_clusters_data_clean	✓	22/08/2024 14:34	Microsoft Excel Comma...	1 KB
ken_admin1_wajir_2023_6_0_mortality_data	✓	22/08/2024 14:31	Microsoft Excel Comma...	313 KB
ken_admin1_wajir_2023_6_0_mortality_data_clean	✓	22/08/2024 14:34	Microsoft Excel Comma...	58 KB
ken_admin1_wajir_2023_6_0_nutrition_data	✓	22/08/2024 14:34	Microsoft Excel Comma...	95 KB
ken_admin1_wajir_2023_6_0_nutrition_data_clean	✓	22/08/2024 14:34	Microsoft Excel Comma...	92 KB
Ken_Wajir_MOH_06_2023.as	✓	22/08/2024 14:31	AS File	134 KB
plausibility_check_Ken_Wajir_MOH_06_2023	✓	22/08/2024 14:34	Microsoft Word Docum...	1,217 KB

Figure 29. Example of different files obtained after the cleaning.

3. The folder will also contain a Word file with the data quality report.



REASSURE

SMART survey anthropometric data quality report

Country: ken

Admin Level [redacted]

Month and year in which survey was completed: July 2022

Raw dataset filename [redacted]

Overall anthropometric data plausibility score

Criterion	Flags	Excellent	Good	Acceptable	Problematic	Result
Percentage of flagged obsevations	Incl	0-2.5: 0 pts	>2.5-5.0: 5 pts	>5.0-7.5: 10 pts	>7.5: 20 pts	0.95
Significance of sex ratio difference	Incl	>0.1: 0 pts	>0.05: 2 pts	>0.001: 4 pts	<=0.001: 10 pts	0.31
Significance of age ratio difference (6-29 vs 30-59 months old)	Incl	>0.1: 0 pts	>0.05: 2 pts	>0.001: 4 pts	<=0.001: 10 pts	0.923
Digit preference score - weight	Incl	0-7: 0 pts	8-12: 2 pts	13-20: 4 pts	>20: 10 pts	3
Digit preference score - height	Incl	0-7: 0 pts	8-12: 2 pts	13-20: 4 pts	>20- 10 pts	7
Digit preference score - MUAC	Incl	0-7: 0 pts	8-12: 2 pts	13-20: 4 pts	>20- 10 pts	4
Standard Deviation of WHZ	Excl	<1.1 & >0.9: 0 pts	<1.15 & >0.85: 5 pts	<1.20 & >0.80: 10 pts	>=1.20 & <=0.80: 20 pts	1.02
Skewness of WHZ	Excl	<+-0.2: 0 pts	<+-0.4: 1 pts	<+-0.6: 3 pts	>+-0.6: 5 pts	0.041
Kurtosis of WHZ	Excl	<+-0.2: 0 pts	<+-0.4: 1 pts	<+-0.6: 3 pts	>+-0.6: 5 pts	-0.018
Poisson distributed prevalence of WHZ < -2	Excl	>0.05: 0 pts	>0.01: 1 pts	>0.001: 3 pts	<=0.001: 5 pts	0.02
Total penalty points:		0-9	10-14	15-24	>=25	1

The overall score of this survey is 99% (100 - 1penalty_points): This is excellent

Note: the above table reproduces the plausibility score calculations performed by the ENA software. For each criterion, a certain number of penalty percentage points are deducted from the best-possible score of 100%. The best-quality surveys are those with the smallest number of penalty points.

Figure 30. Example of word file obtained after the cleaning.

Tab 3: Visualization of SMART Surveys coverage

This section allows you to view simply histograms of the SMART surveys by:

- Quality score
- Sample size
- Recall days
- Date of survey

1. Click on the **Coverage Visualization** tab.

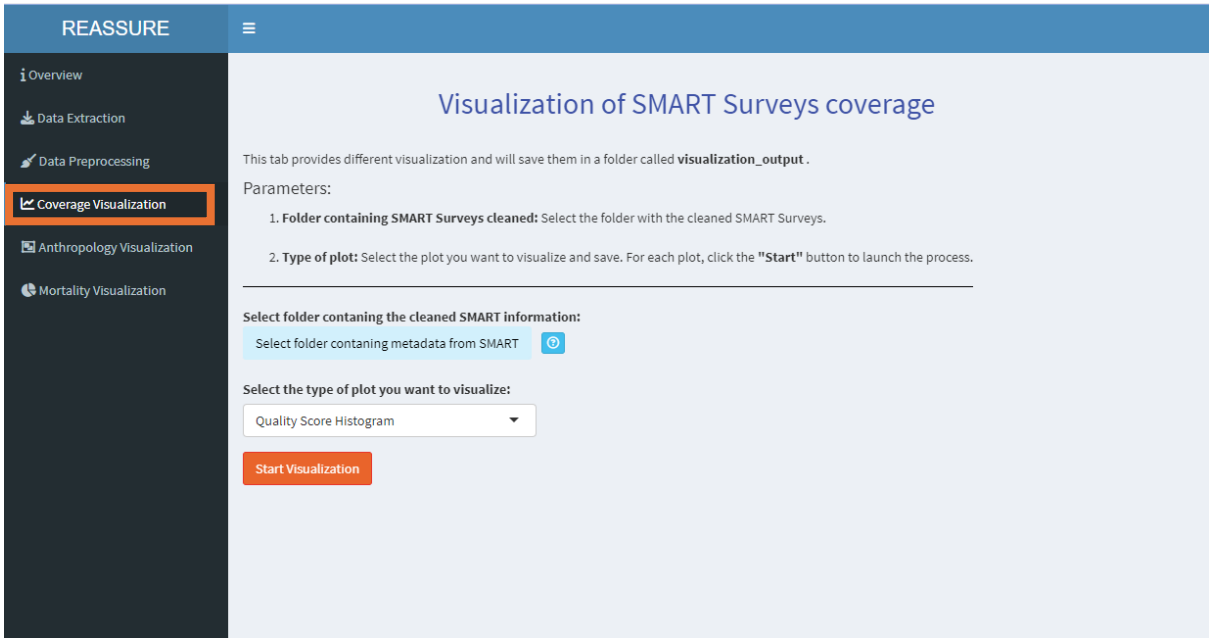


Figure 31: Overview of the Coverage Visualization tab.

2. Select the path where the SMART Surveys have been extracted and cleaned (the folder containing the metadata_clean Excel file). *If you have already cleaned the SMART surveys using the Data Preprocessing tab, the path will be automatically filled.*
3. Choose the type of plot you want to generate from the available options.
4. Click on the Start visualization button.

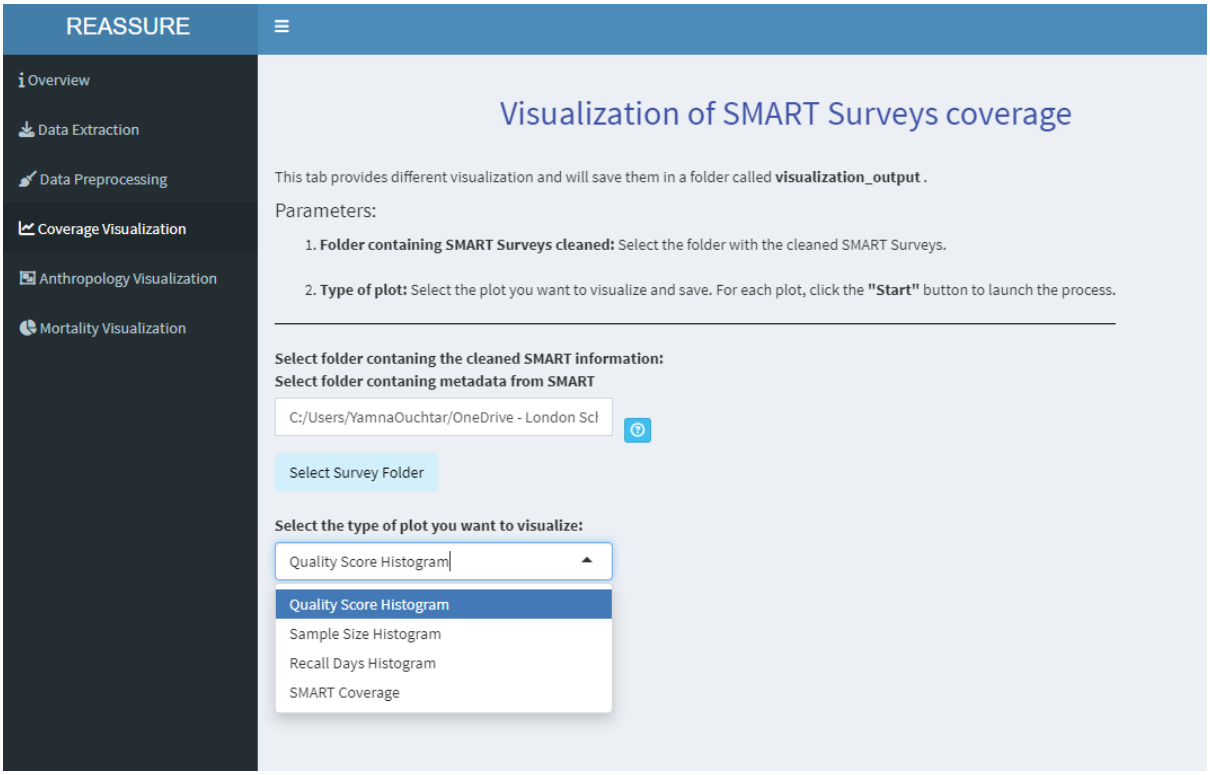


Figure 33: Overview of type of plot.

5. Click on the **Start Visualization** button, and the plot will appear.

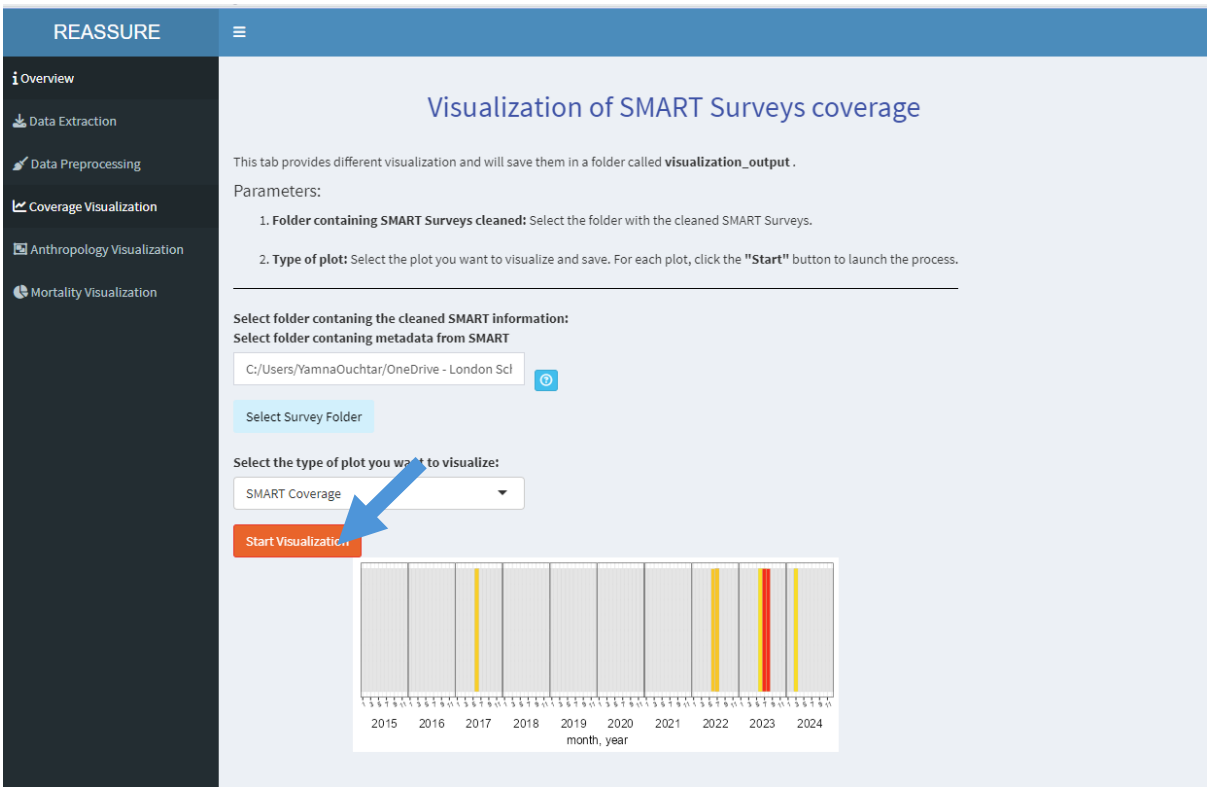
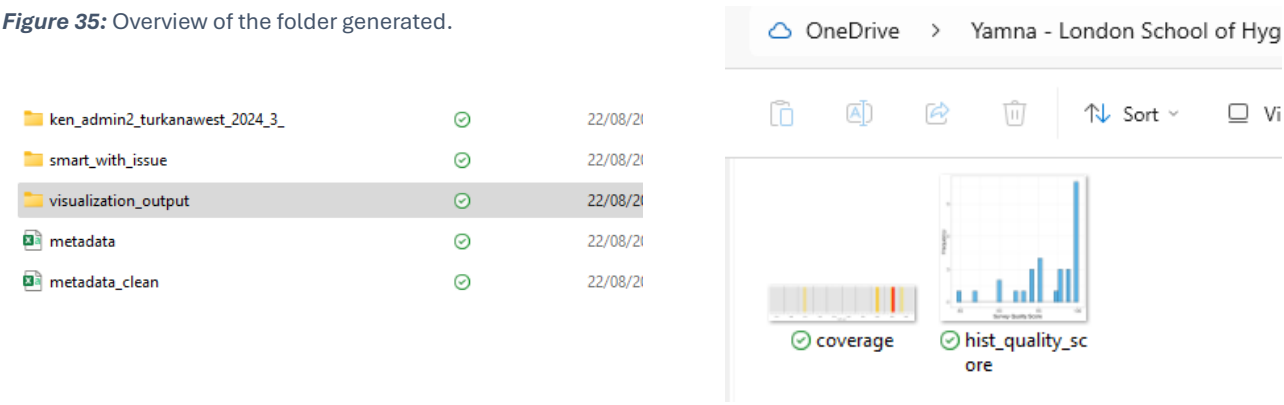


Figure 34: Overview of the plot visualization.

6. A folder called visualization_output will be created, and the plot will be saved in this folder.

Figure 35: Overview of the folder generated.



Tab 4: Visualization of SMART Surveys anthropology

This section of the App allows you to produce different histograms about the anthropology of the SMART surveys. Including:

- Histogram of flagged WHZ
- Histogram of flagged HAZ
- Histogram of flagged WAZ
- Histogram of flagged BIO
- For each survey the flagged WHZ by year
- For each survey the flagged HAZ by year
- For each survey the flagged WAZ by year
- For each survey the flagged Boys / Girls by year

1. Click on the **Anthropology Visualization** tab.
2. Select the path where the SMART Surveys have been extracted and cleaned (the folder containing the metadata_clean Excel file). *If you have already cleaned the SMART surveys using the Data Preprocessing tab, the path will be automatically filled*.
3. Choose the type of plot you want to generate from the available options.
4. Click on the Start visualization button.

Tab 5: Visualization of SMART Surveys mortality

This section of the APP produces simple graphs of different mortality scores:

- Crude death rate (CDR) over time,
- Under 5-years death rate (DR) over time.

1. Click on the **Mortality Visualization** tab.

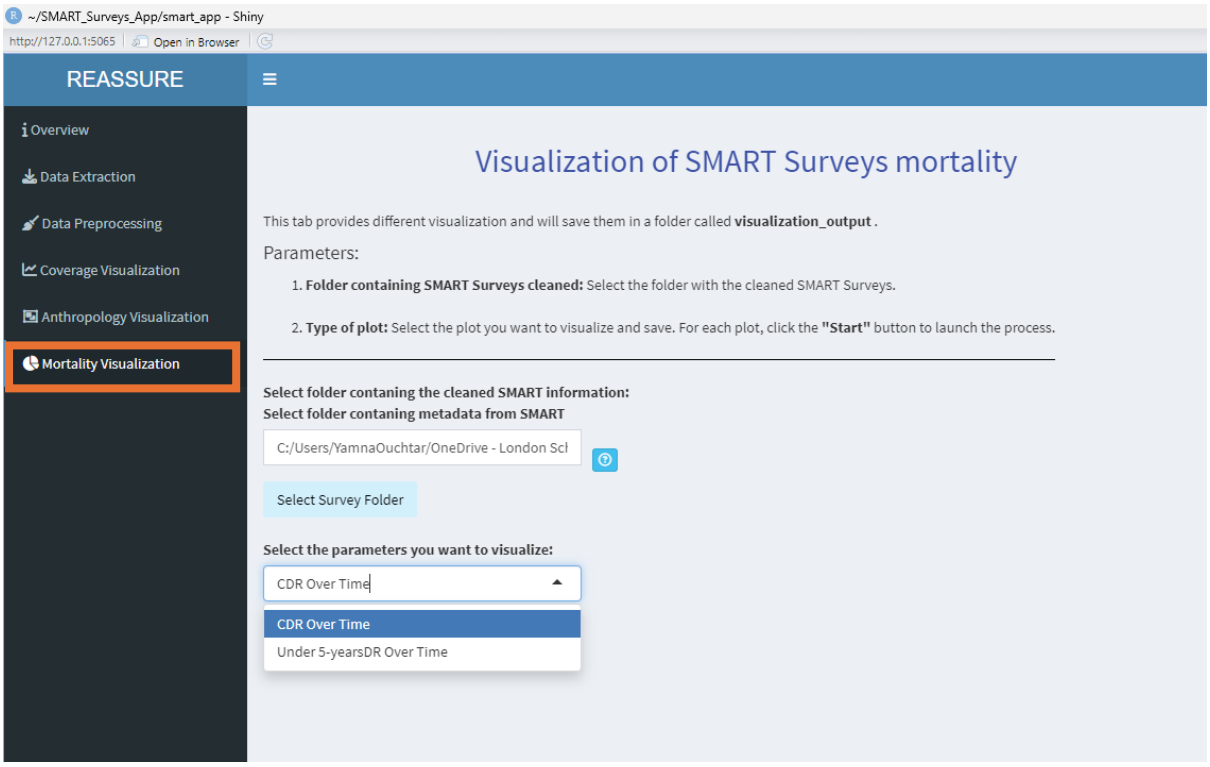


Figure 37: Overview of the Mortality Visualization tab

2. Select the path where the SMART Surveys have been extracted and cleaned (the folder containing the metadata_clean Excel file). *If you have already cleaned the SMART surveys using the Data Preprocessing tab, the path will be automatically filled*.
3. Choose the type of plot you want to generate from the available options.
4. Click on the Start visualization button.