DASHBOARD USER MANUAL - OUTLINE

I. About the ETH – Dashboard

(1) Why was it created
(2) Data sources
(3) How can it be used
(4) Calculations
(5) Box Plots - what are they, how do you interpret them

II. Landing Page

III. Definitions page

a. Explain more about information on this page, i.e., these are the definitions of the metrics being used.
b. Add Definition of FERG

IV. All Hazards

a. Show a picture of the page
b. Explain Definitions segment
c. Explain Dependent variable
d. Explain graph type
    i. Why did we choose the graph types shown
e. Explain Select Sort Metric
    i. What is found in the drop-down box
f. What is a box plot?
    i. How do you read a box plot
g. What is and how to use the far-right segment of the page (WE need a title-Maybe HAZARDS

V. FERG Hazard

a. Explain FERG (may want to reference landing page or link to this section
b. Why is this page different than the All Hazards page

VI. Custom Hazards

a. What is meant by Custom Hazard
b. Why is this page different than the All Hazards page

VII. Scatter Plot

a. What is a scatter plot
b. Why is scatter plot a standalone section

VIII. Weighted Scatter Plot

a. What is a weighed scatter plot
b. Why is it a standalone section

IX. All New Hazards

a. What is this section
    i. Why is it included in the dashboard
b. What do each of the tabs mean:
    i. Steps
    ii. Purpose
    iii. Preparing Data
    iv. Formatting data
    v. Running the simulation

I. About the ETH – Dashboard

Why was it created -

In 2015, the Foodborne Epidemiology Reference Group (FERG) released the WHO (World Health Organization) Estimates of the Global Burden of Foodborne Diseases: https://collections.plos.org/collection/ferg2015/. This work was instrumental in contributing to a global understanding of the burden of foodborne illness and how different populations are impacted. In this report, data was released at the aggregate level by subregion. This dashboard was developed to display the burdens specific to Ethiopia, which were used to generate the subregion and global estimates of the burden of foodborne disease.

Data Sources -

Data for the Ethiopian estimates of the foodborne disease burden attributed to various hazards was requested from FERG. The 2010 FERG report was used as the reference year since the FERG estimates were the most recent global estimates. The 2010 population size of Ethiopia was assumed to be 87.64 million at the time of publication. This number was also used for the calculations of the dashboard. There were several hazards that did not have FERG estimates available but were identified by stakeholders at the 2020 scoping workshop to be relevant to understanding the burden of foodborne illness in Ethiopia. Estimates for these hazards were generated by conducting literature reviews and informal expert elicitations to arrive at an estimate for each individual hazard.

How can it be used -

The dashboard can be used to evaluate, compare, and analyze the simulated data for both FERG and non-FERG hazards. This dashboard gives a visual representation of simulated data using R software and raw data extracted from the FERG report.

Calculations -

Calculations were done by using the FERG data presented in Appendix A (**INSERT) and by using R software we were able to populate the simulated data representative in the charts. Each calculation was completed based on the differences in data availability and the nature of the hazard itself. One generic calculation was not done for all hazards for the dashboard. The data utilized in the simulated calculations was extracted directly from the FERG report.

Box Plots-what are they, how do you interpret them -

A boxplot is plot that shows five key summary statistics of a dataset. It is a simple plot that allows us to easily visualize the distribution of values in a dataset. The five key summary statistics depicted by a boxplot include the minimum, first quartile, median, third quartile and maximum. (****Still need to add WHY***)

II. Landing Page

Needs created on dashboard!!!!!

III. Definitions page

This page is a reference for commonly used words or phrases seen throughout the dashboard and the reports associated with the dashboard. **Need to add in FERG definitions/create an acronyms pages on the dashboard – or hover option for the meaning of each acronym.***

List of Acronyms:

DFID	United Kingdom Department for International Development
ECAE	Ethiopian Conformity Assessment Enterprise
FAO	Food and Agriculture Organization of the United Nations
VDFACA	Veterinary Drug and Animal Feed Administration and Control Authority
CAMPY	*Campylobacter*
DDT	Dichlorodiphenyltrichloroethane
DALY	Disability Adjusted Life Years
DEC	Diarrheagenic *Escherichia coli*
FERG	Foodborne Disease Burden Epidemiology Reference Group
FBD	Foodborne Disease
NTS	Non-typhoidal *Salmonella*
TARTARE	The *Assessment and Management of Risk from Non-typhoidal Salmonella, Diarrheagenic Escherichia coli and Campylobacter in Raw Beef and Dairy in Ethiopia*
YLL	Years of Life Lost

Definitions

Incidence – The number of newly diagnosed cases (that is, people newly acquiring a disease) developed during a specified period of time in the population of interest, for example, 1000 cases per year in Ethiopia.

Incidence Rate - Incidence divided by the total number of people in the population of interest, for example, 10 per 100,000 people per year in Ethiopia.

Incidence_Rate_100K – Incidence rate per 100,000 people in Ethiopia.

Mortality - The number of new deaths that occur during the specified period of time in the population of interest.

Mortality_Rate_100K –The number of deaths per 100,000 people in Ethiopia

Disability-Adjusted Life Year (DALY) - A health gap measure that combines the years of life lost due to premature death (YLL) and the years lived with disability (YLD) from a disease or condition, for varying degrees of severity, making time itself the common metric for death and disability.

One DALY can be thought of as one lost year of healthy life.

DALY_Rate_100K - Rate of one lost year of healthy life per a population of 100,000 in Ethiopia.

Case_Fatality_ratio - Proportion of people who die from a specified disease among all individuals diagnosed with the disease over a certain period of time.

This study focused on foodborne diseases for the case fatality ratios.

DALY_per_case - DALY's calculated for each specific case

Linear – Graph that displays data representation presented in a straight line

Log. – Graph that displays data over a wide range of values and variables. Can be horizontal and vertical

Sqrt – Upward arching graph where the origin point is a square root.

Median – The midpoint of the datasets

Years Life Lost (YLL) – Measurement of premature death using factors of age and cause of death.

Years of healthy life lost due to disability (YLD) – Measurement of one full year of healthy life lost due to disability or ill-health https://www.who.int/data/gho/indicator-metadata-registry/imr-details/160#:~:text=Years%20of%20healthy%20life%20lost%20due%20to%20disability%20(YLD))

IV. All Hazards

All the hazards in the dashboard are shown uon the "All Hazards" page. The below image shows what the viewer will see when selecting the tab. Hazards are grouped by color representing FERG (red) and non-FERG (blue) hazards. The x-axis represents the hazards, and the y-axis represents the dependent variable, e.g. incidence rate.

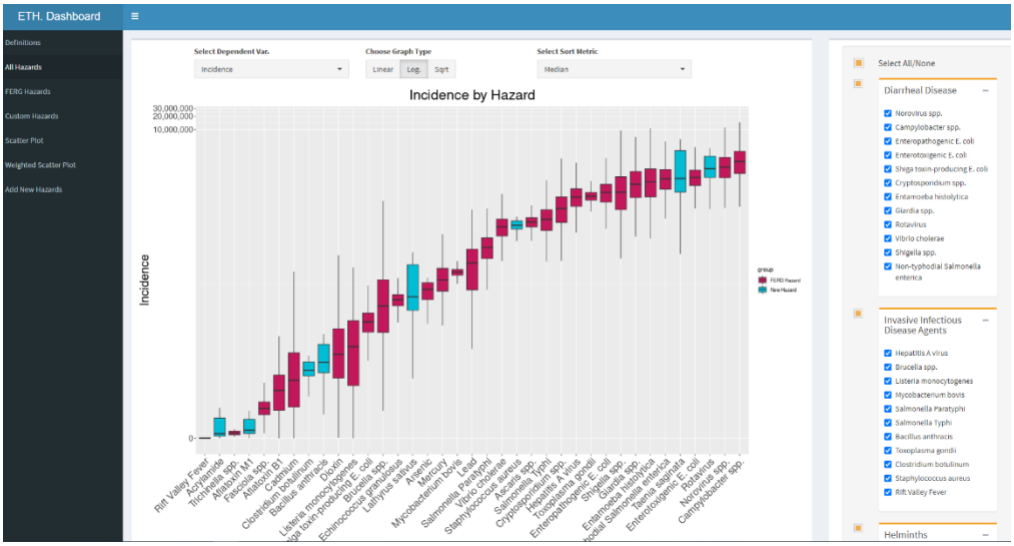

Figure 1 – Home page for the "All Hazards" tab.

At the top left side of the page is a drop-down box labeled "Select Dependent Var." (Fig. 2). Users can select which variable to display for the y-axis. Clicking the desired variable will automatically update the graph. There are 8 variables listed:

- Incidence
- Mortality
- DALYs
- Incidence_Rate_100K
- Mortality_Rate_100K
- DALY_Rate_100K
- Case_Fatality_ratio
- DALY_per_case

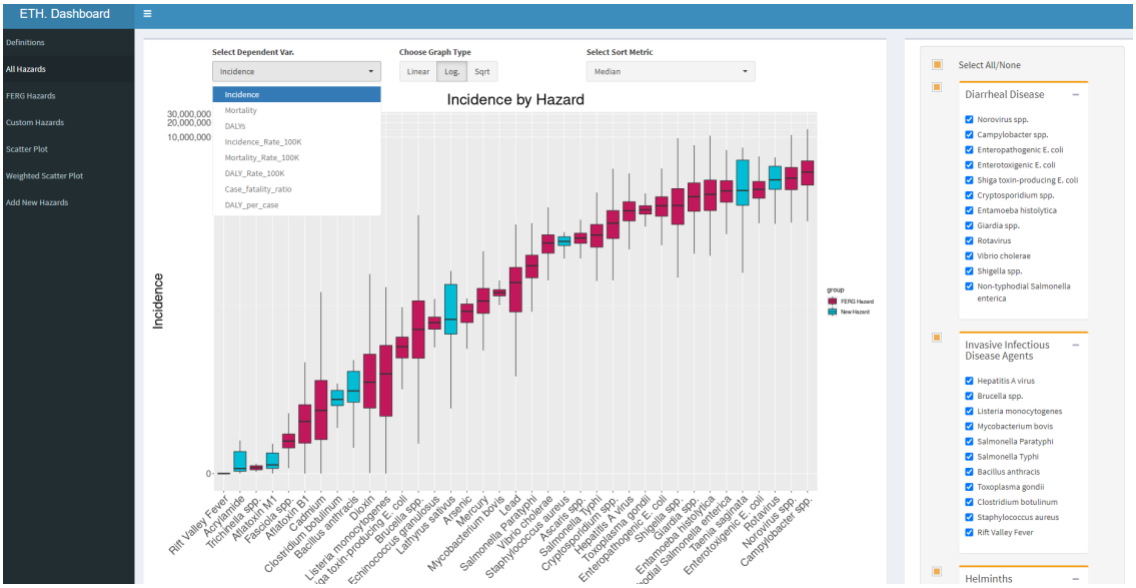

Figure 2 – Select Dependent Var.

Moving right across the top of the page, are 3 options for graphing hazards by metric (Fig. 3). The options for the graph view are:

- Linear
- Log.
- Sqrt

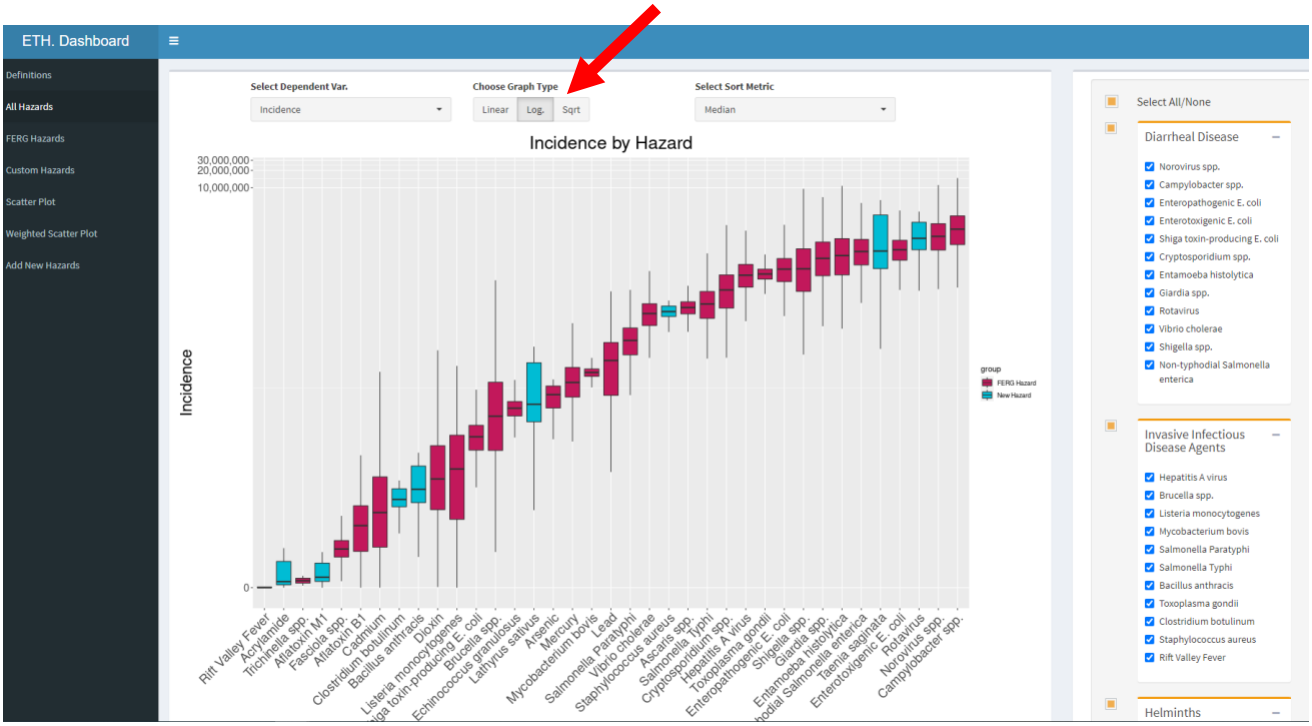

Figure 3 – Choose Graph Type

The final option available for visualizing hazard information is found in the “Select Sort Metric” located at the top right of the page (Fig. 4). The options are:

- Median
- Alphabetically

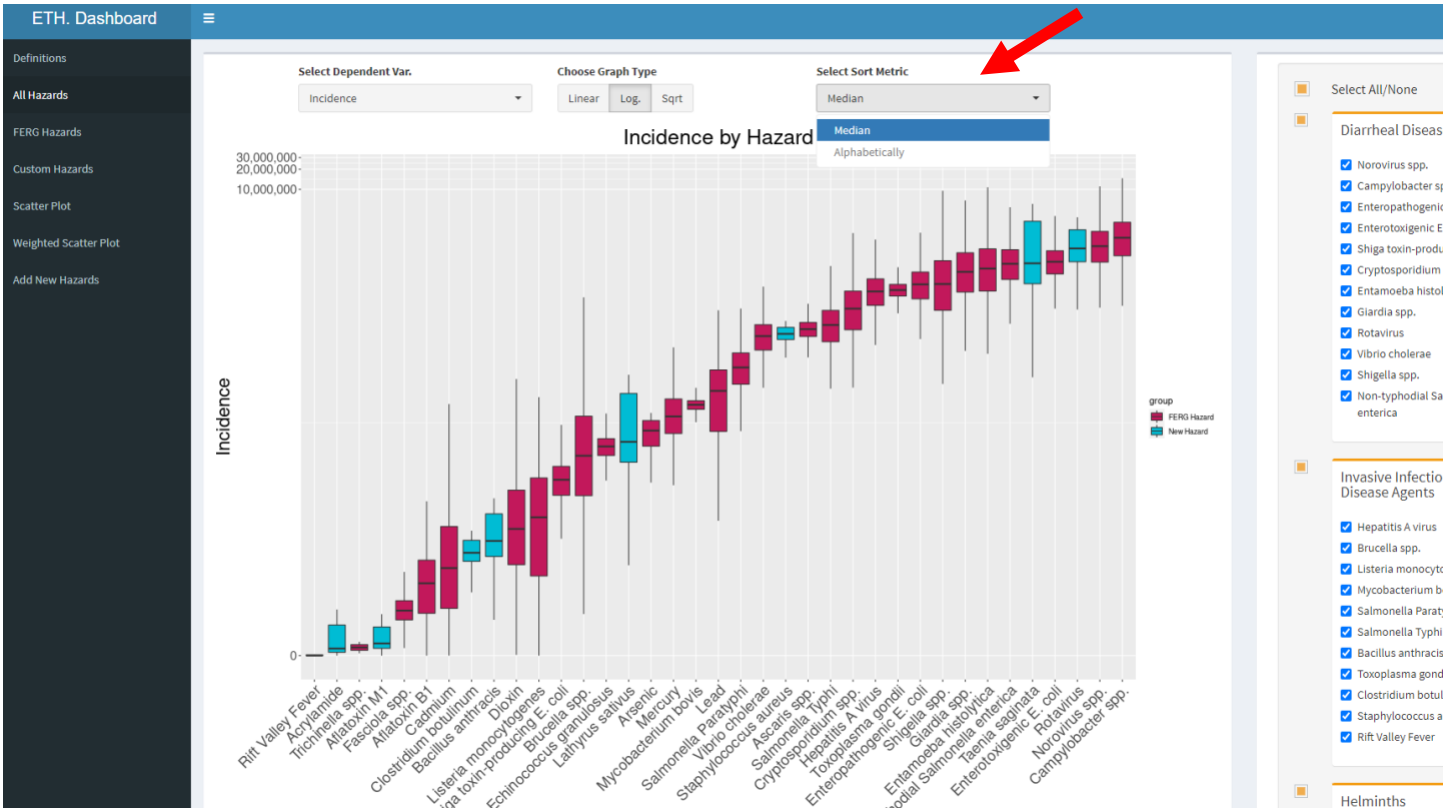

Figure 4 – Select Sort Metric

To the far-right side of the “All Hazards” page there is a column of diseases and hazards in drop-down options (Fig. 5). Upon entering the “All Hazards” tab of the dashboard all items will be selected. To deselect or select which hazards you wish to be reviewed, hit the “+” and the drop-down options with expand allowing for options to be selected or deselected.

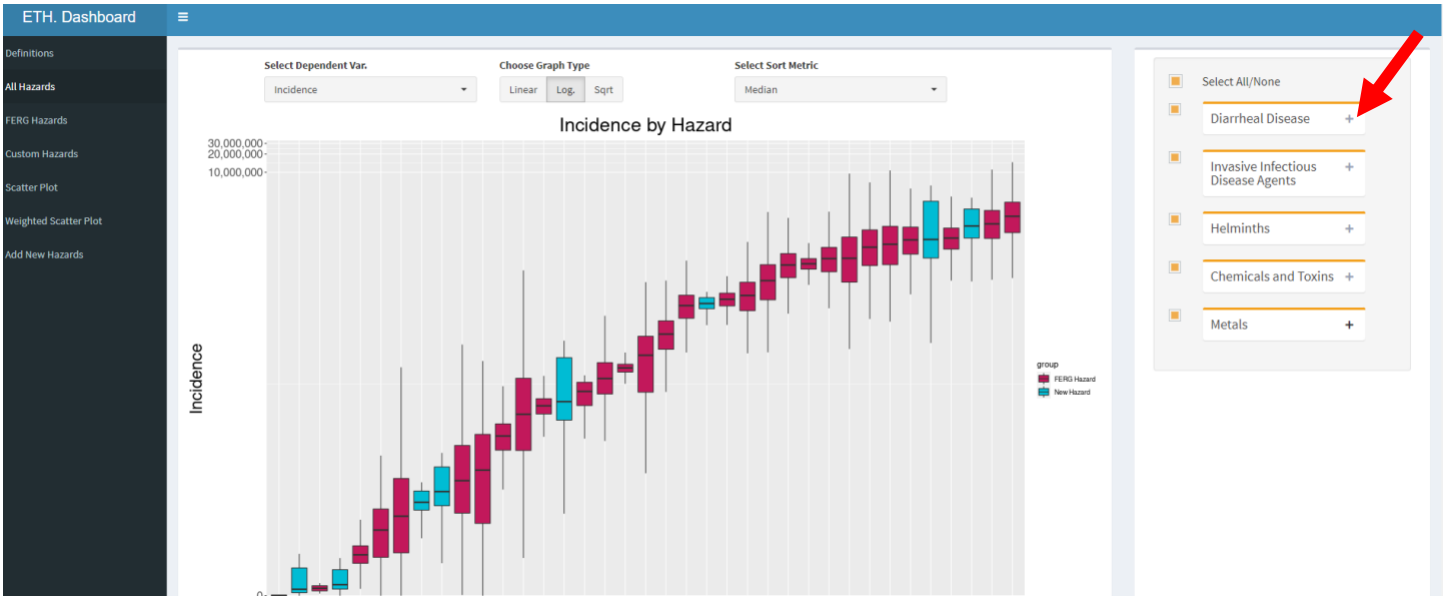

Figure 5 – Drop down menus for selected hazards

If the hazard has a white check mark in a blue box that item has been “selected”. To deselect an item just click on the blue box and the check mark will be removed. The graph will be simultaneously updated to reflect the selected hazards.

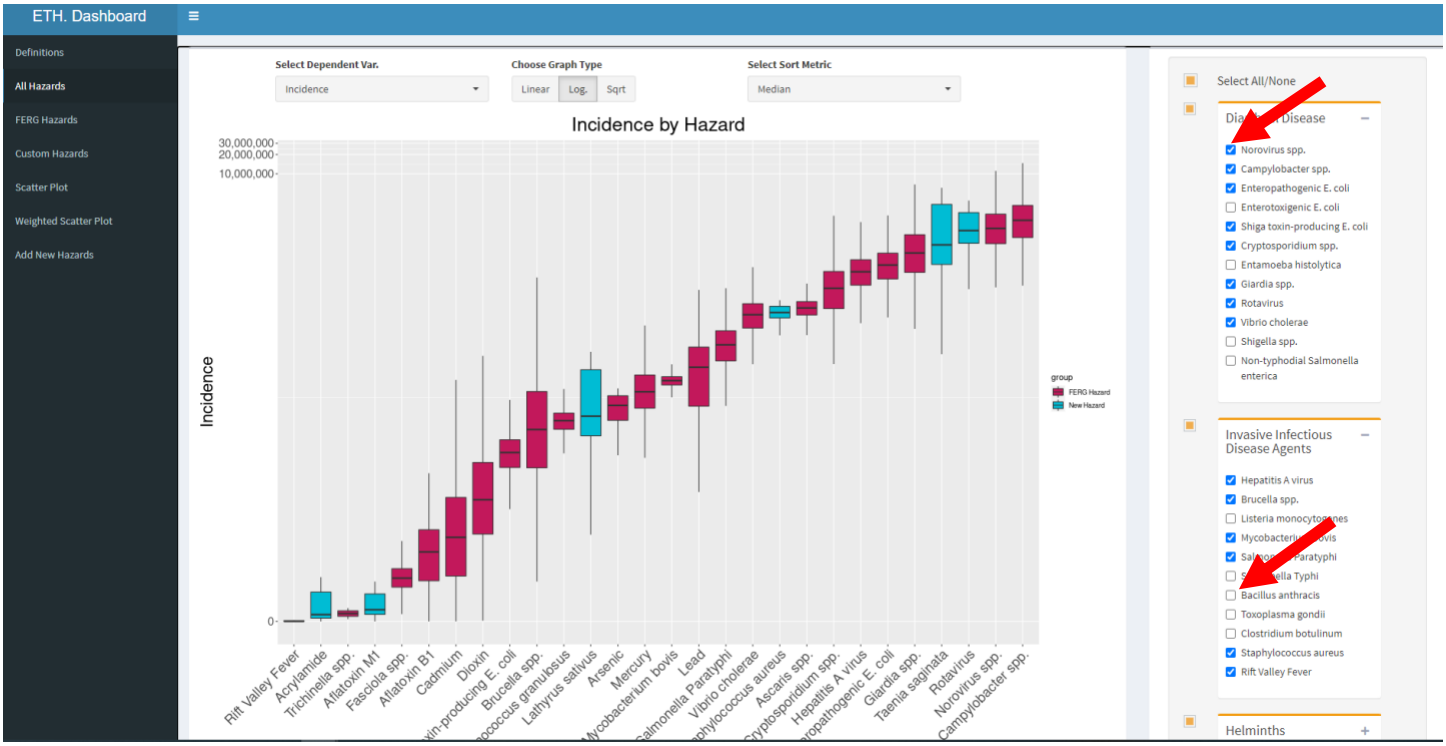

Figure 6 – Blue boxes with white checks indicating selected hazard. Empty boxes indicate an unselected (or deselected) hazard.

********Items still needed for All Hazards section: ********

Explain dependent variable – The effect or result from the research for that hazard.

Explain graph types and why we selected the graph we did -

What is a box plot and how to you read a box plot? – A box plot is a graph that show the distribution of the hazard and can show outliers and how tightly the dataset being used is grouped. If any data is skewed this will also be represented in the box plot. Box plots use a compilation of numbers to formulate the visual representation of the given hazard.

V. FERG Hazards

The third dashboard tab located on the far left of the page is dedicated to FERG hazards (Fig. 7).

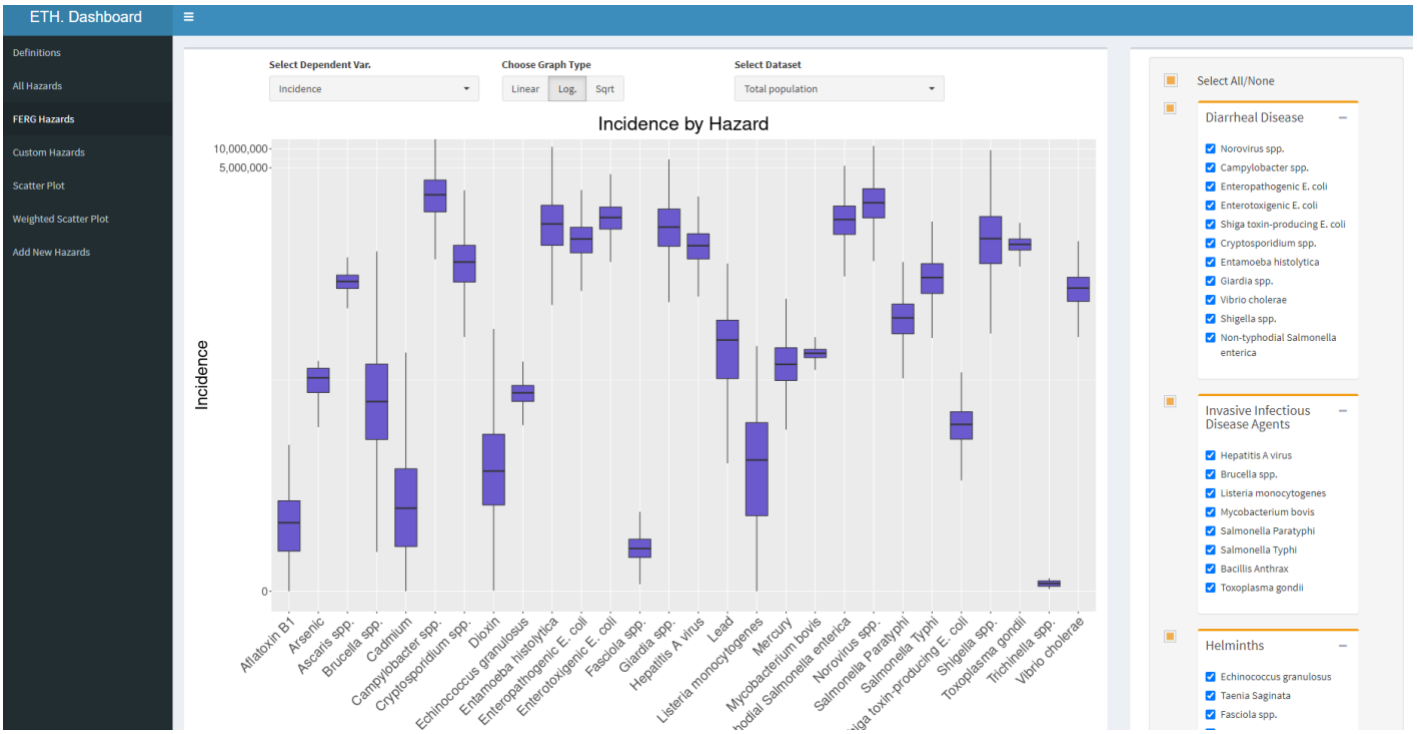

Figure 7 – Opening page for FERG Hazards

The dependent variable options are different from those found in the “All Hazards” tab. (Fig. 8) Options include:

- Incidence
- Mortality
- Case Fatality Ratio
- DALYs
- DALYs per 1000 cases
- YLL
- YLL Rate per 100,000
- YLD
- YLD Rate per 100,000
- Incidence Rate per 100,000
- Mortality Rate per 100,000
- DALY Rate per 100,000

Figure 8 – Select Dependent Var.

The "Choose Graph Type" section has remained the same in both the "All Hazards" and the "FERG Hazards tab".

The last drop-down option across the top to the right is "Select Dataset" (Fig. 9). In this menu the user can select the dataset to review. After selecting the desired dataset, the graph will automatically update. The options listed under this menu are:

- Total Population
- Under five years of age
- Over five years of age

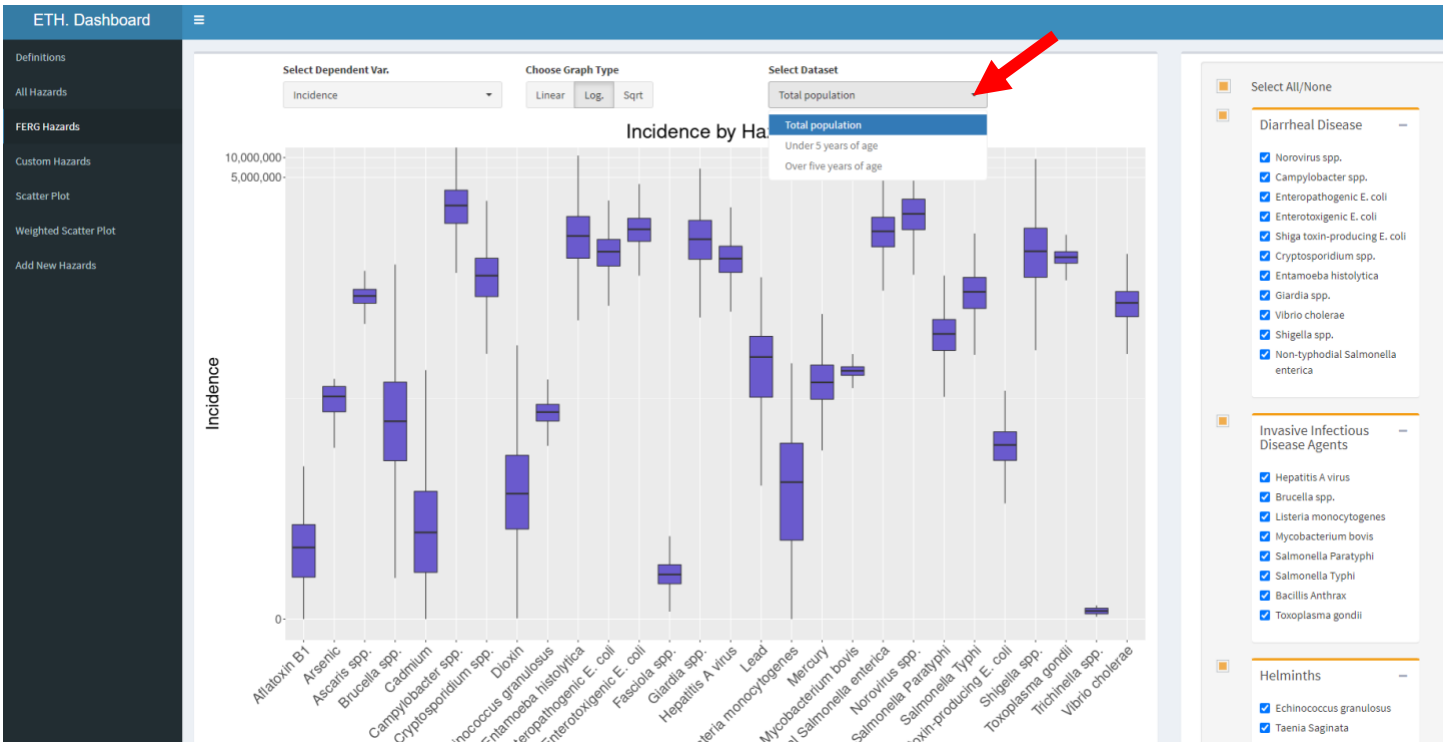

Figure 9 – Select Dataset

The hazard column to the far right has also been updated to only include the FERG hazards. The options to select or deselect the desired hazards remains the same as in the steps outlined under the “All Hazards” tab.

VI. Custom Hazards

The Custom Hazards page, located under the fourth tab on the left side of the page, allows the user to upload their own data set. Results can be compared and illustrated using the same metrics and variables found on the All Hazards page. When the “Custom Hazards” tab is selected the user will have the ability to upload/browse their files for a CSV file from R (Fig. 10). All options at the top of the page are the same as those found when using the “All Hazards” tab. Once the desired information has been uploaded into the dashboard, graphs and variables will become available. The side located to the far-right of the page will also have the list of hazards. (***Need to verify that this will occur and that the process of getting data into the system is accurate****)

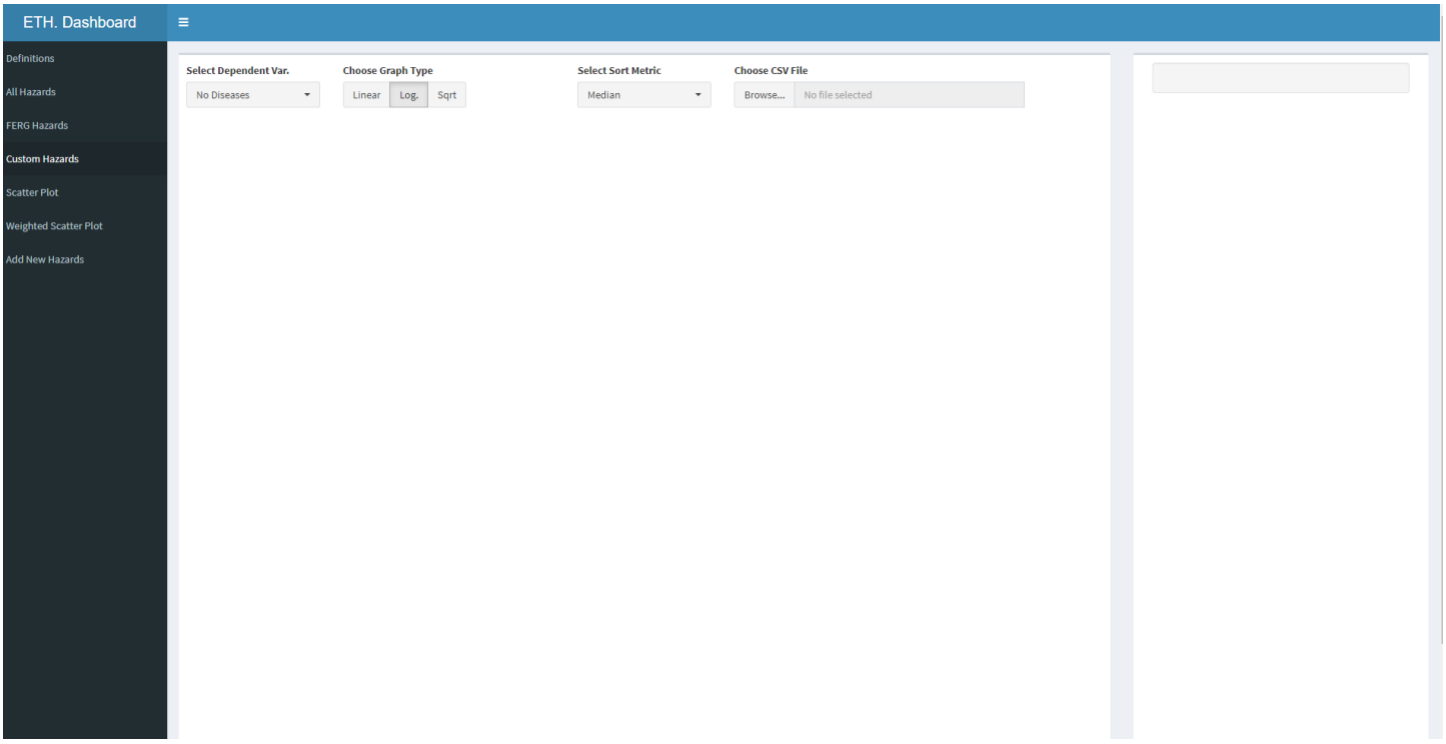

Figure 10 – Custom Hazards home page

VII. Scatter Plot

Located under the fifth tab on the far left of the page is the “Scatter Plot” page. After clicking on the tab, a landing page will appear with a graph titled “Years of Life Lost vs. Incidence” (Fig. 11). The user can select two units of measure to graph hazards.

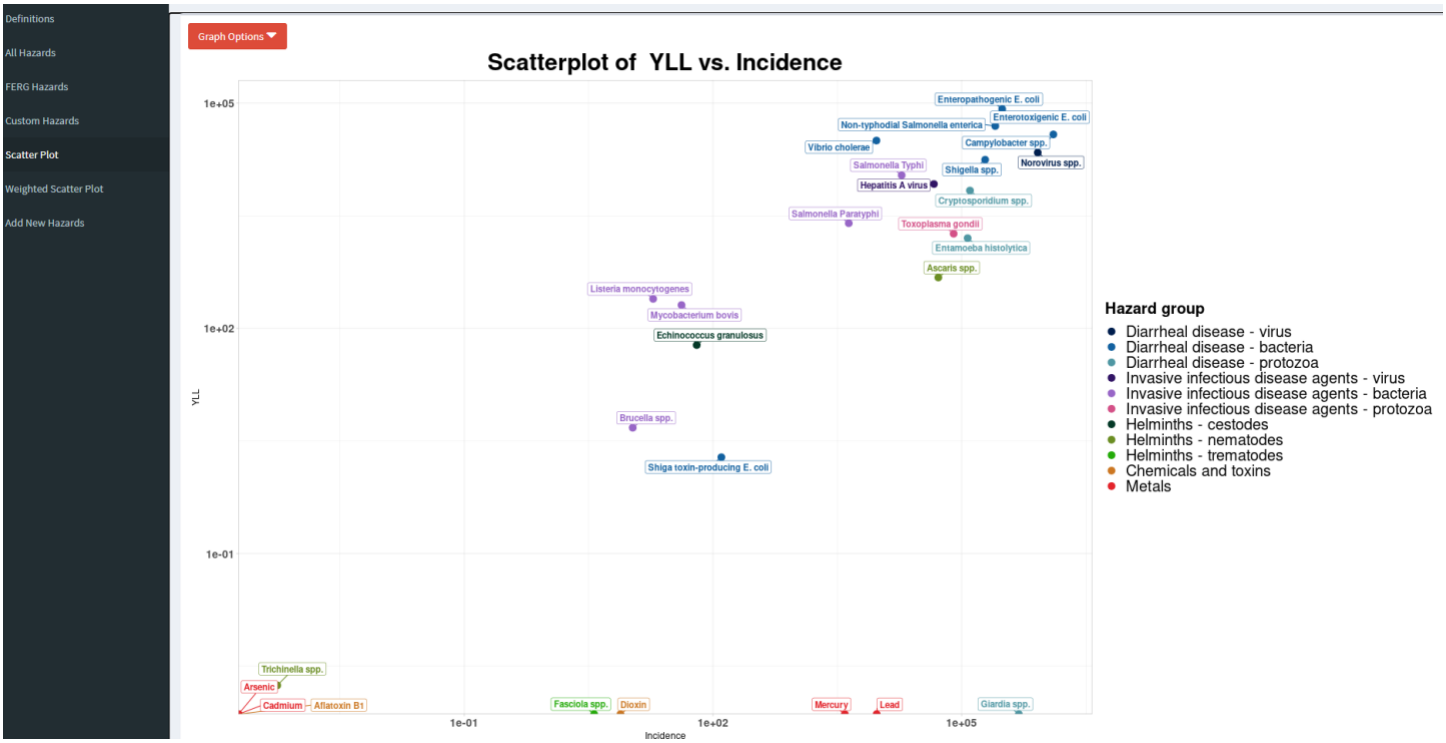

Figure 11 – Scatterplot home page

At the top left corner is a drop-down menu for “Graph Options” (Fig. 12). The user can change the dataset, x-variable and y-variable here.

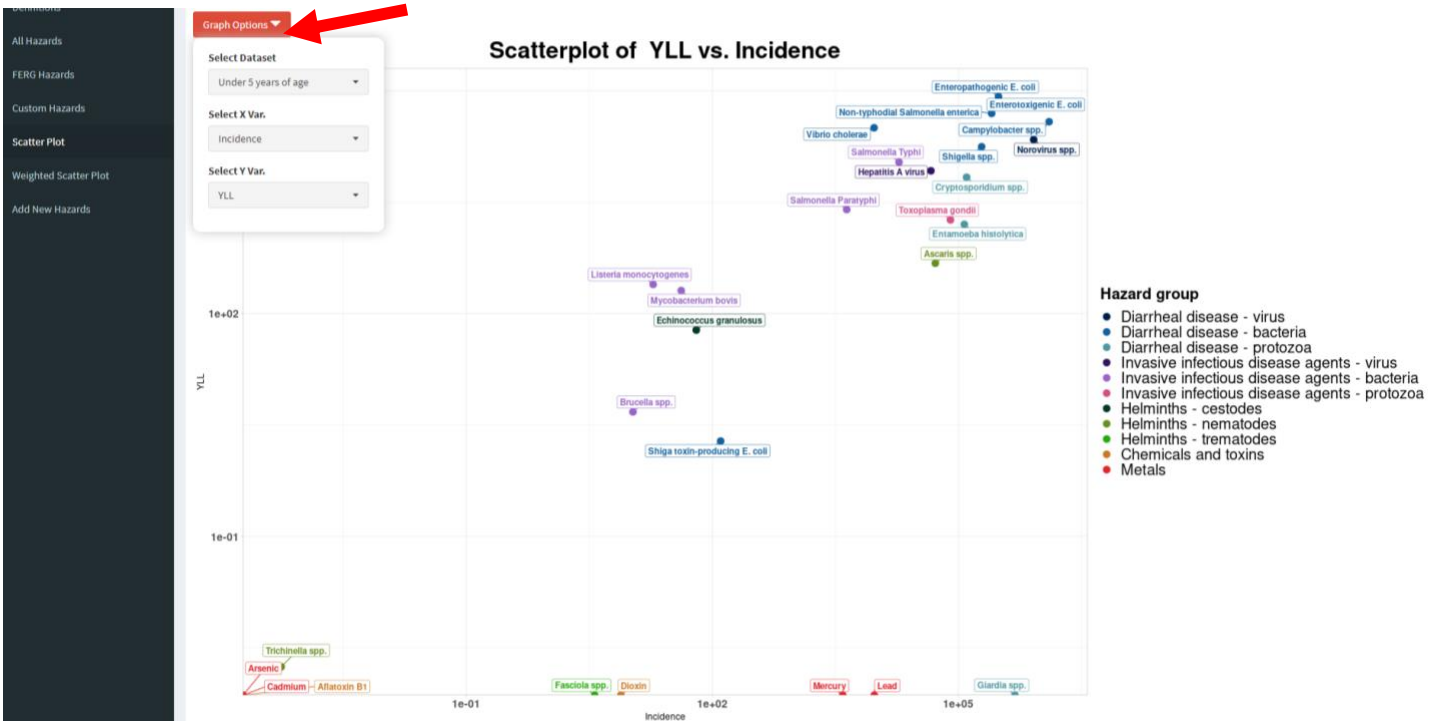

Figure 12 – Graph Options for Scatter Plot

Each hazard, located at the far right of the graph, is color coded based on the hazard type (Fig. 13).

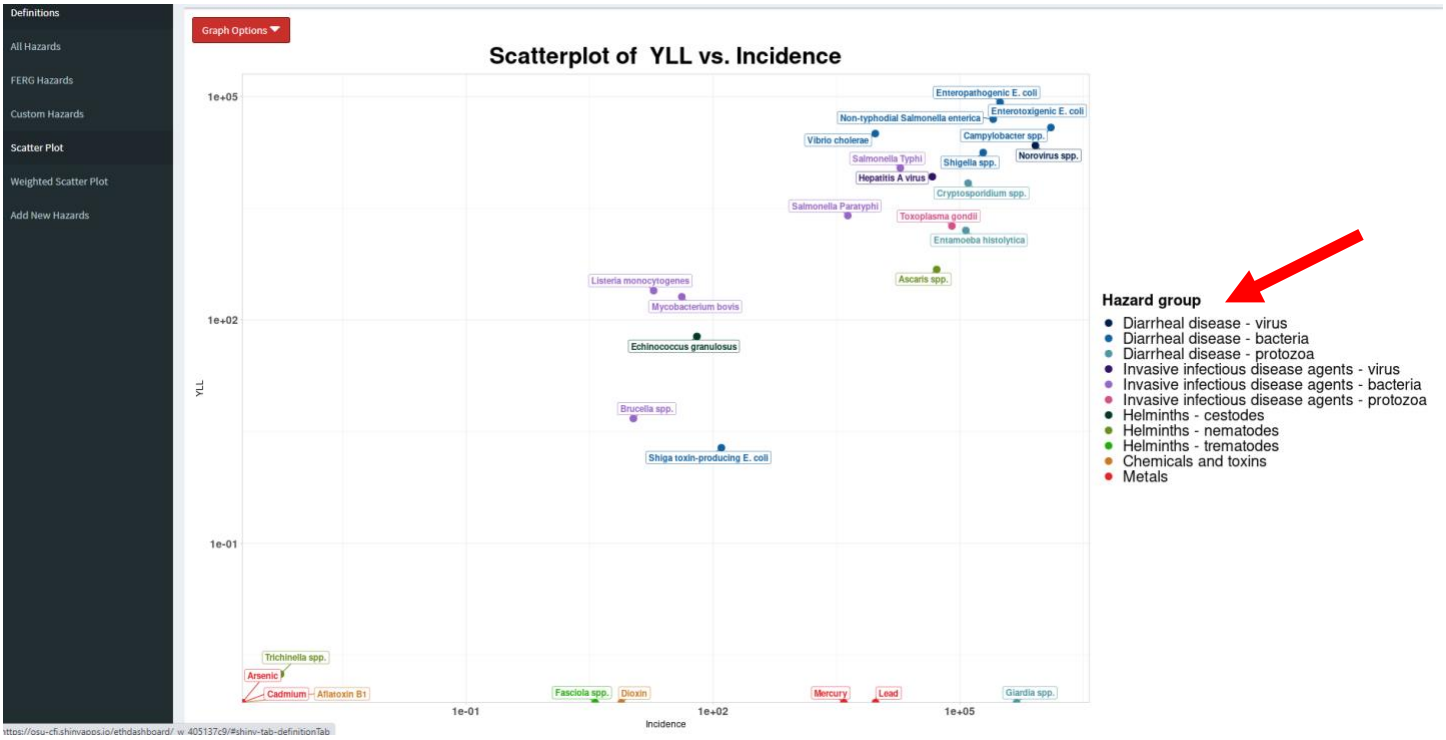

Figure 13 – Hazard groups identified by colors

*******Items still needed for All Hazards section: ********

What is a scatter plot? – A scatter plot is when two sets of data are used and are plotted to show the relationship between the two data sets.
Scatterplots are used to visualize the relationship (positive, negative, or none) and strength of that relationship between two variables (weak, strong).

Relationships shown by graphed data-

Strong, positive relationship: An increase in the variable on the x-axis leads to an increase in the variable on the y-axis. Data points are closely packed together, indicating a strong relationship.

Weak, positive relationship: An increase in the variable on the x-axis leads to an increase in the variable on the y-axis. Data points are spread out, indicating a weak relationship.

No relationship: There is no clear relationship, either positive or negative between the variables.

Strong, negative relationship: An increase in the variable on the x-axis leads to a decrease in the variable on the y-axis. Data points are closely packed together, indicating a strong relationship.

Weak, negative relationship: An increase in the variable on the x-axis leads to a decrease in the variable on the y-axis. Data points are spread out, indicating a strong relationship.

Why did it get a separate tab instead of adding it as a toggle option?

VIII. Weighted Scatter Plot

Located on the left side of the page is the “Weighted Scatter Plot” tab which, upon opening, displays the landing page shown below (Fig. 14).

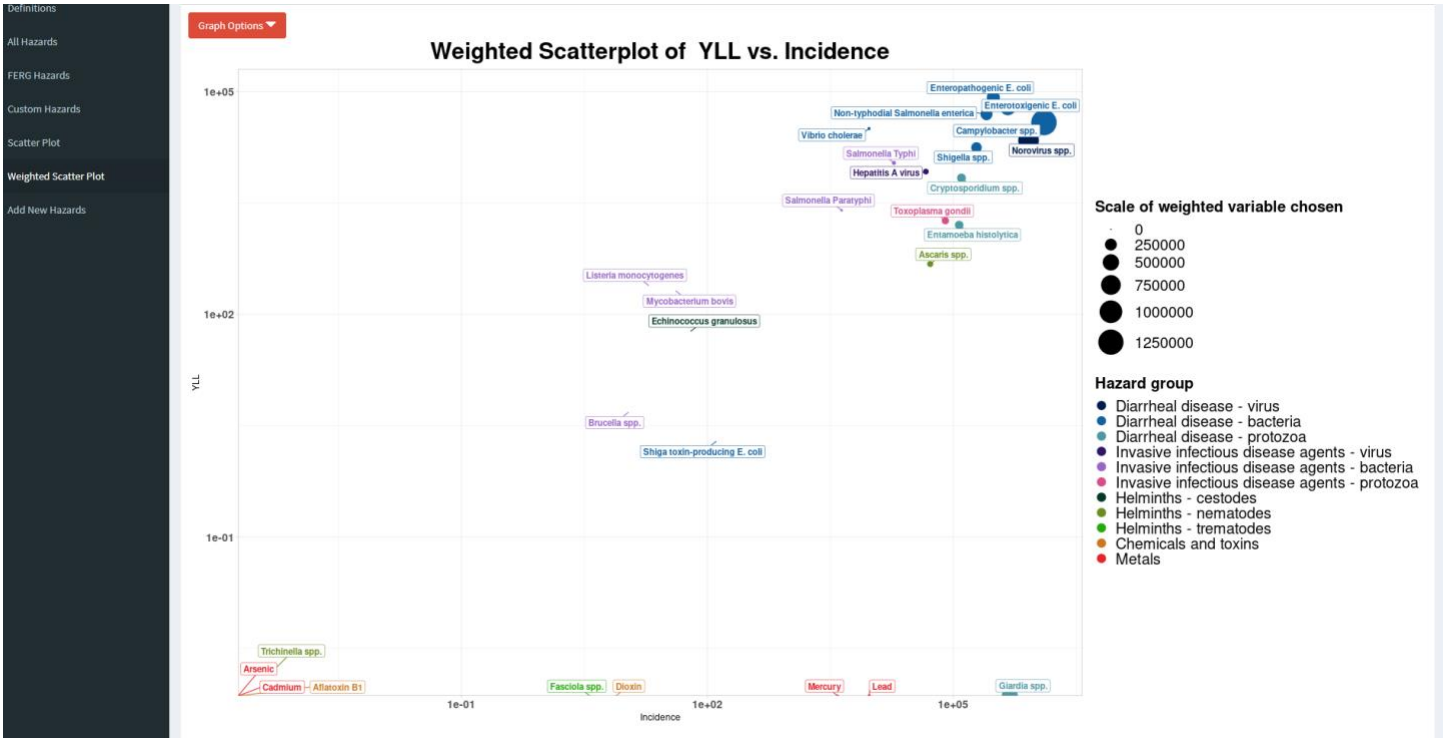

Figure 14 – Weighted Scatter Plot home page

Graph Options for the “Weighted Scatter Plot” graph is located at the top left of the landing page (Fig. 15). The variables are the same as the “Scatter Plot” tab with the addition of a drop-down menu for “Select Weight Var.” The variables that can be selected are:

- Incidence
- Mortality
- Case Fatality Ratio
- DALYs
- DALYs per 1000 cases
- YLL
- YLL Rate per 100,000
- YLD
- YLD Rate per 100,000
- Incidence Rate per 100,000
- Mortality Rate per 100,000
- DALY Rate per 100,000

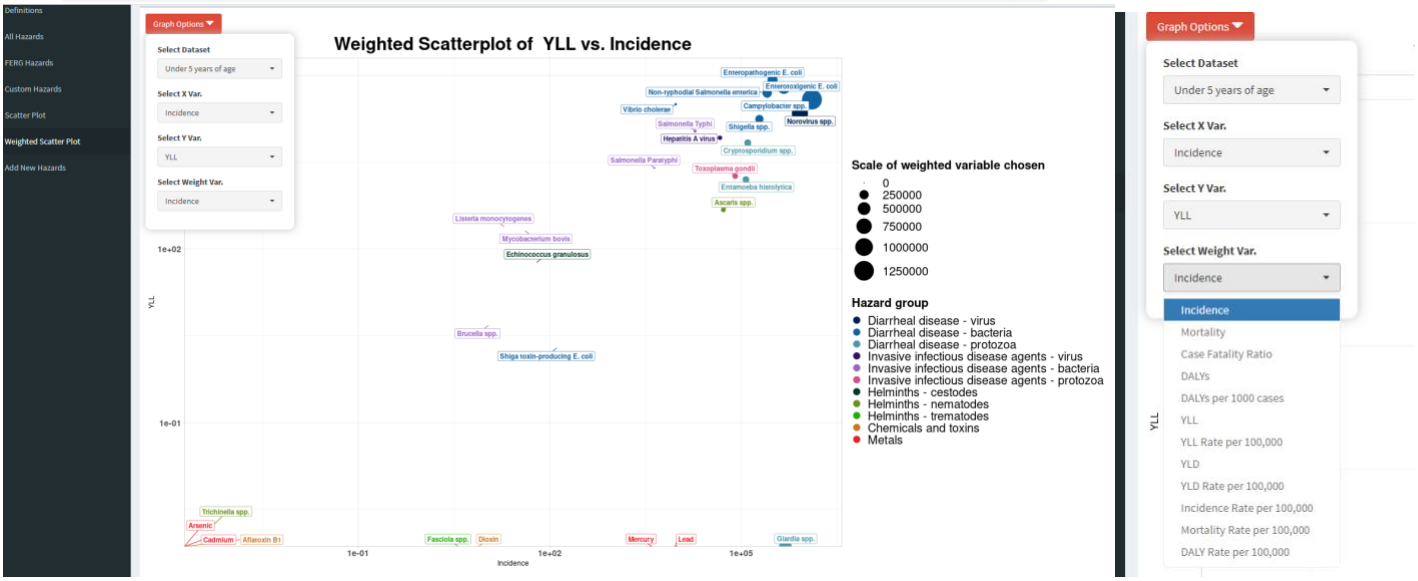

Figure 15 – Weighted Scatter Plot graph options

*******Items still needed for All Hazards section: ********

What is a weighted scatter plot?

Why did it get a separate tab instead of adding it as a toggle option?

IX. Add New Hazards

The opening page for “Add New Hazards” is below and can be found on the left side of the page under the seventh tab (Fig. 16). This page will allow users use hazards of their preference and produce data utilizing the same simulation used to produce the information displayed in the dashboard.. Each tab at the top of the dashboard will walk users through the process of uploading and running the simulation for the desired data and hazards.

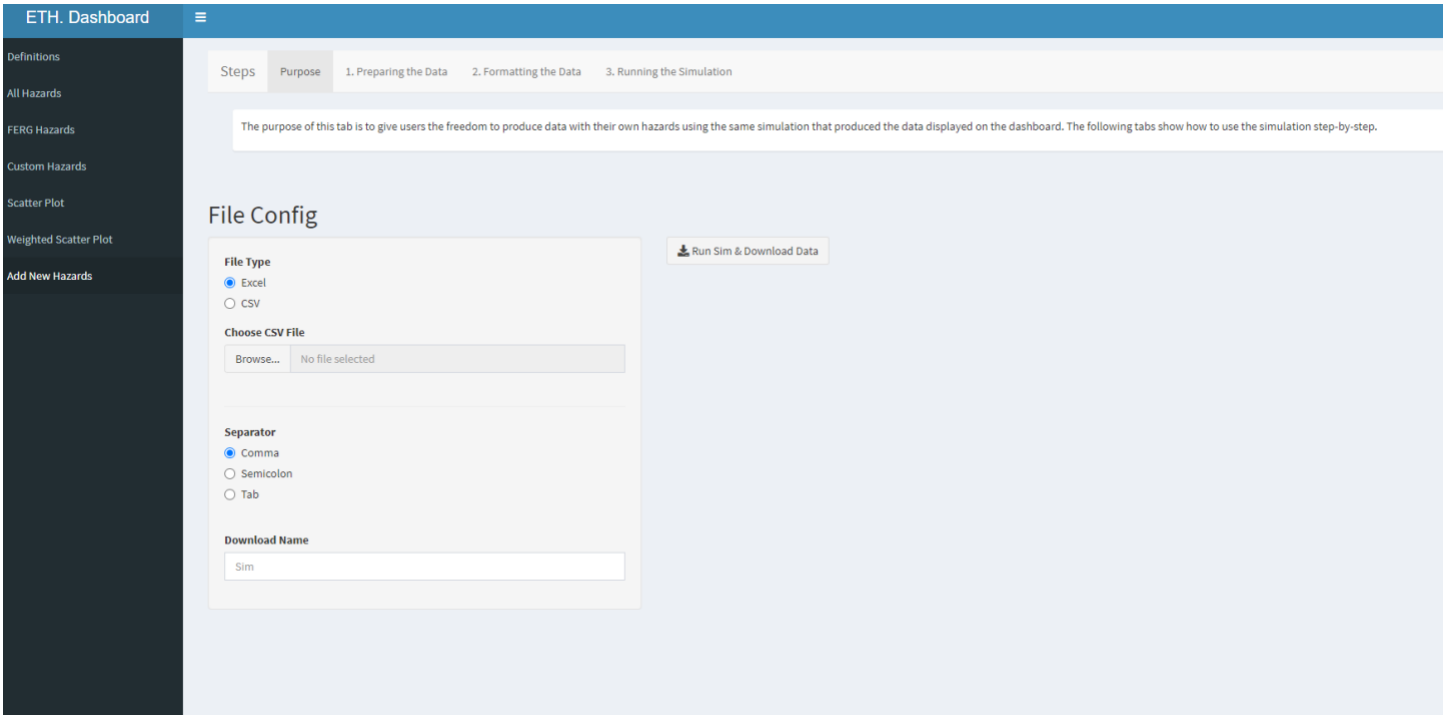

Figure 16 – Add New Hazards home page

<u>Step 1 for adding new hazards:</u>

Preparing the Data (Fig. 17). Instructions listed at the top of the page help guide users on ways to group similar data into desired data types. The instructions also list out the simulation requirements and needed information for each desired Hazard.

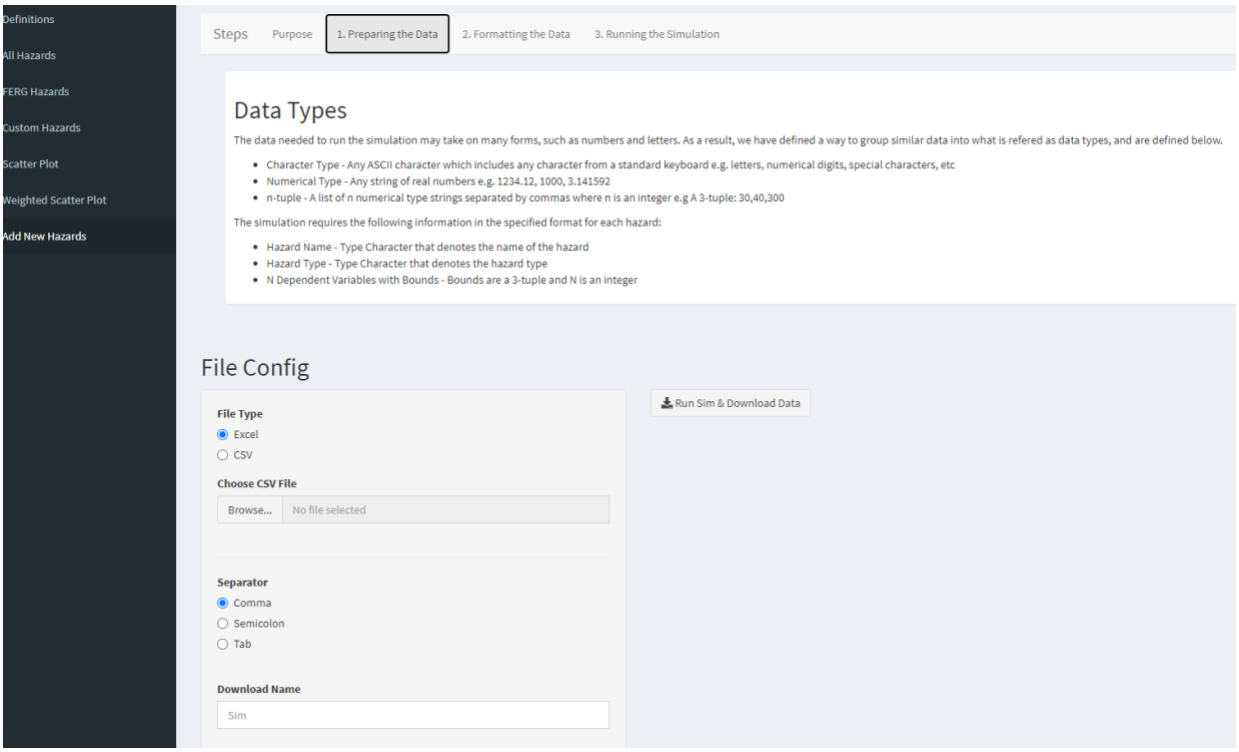

Figure 17 – Preparing the data page with instructions.

<u>Step 2 for adding new hazards</u>:
Formatting the Data (Fig. 18). For the simulation to operate properly files need to be in CSV or Excel (.xlsx). Data formatting instructions are also listed in this section to help guide users to ensure data used is formatted correctly for the simulation.

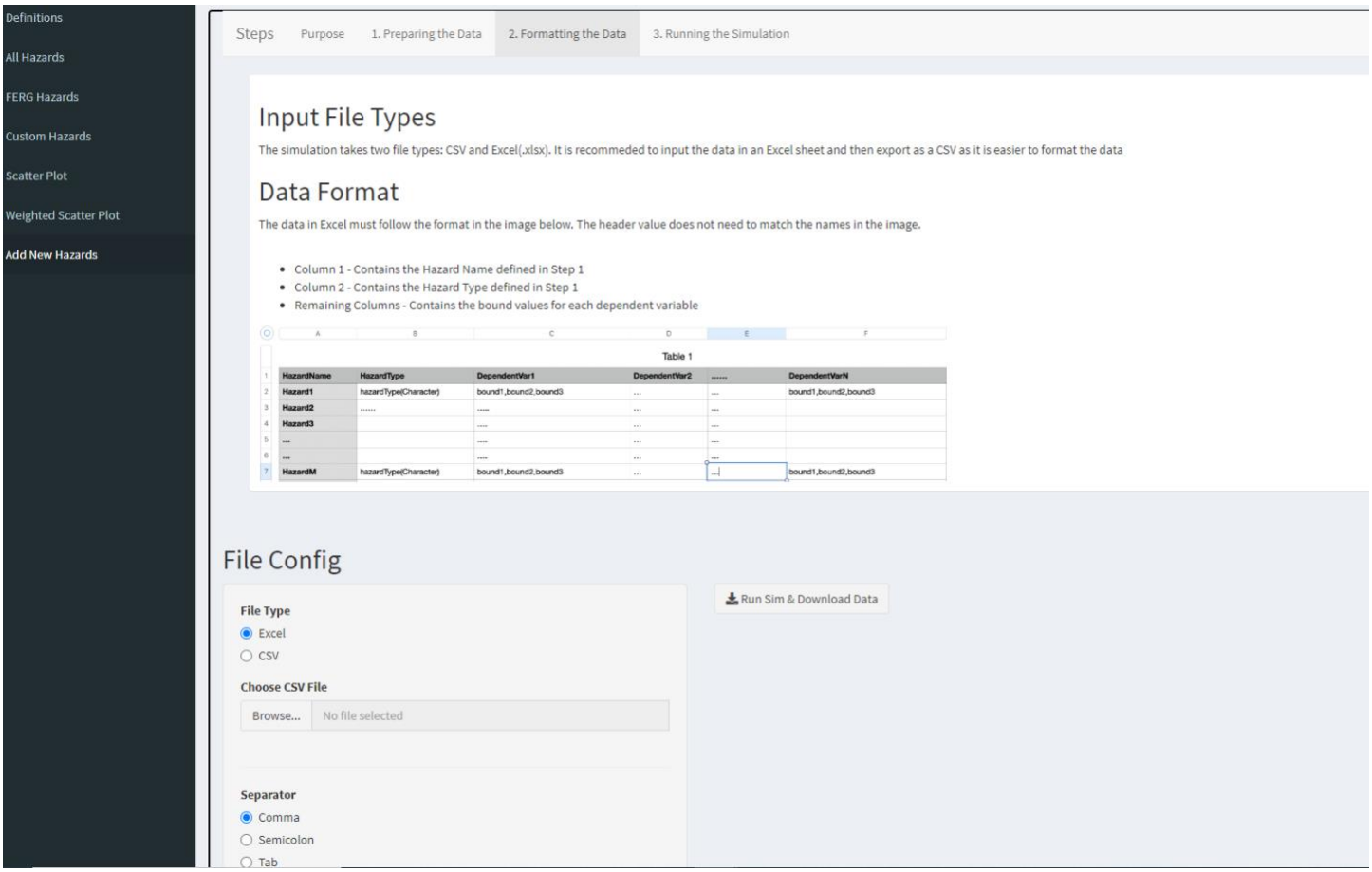

Figure 18 – Formatting the data home page with instructions

Step 3 for adding new hazards:

Running the Simulation (Fig.19). This is the third and final step to getting desired data run to be able to utilize the graphs as seen with the Ethiopian datasets. This page will look similar to the opening page for the "Add New Hazards" tab but will have further instructions on how to run and download the simulated datasets.

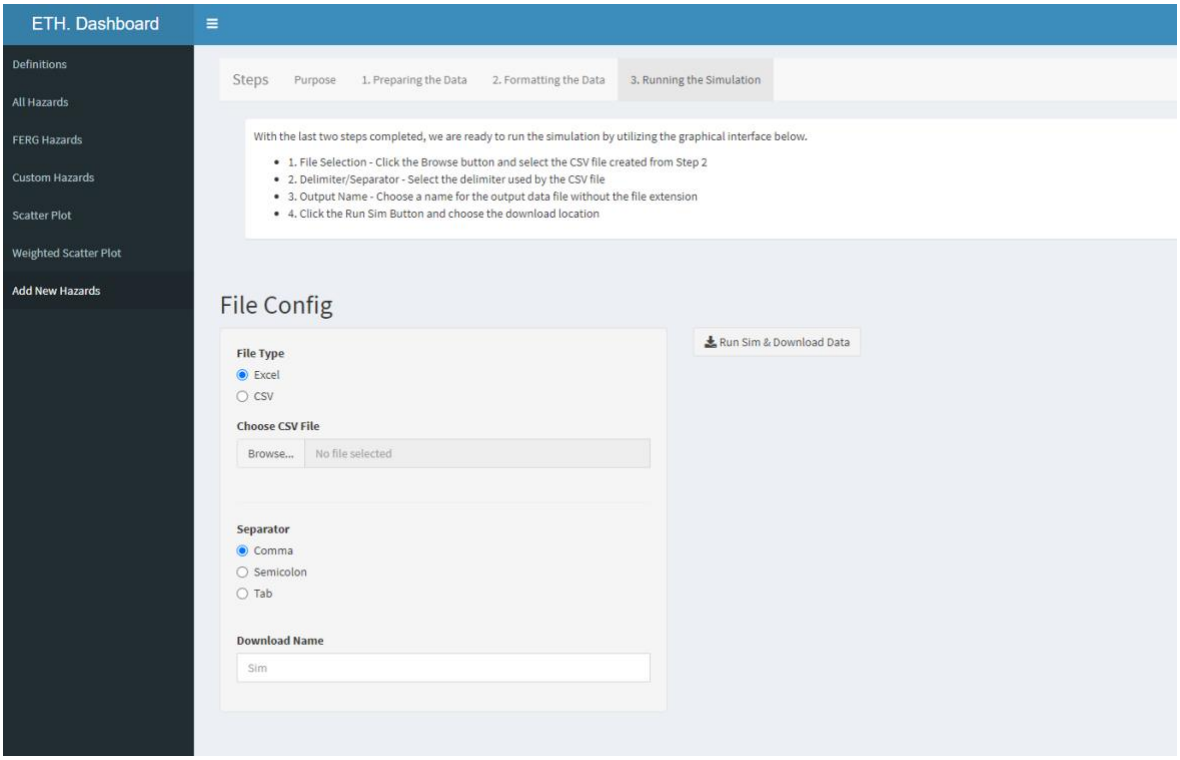

Figure 19 – Running the simulation with instructions

********Items still needed for All Hazards section: ********

What is the purpose for this section?

****Appendix A – FERG report ****

Appendix B – Pre-Read documents from the workshop*