Dashboard

User Documentation

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Quick Introduction

Pilot Phase

This Dashboard is being developed as part of MSF UK, Manson Unit activities with the collaboration of MSF OCA for the Tonkolili District Health Management Team by Bruno Raimbault (development and implementation): raimbault.bruno@gmail.com. It is currently in 'PILOT' phase, for its 'Surveillance' version Tonkolili district, Sierra Leone.

The Dashboard evaluation is planned for the months of May and June 2016. Its deployment in other contexts is not supported by MSF UK at this date.

Purpose of the Dashboard

The Dashboard is a light medical surveillance application for data visualisation. It is meant to automate some tasks performed weekly by the DHM Team. It has been tailored to their needs as identified by MSF UK. It is meant to integrate in the weekly reporting process without changing its structure.

It saves time compared to an excel-based process and it requires less computer skills to let the user focus on data analysis. It is not as flexible as other more comprehensive tools (such has DHIS2) but it requires fewer resources (material and people).

Monitoring and Evaluation

The tool is expected to have a positive impact on by:

- Helping prioritise support to the PHUs,
- Speeding up detection and response,
- Facilitating information sharing and planning of interventions.

Measureable indicators will be agreed on during the implementation phase and measured according to a defined plan to assess the actual impact of the tool as well as to collect feedbacks and suggestion from the DHM Team.
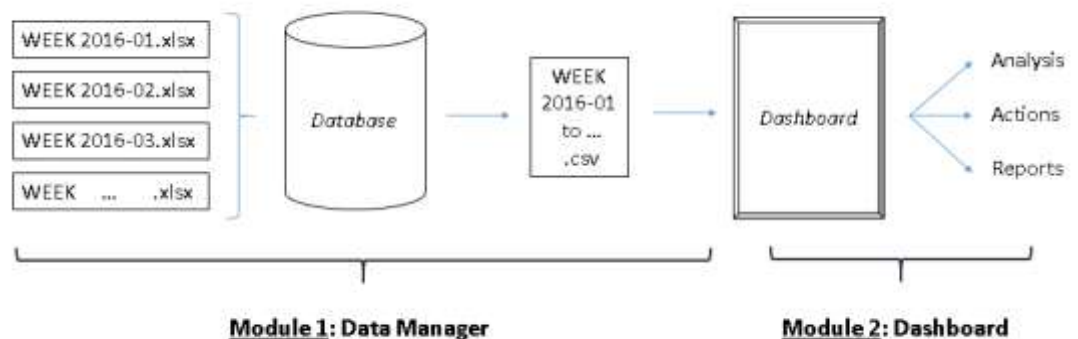
Looking Ahead

The next steps of the project will be determined according to the outcomes of the evaluation of the tool.

This Dashboard solution is currently in Pilot Phase

Concept and Installation

Concept

The solution developed for the DHMT to visualise IDSR data from Tonkolili, Sierra Leone is composed of two modules: Data Manager and Dashboard.

It has been developed in this way for two main reasons:
- If the reporting process changes only the Data Manager module would have to be updated, end
- The Dashboard module is being standardised and tailored to the needs of different contexts. An 'outbreak' version was deployed and a pilot 'surveillance' version for Emergency Responses Units is currently being used and tested in Katanga, DRC.

Different versions of the modules exist depending your operating system. The principal maintained version for Tonkolili is suited for Windows 32 & 64 bits. We will assume in all this guide that it is your configuration. If you would like to use the solution on a different environment (Linux or Mac), please contact the Manson Unit, some aspects might differ in the way folders are managed.

The **Data Manager** processes the data to convert it in a format readable by the Dashboard.

- **Data Manager**

The 'Data Manager' module is currently in version 1.0. At the time it has been developed (Feb-March 2016) the IDSR reporting process produced one file each epi-week. The goal of the tool is thus to:
- Compile all the files available into a database,
- Keep track of the files that have been added to the database and finally,
- Export the content of the database in a format that can be read by the 'Dashboard' (which is the second module).

- **Dashboard**

The 'Dashboard' module is currently in version 1.5. This is the module used for data visualisation.

The **Dashboard** is the actual data visualisation tool.

'Installation'

The solution does not uses any installer. The complete package comes as a single *'MSF-Dashboard_Surveillance-Tonkolili.zip'* you will have to unzip.

1) Create a folder you will use as a workspace. As *'C:'* drives are now usually reserved for the Operating System, we suggest you create a *'dashboard-workspace'* folder in your *'D:'* drive.

2) Decompress the *'MSF-Dashboard_Surveillance-Tonkolili.zip'* file in your workspace folder and you should see the following folder tree:

Once unzipped in a convenient *'dashboard-workspace'* folder, the solution comes up with a folder tree to manage data files, documentations and two shortcuts to run each module.

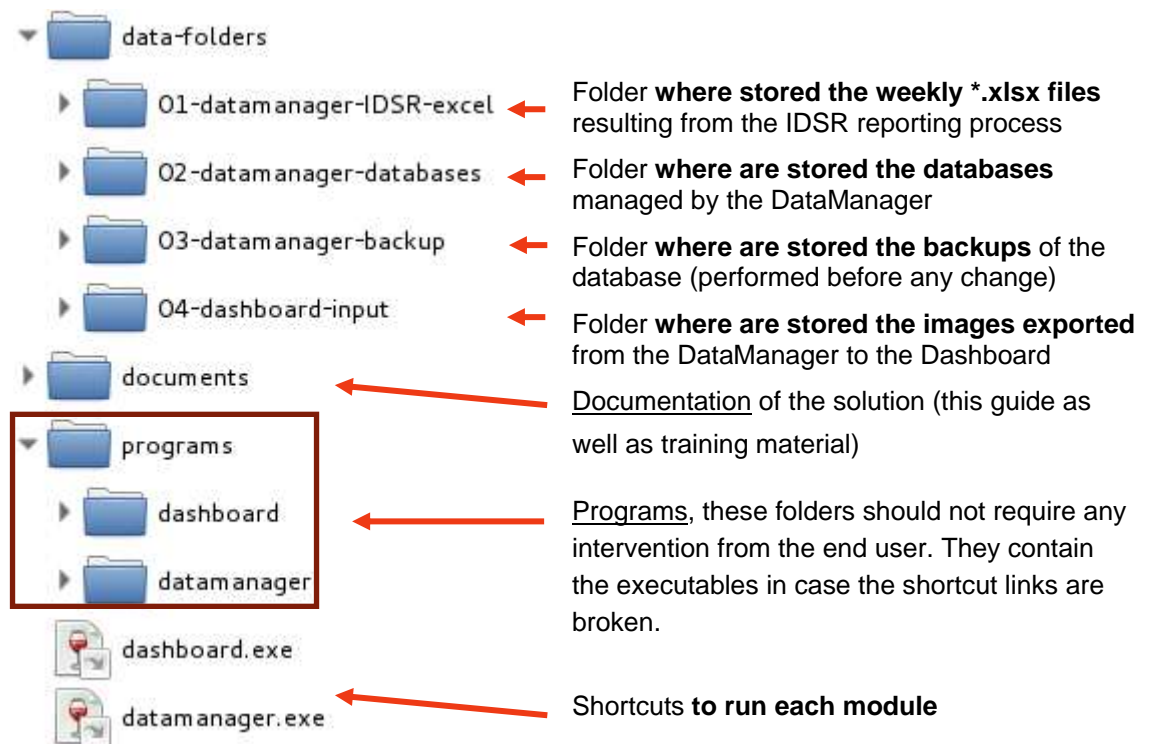data-folders

01-datamanager-IDSR-excel ← Folder **where stored the weekly *.xlsx files** resulting from the IDSR reporting process

02-datamanager-databases ← Folder **where are stored the databases** managed by the DataManager

03-datamanager-backup ← Folder **where are stored the backups** of the database (performed before any change)

04-dashboard-input ← Folder **where are stored the images exported** from the DataManager to the Dashboard

documents ← Documentation of the solution (this guide as well as training material)

programs

dashboard ← Programs, these folders should not require any intervention from the end user. They contain the executables in case the shortcut links are broken.

datamanager

dashboard.exe

datamanager.exe ← Shortcuts **to run each module**

In the following the use of each module will be described in details.

Data Manager

Workspace Setup

As mentioned in introduction, before starting you should have your workspace folder defined (something like: *'D:\dashboard-workspace'* is a good example). A shortcut can be set to access this workspace easily from your desktop.

You should store a copy of the last IDSR excel file each week in the corresponding folder: "01-datamanager-IDSR-excel".

In the Windows Explorer you should then see the following:
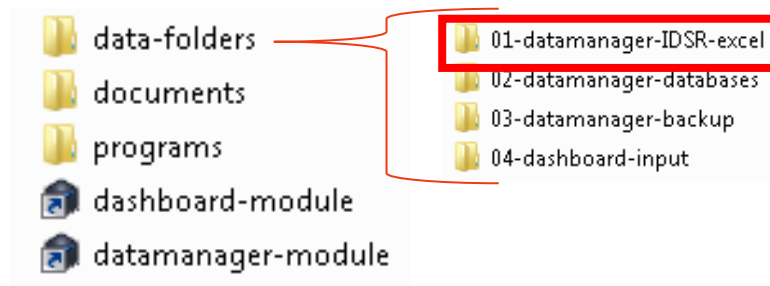
In *'data-folders'* are stored all the medical data files. You should store a copy of the last IDSR excel file each week in the corresponding folder: *'01-datamanager-IDSR-excel'*.

Verify you have at least one excel file in this folder and then use the *'datamanager'* shortcut to launch the first module.

> **Remember**
> If you ever experience any unexpected behaviour, you can first try to <u>relaunch</u> the Data Manager using the following button on the top left or right corner: ↻

Step by step

Step 1: Open or Create a Database

Once the Data Manager is launched, the first step is to *open an existing database* pressing the left button or *creating and opening a new database* pressing the right button. If you had a database previously opened, we suggest you relaunch the Data Manager using the arrow button ↻ to have a fresh start.

Step 1: Open or Create a database

| Open an existing database... | Create and open a new database... |

In both cases, a window will open asking you to select your existing database or to give a name to your new database. A good name is for example *'tonkolili-database-v1'*.

Once you selected or created a database, the screen should update from:

Currently opened database:

No database opened

To:

Currently opened database:

Database name: tonkolili_database_v1.json | Containing: 0 records

You can now proceed to the next step.

> **What is the difference between my original files and this 'database'?**
> The original files contain only the data for one week, it is necessary to compile the data of all the weeks to be able to visualise all together. The database is a new file created to store all the data.
> In the database is kept only the actual data (whereas the excel files contain mostly empty records), which saves spaces. It does not build on excel files so these are left intact (and can be used again in case of error of manipulation).
> The database is in the standard *.json format (which is the native format for Javascript, the programming language used to code the Dashboard). It is easy to read by a machine and understandable by a human (it can be opened with any text editor).

Step 2: Add, Update or Delete data in the database

After you opened or created your database, a table will appear. The Rows correspond to years and the Columns to epi-weeks. This table enables you to visualise easily the data stored in the database.

In the case you would like to add data for the previous or following year, press first the corresponding button: ▢. This will affect only the display until you actually add data. If you do not add data, the added row will disappear the next time you load your database.

You can start performing operations on the database by clicking once with the left button of your mouse on the appropriate cell.

Be careful to select the IDSR excel file corresponding to the week you selected.

For example clicking on the cell associated to the week 2016-01 would give the following result:
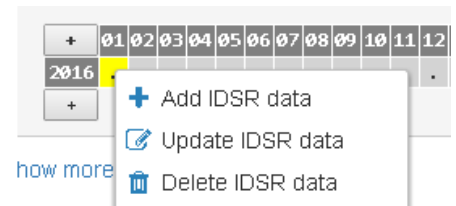
You can now access 3 options by clicking once left on the corresponding menu items:

- Add IDSR data, a window will open and you will then have to select the IDSR excel file corresponding to the week (2016-01 in our example).

  The cell will update form: ▪ to: X . The process generally takes about 30 seconds.

- Update IDSR data, the existing data for this week will be deleted and a window will open and you will then have to select the IDSR excel file corresponding to the week (2016-01 in our example).

  The cell will remain the same: X . The process generally takes about 30 seconds.

- Delete IDSR data, the existing data for this week will be deleted.

  The cell will update form: X to: ▪ . The process is generally very quick.

Before each manipulation (add, update or delete) a full backup of the database is performed.

Repeat the process as many times as necessary to enter all the available data to your database. You should obtain a table similar to the following one:

Once you have added all the data available to your database, you can proceed to the next step.

Check the source of the data in the database

To check the data you entered for each epi-week, you can clic "Show more...", the following will appear:


```
Show less...
        [
            "epiweek": "2016-01",
            "recordnum": 345,
            "createdate": "2016-04-21T12:36:34.337Z",
            "lastupdate": "2016-04-21T12:36:34.337Z",
            "source": "WEEK 1 REPORT 2016 UPDATED.xlsx"
```

For each epi-week you will have a record containing, the epi-week, the number of records, the date it has been created, the date it has been last updated and the name of the excel file that has been used to add data for this epi-week. Thus can help spotting errors during the data importation.

Step 3: Export an image of the database to the Dashboard

You can now export an image of your database in a format that is readable by the Dashboard Module by clicking once with the right button of your mouse the button: "Export database to csv...".

Step 3: Export an Image of the database to the Dashboard

Export database to csv...

A window will open asking you to choose a name for the file. A good name is: *'database-name-version-wks-fisrt-epiwk-last-epiwk'*, for example: *'tonkolili-database-v1-wks-2015-43-2016-15'*.

Why to re-export the database?

Because the Dashboard input standard (a simple '*.csv' table) is slightly different from the database structure.

While this choice is currently arguable conserving the database in the Javascript native format '*.json' facilitates manipulation of the data by the developers for possible future developments (export in other formats: original Excel format, DHIS2 compatible format…, combining with various external data sources – for instance population).
One current use of this implementation can be the comparison of completeness before update (timely) and after update (non-timely).

Finally it is worth mentioning that while the Dashboard is a tool that is transposable to other context, the Data Manager module proves not to be always necessary. The Dashboard input standard is being developed as a balance between all the tools currently in use in the MSF context and its partners. This standard has its own limitations, for instance it does not allow tracking the source of the data, which has been identified as a valuable option in the Tonkolili context.

Step 4: Close the Data Manager

Step 4: Exit the Data Manager and open the Dashboard

You can now close the Data Manager Module.

More details

What happen with population data?

Population data is not currently part of the IDSR reporting (all values to 9999). An external population data file is currently used directly in the Dashboard, which should be updated as new figures become available.

The current implementation does not allow to take into account changing population figures which would be necessary in some contexts or if the Dashboard happened to be used during a long period of time.

What happen with under/over 5 years old categories?

In the database a single record contains 4 values under and over 5 cases and under and over 5 deaths. To be identified as a specific category in the Dashboard, when the data is exported to the Dashboard, the records are split in two containing 3 values: cases, deaths and an indicator of whether the record stands for under 5 ('u') or over 5 ('o').

This explains why number of records is multiplied by 2 when exported to the Dashboard. This is an arbitrary choice to perform the split at the time of export, certainly arguable. It is the result of a balance between space necessary to store data in the database and a decision to limit data manipulation in the Dashboard to the strict minimum.

How to use backups?

The backups are performed before every manipulation of the database (add, update or delete). Backups are stored in the *'03-datamanager-backup'* folder.
Backed up databases are named after the following form:
> *'YYYYMMDD-HHMMSS_original-database-name.json'*

To restore a database from a backup, you just have to rename the file in the '03-datamanager-backup' folder from: 'YYYYMMDD-HHMMSS_original-database-name.json' to: 'original-database-name.json' and replace the original database file in the '02-datamanager-backup' folder. Re-launch the Data Manager module and load the database again.

Rename from: *'YYYYMMDD-HHMMSS_original-database-name.json'*
to: *'original-database-name.json'*
and replace the original database file
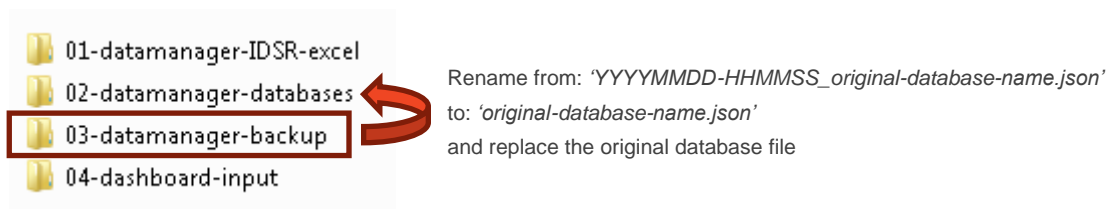
Dashboard

Presentation

The Dashboard module is the module of the solution with data visualisation and interaction capacity. The tool combines geographical data, population with the medical data processed with the Data Manager.

It is developed to be a transitional medical data visualisation and interaction tool somewhere between an 'all-with-excel' model and an integrated model (eg. DHIS2). It is not a 'one-fits-all' application.

Main characteristics:

- Open source – Offline – Light setup (no server, minimum of changes in the reporting lines thanks to the Data Manager module in this case).

- Designed for data visualisation and interaction – the user is performing the analysis not the tool – Automates some routine tasks, gives the user the ability to really quickly dig in the data – Meant to be user-friendly (even for users with limited IT skill-set).

- Does not enhance data quality (problems in reporting lines, with case definition...), if data quality is an issue, the tool can help acknowledging this fact...

- Has to be tailored to the needs (types of charts and maps, behaviours on click and extra functionalities have to be agreed on beforehand, the user cannot change them), it does not allow as much flexibility as Excel, it is not as complete as DHIS2.

-

The Dashboard module is developed in Javascript too. It is based on 13, actively developed, open source libraries:

- 'nwjs' to be able to run the dashboard offline on multiple platforms ;
- 'jquery.js', 'intro.js'… to deal with the interface ;
- 'crossfilter.js', 'geostats.js'… to process the data ;
- 'datatables.js' and plugins to display tables, 'd3.js' and plugins to display charts and 'leaflet.js' and plugins to display maps.

The complete list and licenses are provided with the tool.

One you are finished with the Data Manager module, please open the Dashboard module to get started. For that, go back to your workspace folder and click on the ''dashboard-module'' shortcut:

> 📁 data-folders
> 📁 documents
> 📁 programs
> 🔗 dashboard-module
> 🔗 datamanager-module
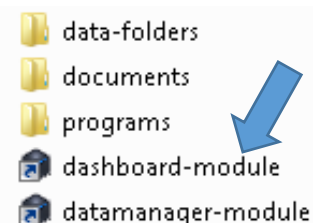
Remember

Applying a serie of filters too quickly can lead to erros. After an operation (filtering, resetting…) make sure the program has processed your change before proceeding to a new one.

If you ever experience any unexpected behaviour, you can first try to <u>relaunch</u> the Data Manager using the following button on the top left or right corner: ↻

Data loading

The first screen you will see gives you the option to load any file in the *'data-folders > 04-dashboard-input'*. Format accepted as input are either text tabulation delimited files *'*.txt'* or coma separated values files *'*.csv'*. Please make sure you only have checked medical data files in this folder. Files that does not have the correct format can cause the dashboard to crash.

Dashboard standard input

The current standard input is the following for the DHMT Tonkolili Dashboard:

```
"disease","chiefdom","PHU","pop","epiweek","fyo","cas","dth"
"Sever Pneumonia","Kholifa Rowalla","CHP Mabom","9999","2015-43","o","6",""
"Sever Pneumonia","Kholifa Rowalla","CHP Mabom","9999","2015-43","u","18","'
"Sever Pneumonia","Kalansogoia","CHC Bumbuna","9999","2015-43","o","3",""
"Sever Pneumonia","Kalansogoia","CHC Bumbuna","9999","2015-43","u","","""
```

The file must contain a header (first line with column names). The order of column is not important but the columns: "disease", "chiefdom", "PHU", "epiweek", "fyo", "cas" and "dth" must appear ("pop" is not mandatory as it is not currently in use, "fyo" is the 'Five Years Old' marker which indicates whether the record stands for Over ('o') or Under ('u') five years old).

Overview

The screen should be the following, let us go through the different options:

[1]

CHOOSE A FILE TO LOAD

DEMO_tonkolili_database_wks-201543-201!

The file currently selected counts **3516** (=2x1758) records.

English | French | Castilian

Change language here

QUICK DATA CHECK

Show error log...

Here is a short **summary of missing or erroneous data**.

This might give an indication on whether further efforts should be put in data cleaning or not. Consult the errors log for more details.

Header	#Error	(%Error)	#Empty	(%Empty)
epiweek:	0	(or 0%)	0	(or 0%)
chiefdom:	0	(or 0%)	0	(or 0%)
PHU:	0	(or 0%)	0	(or 0%)
disease:	0	(or 0%)	0	(or 0%)
fyo:	0	(or 0%)	0	(or 0%)
cas:	0	(or 0%)	454	(or 13%)
dth:	0	(or 0%)	3465	(or 99%)

[2]

Load the Dashboard

[1] The first option is a dropdown list which allows the user to select the file he wants to load in the dashboard. It indicates the number of records in the selected file (number given in the Data Manager multiplied by two due to the under/over five years old split).

[2] By clicking the last button, the Dashboard will be loaded with the currently selected file.

In between is the quick data check summary we will now explain in details:

Quick data check

The quick data check perform simple run through all the data and performs basic tests.

QUICK DATA CHECK

Here is a short **summary of missing or erroneous data**.

This might give an indication on whether further efforts should be put in data cleaning or not. Consult the errors log for more details.

Header	#Error	(%Error)	#Empty	(%Empty)
epiweek:	0	(or 0%)	0	(or 0%)
chiefdom:	0	(or 0%)	0	(or 0%)
PHU:	0	(or 0%)	0	(or 0%)
disease:	0	(or 0%)	0	(or 0%)
fyo:	0	(or 0%)	0	(or 0%)
cas:	0	(or 0%)	454	(or 13%)
dth:	0	(or 0%)	3465	(or 99%)

Hide error log...

```
"er_id","er_field","er_value","er_type","epiweek","disease
1,"death","","empty","2015-43","Sever Pneumonia","Kholifa
2,"death","","empty","2015-43","Sever Pneumonia","Kholifa
3,"death","","empty","2015-43","Sever Pneumonia","Kalansog
4,"case","","empty","2015-43","Sever Pneumonia","Kalansogo
5,"death","","empty","2015-43","Sever Pneumonia","Kalansog
6,"case","","empty","2015-43","Sever Pneumonia","Kalansogo
7,"death","","empty","2015-43","Sever Pneumonia","Kalansog
8,"death","","empty","2015-43","Sever Pneumonia","Kalansog
9,"death","","empty","2015-43","Sever Pneumonia","Kunike "
```

Hide 'isempty' errors   Copy to clipboard

First the tests differentiates missing or empty data and errors. The current reporting process does not allow to distinguish between no data and zero values (zero values are not consistently reported).

Therefor the summary table will give you the absolute number and percentage of errors and missing data detected in each column of the input table. An error log is available as well and can be exported to any software (Excel, text editors…) to be analysed.

How to read the error log

In the following we use the word 'error' to name either a proper 'error' or a 'missing value'.

The log comes in coma separated values. The first row is the header. The columns contain the following fields:

"er_id"   The error unique identifier

"er_field"   The column where the error has been identified (epiweek, PHU, case…)

"er_value"   The erroneous value

"er_type"   The type of error (described with more details below)

Finally a set of values that will permit to identify the erroneous record without ambiguity: **"epiweek","disease","chiefdom","PHU","fyo"**

Each field in a record has an expected format/type, when the value does not match the expected format, an error will be displayed in both the summary and the log.

"epiweek" is expected to be as 'YYYY-WW' (*er_type = epiwk*).

"chiefdom" and **"PHU"** are expected to be matching the names in a standard list (names used in the IDSR reporting as of January 2016) (*er_type = ingeometry*).

"diseases" does not have a particular constraint in this case, they are extracted directly from the tab names and are assumed to remain the same.

"fyo" is automatically added when the image of the database is exported by the Data Manager to the Dashboard and should not show any error.

"case" and **"death"** are expected to be whole numbers (or 'integer') (*er_type = integer*).

Two more error types can occur:

empty when the field does not contain any value.

*duplicates* when the exact same collection of values already exists.

The current process to correct the data is is arguably 'not very straightforward'. After spotting the errors, the user should go back to the original Excel file, correct the errors manually, update the database with the Data Manager and re-export the image of the database to the Dashboard.

Once the data has been checked it is time to load the Dashboard. We will describe in details the content of the main Dashboard screen in the following. We will start with the general interface, then go through all the elements (charts, maps and table).

General interface

The general interface counts 4 main sections:

- The lateral menu ;
- The maps ;
- The charts ; and
- The table.
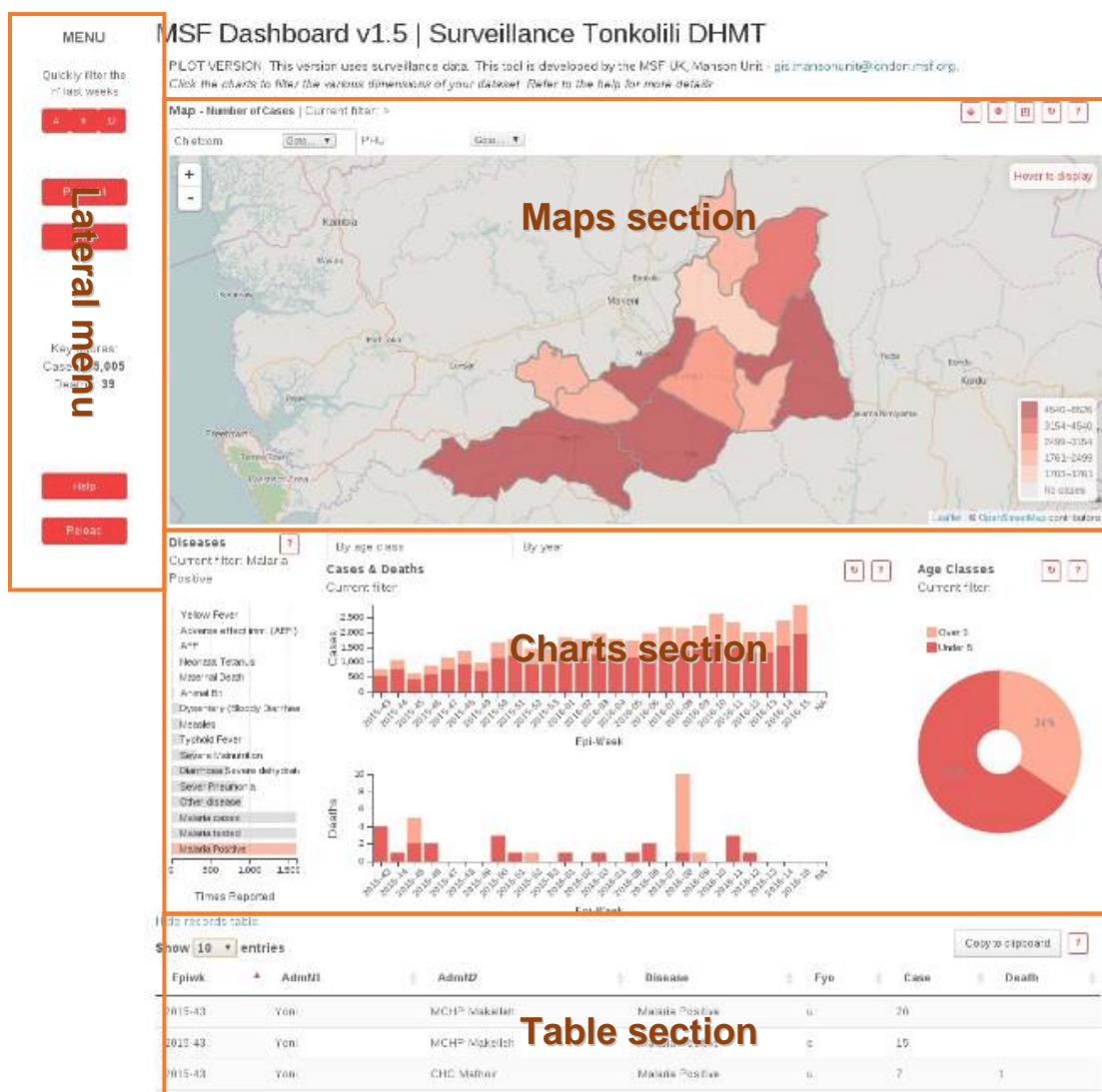
Filtering behaviour

Perhaps the most important thing to remember. The goal of the Dashboard is to give you the ability to easily interact with your data. In practice, clicking on maps or charts elements such as a bar of a bar chart or an area of the map will allow you to filter your dataset.
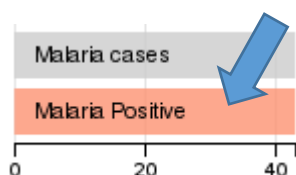
For instance, by clicking *'Malaria Positive'* on the Disease chart, only the records of your dataset referring to 'Malaria Positive' will be displayed in the Dashboard.

At all times you can keep an eye on what a graph is currently filtered by, by checking the content of the 'Current filter' on the top left of the graph:

Current filter: Malaria Positive

You can also easily spot which data is currently left out of the selection as it is faded to grey.

Parallel with Excel

This filtering behaviour is very similar with the 'Filter' behaviour in Excel you might already be familiar with.

Once 'Filter' is enabled on your table (*'data > filter'*), you can select the field you want to filter, 'disease' for example. You then unselect all except 'Malaria Positive' and validate.

When done you can see that only records (or rows) with 'Malaria Positive' disease are showed:

	A	B	C	D	E	F	G	H
1	disease	chiefdom	PHU	pop	epiweek	fyo	cas	dth
126	Malaria Positive	Kholifa Rowalla	MCHP UFC Magburaka	9999	2015-43	o		
127	Malaria Positive	Kholifa Rowalla	MCHP UFC Magburaka	9999	2015-43	u	48	
128	Malaria Positive	Kholifa Rowalla	MCHP Mayossoh	9999	2015-43	o	14	
129	Malaria Positive	Kholifa Rowalla	MCHP Mayossoh	9999	2015-43	u	32	
130	Malaria Positive	Kholifa Rowalla	CHP Mabom	9999	2015-43	o	36	
131	Malaria Positive	Kholifa Rowalla	CHP Mabom	9999	2015-43	u	18	
132	Malaria Positive	Kholifa Rowalla	MCHP Magbass	9999	2015-43	o	6	
133	Malaria Positive	Kholifa Rowalla	MCHP Magbass	9999	2015-43	u	19	
134	Malaria Positive	Kafe Simira	CHC Mabontor	9999	2015-43	o		
135	Malaria Positive	Kafe Simira	CHC Mabontor	9999	2015-43	u	27	
136	Malaria Positive	Kalansogoia	CHC Bumbuna	9999	2015-43	o		
137	Malaria Positive	Kalansogoia	CHC Bumbuna	9999	2015-43	u	12	1
138	Malaria Positive	Kalansogoia	MCHP Bassaia	9999	2015-43	o	2	

This is exactly what is happening with the Dashboard.

As well as in Excel, you can combine filters on multiple fields (or dimensions). For instance, disease and:

- Time:
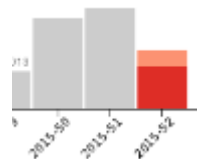
Current filter: 2015-52
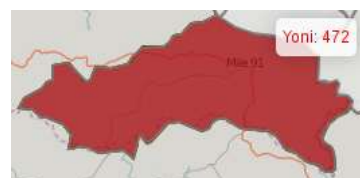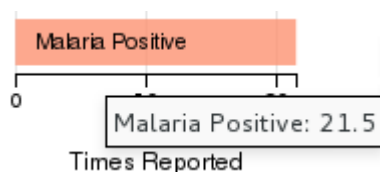
- Place:

Current filter: Yoni, >

- Person:

Current filter: Over 5

To reset a particular filter, you can just click the graph again.

It is important to realise that each filter affects the entire dataset and thus all the graphs.

Read values

You can access the values behind each chart or map feature by hovering over them:

Lateral menu

The lateral menu gives quick access to various options and information:

You can **quickly filter by the 4, 8 or 12 last weeks** by clicking one of these three buttons.

Instead of resetting all the filters one by one, you can simply click the **'Reset All'** button which will reset all the current filters of all the graphs. It is advisable to use this option often in order to avoid confusion.

'Play' allows you to animate your map by automatically filtering each week one by one. During the animation filtering on the time charts ('Cases & Deaths') is disabled, but other filters still apply. You can pause the animation by clicking again the same button or interrupt by resetting all.

The **key figures** allow you to quickly know the total number of Cases and Deaths in the current subset (ex. Malaria Positive for week 2016-01 in Yoni).

The **help** button gives you access to more information about the Dashboard and the different graphs. It is not as complete as this guide.

The **reload** button is equivalent to the arrow button on the top left or right corner: ↻

Quick options

For all the graphs, quick options are available through icons. The set of options avaible can vary depending on the specific graphs, any specific option will be presented later on. Here are the two most common ones:

Quick Reset button: this button allows you to quickly reset the filters related to a specific graph.

Quick Help button: this button allows you to quickly access the part of the help related to this specific graph.

Now that the general principals have been described, we can go in depth and have a look at each chart, map and table.
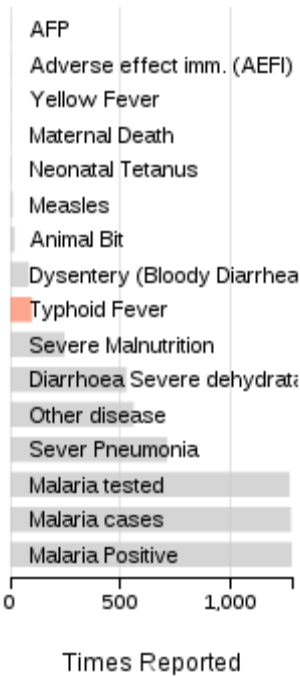
Charts

Diseases

Diseases

Current filter: Typhoid Fever

The disease row chart allows the user to select one disease to visualise. It has a specific behaviour. While with other graphs it is possible to select multiple categories (ex. two or more areas or periods), the diseases chart allows only to select the diseases one by one (that is why there is no quick reset button here).

When clicking again on an already selected disease, you will visualise all the disease together. To go back to the normal behaviour just select a disease in the list.

The horizontal axis displays the number of times a disease has been reported ie. +1 per Area and per Week where 1 or more cases of the disease have been reported. This is meant to give an idea of how frequent is the disease. Diseases are reported in ascending order (from the least reported to the most reported).

AFP
Adverse effect imm. (AEFI)
Yellow Fever
Maternal Death
Neonatal Tetanus
Measles
Animal Bit
Dysentery (Bloody Diarrhea
Typhoid Fever
Severe Malnutrition
Diarrhoea Severe dehydrata
Other disease
Sever Pneumonia
Malaria tested
Malaria cases
Malaria Positive

0   500   1,000

Times Reported

Cases & Deaths

Case and death data can be visualised from two angles: by age classes and by years. The two alternatives are accessible by two tabs just above the charts.

- By age class
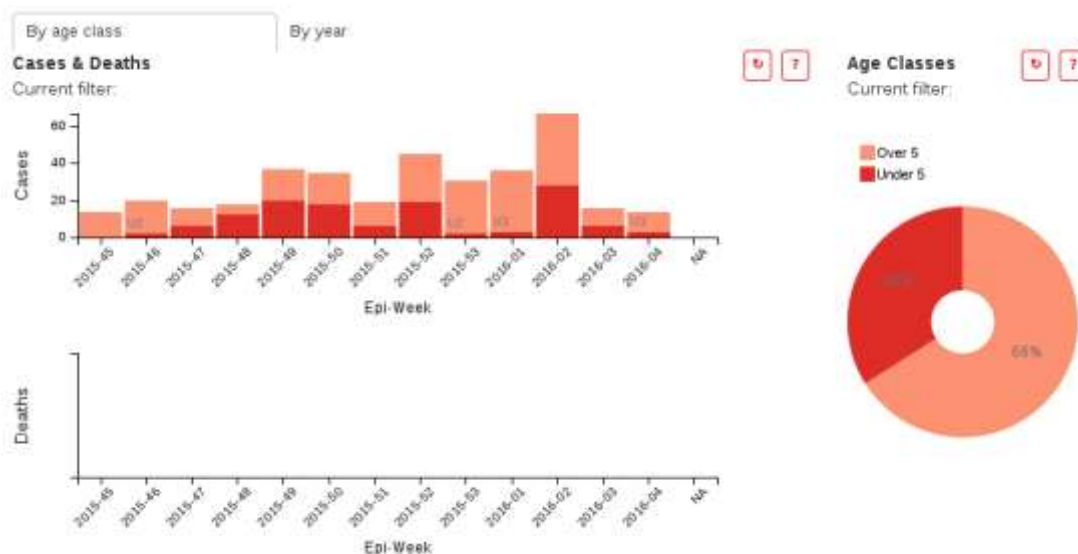
The visualisation by age classes present cases and deaths as bar charts. Two colours permit to differentiate cases or deaths under 5, in dark red, and cases or deaths over five, in pale red.

For small number of cases or deaths numbers are directly displayed on the charts (on the cases chart, 'O5' means 5 cases over 5, 'U4' means 4 cases under 5).

By clicking on the cases or deaths charts the dataset can be filtered by 'time'. The two charts, cases and death are linked, filtering or unfiltering one or the other gives the same result (the quick access icons controls the two charts). One or more weeks can be filtered.

The dataset can be filtered by age classes directly with the pie chart on the right. This is the only 'person' dimension currently recorded in the IDSR data.

- By year
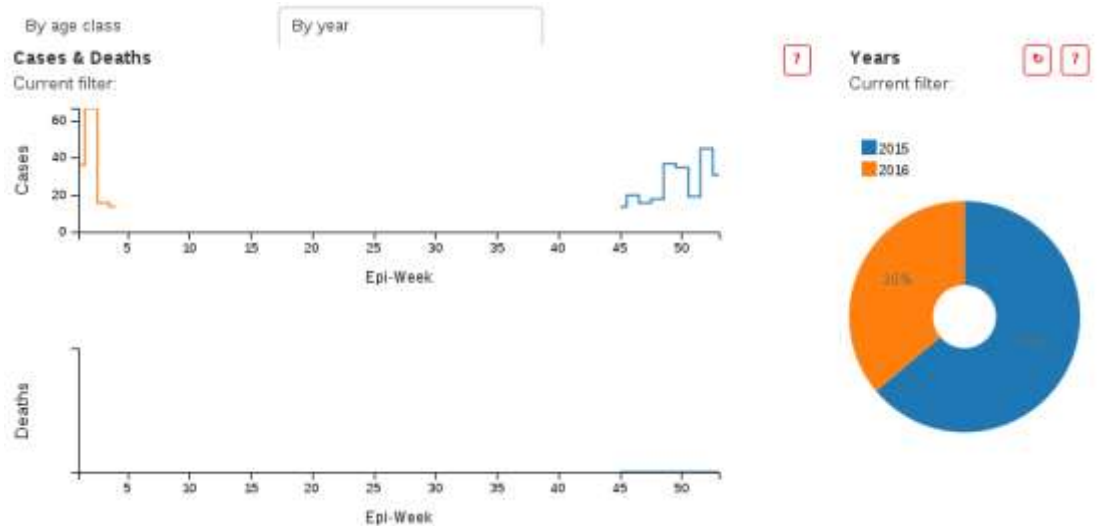
The alternative way to visualise cases and deaths data is by year. This alternative view shows one line graph per years on cases and deaths charts. These two charts cannot be used to filter the data. The corresponding colours of each year are identified on the pie chart.

The pie chart allows to filter the dataset, focusing on a specific year.

Maps

The maps are slightly more complex to use and analyse.

Quick options

The quick options for maps include the two traditional Reset and Help button plus 3 more:

Expand map button: this button allows to expand the map. It just has to be clicked again to go back to normal size.

Map parameters button: this button allows to access the map parameters which will be presented in details in the next section.

Adjust colorscale button: this button allows to fit the colorscale categories to the currently displayed data.

The map has also two more options.

Multiple levels: you can browse the data at Chiefdom level or at PHU level by using the tabs. When going back to a higher level (PHU to Chiefdom), filters applying to PHUs will be reseted.
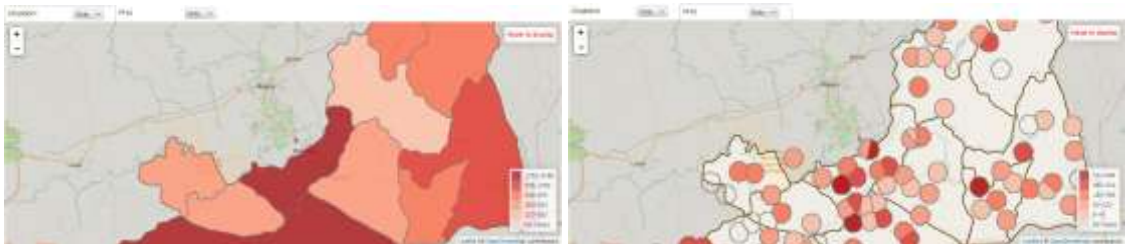
Zoom to: quickly zoom to a specific area by using the dropdown lists. To zoom to a specific Chiefdom, you can directly select it in the Chiefdom dropdown list. To zoom to a specific PHU, you have to first select the Chiefdom which it is part of, and then the PHU dropdown list will automatically populate with the PHU inside this Chiefdom.
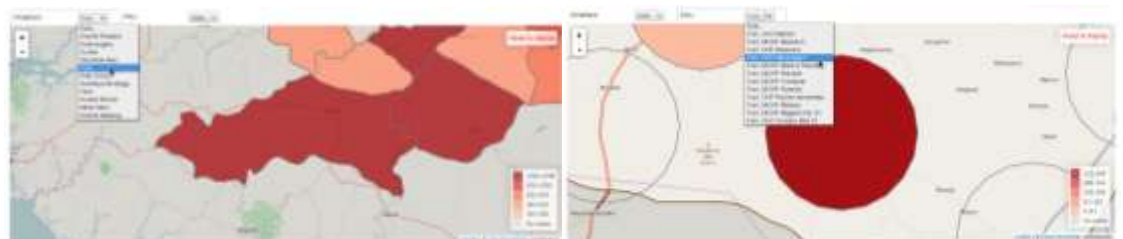
This last operation is not equivalent to filtering by an area. If you want to filter the dataset by the area you zoomed to, you have to click it on the map.

Parameters

As mentioned, you can access the map parameters by clicking the following button:

The window that appears gives you access to four parameter of the map:

- The **map unit**: Cases, Incidence or Completeness (we will go through all the map types in the next sections).

- The way **colourscale** values or categories are defined:
    o In Auto mode, the categories automatically adapt to any change in the subset to be displayed (eg. change of disease, period of time or class of age) to permit adapted visualisation.
    o In Manual mode, the categories will only adapt when the user clicks the adjust colorscale button: . This allows the user to compare two subsets using the same colorscale.

- The **type** of colours used to display the data, map units are linked by default to types of scales but it can still be changed here to visualise data more accurately.

- The **mode of computation** of the categories can be defined here. Basically, you can switch between some of the most used algorithms to compute categories for map visualisation (Jenks is used by default).

Use the cross ( ) at the top right corner to close the parameter window and get back to the main Dashboard screen.

We will now explore the different map units.

Number of cases

Number of cases is simply the sum of number of cases in the current subset aggregated at Chiefdom level or at PHU level. The map does not makes distinction between zero cases and no value at this time, except if an area never reported any case of any disease (in this case the area will be shown as transparent and is not accessible via the dropdown lists).
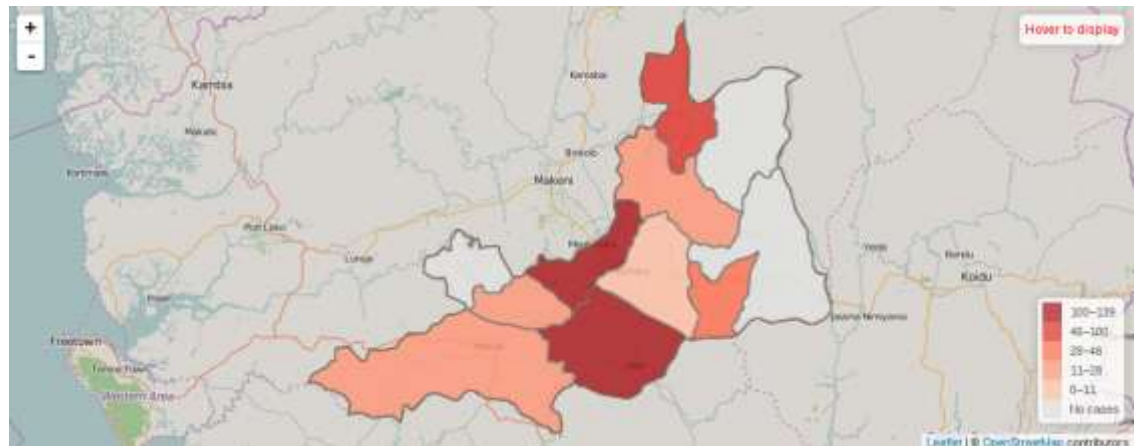
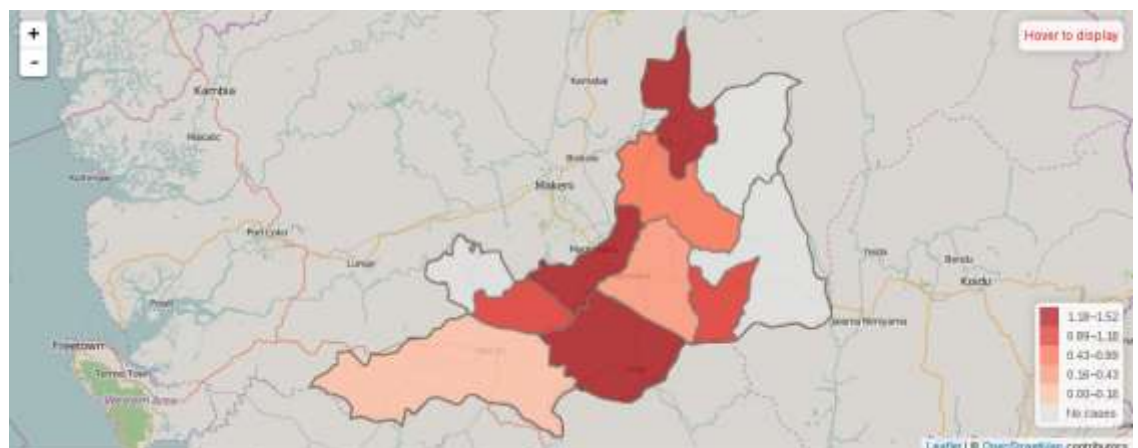### Incidence rates

Incidence Rates (IR) are calculated as:

IR = Number of cases over the selected weeks / [Population in the area or catchment x Number of weeks]

With Number of cases obtained in the same way as presented in the previous section.

Completeness

Completeness (C) is calculated as a percentage with the following formula:

$$C = \frac{\text{Sum over the selected weeks of: Number of PHUs reporting at least one case}}{\text{Number of weeks selected x Number of PHUs in the area}}$$

As numbers of PHUs in two chiefdoms are different we cannot just simply sum C over the chiefdoms to obtain completeness at district level.

At PHU level, Number of PHUs in the area equals one. For one week, if the PHU reports at least one case of one disease, it will be atributed the value 100% indicating complete reporting. If over 4 weeks, the PHU has been reporting cases only 3 weeks, the associated completeness will be ¾ = 75%.
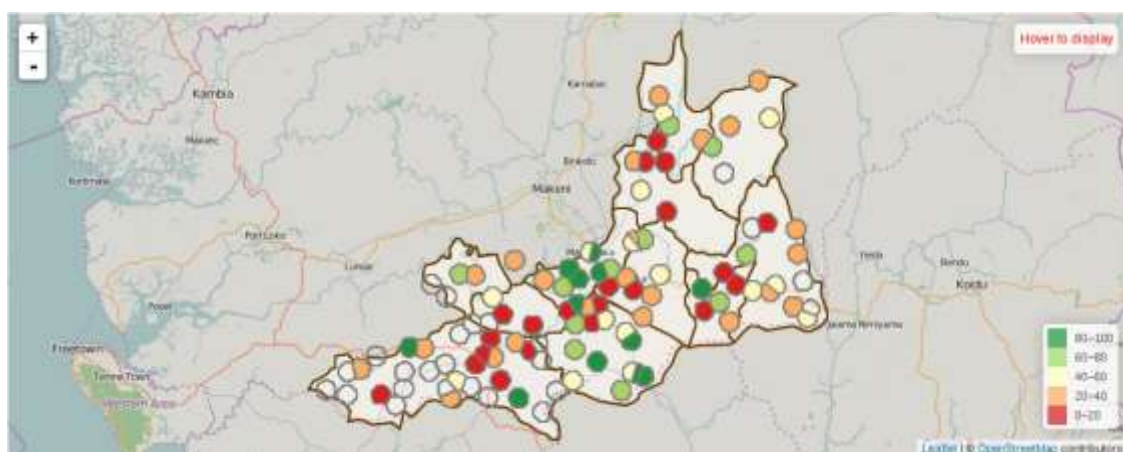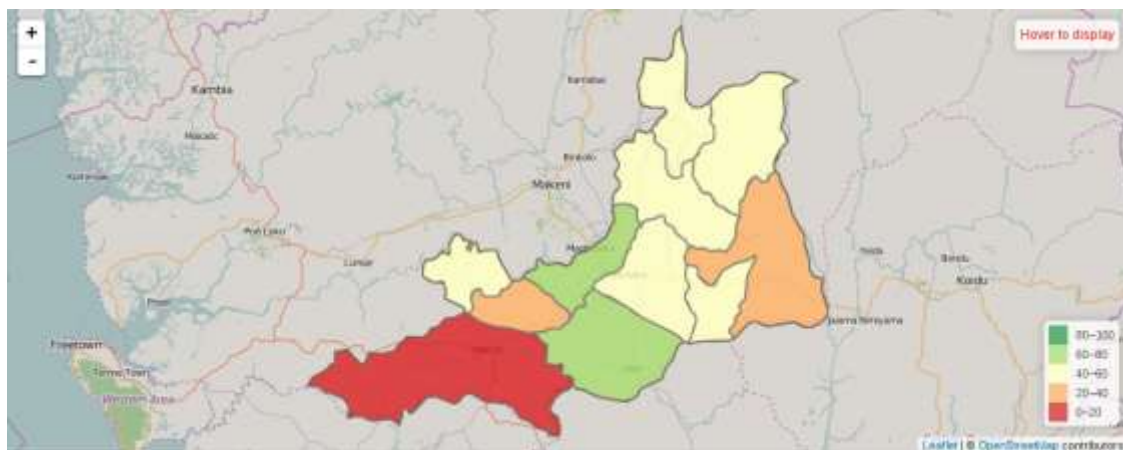
Currently applying filter to an area will result in all the other areas showing red (0%).

Table

Finally at the bottom of the Dashboard, it is possible to access the disaggregated data by showing the record table of the current subset. Records can be ordered by any field (ascending or descending order). Plus, the current subset can be copied to clipboard in order to be exported to Excel or any spreadsheet or text editor.

Hide records table

Show 10 ▼ entries   Copy to clipboard [?]

Epiwk	AdmN1	AdmN2	Disease	Fyo	Case	Death
2015-45	Kholifa Rowalla	MCHP Magbass	Typhoid Fever	o	4	
2015-45	Kholifa Rowalla	MCHP Magbass	Typhoid Fever	u		
2015-45	Kalansogoia	CHC Bumbuna	Typhoid Fever	o	4	
2015-45	Kalansogoia	CHC Bumbuna	Typhoid Fever	u		
2015-45	Kunike Barina	CHC Makali	Typhoid Fever	o	4	
2015-45	Kunike Barina	CHC Makali	Typhoid Fever	u		
2015-45	Yoni	CHC Mathoir	Typhoid Fever	o	2	
2015-45	Yoni	CHC Mathoir	Typhoid Fever	u		
2015-46	Kholifa Rowalla	MCHP Magbass	Typhoid Fever	o	2	
2015-46	Kholifa Rowalla	MCHP Magbass	Typhoid Fever	u		

Showing 1 to 10 of 98 entries   Previous [1] 2 3 4 5 ... 10 Next

FYO (Five Years Old): u = Under (< 5 years old), o = Over (> 5 years old)

Conclusion

As mentioned in introduction, the Dashboard is currently in Pilot phase. The results of the evaluation of the tool are expected to give insights into usefulness, effectiveness and recommendations for future developments.

The current version of the tool is not bug free and functionalities can be bettered. Do not hesitate to reach the Manson Units for comments and suggestions on the tool and on this documentation.

Use cases

Example 1: Looking into PHU reporting comple

1. Reload the dashboard: on the left side menu, click ''Reload''

2. Change map unit to ''Completeness'' by clicking on the second symbol of the map quick functions:

3. Click completeness and close the map parameters menu:

4. Select week of interest – click in column of the bar chart of week of interest. Note that all the other weeks go grey and that all the other graphs only show data for the week of interest.

5. Observe the map. Note that the legend reflects the number of PHU that reported to ISDR during the selected week.

    Which chiefdom had less PHUs reporting to ISDR (use the same chiefdom for the questions below)?.....………………………………………………………………………...

6. Hover the mouse over the relevant chiefdom to check the chiefdom name and number of PHUs that reported to ISDR.

    How many PHUs reported in the chiefdom you mention above?
    …………………………………………………………………..............

that a PHU reported over the number of weeks selected. For example, if only one week is selected, one PHU either have the value of Zero (0) and colour RED, i.e. did not report to ISDR; or One hundred (100) and colour GREEN, i.e. did report to IDSR. If a PHU do not have a colour it means that never reported to ISDR.

For the chiefdom mentioned above:
How many PHUs never reported to ISDR, i.e. no colour: ……………………...
How many PHUs did not report to ISDR this week: ……………………………….
How many PHUs reported to ISDR this week: …………………………………….

9. Now imagine we want to prioritise PHUs for supervisory visits. For that you might want to target those that had low completeness over a larger period of time, e.g. 4 weeks. In order to do that, please select the three weeks prior to the week of interest by clicking in the bar chart. If you click in one week by mistake, just click again to unselect.
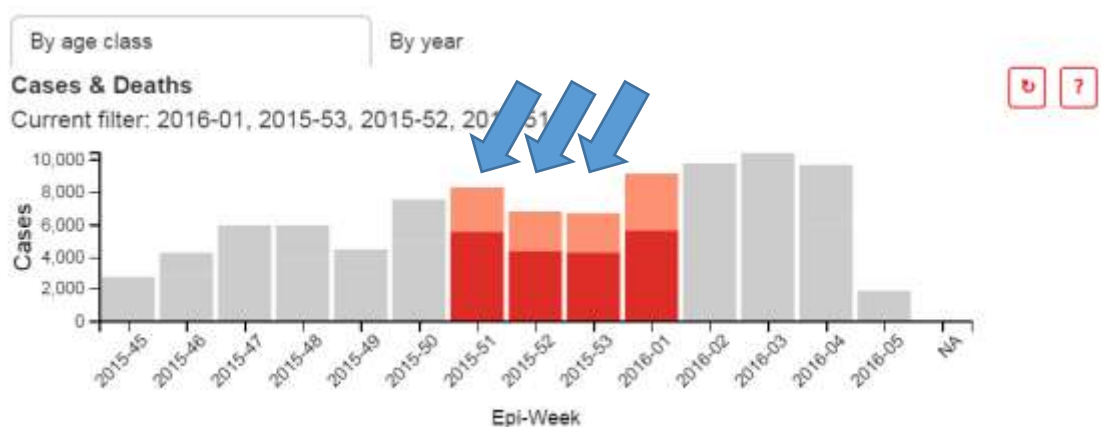
10. Observe the map and note that now there are more colours. The graph is still reporting the proportion of PHUs that reported during the select weeks, but this time the values range between 0 and 100%. For example, if we were to select 10 weeks and a PHU only reported 5 weeks, the proportion shown would be 50% and the colour would be YELLOW.
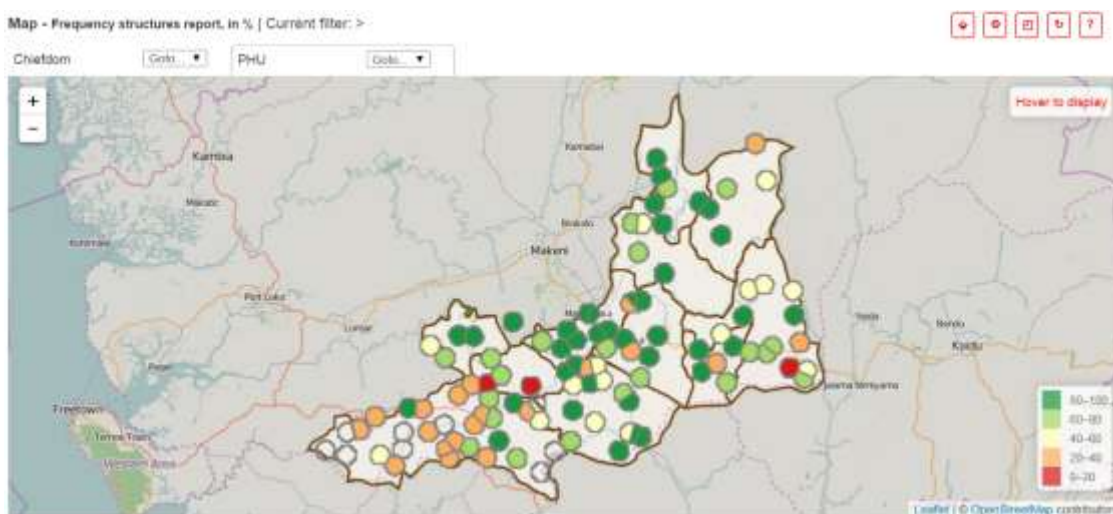
For the chiefdom mentioned above:

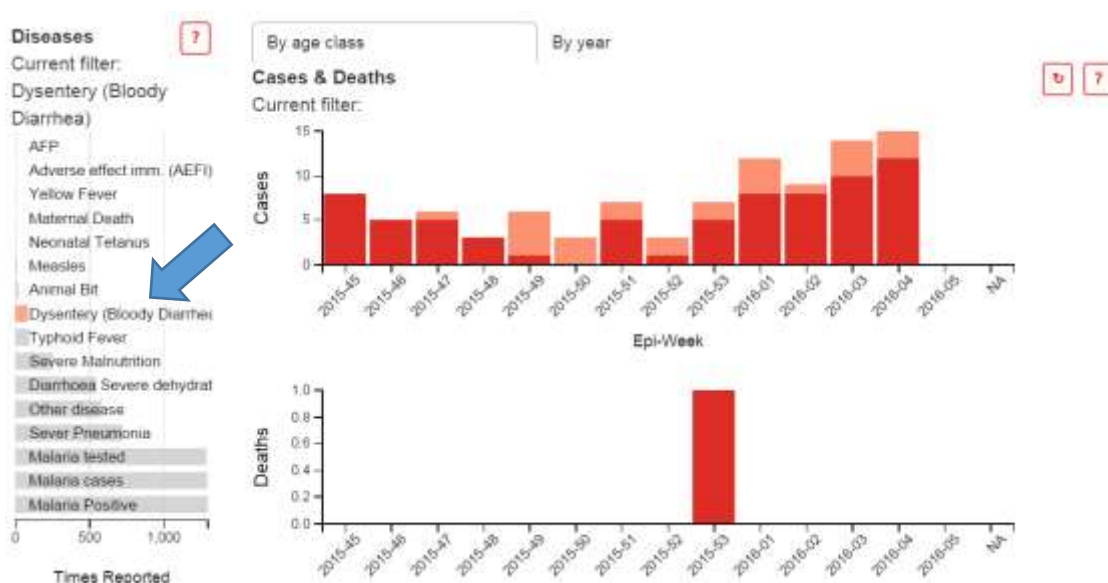How many PHUs reported between 20 – 40 % of the weeks selected, i.e. ORANGE colour? …………………………………………………………………………………..

Example 2: Routine weekly analysis – part 1

1. Reload the dashboard: on the left side menu, click ''Reload''

2. Select disease of interest by clicking in the list of diseases on the left side of the bar charts. Please note that all the other parts update accordingly.

3. Look into the trends over time in the bar chart for cases:
   How does the week of interest compares to the previous weeks, i.e. the number of cases were stable, increased or decreased? …………………………………………..

4. Now select the week of interest by clicking in the bar chart and check how many cases of the disease of interest were reported in the week selected. This can be observed in the left side menu:

   How many cases of the disease of interest were reported in the week selected? …………………………………………………………………………..

5. To know how many cases were reported by age split (under 5 year old and over 5 year old) please hover the mouse over the pie chart in the right of the screen:

Age Classes
Current filter:

How many cases were reported under 5 years old?

…………………………………………………………..

How many cases were reported over 5 years old?

………………………………………………………….
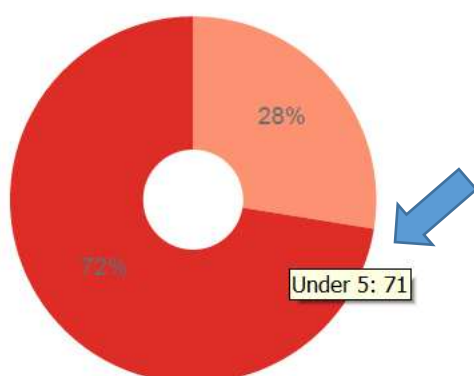
6. Check if there are any deaths in the week selected or in previous weeks by looking into the deaths bar chart:

How many deaths were reported in the selected week? …………………………………

If none, when was the last week that there was a death reported for the selected disease? …………………………………………………………………………………………

7. Observe the map. Note that the colour of chiefdoms and the legend reflects the number of cases per chiefdom.

How many chiefdoms reported cases of the selected disease for the select week (tip: count how many chiefdoms are coloured)?

………

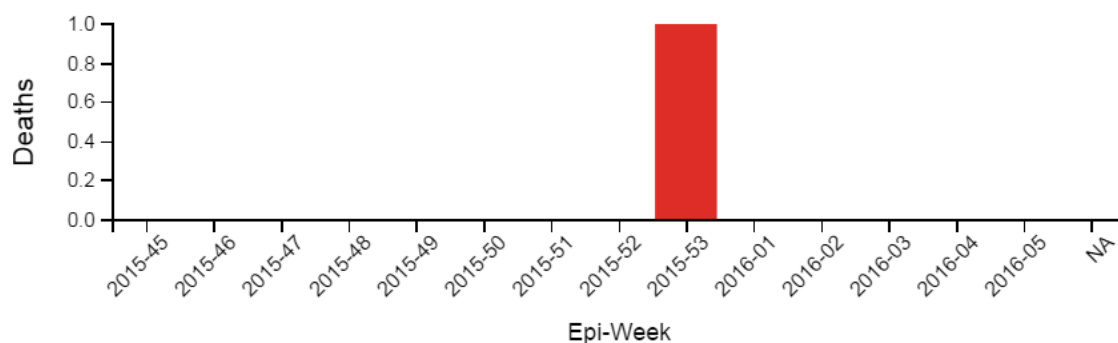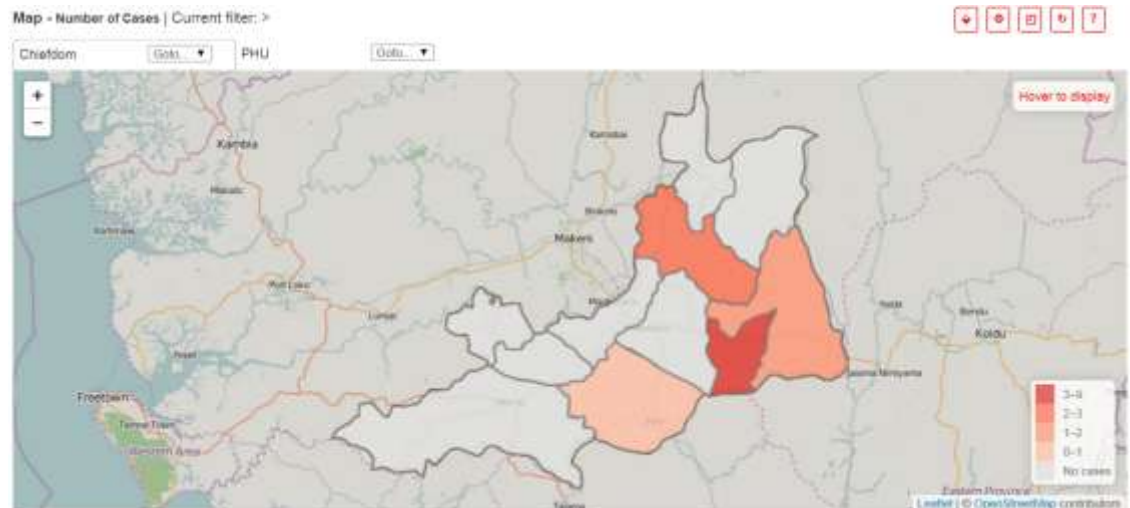Which chiefdom reported more cases (tip: check the map legend)?

………

How many cases were reported in the chiefdom mentioned above (tip: hover the mouse over the chiefdom of interest and check the top right corner of the map)?

……………………………………………………………………………………………………..

8. Now look to the data at the PHU level. For that click in the ''PHU'' button on the top of the map.

How many PHUs reported cases in the chiefdom mentioned above (tip: look to PHUs coloured on the map)? …………………………………………………………………………….

Which PHUs reported more cases (tip: hover the mouse over the coloured PHUs and check the number on the top right corner of the map)?

…………………………………………………………...

9. Now imagine you want to look at the number of cases that reported the specified disease over a larger period of time, e.g. 4 weeks. Select the 3 weeks prior to week of interest.

Which was the PHU with more reported cases over a 4 week period (tip: check the map and hover the mouse over the coloured PHUs)?

…………………………………………...

How many cases were reported in that PHU for the 4 week period? ……………………

Example 3: Routine weekly analysis – part 2

Now is play time. Please investigate the data and the dashboard on another specified disease in order to answer the following questions:

1. How does the week of interest compares to the previous weeks, i.e. the number of cases were stable, increased or decreased? …………………………………………..
2. How many cases of the disease of interest were reported in the week selected?
   ……………………………………………………………………………………………….
3. How many cases were reported under 5 years old? …………………………………..
4. How many cases were reported over 5 years old? ……………………………………
5. How many deaths were reported in the selected week? ………………………………
6. If none, when was the last week that there was a death reported for the selected disease? …………………………………………………………………………………
7. How many chiefdoms reported cases of the selected disease for the select week (tip: count how many chiefdoms are coloured)?
   ………………………………………………………………………………………………….
8. Which chiefdom reported more cases (tip: check the map legend)?
   ………………………………………………………………………………………………….
9. How many cases were reported in the chiefdom mentioned above (tip: hover the mouse over the chiefdom of interest and check the top right corner of the map)?
   …………………………………………………………………………………………………..
10. Which was the PHU with more reported cases over a 4 week period (tip: check the map   and   hover   the   mouse   over   the   coloured   PHUs)?
    …………………………………………………..
11. How many cases were reported in that PHU for the 4 week period? ……………………
12. How many PHUs reported cases in the chiefdom mentioned above (tip: look to PHUs coloured on the map)? ……………………………………………………………………….
13. Which PHUs reported more cases (tip: hover the mouse over the coloured PHUs and check the number on the top right corner of the map)?
    ……………………………………………………...

Example 4: Export the charts and maps

To export the charts and maps. Currently the best solution is to use the 'Snipping Tool' included in all recent versions of Windows.

You just select the area to copy and paste the result in your document. Do not forget to add a title and a date.