

SENS MAPPER

Overview – What does the tool do?

The “SENS Mapper” allows displaying information on Child, Women, WASH and Mosquito Net from SENS surveys on a map which can be used for simple, standardized report maps. As input it uses up to two different csv or xls files: one containing general household information (such as the coordinates) and one containing the specific data for the children and women of the household.

 While the tool needs an internet connection to display the background map (OpenStreetMap), no data is sent over the internet. The SENS data is only stored locally.

What is mapped?

The tool is divided into four modules: Child, Women, WASH and Mosquito Net. It is currently possible to use Child and Women modules to display information on anemia, stunting or general acute malnutrition (GAM) of children in the surveyed households, as well as anemia of women. The map will display all households in red where at least one child/woman suffers from anemia, stunting or GAM and in green those where no child/woman suffers from the above-mentioned condition. In the case of women, households with no women of analyzed category (non-pregnant women aged between 15 and 49) are also displayed in blue. WASH module allow to show level of satisfaction on water distribution, applying a green-orange-red (satisfied-partially satisfied-unsatisfied) color scale. Last but not least, Mosquito Net module will display the use of “Long-Lasting Insecticidal Nets” (LLIN) in green, normal net in orange and cases with no net in red. An example is shown in *Figure 1*.

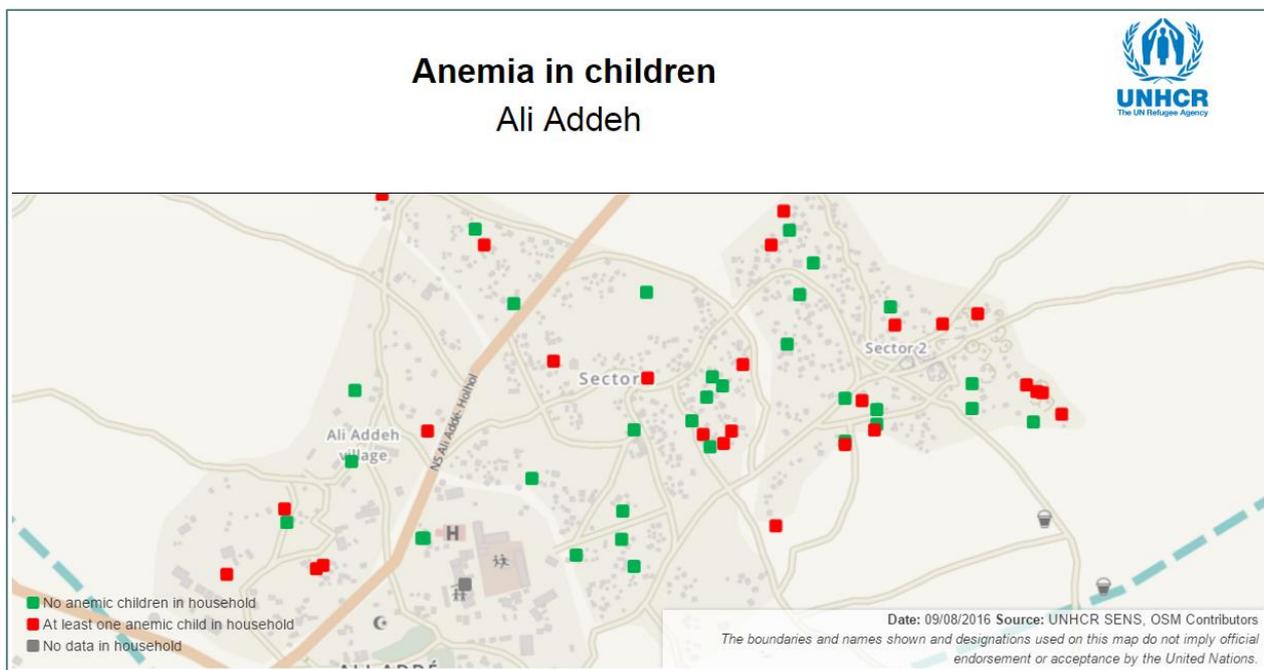


Figure 1: Example screenshot of the final map

Step by step guide to use the tool

The following three pages explain how to use the tool step by step from preparing the data to exporting the map.

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1. Preparing the csv/xls files

Depending on the chosen module, the tool will require either only one or two csv files or xls sheets. WASH and Mosquito Net surveys contain all data in a single household file/sheet (which will include the coordinates of the household), while Child and Women need a second file/sheet containing the nutrition information on each household's children/woman.

If you are working with several worksheets within one workbook in Excel, be careful as only the current worksheet is saved as csv. Data in other worksheets might get lost if they are not saved in standard *.xls or *.xlsx format.

Exporting your data from Kobotoolbox

 Note: You can skip this section if you work with ODK Aggregate

Once the data is synchronized on Kobo and ready to be visualized on the SENS Mapper, you have to export your data from the **Downloads** section of the **DATA** page of your form.

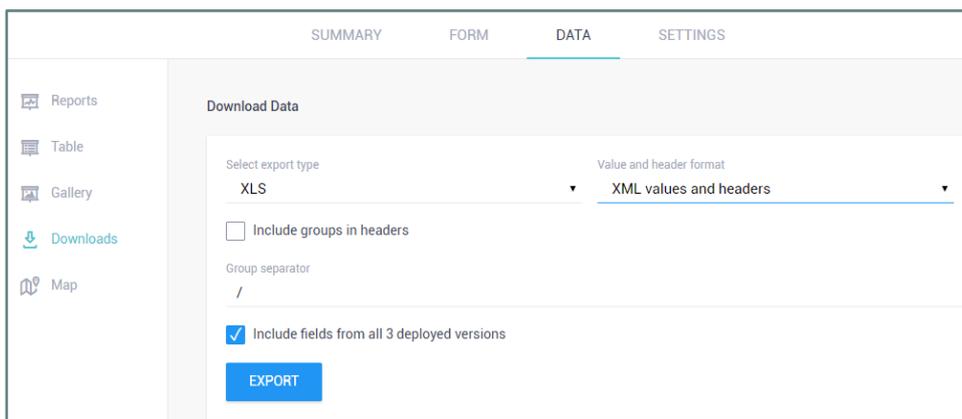
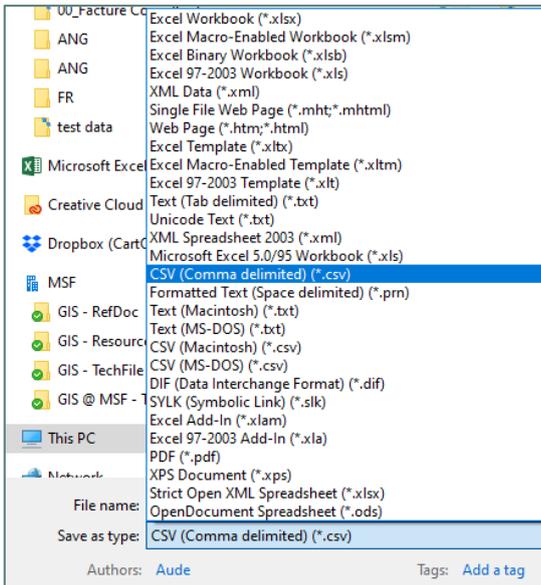


Figure 2: Example screenshot of the "Download data" page of Kobotoolbox

Export format for your dataset to be supported on the SENS Mapper

- **Export type:** From the dropdown list, select the **XLS** format.
- **Values and header format:** From the dropdown list, select **XML values and headers**

 Note: The dataset exported in XLS format should be converted into a CSV file in Excel: **Save as > CSV (Comma delimited).csv**. Remember that you would need to convert all sheets separately as csv files cannot hold multiple sheets.



! We don't recommend exporting your dataset directly as a CSV file from Kobo for two reasons. First you will have to split your data into multiple columns at each comma and more importantly for the child and women forms which works with multiple sheets, the module's data file will not be exported. You will only have the household file without the indicators to visualize on the SENS Mapper.

Household (coordinate) file

The csv-file containing the coordinates of each household is easy to generate. It is directly taken from the survey data and may look as the example table in *Figure 2*.

	A	B	C	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	SubmissionDate	DeviceID	EHM	TID	TEAM	HHN	GPS-Latitude	GPS-Longitude	Altitude	Accu	ET-OF	VINT	UPCC	instar	instance	KEY			
2	12/14/2015 17:28	3.554E+14	1	4	#	2	18	11.96887814	43.25245824	31	5	uuid:f	1	1	uuid:0	Child_HI	uuid:02237fbd-ad97-494c-85af-051b56a18136		
3	12/14/2015 3:12	3.554E+14	1	1	#	1	3	11.97177295	43.25552803	35	5	uuid:f	1	1	uuid:0	Child_HI	uuid:02bd9a5a-3b17-45d9-9302-7eec35805c28		
4	12/12/2015 2:20	3.554E+14	1	3	#	3	11	11.97142499	43.25198311	30	5	uuid:f	1	1	uuid:0	Child_HI	uuid:02c18a49-651f-496e-a4fa-efee86e76185		
5	12/14/2015 17:32	3.554E+14	1	2	#	5	57	11.9691465	43.25520053	31	5	uuid:f	1	1	uuid:0	Child_HI	uuid:03c0246f-3440-444c-8bd0-a433e1fda7f5		
6	12/14/2015 3:09	3.554E+14	1	3	#	3	71	11.97052787	43.25294089	18	5	uuid:f	1	1	uuid:0	Child_HI	uuid:0474569e-1ae4-4b6f-897f-04619efedd36		

Figure 3: Example household table

For **all modules**, the household file must contain the following three key columns:

1. A column called 'KEY' or '_INDEX' containing the uuid-number of the household in the survey (only necessary for Child and Women modules)
2. A column containing the word 'Latitude'/'latitude'/'LATITUDE' anywhere inside the column header
3. A column containing the word 'Longitude'/'longitude'/'LONGITUDE'

In addition to those key columns, WASH and Mosquito Net must contain some extra columns with corresponding data.

Key columns for **WASH module**:

Depending on the version of the SENS form used, the key columns differ.

For the **version 2** of the WASH SENS form:

1. A column named 'SATISFY'/'Satisfy'
2. A column named 'REASON'/'Reason'

For the **version 3** of the WASH SENS form:

1. A column named "SOURCE"
2. A column named "STORAGE"
3. A column named "POTAPROT"

These columns will define the color of the icon for each indicator.

- For "**POTAPROT**" (Average L/p/d of potable water collected at household level): the icon will be green if the level is met (value $\geq 20L$), it will be orange if it is borderline ($\geq 10L$ value $< 20L$) and red if the level is not met (value $< 10L$).
- For "**SOURCE**" (Households collecting drinking water from protected/treated sources): the icon will be green if the water source is one of the following (value ≤ 7): Public tap/standpipe, Hand Pumps/boreholes, Water seller/kiosks, Piped connection to house (or neighbour's), Protected spring, Bottled water, water sachets, Tanker truck. The icon will be red if the water source is one of the following (value > 7): Unprotected hand-dug well, Surface water (lake, pond, dam, river), Unprotected spring, Rainwater collection, Other, Don't know.
- For "**STORAGE**" (Households with at least 10 liters/person of potable water storage capacity): the icon will be green if the level is met (value $\geq 10L$) and red if the level is not met (value $< 10L$).

Key columns for **Mosquito Net module**:

1. A column named 'TOTSLPNT'
2. A column named 'TOTSLPLN'
3. A column named 'MOSNETS'

The classification of mosquito nets' use will be defined following the next conditions.

- A household is considered as slept with a LLIN net if $TOTSLPLN > 0$
- A household is considered as slept with a normal net if $TOTSLPLN = 0$ and $TOTSLPNT > 0$
- A household is considered as having a net but not using it if $TOTSLPLN = 0$ and $TOTSLPNT = 0$
- A household is considered as not having a net if $MOSNETS = 2$
- A household is considered as no data if there are GPS coordinates but required fields do not contain data

The column names should be adapted accordingly in Excel if they don't correspond to those names by default.

The table can contain any number of additional columns, those won't be taken into account for the analysis. It is however important that no two columns have the same name.

Child/Women Nutrition file

To display information on Anemia, Stunting or Acute malnutrition for the children or Anemia for the women in the households, a second csv-file or xls-sheet is needed. This file needs to contain the information on the individuals (children or women) of the different households in the camp.

In order to link the individual' data to the correct household this file also needs to contain a column called 'PARENT_KEY' or '_PARENT_INDEX' (case-sensitive) containing the exact same uuid-numbers as can be found in the household csv-file/xls-sheet. Depending on the column header used in the household coordinate file (i.e., '_key' or '_index'), the module's data file should respectively use 'PARENT_KEY' or '_PARENT_INDEX'

 All rows which don't have a match (in the household table) can't be displayed on the map and are automatically excluded.

To analyze nutrition data for **children**, the file further needs the following columns, which are either taken directly from the survey or created in ENA and appended back to the survey data in Excel:

'CHHB' (for Anemia), 'HAZ' or 'HAZ-WHO' (for Stunting), 'WHZ' or 'WHZ-WHO' (for GAM).

 For Stunting and Acute malnutrition make sure there is only one of the two optional column names: 'HAZ' or 'HAZ-WHO'. If both names are used in the same table the tool will automatically choose the last column with a corresponding name.

 It is important to note that the tool does not know which values are flagged in ENA's 'Plausibility Check'.
To only show consistent data, the implausible entries need to be deleted manually before integrating the table into the tool. In order not to be integrated the fields need to be empty (NOT 0), they will be displayed as 'households excluded' on the map.

	Q	R	
)	HAZ-WHO	WHZ-WHO	BMI
17	-2.409	0.512	
38		-1.722	
61	-0.956	-1.163	
85	-1.798		
71	-1.235	-0.305	

a) *Anemia*

The column 'CHHB' contains the HB level of a child. The tool will automatically count all children with a CHHB-value <11 as anemic and all children with a value >=11 as not anemic.

b) *Stunting*

The column 'HAZ' or 'HAZ-WHO' is used to calculate stunting in children. If the value in the field is <-2 then the child is counted as suffering from stunting, values >=-2 are considered as not suffering from stunting.

c) *General Acute Malnutrition (GAM)*

The column 'WHZ' or 'WHZ-WHO' is used to detect children with acute malnutrition. If the value in the field is <-2 then the child is counted as suffering from acute malnutrition, values >=-2 are considered as not suffering from acute malnutrition.

For the women module, only Anemia indicator is available. The column needed are 'WMHB', 'WMAGE' (age) and 'PREGNANT'. The latter two will be used in order to classify women in the household. Anemia is only measured on non-pregnant women between 15-49 years of age. Pregnant Women or women outside of the defined age group will appear as "no women of category. Women with a WMHB-value <8 will be counted as anemic and women with a value >=8 as not anemic.

The tool aggregates individual information by household. If there is at least one individual in the household with a value below the different thresholds explained above, then the household will be displayed in 'red' – which means that at least one child/woman suffering from Anemia/Stunting/Acute malnutrition in household. In the case of women, an additional 'blue' icon will be shown if there is not any woman of the category of interest in the household.

Based on the information in those columns the tool will create a column: Anemia, Stunting, Acute malnutrition indicating a 1 if there is at least one case of each of the conditions and a 0 if no such case was detected in the household.

Furthermore, it will store the minimum value indicating a condition in that household in the fields called MIN_CHHB, MIN_HAZ and MIN_WHZ.

This information will be accessible in the tool through the popup when clicking on any of the household points on the map.

KEY	uuid:02bd9a5a-3b179302-7eec35805c28
Anemia	1
MIN_CHHB	10.9
Stunting	1
MIN_HAZ	-4.456
Acute_malnutrition	1
MIN_WHZ	-2.265



2. Using the application

Once the data is prepared it can be used in the tool to create a standardized map.



Figure 4: Screenshot of SENS Mapper Tool

After skipping the welcome splash screen, the main window will be ready to start the study. Main elements besides the map are the following (numbering from Figure 4):

1. If you click on the info button at the top of the page some information on how to use the tool will be given.
2. The sidebar will guide you through the process of creating the map step-by-step. Simply follow the instructions below.

💡 It is possible to switch the basemap between the standard Humanitarian OpenStreetMap Team design and the custom UNHCR Camp Mapping design with in-house data, such as water and sanitation infrastructures, administration and security centers, health facilities, etc. (only when they are available).

7 Steps to create the map

1/ Start choosing the module of your interest between Child, Women, WASH and Mosquito Net to unhide the next step

Choose module
none

Upload the CSV File with household coordinates
Seleccionar archivo Ningún archivo cargado
The extent of the map will be set according to the households stored in your data

2/ Continue by loading the household file which contains the coordinates (columns need to contain the word 'Latitude' and 'Longitude') and the uuid-number in a column called 'KEY' or '_index'. Click the 'Choose File' button and browse to the CSV file. Select the file and click 'open'. Please note that XLS file format is not supported.

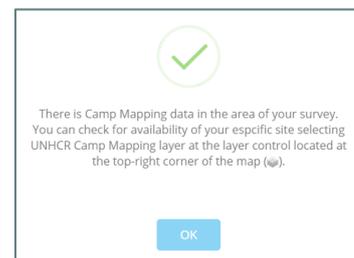
Once the file is loaded, the map will zoom to the location of your households (showing the households as small grey icons) and the name of the file is displayed right next to the 'Choose File' button. In addition, the next step is now activated.

For testing purposes, fake datasets have been enabled for each module. If you do not have a real dataset and you want to try the tool, just click on the "Demo fake dataset" button to load the corresponding one.

💡 If Child or Women modules have been chosen, continue with step 3 to upload the nutrition file. If either WASH or Mosquito Net are chosen, jump directly to step 4. Make sure that required extra columns are available for the latter cases. In case of having loaded fake datasets for Child or Women, go to step 4 as well, since fake nutrition data file is loaded at the same time as household data.

💡 UNHCR Site Mapping basemap

When you select the coordinate file, the app will automatically try to find sites in UNHCR Site Mapping data coinciding with your area of survey and you will be informed by a success message if such data exists.



Choose camp
There are multiple camps in your area of study, please choose one to load its UNHCR Camp Mapping basemap.
Nduta
Nduta
Nyarugusu
Mtendeli

In the case that you are combining survey data from different sites and they have Site Mapping data, a popup will show up to select the one of your interest. UNHCR Site Mapping layer can be activated at any moment from now using the layer control , at the top-right corner of the map.

Once the layer is chosen, Site Mapping-specific tools will appear between the map controls under the UNHCR logo. You will be able to either check its legend or to switch site in case that several are available.



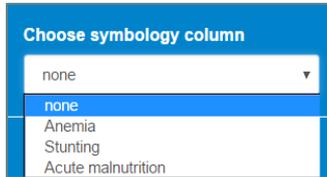
Show Site Mapping Legend

Switch Site

- 3/** Load in the same way the CSV-file containing the nutrition data. Make sure that there is a 'PARENT_KEY' or '_PARENT_INDEX' column referencing the uuid of the household. For the analysis you further need the columns 'CHHB', 'HAZ-WHO' or 'HAZ', 'WHZ-WHO' or 'WHZ' (for children) or 'WMHB' (for women).



Once loaded the next step will be displayed.



- 4/** Now choose the information you want to display: the options available in the menu will depend on the existing columns in uploaded file(s). E.g. if no column 'HAZ' or 'WHO-HAZ' exists in your child nutrition table, then you won't see the choice 'Stunting' in the drop-down menu.

Once an indicator is chosen from the menu, the grey icons on the map will take color and the title bar and the legend will change accordingly. You can still change the symbology by choosing another option from the drop-down menu.

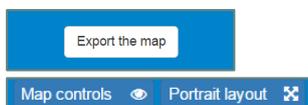


If you want to see more detailed information about a point on the map. Click on that point to open the popup. If you want to zoom in to a certain area of the camp, you can use the zoom-in/-out buttons in the top-right corner of the map or double-click on the map. You can also pan on the map by simply clicking and moving the mouse.

- 5/** In order to improve the title of your map you can now add the camp name and country (or any other additional text you want to display on the map title).



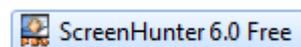
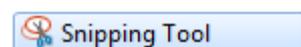
When you click the 'OK' button the information will be added to the map title. You can still change that text by adding new text into the box and clicking the 'OK' button again



- 6/** Once you are happy with the extent, symbology and title of the map, click the 'Export the map' button.

The style of the page will now change to correspond to the standard UNHCR map style. You can still zoom and pan on the map using the map controls on the right or using your mouse-wheel and double-click. You have the possibility to choose between a landscape or a portrait layout by clicking on the corresponding button of the top-bar. Also, you can remove the zoom and layer control tool from the map by clicking on 'Map controls' if you rather not display them

- 7/** Finally take a screenshot of the map to have an image that can be included into your report. For this you can use the Standard Windows 'Snipping Tool' (included with all Windows Systems) or any other screenshot tool you might have downloaded (such as ScreenHunter). You can then paste the image into your document



The final browser-page should look somewhat like the example. Note that, to change the format and size of the map, you can resize your browser window before taking the screenshot.

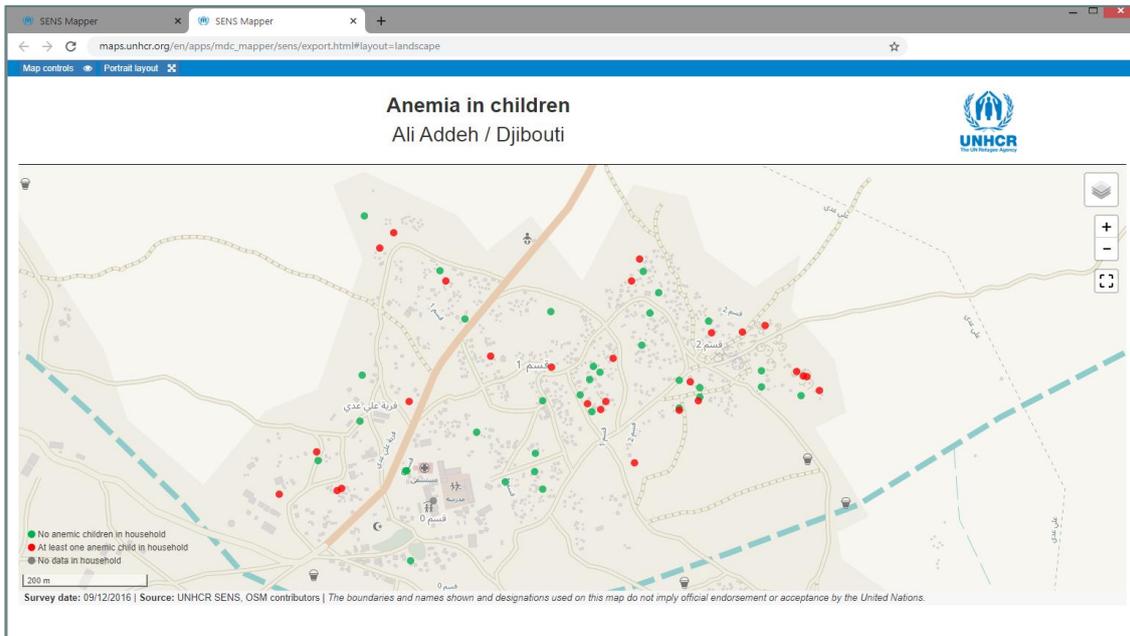
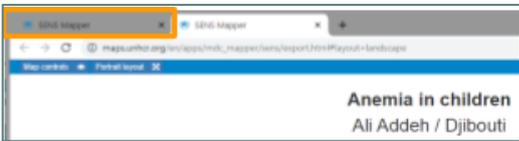


Figure 5: Screenshot of SENS Mapper Tool: final browser-page

3. Debugging

STEP 2	<p>When browsing to the file it doesn't appear in the Explorer Window.</p> <p>You might have selected the wrong format. Make sure to save your table as *.csv.</p> <p>I loaded the file but an Alert Window pops up.</p> <p>Read the message in the alert window carefully. It might give you a hint on what is the problem with your file. Otherwise make sure that the 'KEY' or '_INDEX' column exists and that Latitude and Longitude of the households are specified in the corresponding columns and no column name is used more than once.</p> <p>I loaded the file but it doesn't zoom to the correct location</p> <p>Three possible problems can occur: 1. Latitude and Longitude were switched (if you're unsure try switching the two headers and check it then zooms into the correct location). 2. Coordinates are corrupted: They need to be somewhere between -179.9 and 179.9 (for longitude) and -89.9 and 89.9 (for latitude). 3. The tool uses a wrong column: Make sure the names Latitude/latitude or Longitude/longitude appears in only one column each (anywhere within the column header).</p>
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<p>STEP 3</p>	<p>I loaded the file but an Alert Window pops up.</p> <p>Read the message in the alert window carefully. It might give you a hint on what is the problem with your file. Otherwise make sure that a 'PARENT_KEY' or '_PARENT_INDEX' column exists and that the same uuid number can be found in the KEY/PARENT_KEY column of both files.</p>
<p>STEP 4</p>	<p>The drop-down menu only shows 'none' as an option</p> <p>Verify that you uploaded the right table in Step 2 (or step 3 for Child and Women modules). Make sure they contain module-specific columns (e.g. 'CHHB', 'HAZ-WHO' or 'HAZ', 'WHZ-WHO' or 'WHZ' for Child).</p> <p>For Child and Women verify as well that the data in both CSV files correspond to the same SENS survey and the same uuid numbers can be found in both tables.</p> <p>All the points I uploaded are grey after choosing an indicator</p> <p>This is probably due to a mistake when uploading the second table. It means that all your column names are correct but the uuids from table one have no matches in the second table. Please verify that the table you uploaded corresponds to the same camp and survey.</p> <p>I have a 'CHHB' column in my table but don't get Anemia as a drop-down option</p> <p>Verify that there is not any hidden space in the column header at the beginning or end of the name such as ' CHHB' or 'CHHB '.</p>
<p>STEP 5</p>	<p>I want to have my subtitle in a different style</p> <p>The input accepted in the text field can be simple text but it will also recognize html tags. So if you want the text to be bold you can use 'text' or '<i>text</i>' to be displayed in italics. Add
 if you want to add a line break.</p> 
<p>STEP 6</p>	<p>I want to make further changes to the map</p> <p>The export page is opened in a new tab of your browser. You can therefore go back to SENS Mapper tab and make needed changes. Click again 'Export the map' button to open a new export tab.</p>  <p>If you only want to pan and zoom on the map, you can still do it from the export tab using the map controls on the right and your mouse-wheel, double-click (to zoom) or click drag and drop (to pan).</p>
<p>STEP 7</p>	<p>How to make a screenshot with the Windows snipping tool?</p> <p>Search for 'Snipping Tool' in your Programs (only available on Windows machines) and open it. By default, it is activated when opening to take a screenshot right away. If you want to deactivate it press the ESC key.</p> <p>Click on the small arrow next to 'NEW'. From the drop-down menu select 'Rectangle snip'. Then draw a rectangle over the area you want to include in the screenshot. The screenshot is then saved to the clipboard so you can simply go to your document where you want to add the map (e.g. in MS Word) right-click and choose 'paste' to paste the screenshot into a report.</p>

If you have any inquiries or further questions, please contact info@cartong.org