



GLOBAL TASK FORCE ON
CHOLERA CONTROL

Identification of Priority Areas for Multisectoral Interventions (PAMIs) for cholera elimination

Step-by-step GTFCC tool user guide

2023

INTRODUCTION

- **This step-by-step user guide:**
 - complements the [GTFCC Guidance document on the identification of priority areas for multisectoral interventions \(PAMIs\) for cholera elimination](#)
 - aims to provide **step-by-step guidance** for the identification of PAMIs for cholera elimination using a [GTFCC Excel-based tool](#), which automates calculations
- The intended users of this guide are epidemiologists and data analysts involved in the identification of PAMI.

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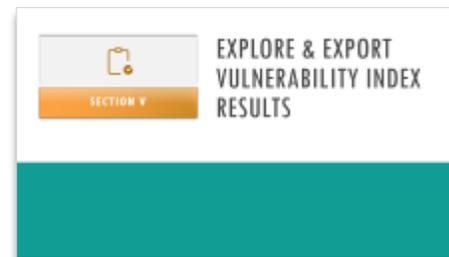
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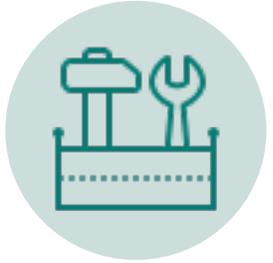
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GENERAL RECOMMENDATIONS

- **It is recommended :**
 - **to make use of** the data template file for **preparation of the data** to ease the upload step in the GTFCC tool following a standardized data model ensuring accurate calculation of the vulnerability index
 - **to start each new analysis with an empty version of the tool**
- GTFCC Excel-based tool used the spreadsheet software Microsoft Excel and works under Windows and macOS operating systems.



REQUIRED MATERIALS

- **Excel based tool** aiming to automate the calculation of the vulnerability index
- **Data template file** to prepare the data following a standardized data model
- **Training data set** corresponds to a fictive dataset for demonstration purpose and for the users to familiarize themselves in the manipulation of the Excel-based tool.

1) Upload in a folder the three files

-  2023-gtfcc-pami-cholera-elimination-excel-tool-en.xlsx
-  2023-gtfcc-pami-cholera-elimination-input-dataset-template-en.xlsx
-  2023-gtfcc-pami-cholera-elimination-training-dataset-en.xlsx

2) Create a copy of the tool and data template for the analysis

- cholera_analysis_PAMI > cholera vulnerability analysis
- | Name | |
|---|--|
|  GTFCC tool _ PAMIs for elimination_ANALYSIS_001.xlsx | |
|  Template for preparing the data _ PAMIs for elimination_ANALYSIS_001.xlsx | |



SECTION I

DATA PREPARATION

STEP 1

Scope : data check list

- Prior to the analysis:
- Verify all items in the check list
- Correct/complete information as needed

Data check list

Items	Yes	No
Period of analysis defined	<input type="checkbox"/>	<input type="checkbox"/>
NCP operational unit level defined	<input type="checkbox"/>	<input type="checkbox"/>
List of NCP operational units (with unique identifiers and names) completed	<input type="checkbox"/>	<input type="checkbox"/>
Population of each NCP operational units compiled (latest population estimates preferable)	<input type="checkbox"/>	<input type="checkbox"/>
Cholera epidemiological data collected and verified: Number of locally acquired cholera cases by NCP operational units and year (for both suspected and confirmed cases)	<input type="checkbox"/>	<input type="checkbox"/>
Cholera epidemiological data collected and verified: Number of imported confirmed cholera cases by NCP operational units and year	<input type="checkbox"/>	<input type="checkbox"/>
Selection of the vulnerability factors and rational for inclusion/exclusion	<input type="checkbox"/>	<input type="checkbox"/>
Measurable indicator defined for each selected vulnerability factor	<input type="checkbox"/>	<input type="checkbox"/>
Data for each measurable indicator collected	<input type="checkbox"/>	<input type="checkbox"/>
Data for each measurable indicators verified: data quality check (source, coverage, check of outliers and missing values ...)	<input type="checkbox"/>	<input type="checkbox"/>

STEP 2.1

Scope : Complete the template with country-specific data

- **Rows:** NCP operational geographic units
- **Columns:** Identifiers, population and measurable indicators

Add NCP geographic identifiers, admin 1 and 2 names

Add population data

Add values of measurable indicators

The screenshot shows an Excel spreadsheet with a table header. The columns are labeled as follows:

unique_id	admin_1	admin_2	population	VF_01_cho1_otbk	VF_02_cho1_import	VF_03_cho1_proximy	VF_04_mov_pathw	VF_05_pop_gathering	VF_06_overcrowded_set	VF_07_high_risk_pop	VF_08_hard_to_acc_risk_pop	VF_09_ovc	VF_10_climate_event	VF_11_comp_humanit_emerg	VF_12_unimprov_water	VF_13_unimprov_sanitat	VF_14_limited_hygen	VF_15_add_factor_1	VF_16_add_factor_2	VF_17_add_factor_3	VF_18_add_factor_4
-----------	---------	---------	------------	-----------------	-------------------	--------------------	-----------------	---------------------	-----------------------	---------------------	----------------------------	-----------	---------------------	--------------------------	----------------------	------------------------	---------------------	--------------------	--------------------	--------------------	--------------------



Do not change the table header (= names of variable) as being automatically recognized in the GTFCC tool

STEP 2.2

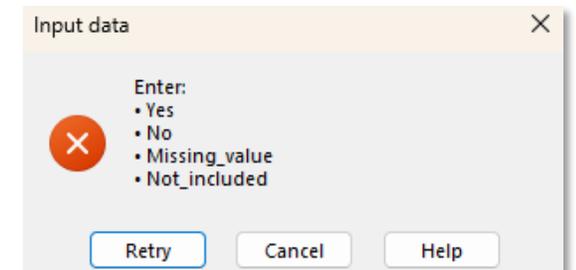
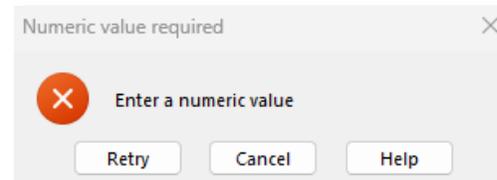
Scope : Complete the template with country-specific data



Follow the data validation rules:

- Population: numeric value only
- Indicator values:
 - Yes
 - No
 - Missing_value
 - Not_included

	A	B	C	D	E	F	G	H	I	J	K	L	M
1				unique_id									
2	district_001	AAAAA	HHHHH	10,780	Yes	No	No	Yes	No			tttt	
3													
4													
5													
6													
7													



STEP 2.3

Scope : Example of data

- Follow data table nomenclature and structure
- VF_15 to VF_18:
 - are placeholder variables to store information for any additional vulnerability factors
 - are tagged as “Not_included” in the training dataset

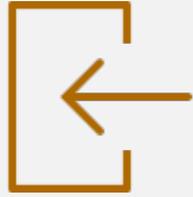
File: 2023-gtfcc-pami-cholera-elimination-training-dataset-en.xlsx

	ufile_id	admin_1	admin_2	population	VF_01_chol_risk	VF_02_chol_impact	VF_03_chol_prevalence	VF_04_mar_pathway	VF_05_pop_gathering	VF_06_water_accessed_saf	VF_07_high_risk_pop	VF_08_lived_in_a_cc_risk_pop	VF_09_age	VF_10_disease_event	VF_11_comp_humana_samba	VF_12_unimproved_water	VF_13_unimproved_sanit	VF_14_unimed_hygiene	VF_15_add_factor_1	VF_16_add_factor_2	VF_17_add_factor_3	VF_18_add_factor_4	
1																							
2	id_005	admin_1_01	admin_2_005	64,393	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
3	id_013	admin_1_02	admin_2_013	121,255	Yes	Yes	No	No	Yes	No	No	No	No	Yes	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
4	id_014	admin_1_02	admin_2_014	37,086	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
5	id_015	admin_1_02	admin_2_015	164,440	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
6	id_022	admin_1_02	admin_2_022	230,397	No	No	Missing_value	No	No	No	No	No	No	No	No	No	Yes	No	No	Not_included	Not_included	Not_included	Not_included
7	id_025	admin_1_02	admin_2_025	253,927	Yes	No	No	Yes	No	No	Yes	No	No	No	Yes	No	No	No	No	Not_included	Not_included	Not_included	Not_included
8	id_028	admin_1_02	admin_2_028	169,610	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
9	id_030	admin_1_02	admin_2_030	119,295	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
10	id_033	admin_1_02	admin_2_033	223,118	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
11	id_035	admin_1_02	admin_2_035	317,110	No	Yes	Missing_value	No	Yes	No	No	No	No	Missing_value	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
12	id_038	admin_1_02	admin_2_038	283,342	Yes	No	No	No	No	No	No	Yes	No	Yes	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
13	id_039	admin_1_02	admin_2_039	161,100	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	Not_included	Not_included	Not_included	Not_included
14	id_048	admin_1_03	admin_2_048	166,895	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	No	No	No	Not_included	Not_included	Not_included	Not_included
15	id_051	admin_1_03	admin_2_051	369,869	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	No	No	Yes	No	Not_included	Not_included	Not_included	Not_included
16	id_053	admin_1_04	admin_2_053	200,425	No	No	Missing_value	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Not_included	Not_included	Not_included	Not_included
17	id_054	admin_1_04	admin_2_054	176,323	No	No	No	No	Yes	No	No	Yes	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
18	id_055	admin_1_04	admin_2_055	374,440	No	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
19	id_058	admin_1_04	admin_2_058	227,349	No	No	No	No	Yes	No	No	No	No	Yes	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
20	id_065	admin_1_04	admin_2_065	111,409	No	Yes	No	No	Yes	Yes	Yes	No	No	No	Yes	No	No	No	No	Not_included	Not_included	Not_included	Not_included
21	id_066	admin_1_04	admin_2_066	162,852	No	No	No	No	No	No	No	No	No	Yes	No	No	Yes	No	No	Not_included	Not_included	Not_included	Not_included
22	id_067	admin_1_04	admin_2_067	122,772	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No	No	Not_included	Not_included	Not_included	Not_included
23	id_070	admin_1_04	admin_2_070	260,209	No	No	No	No	No	No	No	No	No	No	No	Yes	No	Yes	No	Not_included	Not_included	Not_included	Not_included
24	id_073	admin_1_05	admin_2_073	212,029	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
25	id_074	admin_1_05	admin_2_074	219,337	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes	No	No	Not_included	Not_included	Not_included	Not_included
26	id_088	admin_1_06	admin_2_088	441,446	No	No	Missing_value	No	No	No	Missing_value	No	No	Missing_value	Missing_value	Missing_value	Missing_value	Missing_value	Missing_value	Not_included	Not_included	Not_included	Not_included



Note that the training dataset does contain missing data for the sake of example. **It is recommended only to import dataset without missing data to avoid bias in the vulnerability index calculation.**

For more information, see section [“Missing data management”](#) in the guidance and FAQs section below.



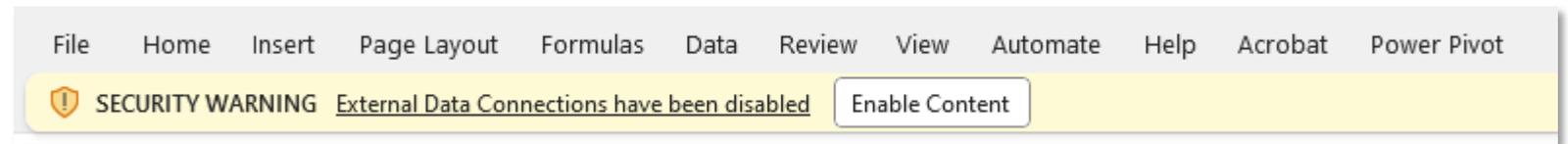
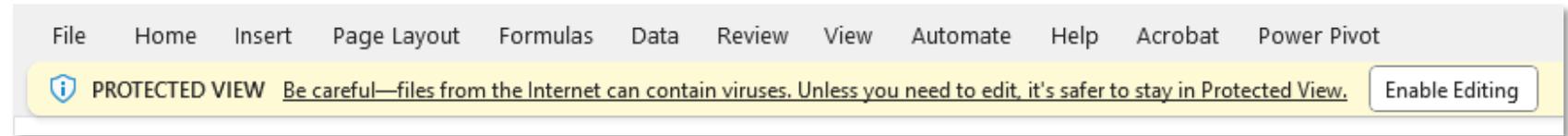
SECTION II

IMPORT THE DATA IN THE GTFCC TOOL

STEP 3.1

Scope : Open GTFCC tool

- Open GTFCC tool
- The Policy Tips in the message bar is prompted by default
- Click “Enable Editing” and “Enable content” to open the tool in Editing Mode



STEP 3.2

Scope : Open GTFCC tool

- Open GTFCC tool
- Select tab: **Information**
- Overview of available resources
- Check “**instruction summary**” for instructions about how to use the tool

File Home Insert Page Layout Formulas Data Review View Automate Help Acrobat Power Pivot

 GLOBAL TASK FORCE ON
CHOLERA CONTROL

GTFCC Excel-based tool for the Identification of priority areas for multisectoral interventions for cholera elimination

Hyperlinks

This GTFCC Excel-based tool aims to automatize the calculation of the indicators and cholera vulnerability index for the **identification of priority areas for multisectoral interventions (PAMIs)** for cholera elimination as described in the GTFCC Interim Guidance (2023) available at: [Identification of priority areas for multisectoral interventions for cholera elimination](#)

This tool should be jointly used with the **User guide**: [User guide PAMI for cholera elimination Excel-based tool](#)

This user guide comes along with a **data set template** for data preparation prior to import the data set into in the GTFCC Excel-based tool: [Data input template](#)

A **training dataset** to help users familiarize themselves in the manipulation of the GTFCC Excel-based tool is available at: [Training dataset](#)

Contact: gtfccsecretariat@who.int

Overview

The tool is organized with six sheets from left to right:

Information presents the tool and relevant documents.
→ **Data input table** corresponds to the data import sheet for input dataset prepared for the analysis according to the data template.
→ **Factor selection** allows user to select the contribution and set the weight (if applicable) for each vulnerability indicator for the index calculation.

R.1| Vulnera. index calculation provides automated calculations of number of missing data and vulnerability index.
R.2| Vulnera. index summary contains a pivot table with the key parameters stratified by vulnerability index values.
R.3| Missing data overview presents the frequency of missing values by vulnerability factors.
R.4| Table PAMIs export corresponds to the data of **R.1| Priority index calculation** available for data exploration (sort/filter) and can be exported for further mapping and analysis.

Instruction summary

It is recommended to always use an empty input dataset template and an empty GTFCC Excel-based tool for each new analysis.

To compute the priority index, the major steps are the following:

- 1 Import the input dataset into the → **Data input table** tab. The data should be prepared using the **2023-gtfcc-pami-cholera-elimination-input-dataset-template-en.xlsx** file. The dataset structure and the names of variables should strictly follow the nomenclature described in the user guide.
- 2 Update measurable indicator definition(s) for each vulnerability factor(s) as needed in the → **Factor selection** tab. Select relative weight (if applicable) and contribution of each vulnerability factor into the calculation of the vulnerability index.
- 3 Compute automatically the vulnerability index for all NCP operational geographic units selecting the range of data input in **R.1| Vulnera. index calculation** tab.
- 4 Consult the results and the summary table by refreshing the entire workbook by pressing **Ctrl + Alt + F5**. Check missing values in **R.3| Missing data overview** tab, and complete imported data as needed (see guidance and user guide for the recommendations about the management of missing information).
- 5 Export the vulnerability factor information and vulnerability index values using the datatable available in **R.4| Table PAMIs export** tab.

Detailed instructions are available in the User guide.
The User guide aims to provide users with step-by-step guidance for the identification of PAMIs for cholera elimination, in particular explanations on how to use the GTFCC Excel-based tool. This document is intended for epidemiologists and data analysts who participate in cholera surveillance and identification of PAMIs.

< > **Information** → Data input table → Factor selection **R.1| Vulnera. index calculation** **R.2| Vulnera. index summary** **R.3| Missing data overview** **R.4| Table PAMIs export** +



STEP 4.1

Scope : Import data

- Open first the second tab:

→ Data input table

The screenshot displays the Microsoft Excel interface. The ribbon at the top includes 'File', 'Home', 'Insert', 'Page Layout', 'Formulas', 'Data', 'Review', 'View', 'Automate', 'Help', 'Acrobat', 'Power Pivot', and 'Table Design'. The main grid shows columns A through U and rows 1 through 44. Cell A1 contains the text 'Paste data here (as values only)'. At the bottom, the task pane is visible with several tabs: 'Information', '→ Data input table', '→ Factor selection', 'R.1| Vulnera. index calculation', 'R.2| Vulnera. index summary', 'R.3| Missing data overview', and 'R.4| Table PAMIs export'. The '→ Data input table' tab is highlighted with a yellow background.



STEP 4.3

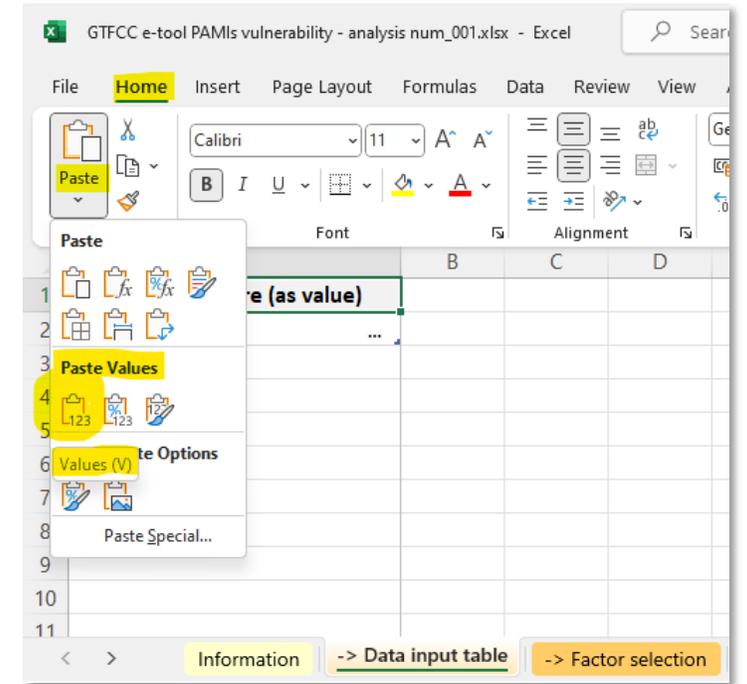
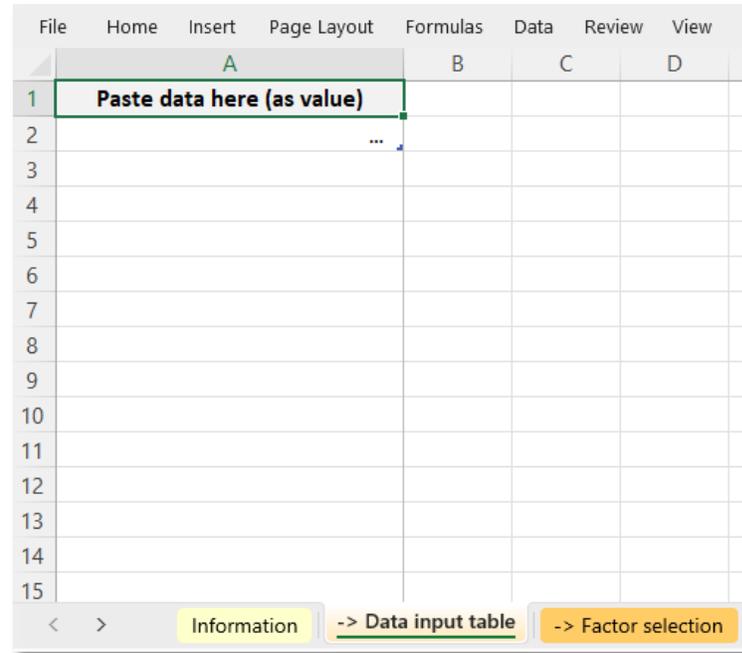
Scope : Paste data into the tool

- Paste the dataset as value in

→ Data input table

- Paste in A1 cell as “Values (V)” under Home >> Paste >> Paste Values >> “123”

Paste Values



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	unique_id	admin_1	admin_2	tgt_population	FV_01_chol_epid	FV_02_chol_import	FV_03_pov_zone_chelera	FV_04_votes_com_mal	FV_05_rasamb_ppopul	FV_06_zone_surpeupl	FV_07_ppp_spec_risk	FV_08_ppp_access_diff	FV_09_vacc_surp_3_ans	FV_10_climate_ev	FV_11_urgence_hum_comp	FV_12_EHA_ind_eau	FV_13_EHA_ind_sassain	FV_14_EHA_ind_hygiene	FV_15_facteur_add_1	FV_16_facteur_add_2	FV_17_facteur_add_3	FV_18_facteur_add_4	
2	id_005	admin_1_01	admin_2_0C	64393	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Exclu	Exclu	Exclu	Exclu	
3	id_013	admin_1_02	admin_2_01	121255	Oui	Non	Non	Non	Oui	Non	Non	Non	Non	Non	Non	Non	Non	Oui	Non	Exclu	Exclu	Exclu	Exclu
4	id_014	admin_1_02	admin_2_01	37086	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Exclu	Exclu	Exclu	Exclu
5	id_015	admin_1_02	admin_2_01	164440	Non	Non	Oui	Oui	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Exclu	Exclu	Exclu	Exclu
6	id_022	admin_1_02	admin_2_02	290397	Non	Non	Valeur_man	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Oui	Non	Exclu	Exclu	Exclu	Exclu
7	id_025	admin_1_02	admin_2_02	253927	Oui	Non	Non	Oui	Non	Non	Oui	Non	Non	Non	Non	Non	Non	Non	Non	Exclu	Exclu	Exclu	Exclu
8	id_028	admin_1_02	admin_2_02	169610	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Exclu	Exclu	Exclu	Exclu
9	id_030	admin_1_02	admin_2_03	119295	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Exclu	Exclu	Exclu	Exclu
10	id_033	admin_1_02	admin_2_03	223118	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Exclu	Exclu	Exclu	Exclu
11	id_035	admin_1_02	admin_2_03	317110	Non	Oui	Valeur_man	Non	Oui	Non	Non	Non	Non	Valeur_man	Non	Non	Non	Non	Non	Exclu	Exclu	Exclu	Exclu
12	id_038	admin_1_02	admin_2_03	283942	Oui	Non	Non	Non	Non	Non	Non	Non	Oui	Non	Oui	Non	Non	Non	Non	Exclu	Exclu	Exclu	Exclu
13	id_039	admin_1_02	admin_2_03	161100	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Non	Oui	Non	Non	Non	Exclu	Exclu	Exclu	Exclu



SECTION III

VULNERABILITY INDEX CALCULATION SETTINGS

STEP 5.1

Scope : Manage vulnerability index calculation settings

▪ **Open tab:** → Factor selection

▪ **The tab contains several panels**

- The indicative list of **vulnerability factors**
- The definition of each **measurable indicator**
- A panel for setting the **weight** of each factor for the index calculation if applicable
- **Factor selection** panel

List of vulnerability factors

List of measurable indicators & variable names

Weight in the index calculation (if applicable)

Factor selection for index calculation

List of the country-specific vulnerability factors	Update measurable indicator definition		Set the indicator relative weight (if applicable)	Select factors for the vulnerability index calculation
	- Outcome of each measurable indicator is expected to be "Yes"/"No"	- Do not modify the variable names	- By default, unweighted sum corresponds to weight value of 1 - Numeric weight can be modified by the user (e.g., 2, 4, ...)	- Use the drop menu to select vulnerability factors to be included in the vulnerability index calculation (except for "Confirmed cholera outbreak(s) over the analysis period" already added by default)
Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Confirmed cholera outbreak(s) over the analysis period	NCP unit with at least one confirmed cholera outbreak reported over the past five year/analysis period	VF_01_chol_otbk	Not applicable	If "YES", NCP geo. unit is a PAMI
Confirmed cholera imported case(s) in the NCP operational geographic unit considered	NCP unit with at least one confirmed cholera case imported (from another country or another NCP operational geographic unit reported during the analysis period)	VF_02_chol_import	1	Included in the vulnerability index
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighbouring country(ies)	Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighbouring countries	VF_03_chol_proximity	1	Included in the vulnerability index
Location along major travel routes with transportation hubs	NCP unit located along transportation pathway(s) with transportation hub(s)	VF_04_mov_pathw	1	Included in the vulnerability index
Major population gatherings	NCP unit hosting major population gathering(s)	VF_05_pop_gathering	1	Included in the vulnerability index
High population density locations or overcrowded settings	NCP unit with high population density or overcrowded settings	VF_06_overcrowded_set	1	Included in the vulnerability index
High-risk populations	NCP unit with high-risk population	VF_07_high_risk_pop	1	Included in the vulnerability index
Hard-to-access populations	NCP unit with hard-to-access population	VF_08_hard_to_acc_risk_pop	1	Included in the vulnerability index
Population that received oral cholera vaccine (OCV) more than three years ago	NCP unit with a population vaccinated more than three years ago (two-doses OCV campaign with a coverage for both round >70%)	VF_09_ovc	1	Included in the vulnerability index
High-risk for extreme climate and weather conditions	NCP unit exposed to extreme climate and weather conditions	VF_10_climate_event	1	Included in the vulnerability index
Complex humanitarian emergency	NCP unit located in an area under a complex humanitarian emergency	VF_11_comp_humanit_emerg	1	Included in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Additionalnal country-specific cholera vulnerability factor (1)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_15_add_factor_1	1	Excluded from the vulnerability index
Additionalnal country-specific cholera vulnerability factor (2)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_16_add_factor_2	1	Excluded from the vulnerability index
Additionalnal country-specific cholera vulnerability factor (3)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additionalnal country-specific cholera vulnerability factor (4)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_18_add_factor_4	1	Excluded from the vulnerability index



STEP 5.2

Scope : Update definition of any additional country-specific vulnerability factor (if applicable)

- Check the list of vulnerability factors
- Update measurable indicator definition(s) for the additional vulnerability factor(s)

File Home Insert Page Layout Formulas Data Review View Automate Help Acrobat Power Pivot

List of the country-specific vulnerability factors

Update measurable indicator definition

- Outcome of each measurable indicator is expected to be "Yes"/"No"

- Do not modify the variable names

Set the indicator relative weight (if applicable)

- By default, unweighted sum corresponds to weight value of 1

- Numeric weight can be modified by the user (e.g., 2, 4, ...)

Select factors for the vulnerability index calculation

- Use the drop menu to select vulnerability factors to be included in the vulnerability index calculation (except for "Confirmed cholera outbreak(s) over the analysis period" already added by default)

Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Confirmed cholera outbreak(s) over the analysis period	NCP unit with at least one confirmed cholera outbreak reported over the past five year/analysis period	VF_01_cho_otbtk	Not applicable	If "YES", NCP geo. unit is a PAMI
Confirmed cholera imported case(s) in the NCP operational geographic unit considered	NCP unit with at least one confirmed cholera case imported (from another country or another NCP operational geographic unit reported during the analysis period)	VF_02_cho_import	1	Included in the vulnerability index
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighbouring country(ies)	Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighbouring countries	VF_03_cho_proximity	1	Included in the vulnerability index
Location along major travel routes with transportation hubs	NCP unit located along transportation pathway(s) with transportation hub(s)	VF_04_mov_pathw	1	Included in the vulnerability index
Major population gatherings	NCP unit hosting major population gathering(s)	VF_05_pop_gathering	1	Included in the vulnerability index
High population density locations or overcrowded settings	NCP unit with high population density or overcrowded settings	VF_06_overcrowded_set	1	Included in the vulnerability index
High-risk populations	NCP unit with high-risk population	VF_07_high_risk_pop	1	Included in the vulnerability index
Hard-to-access populations	NCP unit with hard-to-access population	VF_08_hard_to_acc_risk_pop	1	Included in the vulnerability index
Population that received oral cholera vaccine (OCV) more than three years ago	NCP unit with a population vaccinated more than three years ago (two-doses OCV campaign with a coverage for both round >70%)	VF_09_ocv	1	Included in the vulnerability index
High-risk for extreme climate and weather conditions	NCP unit exposed to extreme climate and weather conditions	VF_10_climate_event	1	Included in the vulnerability index
Complex humanitarian emergency	NCP unit located in an area under a complex humanitarian emergency	VF_11_comp_humanit_emerg	1	Included in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Additional country-specific cholera vulnerability factor (1)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_15_add_factor_1	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (2)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_16_add_factor_2	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (3)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (4)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_18_add_factor_4	1	Excluded from the vulnerability index

Information
-> Data input table
-> Factor selection
R.1| Vulnera. index calculation
R.2| Vulnera. index summary
R.3| Missing data overview
R.4| Table PAMIs export
+

Update vulnerability factor and measurable indicator definition(s) as needed

STEP 5.3

Scope : Check information

- The variable names are predefined and cannot be edited by the user.
- The corresponding cells are locked for editing.

File Home Insert Page Layout Formulas Data Review View Automate Help Acrobat Power Pivot

List of the country-specific vulnerability factors

Update measurable indicator definition

Set the indicator relative weight (if applicable)

Select factors for the vulnerability index calculation

Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Confirmed cholera outbreak(s) over the analysis period	NCP unit with at least one confirmed cholera outbreak reported over the past five year/analysis period	VF_01_cho_otbtk	Not applicable	If "YES", NCP geo. unit is a PAMI
Confirmed cholera imported case(s) in the NCP operational geographic unit considered	NCP unit with at least one confirmed cholera case imported (from another country or another NCP operational geographic unit reported during the analysis period)	VF_02_cho_import	1	Included in the vulnerability index
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighbouring country(ies)	Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighbouring countries	VF_03_cho_proximity	1	Included in the vulnerability index
Location along major travel routes with transportation hubs	NCP unit located along transportation pathway(s) with transportation hub(s)	VF_04_mov_pathw	1	Included in the vulnerability index
Major population gatherings	NCP unit hosting major population gathering(s)	VF_05_pop_gathering	1	Included in the vulnerability index
High population density locations or overcrowded settings	NCP unit with high population density or overcrowded settings	VF_06_overcrowded_set	1	Included in the vulnerability index
High-risk populations	NCP unit with high-risk population	VF_07_high_risk_pop	1	Included in the vulnerability index
Hard-to-access populations	NCP unit with hard-to-access population	VF_08_hard_to_acc_risk_pop	1	Included in the vulnerability index
Population that received oral cholera vaccine (OCV) more than three years ago	NCP unit with a population vaccinated more than three years ago (two-doses OCV campaign with a coverage for both round >70%)	VF_09_ocv	1	Included in the vulnerability index
High-risk for extreme climate and weather conditions	NCP unit exposed to extreme climate and weather conditions	VF_10_climate_event	1	Included in the vulnerability index
Complex humanitarian emergency	NCP unit located in an area under a complex humanitarian emergency	VF_11_comp_humanit_emerg	1	Included in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Additionalnal country-specific cholera vulnerability factor (1)	To be completed if additionalnal cholera country-specific factor are selected: "NCP unit with ..."	VF_15_add_factor_1	1	Excluded from the vulnerability index
Additionalnal country-specific cholera vulnerability factor (2)	To be completed if additionalnal cholera country-specific factor are selected: "NCP unit with ..."	VF_16_add_factor_2	1	Excluded from the vulnerability index
Additionalnal country-specific cholera vulnerability factor (3)	To be completed if additionalnal cholera country-specific factor are selected: "NCP unit with ..."	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additionalnal country-specific cholera vulnerability factor (4)	To be completed if additionalnal cholera country-specific factor are selected: "NCP unit with ..."	VF_18_add_factor_4	1	Excluded from the vulnerability index

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>
Information
-> Data input table
-> Factor selection
R.1| Vulnera. index calculation
R.2| Vulnera. index summary
R.3| Missing data overview
R.4| Table PAMIs export
+

List of variable names

STEP 5.4

Scope : Set weight (optional)

- Default settings for vulnerability index calculation:
 - Unweighted sum
 - For all selected vulnerability factor, default value of weight equal to 1
 - Optional: possible to manually increase/decrease the weight according to stakeholders' decision

File Home Insert Page Layout Formulas Data Review View Automate Help Acrobat Power Pivot

List of the country-specific vulnerability factors

Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Confirmed cholera outbreak(s) over the analysis period	NCP unit with at least one confirmed cholera outbreak reported over the past five year/analysis period	VF_01_chol_otbtk	Not applicable	If "YES", NCP geo. unit is a PAMI
Confirmed cholera imported case(s) in the NCP operational geographic unit considered	NCP unit with at least one confirmed cholera case imported (from another country or another NCP operational geographic unit reported during the analysis period)	VF_02_chol_import	1	Included in the vulnerability index
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighbouring country(ies)	Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighbouring countries	VF_03_chol_proximity	1	Included in the vulnerability index
Location along major travel routes with transportation hubs	NCP unit located along transportation pathway(s) with transportation hub(s)	VF_04_mov_pathw	1	Included in the vulnerability index
Major population gatherings	NCP unit hosting major population gathering(s)	VF_05_pop_gathering	1	Included in the vulnerability index
High population density locations or overcrowded settings	NCP unit with high population density or overcrowded settings	VF_06_overcrowded_set	1	Included in the vulnerability index
High-risk populations	NCP unit with high-risk population	VF_07_high_risk_pop	1	Included in the vulnerability index
Hard-to-access populations	NCP unit with hard-to-access population	VF_08_hard_to_acc_risk_pop	1	Included in the vulnerability index
Population that received oral cholera vaccine (OCV) more than three years ago	NCP unit with a population vaccinated more than three years ago (two-doses OCV campaign with a coverage for both round >70%)	VF_09_ocv	1	Included in the vulnerability index
High-risk for extreme climate and weather conditions	NCP unit exposed to extreme climate and weather conditions	VF_10_climate_event	1	Included in the vulnerability index
Complex humanitarian emergency	NCP unit located in an area under a complex humanitarian emergency	VF_11_comp_humanit_emerg	1	Included in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Additional country-specific cholera vulnerability factor (1)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_15_add_factor_1	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (2)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_16_add_factor_2	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (3)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (4)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_18_add_factor_4	1	Excluded from the vulnerability index

Update measurable indicator definition

- Outcome of each measurable indicator is expected to be "Yes"/"No"

- Do not modify the variable names

Set the indicator relative weight (if applicable)

- By default, unweighted sum corresponds to weight value of 1

- Numeric weight can be modified by the user (e.g., 2, 4, ...)

Select factors for the vulnerability index calculation

- Use the drop menu to select vulnerability factors to be included in the vulnerability index calculation (except for "Confirmed cholera outbreak(s) over the analysis period" already added by default)

Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Confirmed cholera outbreak(s) over the analysis period	NCP unit with at least one confirmed cholera outbreak reported over the past five year/analysis period	VF_01_chol_otbtk	Not applicable	If "YES", NCP geo. unit is a PAMI
Confirmed cholera imported case(s) in the NCP operational geographic unit considered	NCP unit with at least one confirmed cholera case imported (from another country or another NCP operational geographic unit reported during the analysis period)	VF_02_chol_import	1	Included in the vulnerability index
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighbouring country(ies)	Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighbouring countries	VF_03_chol_proximity	1	Included in the vulnerability index
Location along major travel routes with transportation hubs	NCP unit located along transportation pathway(s) with transportation hub(s)	VF_04_mov_pathw	1	Included in the vulnerability index
Major population gatherings	NCP unit hosting major population gathering(s)	VF_05_pop_gathering	1	Included in the vulnerability index
High population density locations or overcrowded settings	NCP unit with high population density or overcrowded settings	VF_06_overcrowded_set	1	Included in the vulnerability index
High-risk populations	NCP unit with high-risk population	VF_07_high_risk_pop	1	Included in the vulnerability index
Hard-to-access populations	NCP unit with hard-to-access population	VF_08_hard_to_acc_risk_pop	1	Included in the vulnerability index
Population that received oral cholera vaccine (OCV) more than three years ago	NCP unit with a population vaccinated more than three years ago (two-doses OCV campaign with a coverage for both round >70%)	VF_09_ocv	1	Included in the vulnerability index
High-risk for extreme climate and weather conditions	NCP unit exposed to extreme climate and weather conditions	VF_10_climate_event	1	Included in the vulnerability index
Complex humanitarian emergency	NCP unit located in an area under a complex humanitarian emergency	VF_11_comp_humanit_emerg	1	Included in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Additional country-specific cholera vulnerability factor (1)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_15_add_factor_1	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (2)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_16_add_factor_2	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (3)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (4)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_18_add_factor_4	1	Excluded from the vulnerability index

< >
Information
-> Data input table
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+

Manually change numeric value in the corresponding cell

Indicator weight
No applicable
3
1
2

Optional: Set weight in the calculation of the vulnerability index

STEP 5.5

Scope : Select vulnerability factors

- Use to the dropdown menu for the inclusion/exclusion of vulnerability factor(s) into the calculation of the vulnerability index as relevant in the country specific context
- Useful feature to perform a sensibility analysis of index values with different sets of vulnerability factors

Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Confirmed cholera outbreak(s) over the analysis period	NCP unit with at least one confirmed cholera outbreak reported over the past five year/analysis period	VF_01_chol_otbk	Not applicable	If "YES", NCP geo. unit is a PAMI
Confirmed cholera imported case(s) in the NCP operational geographic unit considered	NCP unit with at least one confirmed cholera case imported (from another country or another NCP operational geographic unit reported during the analysis period)	VF_02_chol_import	1	Included in the vulnerability index
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighbouring country(ies)	Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighbouring countries	VF_03_chol_proximity	1	Included in the vulnerability index
Location along major travel routes with transportation hubs	NCP unit located along transportation pathway(s) with transportation hub(s)	VF_04_mov_pathw	1	Included in the vulnerability index
Major population gatherings	NCP unit hosting major population gathering(s)	VF_05_pop_gathering	1	Included in the vulnerability index
High population density locations or overcrowded settings	NCP unit with high population density or overcrowded settings	VF_06_overcrowded_set	1	Included in the vulnerability index
High-risk populations	NCP unit with high-risk population	VF_07_high_risk_pop	1	Included in the vulnerability index
Hard-to-access populations	NCP unit with hard-to-access population	VF_08_hard_to_acc_risk_pop	1	Included in the vulnerability index
Population that received oral cholera vaccine (OCV) more than three years ago	NCP unit with a population vaccinated more than three years ago (two-doses OCV campaign with a coverage for both round >70%)	VF_09_ocv	1	Included in the vulnerability index
High-risk for extreme climate and weather conditions	NCP unit exposed to extreme climate and weather conditions	VF_10_climate_event	1	Included in the vulnerability index
Complex humanitarian emergency	NCP unit located in an area under a complex humanitarian emergency	VF_11_comp_humanit_emerg	1	Included in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Additionalnal country-specific cholera vulnerability factor (1)	To be completed if additionalnal cholera country-specific factor are selected: "NCP unit with ..."	VF_15_add_factor_1	1	Excluded from the vulnerability index
Additionalnal country-specific cholera vulnerability factor (2)	To be completed if additionalnal cholera country-specific factor are selected: "NCP unit with ..."	VF_16_add_factor_2	1	Excluded from the vulnerability index
Additionalnal country-specific cholera vulnerability factor (3)	To be completed if additionalnal cholera country-specific factor are selected: "NCP unit with ..."	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additionalnal country-specific cholera vulnerability factor (4)	To be completed if additionalnal cholera country-specific factor are selected: "NCP unit with ..."	VF_18_add_factor_4	1	Excluded from the vulnerability index

Included in the vulnerability index

Included in the vulnerability index

Excluded from the vulnerability index

Change selection using dropdown menu option

Vulnerability factor selection



SECTION IV

CALCULATE VULNERABILITY INDEX

STEP 6.1

Scope : Calculate vulnerability index

- Open tab: **R.1| Vulnera. index calculation**
- To expand the calculation to all NCP operational geographic units across the entire input dataset range contained in the “Data input table”, **first select the entire first row (from cell A2 to X2)**

Row num. 2 already contains an automated calculation of the priority index

	unique_id	admin_1	admin_2	pop	VF_01_chol_dbtk	VF_02_chol_import	VF_03_chol_proximity	VF_04_mov_pathw	VF_05_pop_gathering	VF_06_overcrowded_set	VF_07_high_risk_pop	VF_08_hard_to_acc_risk_pop	VF_09_ocv	VF_10_climate_event	VF_11_comp_humanit_emerg	VF_12_unimprov_water	VF_13_unimprov_sanitat	VF_14_limited_hygien	VF_15_add_factor_1	VF_16_add_factor_2	VF_17_add_factor_3	VF_18_add_factor_4	Number_of_missing_values	Priority_Index
1	id_005	admin_1_01	admin_2_005	64393	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included	0	0	

	unique_id	admin_1	admin_2	pop	VF_01_chol_dbtk	VF_02_chol_import	VF_03_chol_proximity	VF_04_mov_pathw	VF_05_pop_gathering	VF_06_overcrowded_set	VF_07_high_risk_pop	VF_08_hard_to_acc_risk_pop	VF_09_ocv	VF_10_climate_event	VF_11_comp_humanit_emerg	VF_12_unimprov_water	VF_13_unimprov_sanitat	VF_14_limited_hygien	VF_15_add_factor_1	VF_16_add_factor_2	VF_17_add_factor_3	VF_18_add_factor_4	Number_of_missing_values	Priority_Index
1	id_005	admin_1_01	admin_2_005	64393	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included	0	0		



Do not change the table header names and formulas

STEP 6.2

Scope : Calculate vulnerability index

- Select the bottom right corner of the cell “X2”
- Place the mouse on the **green mark (green handle)** and maintain left click
- Then, **drag the selection maintaining left click down** to fill the formulas **until all NCP operational geographic units of the input dataset are included in the data table**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2	id_005	admin_1_01	admin_2_005	64393	No	Not_included	Not_included	Not_included	Not_included	0	0															
3																										
4																										
5																										



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2	id_005	admin_1_01	admin_2_005	64393	No	Not_included	Not_included	Not_included	Not_included	0	0															
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										
13																										



STEP 6.4

Scope : Interpret vulnerability index

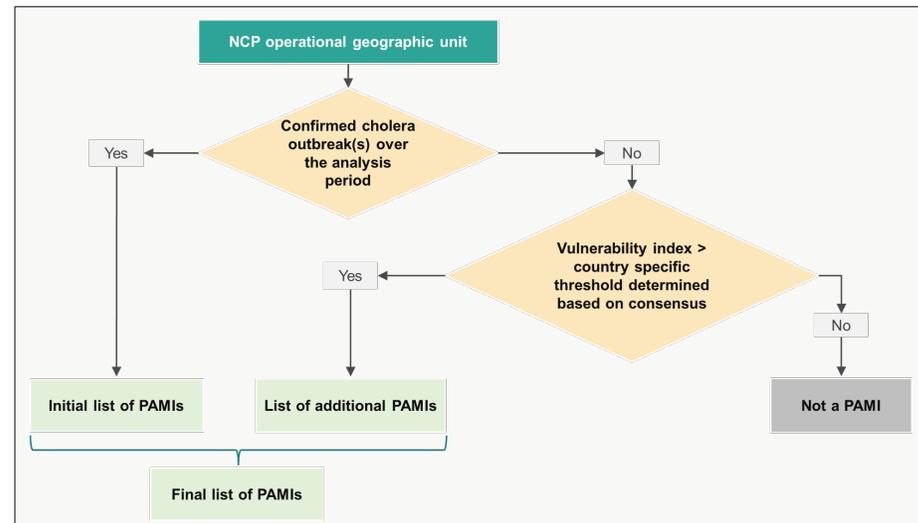
According to PAMI classification algorithm :

Id_014: All factors = “No” ⇒ index value = 0 ⇒ **Not a PAMI**

Id_038: NCP unit with at least one confirmed cholera outbreak reported over the past five year = “Yes” ⇒ index value = **PAMI**

Id_055: Five factors = “Yes” ⇒ index value = 5 ⇒ **check index threshold to classify as PAMI or not**

PAMI classification algorithm



	unique_id	admin_1	admin_2	pop	VF_01_chol_atbk	VF_02_chol_import	VF_03_chol_proximity	VF_04_mov_pathw	VF_05_pop_gathering	VF_06_overcrowded_set	VF_07_high_risk_pop	VF_08_hard_to_acc_risk_pop	VF_09_ovc	VF_10_climate_event	VF_11_comp_humanit_emerg	VF_12_unimpr ov_water	VF_13_unimpr ov_sanitat	VF_14_limited_hygen	VF_15_add_factor_1	VF_16_add_factor_2	VF_17_add_factor_3	VF_18_add_factor_4	Number_of_missing_values	Priority_index
1	id_005	admin_1_01	admin_2_005	64393	No	No	No	No	No	No	No	No	No	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	0
2	id_013	admin_1_02	admin_2_013	1E+05	Yes	Yes	No	No	Yes	No	Yes	No	No	Yes	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	Initial PAMI
3	id_014	admin_1_02	admin_2_014	37086	No	No	No	No	No	No	No	No	No	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	0
4	id_015	admin_1_02	admin_2_015	2E+05	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	2	0	2
5	id_022	admin_1_02	admin_2_022	3E+05	No	No	missing_valu	No	No	No	No	No	No	No	No	Yes	lot_includelot_includelot_includelot_include	0	1	1	0	0	1	
6	id_025	admin_1_02	admin_2_025	3E+05	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	Initial PAMI
7	id_028	admin_1_02	admin_2_028	2E+05	No	No	No	No	No	No	No	No	No	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	0
8	id_030	admin_1_02	admin_2_030	1E+05	No	No	No	No	No	No	No	No	No	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	0
9	id_033	admin_1_02	admin_2_033	2E+05	No	No	No	No	No	No	No	No	No	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	0
10	id_035	admin_1_02	admin_2_035	3E+05	No	Yes	missing_valu	No	Yes	No	Yes	No	missing_valu	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	2	3	0	3
11	id_038	admin_1_02	admin_2_038	3E+05	Yes	No	No	No	No	No	Yes	No	Yes	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	Initial PAMI
12	id_039	admin_1_02	admin_2_039	2E+05	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	lot_includelot_includelot_includelot_include	0	0	1	0	1
13	id_048	admin_1_03	admin_2_048	2E+05	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	Initial PAMI
14	id_051	admin_1_03	admin_2_051	4E+05	No	Yes	missing_valu	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	lot_includelot_includelot_includelot_include	0	0	0	0	8	
15	id_053	admin_1_04	admin_2_053	2E+05	No	No	missing_valu	No	Yes	No	Yes	No	Yes	No	No	No	Yes	lot_includelot_includelot_includelot_include	0	1	4	0	4	
16	id_054	admin_1_04	admin_2_054	2E+05	No	No	No	No	Yes	No	Yes	No	No	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	3	0	3
17	id_055	admin_1_04	admin_2_055	4E+05	No	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	5	0	5
18	id_058	admin_1_04	admin_2_058	2E+05	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	3	0	3
19	id_065	admin_1_04	admin_2_065	1E+05	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	5	0	5
20	id_066	admin_1_04	admin_2_066	2E+05	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	lot_includelot_includelot_includelot_include	0	0	1	0	1
21	id_067	admin_1_04	admin_2_067	1E+05	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	No	No	No	No	lot_includelot_includelot_includelot_include	0	0	0	0	Initial PAMI



SECTION V

EXPLORE & EXPORT VULNERABILITY INDEX RESULTS

STEP 7

Scope : Refresh Data and Pivot Tables

- Open tab: **R.2| Vulnera. index summary**
- To refresh the workbook

File Home Insert Page Layout Formulas Data Review View Automate Help Acrobat Power Pivot

To refresh the table, type **CTRL + ALT + F5** or open tab Data, then select the drop-down menu "Refresh all" and click on "Refresh all"

Summary table of key parameters stratified by priority index values

```
graph TD; A[NCP operational geographic unit] --> B{Confirmed cholera outbreak(s) over the analysis period}; B -- Yes --> C[Initial list of PAMIs]; B -- No --> D{Vulnerability index > country specific threshold determined based on consensus}; D -- Yes --> E[List of additional PAMIs]; D -- No --> F[Not a PAMI]; C --> G[Final list of PAMIs]; E --> G;
```

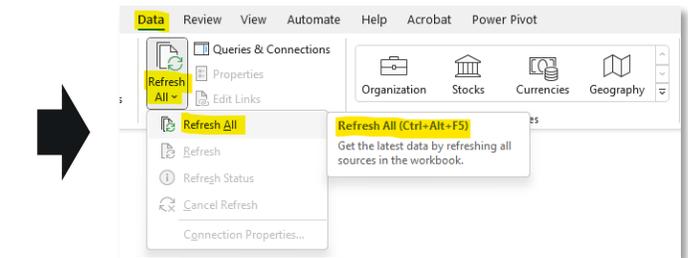
Vulnerability index values	Number of geographic units	Cum. number of geographic units	Rel. % of the num. of geographic units	Cum. % of the num. of geographic units	Total population	Rel. % of total population	Cum. % of total population
#REF!	100	100	NA	NA	NA	NA	NA
Grand Total	NA	NA	NA	NA	NA	NA	NA

Information → Data input table → Factor selection **R.1| Vulnera. index calculation** **R.2| Vulnera. index summary** R.3| Missing data overview R.4| Table PAMIs export +

To refresh all automated Data and Pivot Tables in the Escel workbook :

Option 1: Type **CTRL + ALT + F5**

Option 2: Open tab Data, then select the drop-down menu "Refresh all" and click on "**Refresh all**"



STEP 8.1

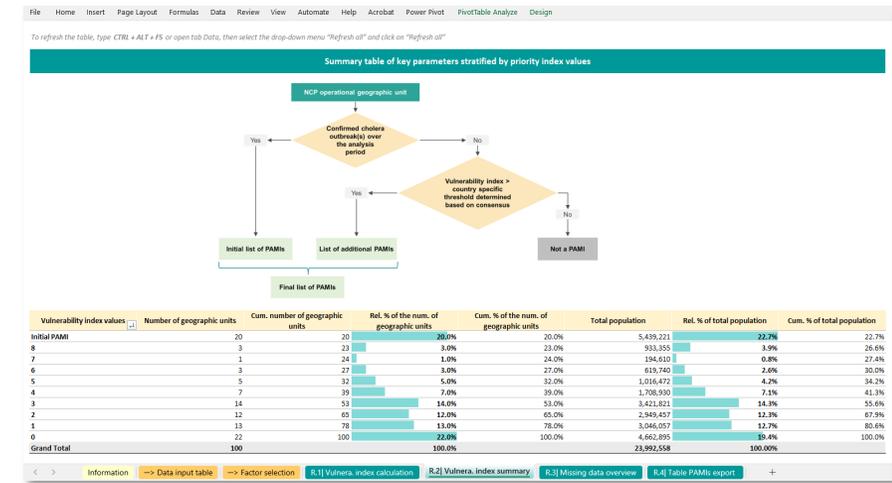
Scope : Explore summary table

- The pivot table contains key parameters (i.e., number of NCP operational geographic units, target population) stratified by vulnerability index values
- For illustration purpose, index value threshold equal to 6

Sort and filter button



Vulnerability index values	Number of geographic units	Cum. number of geographic units	Rel. % of the num. of geographic units	Cum. % of the num. of geographic units	Total population	Rel. % of total population	Cum. % of total population
Initial PAMI	20	20	20.0%	20.0%	5,439,221	22.7%	22.7%
8	3	23	3.0%	23.0%	933,355	3.9%	26.6%
7	1	24	1.0%	24.0%	194,610	0.8%	27.4%
6	3	27	3.0%	27.0%	619,740	2.6%	30.0%
5	5	32	5.0%	32.0%	1,016,472	4.2%	34.2%
4	7	39	7.0%	39.0%	1,708,930	7.1%	41.3%
3	14	53	14.0%	53.0%	3,421,821	14.3%	55.6%
2	12	65	12.0%	65.0%	2,949,457	12.3%	67.9%
1	13	78	13.0%	78.0%	3,046,057	12.7%	80.6%
0	22	100	22.0%	100.0%	4,662,895	19.4%	100.0%
Grand Total	100	100	100.0%	100.0%	23,992,558	100.00%	



Assuming vulnerability index threshold of > 6 , **24 NCP operational units**, representing **27.4%** of the total population, are classified as PAMI:

- 20 initially classified as PAMI due to previous cholera transmission
- 4 classified as PAMI due index value > 6

STEP 8.2

Scope : Check missing data

- Open tab: **R.3| Missing data overview**
- Check the frequency of missing data
- Data on measurable vulnerability indicators should be collected for all the NCP operational geographical units to prevent bias in the calculation of the vulnerability index**

Vulnerability factors	Num. of observations				Relative percentage			
	Missing values	"No"	"Yes"	Total	Missing values	"No"	"Yes"	Total
Confirmed cholera outbreak(s) over the analysis period	1	79	20	100	1.0%	79.0%	20.0%	100.0%
Confirmed cholera imported case(s) in the NCP operational geographic unit considered	0	68	32	100	0.0%	68.0%	32.0%	100.0%
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighbouring country(ies)	7	73	20	100	7.0%	73.0%	20.0%	100.0%
Location along major travel routes with transportation hubs	0	80	20	100	0.0%	80.0%	20.0%	100.0%
Major population gatherings	2	66	32	100	2.0%	66.0%	32.0%	100.0%
High population density locations or overcrowded settings	0	84	16	100	0.0%	84.0%	16.0%	100.0%
High-risk populations	2	66	32	100	2.0%	66.0%	32.0%	100.0%
Hard-to-access populations	1	93	6	100	1.0%	93.0%	6.0%	100.0%
Population that received oral cholera vaccine (OCV) more than three years ago	2	75	23	100	2.0%	75.0%	23.0%	100.0%
High-risk for extreme climate and weather conditions	4	83	13	100	4.0%	83.0%	13.0%	100.0%
Complex humanitarian emergency	0	73	27	100	0.0%	73.0%	27.0%	100.0%
Unimproved water	0	75	25	100	0.0%	75.0%	25.0%	100.0%
Unimproved sanitation	3	79	18	100	3.0%	79.0%	18.0%	100.0%
Limited access to hygiene	2	70	28	100	2.0%	70.0%	28.0%	100.0%
Additional country-specific cholera vulnerability factor (1)	0	0	0	0	.	.	.	.
Additional country-specific cholera vulnerability factor (2)	0	0	0	0	.	.	.	.
Additional country-specific cholera vulnerability factor (3)	0	0	0	0	.	.	.	.
Additional country-specific cholera vulnerability factor (4)	0	0	0	0	.	.	.	.



Note that the training dataset does contain missing data for the sake of example. **It is recommended only to import dataset without missing data to avoid bias in the vulnerability index calculation.** For more information, see section "[Missing data management](#)" in [the guidance](#) and FAQs section below.

STEP 9

Scope : Explore the table PAMIs export

- Open tab: **R.4] Table PAMIs export**
- Sort and filter buttons enable to explore geographic units according to selected index value
- This table can be used and exported for further analysis and mapping

Index values 7 and 8 selected



SECTION VI

FREQUENTLY ASKED QUESTIONS (FAQS)

LIST OF FAQS

This section presents supplementary information on specific topics and troubleshooting procedures:

- How to **change the weight of a vulnerability factor?**
- How to **select the vulnerability factors included in the index calculation?**
- How to **add an additional vulnerability factor in the data template?**
- How to **add an additional vulnerability factor in the index calculation?**
- How to **handle missing data?**
- How to **remove errors in R.1 tab?**

How to change the weight of a vulnerability factor? (2)

Scope : vulnerability factor weight

- In this example on the right, the value factor score (1 or 0) of . “Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighbouring countries” is set with **relative weight of 2**
- . “NCP unit hosting major population gathering(s)” is set with **relative weight of 3**
- . “NCP unit with hard-to-access population” is set with **relative weight of 2**

File Home Insert Page Layout Formulas Data Review View Automate Help Acrobat Power Pivot			
List of the country-specific vulnerability factors	Update measurable indicator definition		Set the indicator relative weight (if applicable)
	- Outcome of each measurable indicator is expected to be "Yes"/"No"	- Do not modify the variable names	- By default, unweighted sum corresponds to weight value of 1 - Numeric weight can be modified by the user (e.g., 2, 4, ...)
Vulnerability factors	Measurable indicators	Variable names	Indicator weight
Confirmed cholera outbreak(s) over the analysis period	NCP unit with at least one confirmed cholera outbreak reported over the past five year/analysis period	VF_01_cho_otbk	Not applicable
Confirmed cholera imported case(s) in the NCP operational geographic unit considered	NCP unit with at least one confirmed cholera case imported (from another country or another NCP operational geographic unit reported during the analysis period)	VF_02_cho_import	1
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighbouring country(ies)	Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighbouring countries	VF_03_cho_proximity	2
Location along major travel routes with transportation hubs	NCP unit located along transportation pathway(s) with transportation hub(s)	VF_04_mov_pathw	1
Major population gatherings	NCP unit hosting major population gathering(s)	VF_05_pop_gathering	3
High population density locations or overcrowded settings	NCP unit with high population density or overcrowded settings	VF_06_overcrowded_set	1
High-risk populations	NCP unit with high-risk population	VF_07_high_risk_pop	1
Hard-to-access populations	NCP unit with hard-to-access population	VF_08_hard_to_acc_risk_pop	2
Population that received oral cholera vaccine (OCV) more than three years ago	NCP unit with a population vaccinated more than three years ago (two-doses OCV campaign with a coverage for both round >70%)	VF_09_ocv	1
High-risk for extreme climate and weather conditions	NCP unit exposed to extreme climate and weather conditions	VF_10_climate_event	1
Complex humanitarian emergency	NCP unit located in an area under a complex humanitarian emergency	VF_11_comp_humanit_emerg	1

The new weight values are automatically applied in the index calculation

Always refresh the workbook to update the result tables using the workbook short-cut: **Ctrl+Alt+F5**

How to select the vulnerability factors included in the index calculation?

Scope : vulnerability factor management

- The tool provides the user with the capacity of **select/unselect vulnerability factors** included in the calculation of the index
- The calculation of the index is automatically updated with the list of selected factors

Selection of factors in the vulnerability index	
If "YES", NCP geo. unit is a PAMI	
Included in the vulnerability index	▼
Included in the vulnerability index	
Excluded from the vulnerability index	
Included in the vulnerability index	
Included in the vulnerability index	
Included in the vulnerability index	
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Excluded from the vulnerability index	
Excluded from the vulnerability index	
Excluded from the vulnerability index	
Excluded from the vulnerability index	

1- Open tab -> Factor selection

List of the country-specific vulnerability factors	Update measurable indicator definition	Set the indicator relative weight (if applicable)	Select factors for the vulnerability index calculation
Vulnerability factors	Measurable Indicators	Variable names	Indicator weight
Selection of factors in the vulnerability index			
Confirmed cholera outbreak(s) over the analysis period	NCP unit with at least one confirmed cholera outbreak reported over the past five years/analysis period	VF_01_chol_outb	Not applicable
Confirmed cholera imported cases in the NCP operational geographic unit considered	NCP unit with at least one confirmed cholera case imported from another country of another NCP operational geographic unit reported during the analysis period	VF_02_chol_import	1
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighboring countries	Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighboring countries	VF_03_chol_proximity	1
Location along major travel routes with transportation hubs	NCP unit located along transportation pathways with transportation hubs	VF_04_rev_pathw	1
Major population gatherings	NCP unit hosting major population gathering(s)	VF_05_pop_gathering	1
High population density locations or overcrowded settings	NCP unit with high population density or overcrowded settings	VF_06_overcrowded_set	1
High-risk populations	NCP unit with high-risk population	VF_07_high_risk_pop	1
Hard-to-access populations	NCP unit with hard-to-access population	VF_08_hard_to_access_pop	1
Population that received oral cholera vaccine (OCV) more than three years ago	NCP unit with a population vaccinated more than three years ago (two-doses OCV campaign with a coverage for both rounds >70%)	VF_09_ovc	1
High-risk for extreme climate and weather conditions	NCP unit exposed to extreme climate and weather conditions	VF_10_extreme_event	1
Complex humanitarian emergency	NCP unit located in an area under a complex humanitarian emergency	VF_11_comp_humanit_emerg	1
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanit	1
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygen	1
Additional country-specific cholera vulnerability factor (1)	To be completed if additional cholera country-specific factor are selected: "NCP unit with..."	VF_15_add_factor_1	1
Additional country-specific cholera vulnerability factor (2)	To be completed if additional cholera country-specific factor are selected: "NCP unit with..."	VF_16_add_factor_2	1
Additional country-specific cholera vulnerability factor (3)	To be completed if additional cholera country-specific factor are selected: "NCP unit with..."	VF_17_add_factor_3	1
Additional country-specific cholera vulnerability factor (4)	To be completed if additional cholera country-specific factor are selected: "NCP unit with..."	VF_18_add_factor_4	1

2 – Use the drop-down list to include or exclude in the vulnerability index calculation the vulnerability factor located in the same row

Note: the factor “Confirmed cholera outbreak(s) over the analysis period” is always included in the index calculation

Always refresh the workbook to update the result tables using the workbook short-cut: Ctrl+Alt+F5

How to add an additional vulnerability factor in the data template?

Scope : vulnerability factor data management

- The data template allows adding **four additional country-specific factors**
- As example, one additional country-specific vulnerability factor “*Areas with harbor(s) and fish market*” is considered
- Data added under the “VF_15_add_factor_1”

Placeholder to store measurable indicator information (Yes/No)

VF_15_add_factor_1
 VF_16_add_factor_2
 VF_17_add_factor_3
 VF_18_add_factor_4

	Unique_id	admin_1	admin_2	population	VF_01_chol_dta	VF_02_chol_impact	VF_03_chol_prevalence	VF_04_mor_pathw	VF_05_pop_gathering	VF_06_overcrowded_bld	VF_07_high_risk_pop	VF_08_hard_to_reach_risk_pop	VF_09_oor	VF_10_olimate_event	VF_11_comp_humant_arming	VF_12_unimprov_water	VF_13_unimprov_sanitat	VF_14_unimprov_hygiene	VF_15_add_factor_1	VF_16_add_factor_2	VF_17_add_factor_3	VF_18_add_factor_4	
1	id_005	admin_1_01	admin_2_005	64,333	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
2	id_013	admin_1_02	admin_2_013	121,255	Yes	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	Not_included	Not_included	Not_included	Not_included
3	id_014	admin_1_02	admin_2_014	37,086	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Not_included	Not_included	Not_included	Not_included
4	id_015	admin_1_02	admin_2_015	164,440	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
5	id_022	admin_1_02	admin_2_022	290,397	No	No	Missing_value	No	No	No	No	No	No	No	No	No	No	Yes	No	Not_included	Not_included	Not_included	Not_included
6	id_025	admin_1_02	admin_2_025	253,327	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Not_included	Not_included	Not_included	Not_included
7	id_028	admin_1_02	admin_2_028	163,610	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
8	id_030	admin_1_02	admin_2_030	119,295	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
9	id_033	admin_1_02	admin_2_033	223,118	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
10	id_035	admin_1_02	admin_2_035	317,110	No	Yes	Missing_value	No	Yes	No	No	No	No	Missing_value	No	No	No	No	No	No	Not_included	Not_included	Not_included
11	id_038	admin_1_02	admin_2_038	283,342	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	Yes	Not_included	Not_included	Not_included	Not_included
12	id_039	admin_1_02	admin_2_039	161,100	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	Not_included	Not_included	Not_included	Not_included
13	id_048	admin_1_03	admin_2_048	166,885	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Not_included	Not_included	Not_included
14	id_051	admin_1_03	admin_2_051	369,669	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	Yes	No	Not_included	Not_included	Not_included	Not_included
15	id_053	admin_1_04	admin_2_053	200,425	No	No	Missing_value	No	Yes	No	No	No	No	Yes	No	No	No	Yes	No	Not_included	Not_included	Not_included	Not_included
16	id_054	admin_1_04	admin_2_054	176,323	No	No	No	No	Yes	No	No	No	Yes	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
17	id_055	admin_1_04	admin_2_055	374,440	No	Yes	No	No	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
18	id_058	admin_1_04	admin_2_058	227,349	No	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	Not_included	Not_included	Not_included	Not_included
19	id_065	admin_1_04	admin_2_065	111,409	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No	No	Not_included	Not_included	Not_included	Not_included
20	id_066	admin_1_04	admin_2_066	162,852	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	Not_included	Not_included	Not_included	Not_included
21	id_067	admin_1_04	admin_2_067	122,772	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No	Not_included	Not_included	Not_included	Not_included
22	id_070	admin_1_04	admin_2_070	260,209	No	No	No	No	No	No	No	No	No	No	No	Yes	No	Yes	No	Not_included	Not_included	Not_included	Not_included
23	id_073	admin_1_05	admin_2_073	212,029	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
24	id_074	admin_1_05	admin_2_074	219,337	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included
25	id_088	admin_1_06	admin_2_088	441,446	No	No	Missing_value	No	No	No	Missing_value	No	No	Missing_value	No	No	Missing_value	Missing_value	No	Not_included	Not_included	Not_included	Not_included
26	id_090	admin_1_06	admin_2_090	302,855	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No	Not_included	Not_included	Not_included	Not_included
27	id_094	admin_1_06	admin_2_094	165,842	No	No	Missing_value	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	Not_included



Do not change variable name in the template

How to add an additional vulnerability factor in the index calculation? (1)

Scope : vulnerability factor management

- Some users may wish to include vulnerability factors that are not identified in the indicative list
- The tool allows adding four additional country-specific factor to the vulnerability using the rows “Additional country-specific cholera vulnerability factor” (1 to 4)

Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Confirmed cholera outbreak(s) over the analysis period	NCP unit with at least one confirmed cholera outbreak reported over the past five year/analysis period	VF_01_chol_otbk	Not applicable	If "YES", NCP geo. unit is a PAMI
Confirmed cholera imported case(s) in the NCP operational geographic unit considered	NCP unit with at least one confirmed cholera case imported (from another country or another NCP operational geographic unit reported during the analysis period)	VF_02_chol_import	1	Included in the vulnerability index
Cross-border areas adjacent to frequently cholera-affected areas or identified PAMIs in neighbouring country(ies)	Cross-border NCP unit adjacent to cross-border areas frequently affected by cholera outbreaks or classified as PAMI in neighbouring countries	VF_03_chol_proximity	1	Included in the vulnerability index
Location along major travel routes with transportation hubs	NCP unit located along transportation pathway(s) with transportation hub(s)	VF_04_mov_pathw	1	Included in the vulnerability index
Major population gatherings	NCP unit hosting major population gathering(s)	VF_05_pop_gathering	1	Included in the vulnerability index
High population density locations or overcrowded settings	NCP unit with high population density or overcrowded settings	VF_06_overcrowded_set	1	Included in the vulnerability index
High-risk populations	NCP unit with high-risk population	VF_07_high_risk_pop	1	Included in the vulnerability index
Hard-to-access populations	NCP unit with hard-to-access population	VF_08_hard_to_acc_risk_pop	1	Included in the vulnerability index
Population that received oral cholera vaccine (OCV) more than three years ago	NCP unit with a population vaccinated more than three years ago (two-doses OCV campaign with a coverage for both round >70%)	VF_09_ocv	1	Included in the vulnerability index
High-risk for extreme climate and weather conditions	NCP unit exposed to extreme climate and weather conditions	VF_10_climate_event	1	Included in the vulnerability index
Complex humanitarian emergency	NCP unit located in an area under a complex humanitarian emergency	VF_11_comp_humanit_emerg	1	Included in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Additional country-specific cholera vulnerability factor (1)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_15_add_factor_1	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (2)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_16_add_factor_2	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (3)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (4)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_18_add_factor_4	1	Excluded from the vulnerability index

Placeholder for additional vulnerability factors

Note that additional vulnerability factors are not included by default in the index calculation

How to add an additional vulnerability factor in the index calculation? (2)

Scope : vulnerability factor management

- As example, an additional country-specific vulnerability factor type “Harbor(s) with fish market” and the corresponding definition of the measurable indicator are manually added

Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Additional country-specific cholera vulnerability factor (1)	<i>To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."</i>	VF_15_add_factor_1	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (2)	<i>To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."</i>	VF_16_add_factor_2	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (3)	<i>To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."</i>	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (4)	<i>To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."</i>	VF_18_add_factor_4	1	Excluded from the vulnerability index



Vulnerability factors	Measurable indicators	Variable names	Indicator weight
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1
Harbor(s) with fish market	NCP unit with harbor(s) with traditionnal fish market	VF_15_add_factor_1	1
Additional country-specifc cholera vulnerability factor (2)	<i>To be completed if additionnal cholera country-specific factor are selected: "NCP unit with ..."</i>	VF_16_add_factor_2	1
Additional country-specifc cholera vulnerability factor (3)	<i>To be completed if additionnal cholera country-specific factor are selected: "NCP unit with ..."</i>	VF_17_add_factor_3	1
Additional country-specifc cholera vulnerability factor (4)	<i>To be completed if additionnal cholera country-specific factor are selected: "NCP unit with ..."</i>	VF_18_add_factor_4	1

How to add an additional vulnerability factor in the index calculation? (3)

Scope : vulnerability factor management

- As example, a **specific weight of 2** may set by the user (optional step)

Vulnerability factors	Measurable indicators	Variable names	Indicator weight
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1
Harbor(s) with fish market	NCP unit with harbor(s) with traditionnal fish market	VF_15_add_factor_1	1
Additionalnal country-specific cholera vulnerability factor (2)	<i>To be completed if additionalnal cholera country-specific factor are selected: *NCP unit with ...*</i>	VF_16_add_factor_2	1
Additionalnal country-specific cholera vulnerability factor (3)	<i>To be completed if additionalnal cholera country-specific factor are selected: *NCP unit with ...*</i>	VF_17_add_factor_3	1
Additionalnal country-specific cholera vulnerability factor (4)	<i>To be completed if additionalnal cholera country-specific factor are selected: *NCP unit with ...*</i>	VF_18_add_factor_4	1



Vulnerability factors	Measurable indicators	Variable names	Indicator weight
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1
Harbor(s) with fish market	NCP unit with harbor(s) with traditionnal fish market	VF_15_add_factor_1	2
Additionalnal country-specific cholera vulnerability factor (2)	<i>To be completed if additionalnal cholera country-specific factor are selected: *NCP unit with ...*</i>	VF_16_add_factor_2	1
Additionalnal country-specific cholera vulnerability factor (3)	<i>To be completed if additionalnal cholera country-specific factor are selected: *NCP unit with ...*</i>	VF_17_add_factor_3	1
Additionalnal country-specific cholera vulnerability factor (4)	<i>To be completed if additionalnal cholera country-specific factor are selected: *NCP unit with ...*</i>	VF_18_add_factor_4	1

How to add an additional vulnerability factor in the index calculation? (4)

Scope : vulnerability factor management

- To include the additional vulnerability factor in the index, select **“Included in the vulnerability index”** in the drop-down list
- The additional factor is now automatically included in the index calculation

Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Harbor(s) with fish market	NCP unit with harbor(s) with traditionnal fish market	VF_15_add_factor_1	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (2)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_16_add_factor_2	1	Included in the vulnerability index
Additional country-specific cholera vulnerability factor (3)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (4)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_18_add_factor_4	1	Excluded from the vulnerability index

Information → Data input table → Factor selection R.1| Vulnera. index calculation R.2| Vulnera. index summary R.3| Missing data overview R.4| Table PAMIs export +



Vulnerability factors	Measurable indicators	Variable names	Indicator weight	Selection of factors in the vulnerability index
Unimproved water	NCP unit with more than 30% of the population using unimproved water facility type (calculated as sum of % of population with unimproved service level and % of population using surface water) OR more than 15% of the population using surface water	VF_12_unimprov_water	1	Included in the vulnerability index
Unimproved sanitation	NCP unit with more than 50% of the population using unimproved sanitation facility type (calculated as % of population with unimproved sanitation service level and % of population practicing open defecation) OR more than 30% of the population practicing open defecation	VF_13_unimprov_sanitat	1	Included in the vulnerability index
Limited access to hygiene	NCP unit with more than 50% of the population with no handwashing facility on premises	VF_14_limited_hygien	1	Included in the vulnerability index
Harbor(s) with fish market	NCP unit with harbor(s) with traditionnal fish market	VF_15_add_factor_1	1	Included in the vulnerability index
Additional country-specific cholera vulnerability factor (2)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_16_add_factor_2	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (3)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_17_add_factor_3	1	Excluded from the vulnerability index
Additional country-specific cholera vulnerability factor (4)	To be completed if additional cholera country-specific factor are selected: "NCP unit with ..."	VF_18_add_factor_4	1	Excluded from the vulnerability index

Information → Data input table → Factor selection R.1| Vulnera. index calculation R.2| Vulnera. index summary R.3| Missing data overview R.4| Table PAMIs export +

How to handle missing data?

Scope : Missing data management

As a general principle, data on vulnerability indicators should be **available for all the NCP geographical unit** to prevent introducing bias in the calculation of the vulnerability index

For more information, see “Management of missing information” in the [guidance](#)

Missing information	Options
Missing information for a measurable vulnerability indicator for most NCP operational geographic units	It is recommended to use a proxy indicator and adjust the initial measurable indicator definition accordingly.
Missing information for a vulnerability indicator at the NCP operational geographic unit level	It is possible that vulnerability indicator data are only available at upper geographic level compared to the selected NCP operational unit geographical level (e.g., admin 1 level indicator value available but no disaggregated indicator value at admin 2 level).
Incomplete (or of suboptimal quality) information for a vulnerability indicator for some NCP operational geographic units.	Different complementary options could be considered to address this situation, including conducting an <i>ad hoc</i> survey to collect missing information or asking subject matter experts to provide a qualitative assessment of the corresponding indicator to fill the data gap. If information remains partially missing, this shall be addressed by assessing qualitatively the presence/absence of the vulnerability factor(s) based on participants’ opinion during the stakeholder validation workshop

How to solve error in R.1 tab? (1)

Scope : Remove unnecessary rows in the priority index calculation (step 7.2)

- When dragging formulas down to fill the data table of **R.1 | Vulnera. index calculation** until all NCP operational geographic units of the input dataset are included,
- it may happen that the user extends the selection over the data input range contained into “-> Data input table”

The screenshot shows an Excel spreadsheet with the following columns: unique_id, admin_1, admin_2, pop, VF_01_chol_cdk, VF_02_chol_lmport, VF_03_chol_primity, VF_04_mov_pathw, VF_05_pop_gathering, VF_06_overcrowded_set, VF_07_high_risk_pop, VF_08_hard_to_acc_risk_pop, VF_09_ovc, VF_10_climate_event, VF_11_comp_humant_emerg, VF_12_unimprov_water, VF_13_unimprov_sanitat, VF_14_limited_hygien, VF_15_add_factor_1, VF_16_add_factor_2, VF_17_add_factor_3, VF_18_add_factor_4, Number of missing values, and Priority_index. The data table contains rows with values like 'id_005', 'admin_1_01', 'admin_2_005', etc. A large black arrow points downwards from the table area.

The screenshot shows an Excel spreadsheet with the same columns as the top screenshot. A red warning triangle points to a row (row 102) where several cells contain the error message '#REF!'. A large black arrow points downwards from the top screenshot.

unique_id	admin_1	admin_2	pop	VF_01_ch	VF_02_ch	VF_03_ch	VF_04_mc	VF_05_pop_gath	VF_06_ov	VF_07_high_ris	VF_08_ha	VF_09_ovc	VF_10_clir	VF_11_col	VF_12_un	VF_13_un	VF_14_lim	VF_15_ad	VF_16_add_fi	VF_17_add_fi	VF_18_add_fi	Numt	Priority_index	
91	id_281	admin_1_17	admin_2_281	3E+05	Yes	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	Yes	No	Not_included	Not_included	Not_included	0	Initial PAMI	
92	id_282	admin_1_17	admin_2_282	4E+05	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	No	No	Yes	No	No	Not_included	Not_included	Not_included	0	Initial PAMI	
93	id_284	admin_1_17	admin_2_284	2E+05	No	Yes	No	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Not_included	Not_included	Not_included	0	4	
94	id_292	admin_1_18	admin_2_292	1E+05	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	0	1	
95	id_300	admin_1_18	admin_2_300	2E+05	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No	Not_included	Not_included	Not_included	0	3	
96	id_302	admin_1_18	admin_2_302	91815	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No	No	Not_included	Not_included	Not_included	0	2	
97	id_304	admin_1_18	admin_2_304	2E+05	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	Not_included	Not_included	Not_included	0	1	
98	id_305	admin_1_18	admin_2_305	2E+05	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Not_included	Not_included	Not_included	0	0	
99	id_306	admin_1_18	admin_2_306	1E+05	No	Yes	No	Yes	No	No	No	No	No	No	No	Yes	No	No	Not_included	Not_included	Not_included	0	3	
100	id_307	admin_1_18	admin_2_307	1E+05	No	No	No	No	Missing_value	Yes	Missing_value	No	Yes	No	No	Yes	No	No	Not_included	Not_included	Not_included	0	2	
101	id_102	admin_1_07	admin_2_308	3E+05	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	Not_included	Not_included	Not_included	0	1	
102	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0	#REF!
103	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0	#REF!
104	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0	#REF!
105	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0	#REF!
106	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0	#REF!
107	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0	#REF!
108																								
109																								
110																								

With the training dataset used in example above, it corresponds to row numbers > 101 containing errors message in the corresponding cells (“#REF!”).

Contact

Questions and requests for technical support for PAMIs identification can be addressed to gtfccsecretariat@who.int