USER MANUAL

Health Equity Assessment Toolkit Plus (HEAT Plus)

UPLOAD DATABASE EDITION, VERSION 5.0

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1 Introduction

Equity is at the heart of the United Nations 2030 Agenda for Sustainable Development, which aims to "leave no one behind". This commitment is reflected throughout the 17 Sustainable Development Goals (SDGs) that Member States have pledged to achieve by 2030.

Monitoring inequalities (observable differences across population subgroups) is essential for tackling inequities (differences that are deemed unfair, avoidable or remediable): it allows identifying vulnerable population subgroups that are being left behind and helps inform equity-oriented policies, programmes and practices that can close existing gaps.

The World Health Organization (WHO) is committed to achieving equity in health and has developed a number of tools and resources for monitoring health inequalities, including the Health Equity Assessment Toolkit.

The **Health Equity Assessment Toolkit** is a free and open-source software application that facilitates the exploration, analysis and reporting of health inequalities. Through innovative and interactive data visualizations, the software makes it easy to assess and communicate data about health inequalities. Disaggregated data and summary measures are visualized in a variety of graphs and tables that can be customized according to users' needs. Results can be exported to communicate findings to different audiences and inform evidence-based decision making.

The software is available in **two editions**:

HEAT (built-in database edition), which contains datasets of disaggregated data from the WHO Health Inequality Data Repository,

HEAT Plus (upload database edition), which allows users to upload their own datasets of disaggregated data.

Together, HEAT and HEAT Plus are powerful tools that help make data about inequalities accessible and bring key messages to decision-makers to tackle inequities and achieve the SDGs.

This **HEAT Plus user manual** accompanies the upload database edition of the toolkit and provides detailed information about the features and functionalities of HEAT Plus. Information on how to access HEAT Plus are provided in Section 2, followed by an overview on how to use HEAT Plus in Section 3 (including information on how to get started, how to prepare data for upload, how to upload and manage data, how to navigate the tool and a list of resources to learn more about the software). Section 4 (Explore inequality) and Section 5 (Compare inequality) provide more details about the different views and visualizations available in HEAT Plus. Throughout the user manual, blue boxes highlight links to further resources and practical tips for using HEAT Plus.

You may want to read this user manual sequentially and in its entirety, or consult different sections as required. You are also encouraged to consult the other documents that accompany HEAT Plus, including the technical notes, which provide detailed information about the data displayed in HEAT Plus. Moreover, you may want to supplement these resources with materials that provide further information on the theoretical and/or practical steps of (health) inequality monitoring, such as the WHO's *Handbook on health inequality monitoring* and *National health inequality monitoring: a step-by-step manual*. Many resources are publicly available through the WHO Health Inequality Monitor, and although with a focus on health, the approaches may be applied to any topic.

LINKS

- WHO Health Inequality Monitor
- WHO Health Equity Assessment Toolkit

1.1 What HEAT Plus can do

HEAT Plus facilitates inequality assessments based on your own data. You can

- ✓ **Upload your own disaggregated data**. Datasets of disaggregated data have to be in a specified format in order to be uploaded to HEAT Plus. The HEAT Plus Template and Validation Tool helps you to prepare your data according to the template and validate your entries.
- ✓ **Use data from any data source**. Commonly used data sources for inequality monitoring include population-based surveys as well as facility and administrative data, civil registration and vital statistics, surveillance systems and censuses. However, you can use data from any source that is available to you.
- ✓ **Assess the situation in any setting**. Inequalities can be assessed at global, regional, national or subnational levels (e.g. within a province or district), depending on your data availability and research interests.
- ✓ **Examine the situation for any indicator**. In addition to health and health-related indicators, HEAT Plus also enables you to use indicators from beyond the health sector, including all SDG indicators.
- ✓ **Study the situation for any inequality dimension**. Inequality dimensions that are frequently used for inequality monitoring (and recommended for disaggregation of SDG indicators) include income, sex, age, race, ethnicity, migratory status, disability and geographic location (urban/rural). In addition, education is a commonly used inequality dimensions. You can also use other inequality dimensions that are relevant to your specific context, such as indigenous status, occupation, religion and subnational/administrative region (e.g. provinces or districts). Moreover, you can assess the situation for intersections of two inequality dimensions (double disaggregation), provided that data have been entered accordingly in the template.
- ✓ **Analyse changes in the situation over time.** HEAT Plus allows you to assess the situation over time using yearly, monthly, weekly or daily data – or any other date format that is available to you.
- ✓ **Calculate summary measures of inequality**. Based on your disaggregated data, HEAT Plus will calculate up to 19 summary measures and their 95% confidence intervals. Please refer to the technical notes for details about these measures, including about their definition, calculation and interpretation.
- ✓ **Visualize data interactively**. Disaggregated data and summary measures are visualized in a variety of interactive graphs and tables that can be further customized according to your interests and needs. This user manual provides detailed information about the visuals available in HEAT Plus and how they can be used to analyse and interpret your data.
- ✓ **Export results for evidence-based decision making**. All results can be exported and used to communicate findings for evidence-based decision making to ensure impact in countries.

1.2 What HEAT Plus cannot do

While HEAT Plus has been designed as a flexible tool for inequality assessments, there are a few things that are beyond the scope of the software. HEAT Plus cannot

- **Calculate disaggregated data from raw datasets**. HEAT Plus cannot automatically generate estimates for population subgroups based on your raw data. To calculate disaggregated estimates, you can use statistical software packages, such as R, SAS, SPSS or Stata. Codes for calculating disaggregated data using population-based survey data are available at https://www.who.int/data/inequality-monitor/tools-resources/statistical_codes.
- **Improve the quality of your data**. For example, if you wish to assess inequalities in immunization coverage based on health facility data and data are inaccurate for some facilities, HEAT Plus cannot adjust or correct for this. In such a case, it is recommended that you turn your attention to sourcing data with better quality.
- **Impute missing data.** For instance, you may want to assess data by education level (using three population subgroups: no education, primary school, and secondary school or higher), and estimates are missing for one subgroup (e.g. no education). In such a case, HEAT Plus cannot impute the missing value for that group.
- **Calculate summary measures if data are missing**. Summary measures and their 95% confidence intervals can only be calculated if the required data are available. For example, some measures can only be calculated if subgroup estimates are available for all subgroups of a dimension. Moreover, for many measures, the size of the population in each subgroup is required. Similarly, if standard errors of subgroup estimates are not included, HEAT Plus will not be able to calculate 95% confidence intervals of summary measures.

2 How to access HEAT Plus

HEAT Plus is available as a desktop version for Windows. This version can be downloaded as a compressed (zipped) folder from the WHO website. The software can be installed locally on a desktop or laptop computer and can be used offline (no internet connection required).

The latest version of HEAT Plus is available at: https://www.who.int/data/inequality-monitor/assessment_toolkit.

Note that you require the "R" statistical software and a web browser to run the software. In the desktop version, WHO has provided a portable version of "R" and the portable edition of the web browsers Google Chrome (Windows version) or Chromium (Mac version). This does not imply in any manner that the use of these products is endorsed or recommended by the World Health Organization in preference to others of a similar nature. R Portable, Chrome Portable and Chromium Portable do not require any installation.

To run HEAT Plus Desktop on your Windows machine, download the compressed " HEAT Plus for Windows" (zip) file, unzip the file and save the content to your computer's hard drive. Select the "HEAT Plus for Windows" folder and double-click the "Start_HEATPlus.bat" file. The toolkit will automatically open in a Chrome Portable browser window.

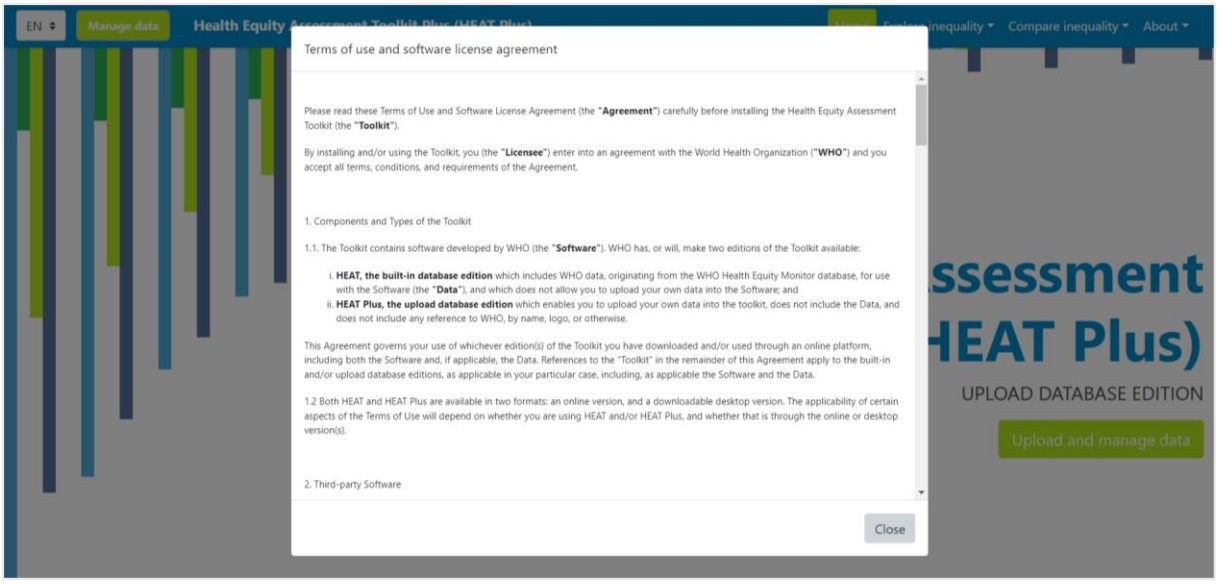
To refresh HEAT Plus, click the circular arrow on the right of the address bar in the open browser window. To restart HEAT Plus, make sure to close both the browser window and the command window, before double-clicking the 'Start_HEATPlus.bat' file.

3 How to use HEAT Plus

3.1 Getting started

3.1.1 Terms of use and software license agreement

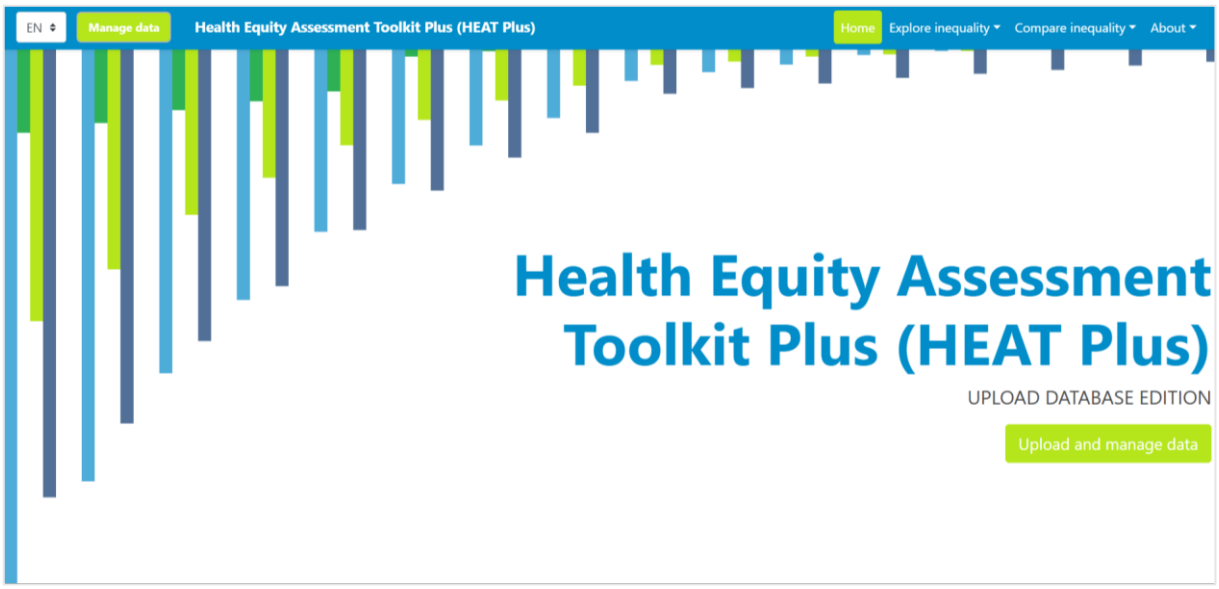
In order to use HEAT Plus, you first need to read and accept the **terms of use and software license agreement** that appear in a pop-up window. Click the 'Close' button to proceed.



3.1.2 HEAT Plus home page

Once you have accepted the terms of the agreement, you will be able to access the **Home** page. To view the tool in another language, click on the language menu in the top right corner (English (EN) by default) and select your language of choice (French (FR), Portuguese (PT) or Spanish (ES)).

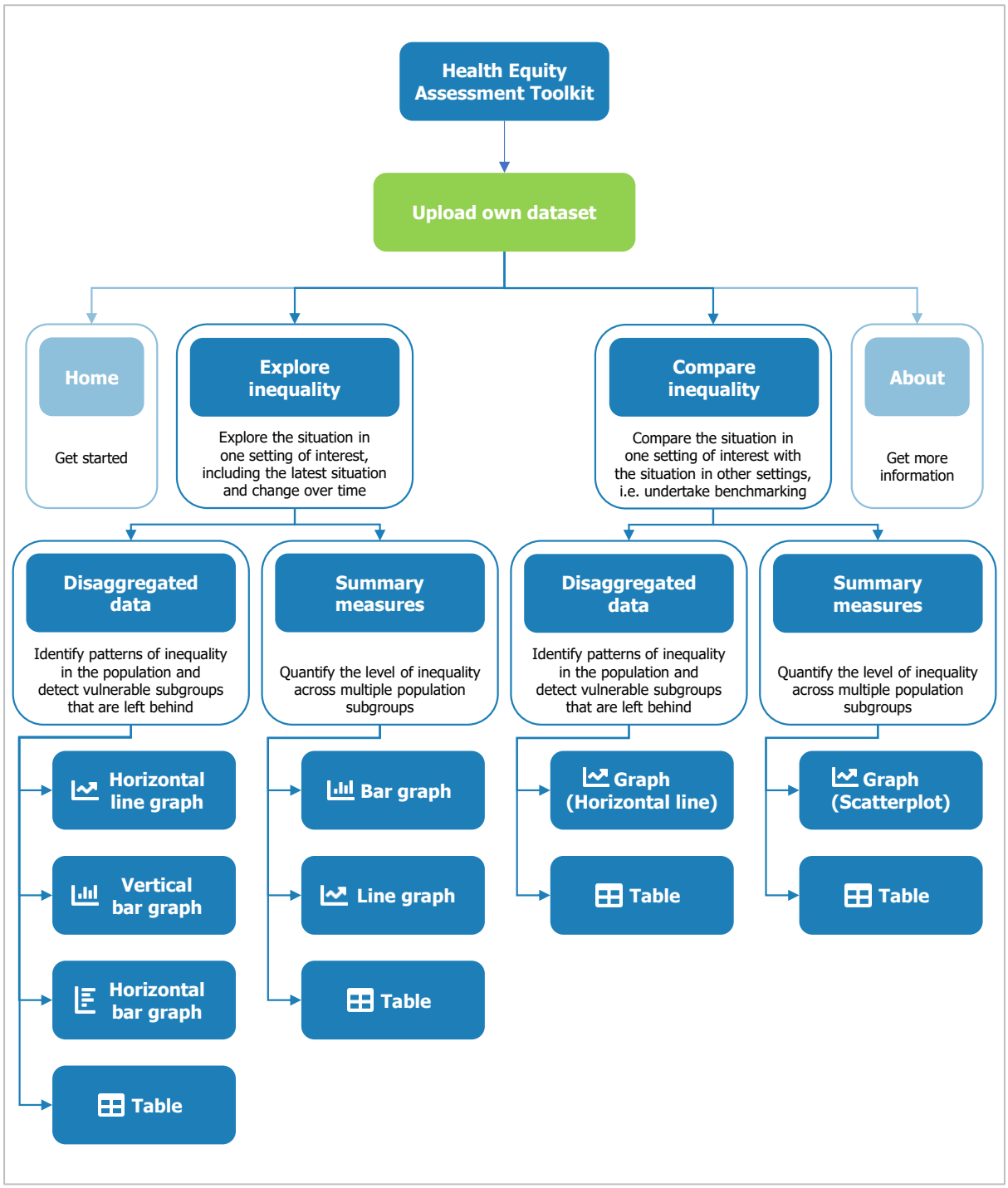
Scroll down the page to get more information about the software.



3.1.3 HEAT Plus structure

Figure 1 provides an overview of the structure of HEAT Plus. Please refer to Section 3.2. for information on how to prepare your data for upload, Section 3.3 for instructions on how to upload and manage your data, Section 3.2 for instructions on how to navigate HEAT Plus, and Section 3.5 for a list of resources to learn more about HEAT Plus. Sections 4 (Explore inequality) and Section 5 (Compare inequality) provide detailed descriptions of the views and visualizations available in HEAT Plus.

Figure 1 HEAT Plus structure



TIPS for getting started

Use the **HEAT Plus Validation Tool** to prepare your dataset of disaggregated according to the **HEAT Plus Template**. Once your data is in the required format, log in to HEAT Plus and upload your data. Then proceed with your equity assessment.

Go to **Explore inequality** and assess the situation in your setting of interest, first using 'Disaggregated data' and then 'Summary measures'.

Once you have explored the situation in one setting, go to **Compare Inequality** to compare the situation in that setting with the situation in other settings, using both 'Disaggregated data' and 'Summary measures'.

3.2 Preparing your data for upload

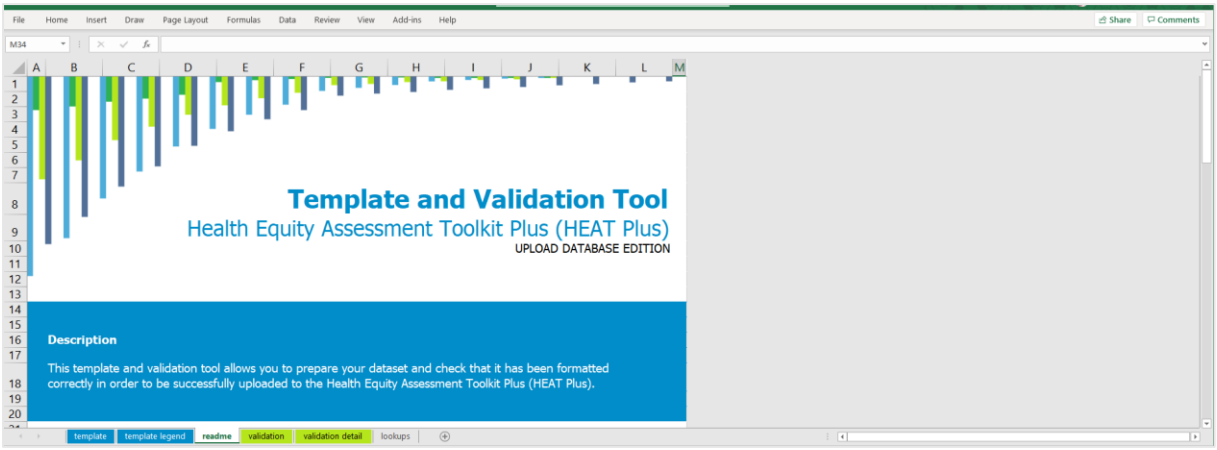
HEAT Plus allows you to upload your own datasets of disaggregated data. Datasets have to be in a specific format and stored as comma separated values (csv) or Microsoft Excel (xls or xlsx) files in order to be successfully uploaded to HEAT Plus. The HEAT Plus Template and Validation Tool helps you prepare your data in the required format.

3.2.1 HEAT Plus Template and Validation Tool

The **HEAT Plus Template and Validation Tool** allows you to prepare your data according to the template and run validation checks to ensure data have been formatted correctly. The Tool is a macro-enabled Microsoft Excel file (xlsm) comprising six tabs:

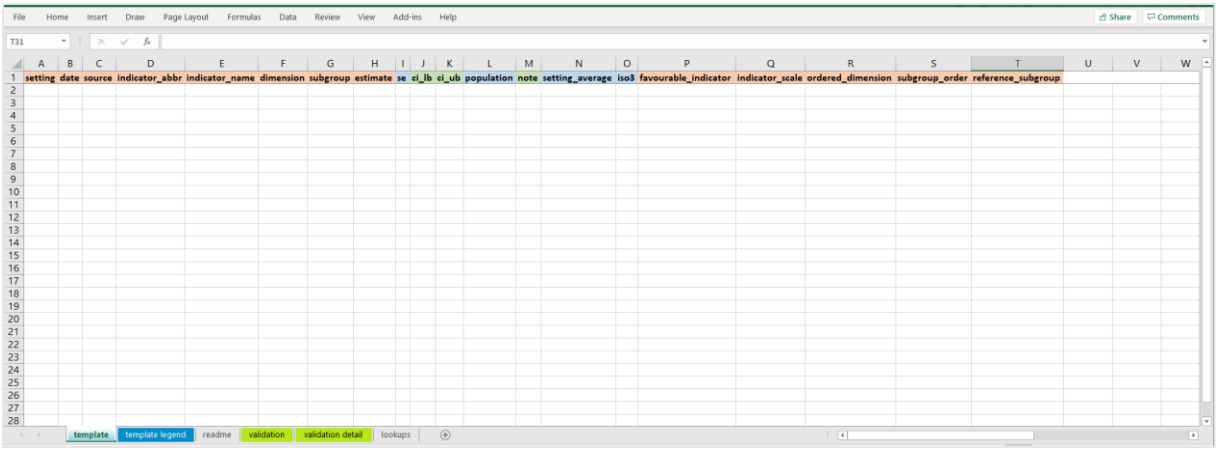
- The **readme** tab provides instructions on how to use the tool.
- The **template** tab allows you to enter your data in the required format.
- The **template legend** tab provides detailed explanations of all variables included in the template.
- The **validation** enables you to run validation checks for the data you entered in the template.
- The **validation detail** tab lists detailed results of the validation checks.
- The **lookups** tab contains a list of WHO Member States and corresponding ISO3 code.

View the **readme** tab for instructions on how to use the validation tool.

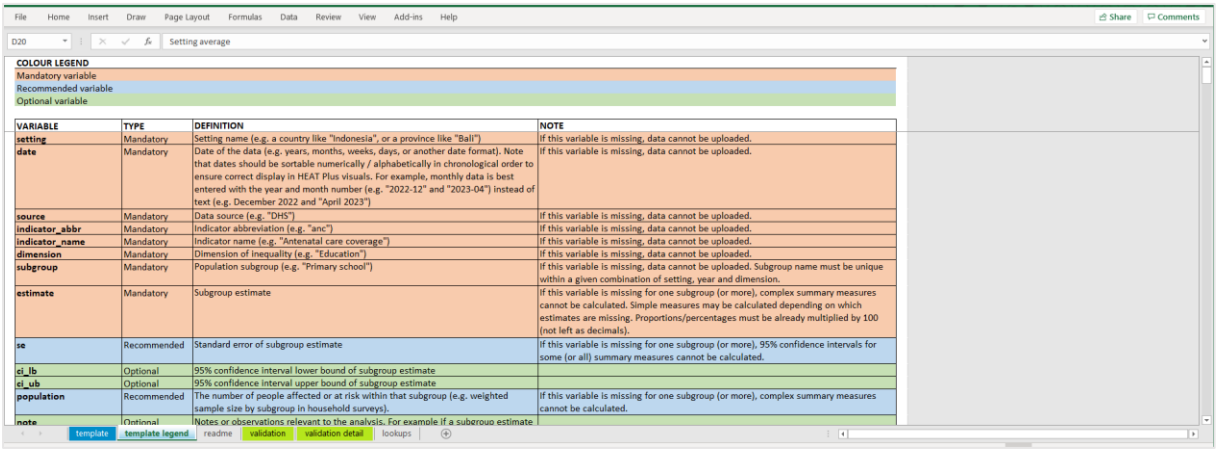


3.2.2 Entering your data in the template

Once you are familiar with the tool, you can proceed to enter your data in the **template** tab.



Please consult the **template legend** tab for information about the variables included in the template.

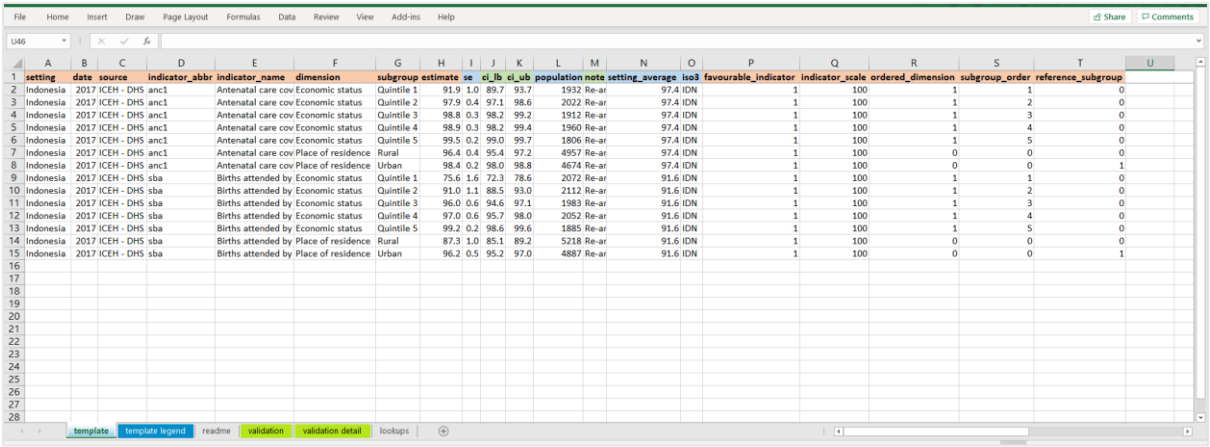


Overall, the template comprises 20 variables. Out of these, 13 variables are mandatory to fill in, four are recommended and three are optional to complete.

- **Mandatory variables** are required in order to upload data to HEAT Plus. If data for these variables are missing, the dataset cannot be uploaded. These variables are: setting, date, source, indicator abbreviation, indicator name, inequality dimension, population subgroup, subgroup estimate, specification of whether the indicator is favourable or not, indicator scale, specification of whether the dimension is ordered or not, subgroup order for ordered dimensions and reference subgroup for non-ordered dimensions. Additionally, the subgroup estimate is listed as a mandatory variable. Estimates for population subgroups are key for inequality assessments in HEAT Plus. However, in some cases, subgroup estimates may be missing for good reason (e.g. due to small sample sizes). Therefore, the subgroup estimate is the only mandatory variable that may have missing values.
- **Recommended variables** are required for the calculation of 95% confidence intervals of summary measures and/or for using certain functionalities in HEAT Plus. These include: standard errors of subgroup estimates, size of the population in each subgroup, the setting average (e.g. the national average if your setting is a country) and the ISO 3 country code (if your setting is a country).
- **Optional variables** are required for using certain functionalities in HEAT Plus and include the 95% confidence intervals (lower and upper bounds) of subgroup estimates and the note (allowing you to note any information about your data, such as small sample sizes).

For a detailed description of these variables, please refer to Annex 1 of the user manual or the template legend in the HEAT Plus Template and Validation Tool.

In the example below, data for two health indicators (antenatal care and skilled birth attendance) disaggregated by two inequality dimensions (economic status and place of residence) from the 2017 Indonesian Demographic and Health Survey were entered in the template tab.



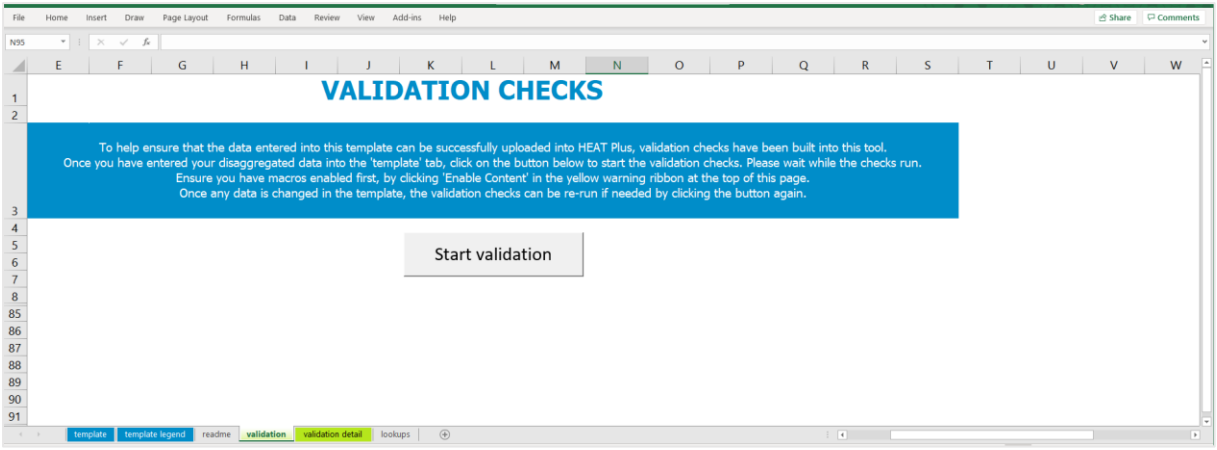
setting	date	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	note	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 1	91.9	1.0	89.7	93.7	1932	Re-ar	97.4	IDN	1	100	1	1	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 2	97.9	0.4	97.1	98.6	2022	Re-ar	97.4	IDN	1	100	1	2	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 3	98.8	0.3	98.2	99.2	1912	Re-ar	97.4	IDN	1	100	1	3	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 4	98.9	0.3	98.2	99.4	1960	Re-ar	97.4	IDN	1	100	1	4	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 5	99.5	0.2	99.0	99.7	1806	Re-ar	97.4	IDN	1	100	1	5	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Place of residence	Rural	96.4	0.4	95.4	97.2	4957	Re-ar	97.4	IDN	1	100	0	0	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Place of residence	Urban	98.4	0.2	98.0	98.8	4674	Re-ar	97.4	IDN	1	100	0	0	1
Indonesia	2017	ICEH - DHS	sba	Births attended by	Economic status	Quintile 1	75.6	1.6	72.3	78.6	2072	Re-ar	91.6	IDN	1	100	1	1	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Economic status	Quintile 2	91.0	1.1	88.5	93.0	2112	Re-ar	91.6	IDN	1	100	1	2	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Economic status	Quintile 3	96.0	0.6	94.6	97.1	1983	Re-ar	91.6	IDN	1	100	1	3	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Economic status	Quintile 4	97.0	0.6	95.7	98.0	2052	Re-ar	91.6	IDN	1	100	1	4	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Economic status	Quintile 5	99.2	0.2	98.6	99.6	1885	Re-ar	91.6	IDN	1	100	1	5	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Place of residence	Rural	87.3	1.0	85.1	89.2	5218	Re-ar	91.6	IDN	1	100	0	0	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Place of residence	Urban	96.2	0.5	95.2	97.0	4887	Re-ar	91.6	IDN	1	100	0	0	1

Additional tips on preparing and entering your data in the template are provided in Annex 2 (Frequently Asked Questions).

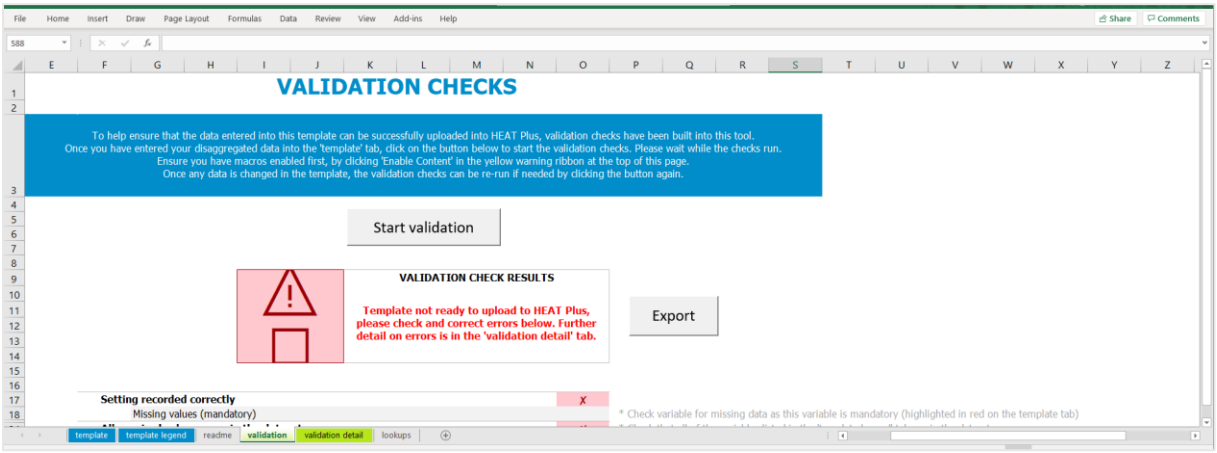
3.2.3 Checking your data using the validation checks

Once you have entered your data in the template, go to the **validation** tab to run the validation checks. Please ensure that you have macros enabled, by clicking 'Enable Content' in the yellow warning ribbon at the top of the file, if this is visible.

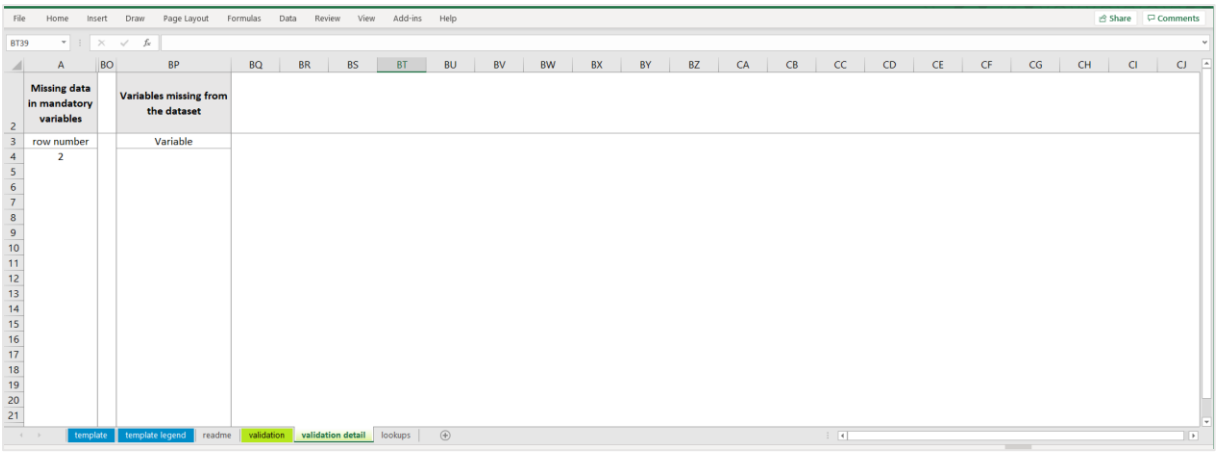
Click the 'Start validation' button to start the validation checks. Depending on the amount of data you entered in the template tab, this may take some time. Please wait while the checks run.



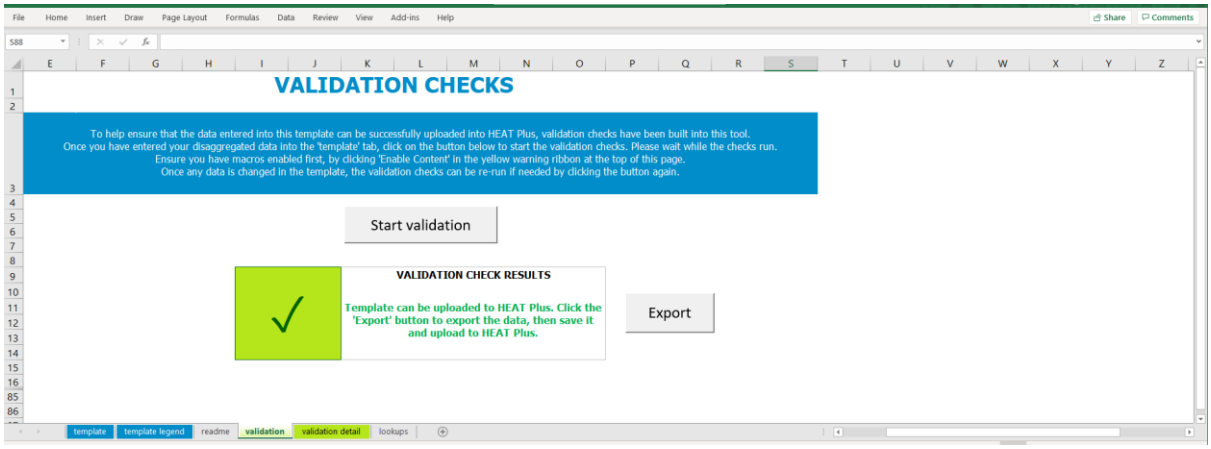
If the validation checks results show that your data has not been entered correctly, a red warning message will appear. In this case, you will need to correct the entries in the template tab.



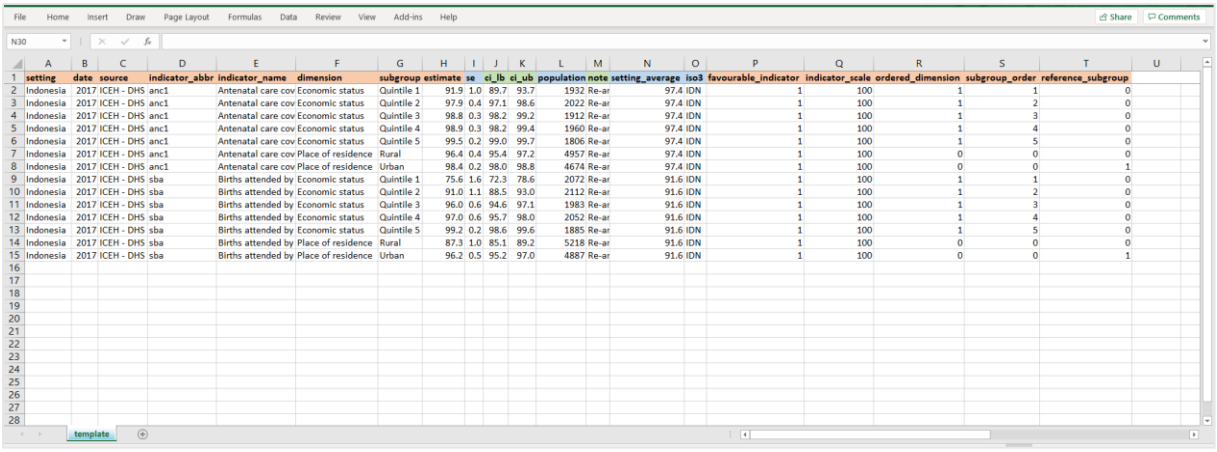
For details about the errors in your data, please refer to the **validation detail** tab.



If the validation checks results confirm that your data has been entered correctly in the template tab, a green success message and an 'Export' button will appear.



Click the 'Export' button to export your data from the template tab to a new file. This file will be smaller in size and easier to upload. Please save the file that appears in a new window. You can now proceed to upload the file to HEAT Plus.



setting	date	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	note	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 1	91.9	1.0	89.7	93.7	1932	Re-ar	97.4	IDN	1	100	1	1	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 2	97.9	0.4	97.1	98.6	2022	Re-ar	97.4	IDN	1	100	1	2	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 3	98.8	0.3	98.2	99.2	1912	Re-ar	97.4	IDN	1	100	1	3	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 4	98.9	0.3	98.2	99.4	1960	Re-ar	97.4	IDN	1	100	1	4	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Economic status	Quintile 5	99.5	0.2	99.0	99.7	1806	Re-ar	97.4	IDN	1	100	1	5	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Place of residence	Rural	96.4	0.4	95.4	97.2	4957	Re-ar	97.4	IDN	1	100	0	0	0
Indonesia	2017	ICEH - DHS	anc1	Antenatal care cov	Place of residence	Urban	98.4	0.2	98.0	98.8	4674	Re-ar	97.4	IDN	1	100	0	0	1
Indonesia	2017	ICEH - DHS	sba	Births attended by	Economic status	Quintile 1	75.6	1.6	72.3	78.6	2072	Re-ar	91.6	IDN	1	100	1	1	0
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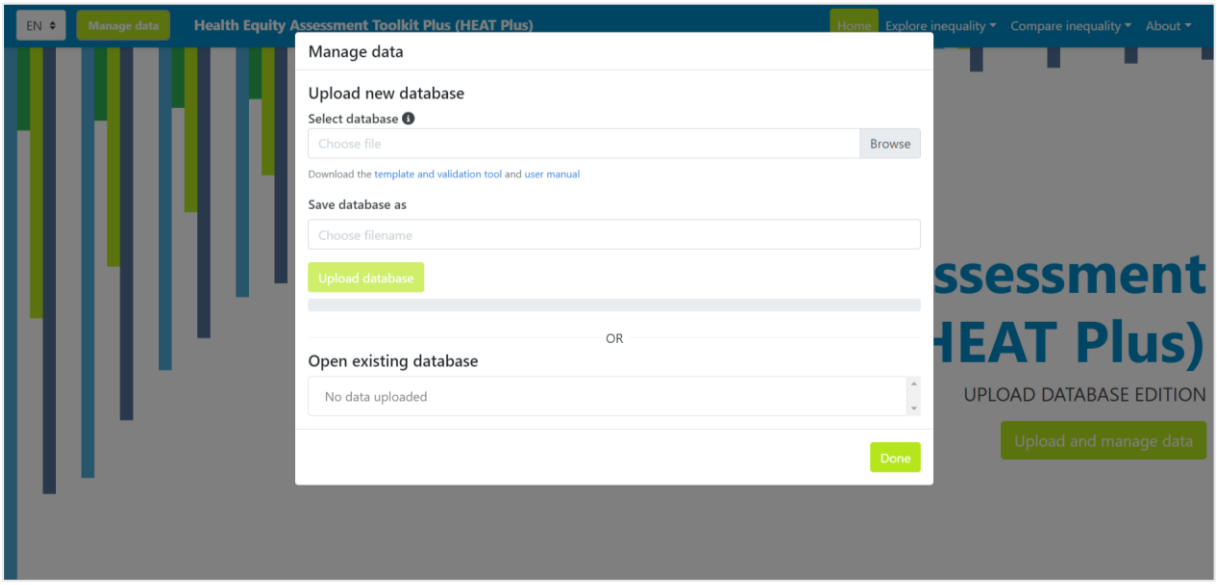
Indonesia	2017	ICEH - DHS	sba	Births attended by	Economic status	Quintile 3	96.0	0.6	94.6	97.1	1983	Re-ar	91.6	IDN	1	100	1	3	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Economic status	Quintile 4	97.0	0.6	95.7	98.0	2052	Re-ar	91.6	IDN	1	100	1	4	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Economic status	Quintile 5	99.2	0.2	98.6	99.6	1885	Re-ar	91.6	IDN	1	100	1	5	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Place of residence	Rural	87.3	1.0	85.1	89.2	5218	Re-ar	91.6	IDN	1	100	0	0	0
Indonesia	2017	ICEH - DHS	sba	Births attended by	Place of residence	Urban	96.2	0.5	95.2	97.0	4887	Re-ar	91.6	IDN	1	100	0	0	1

3.3 Uploading and managing your data

Click the green 'Upload and manage data' button on the home page or the green "Manage data" button in the top left corner in order to open the data manager.

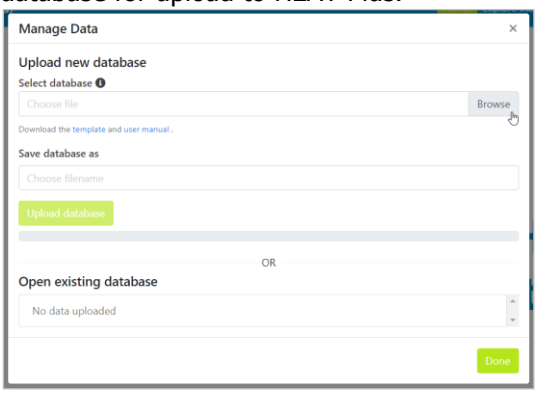
A pop-up window will appear that allows you to manage your data. Here you can upload new databases and/or open existing databases. You can also rename and delete previously uploaded databases.



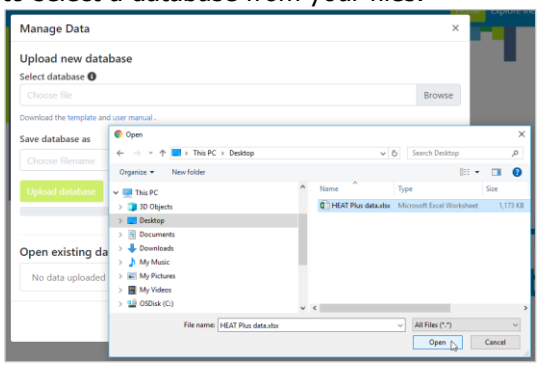
3.3.1 Upload a new database

Follow the six steps below to upload a new database.

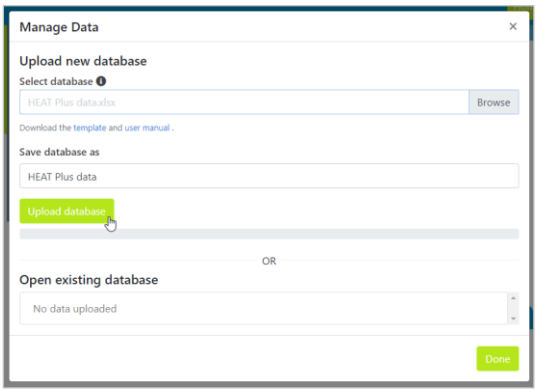
1. Click the 'Browse' button to select a new database for upload to HEAT Plus.



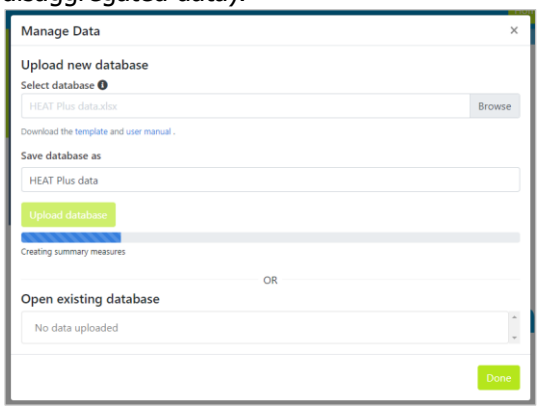
2. A pop-up window will appear that allows you to select a database from your files.



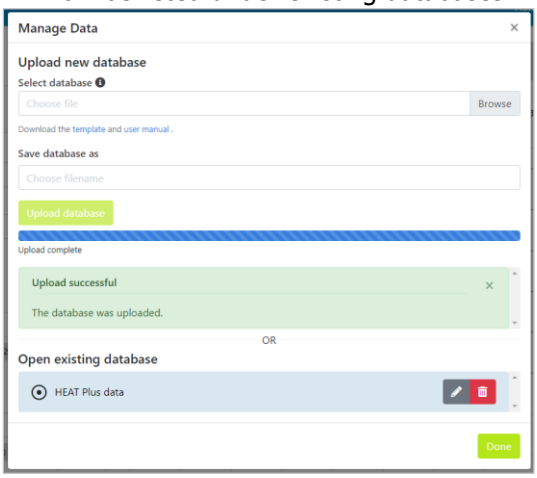
3. Click the 'Upload database' button to commence the upload.



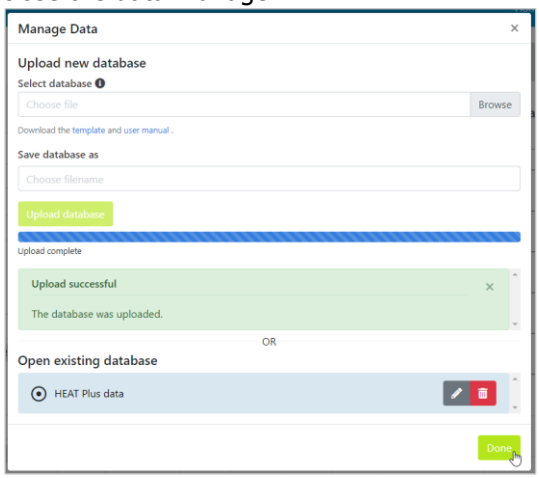
4. Wait for HEAT Plus to upload your database (and calculate summary measures based on your disaggregated data).



5. Once the upload is complete, a confirmation message will appear. Your uploaded database will now be listed under existing databases.



6. HEAT Plus will automatically open your newly uploaded database. Click the 'Done' button to close the data manager.

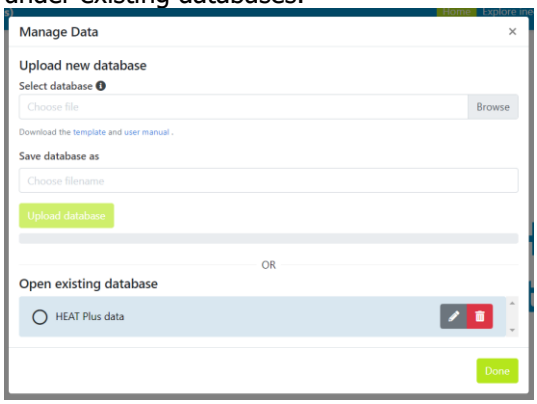


You can repeat these steps to upload additional databases. Uploaded databases will be securely stored in your HEAT Plus account.

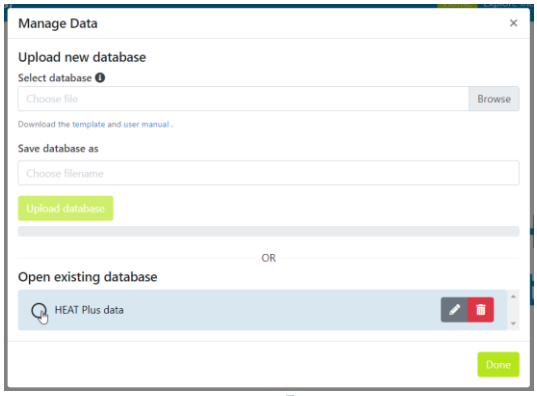
3.3.2 Open an existing database

Follow the four steps below to open a previously uploaded database.

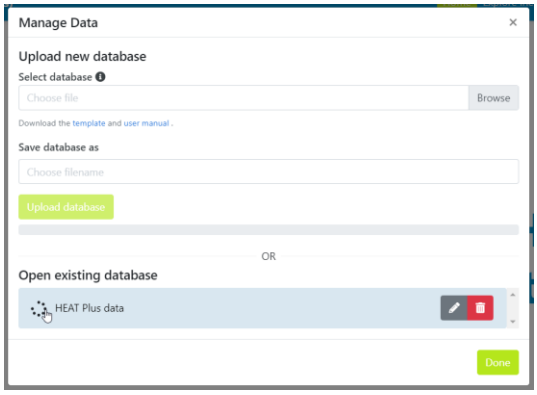
1. Previously uploaded databases will appear under existing databases.



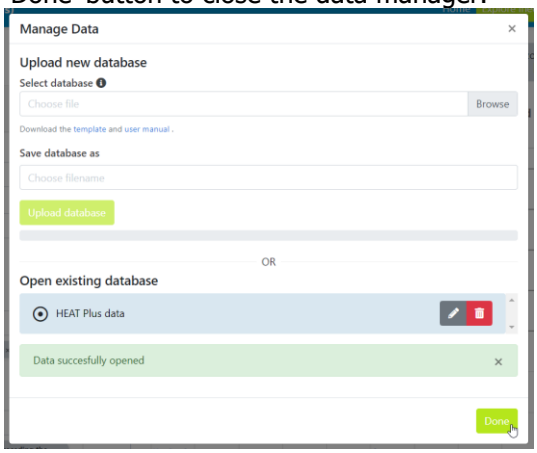
2. Select the database that you want to open.



3. Wait for HEAT Plus to open your database.



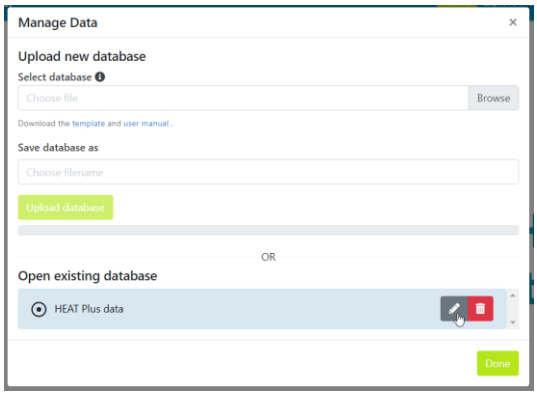
4. Once the database has been opened, a confirmation message will appear. Click the 'Done' button to close the data manager.



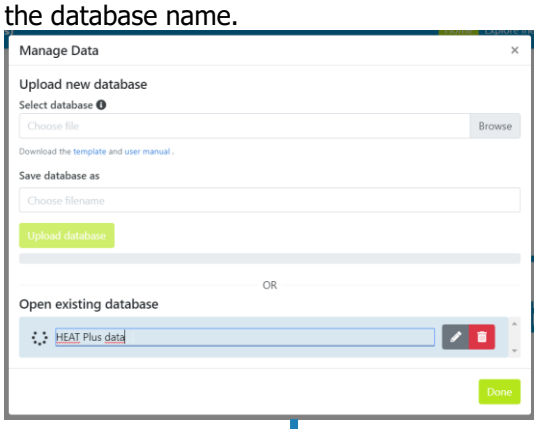
3.3.3 Rename an existing database

Follow the four steps below to rename an existing database.

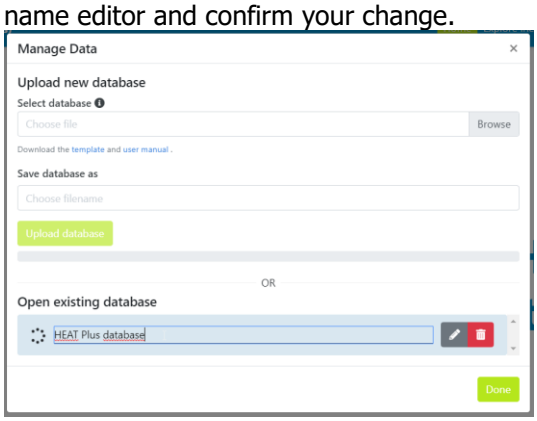
1. Click the pen next to the database whose name you want to change.



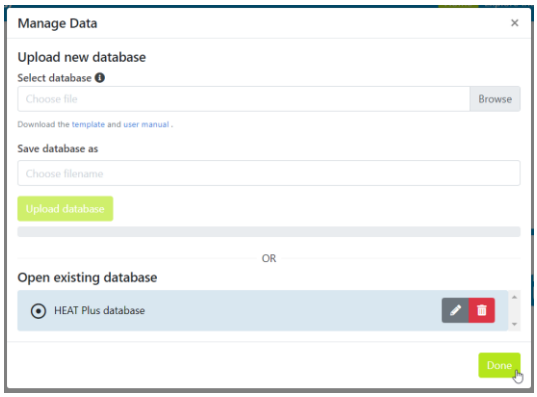
2. This will allow you to edit the name of the database. Click inside the editor field to change the database name.



3. Change the name of your database. Click anywhere outside the name editor to quit the name editor and confirm your change.



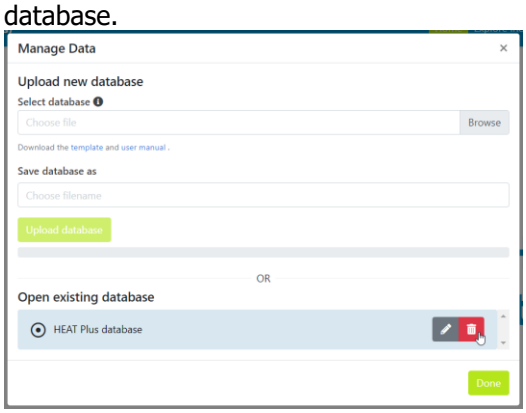
4. Once the name has been changed, click the 'Done' button to close the data manager.



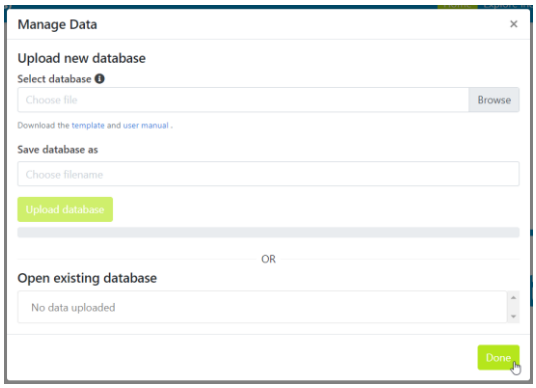
3.3.4 Delete an existing database

Follow the two steps below to delete an existing database.

1. Click the bin next to the database that you want to delete. Wait for HEAT Plus to delete the database.



2. Once the database has been deleted, click the 'Done' button to close the data manager.

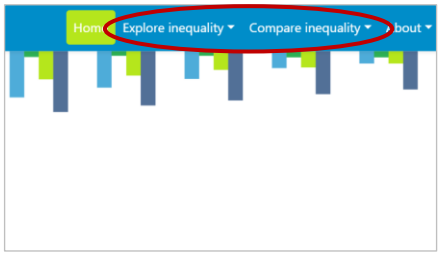


3.4 Navigating HEAT Plus

3.4.1 Navigation menu

Use the navigation menu, located in the top-right corner of the software, to navigate to the different sections of the software. The active section will always be highlighted in green, such as 'Home' while you are on the home page.

HEAT Plus is organized around two main components:



- **Explore inequality** allows you to explore the situation in one setting of interest, including the latest situation of inequality and the change in inequality over time.
- **Compare inequality** enables you to compare the situation in one setting of interest with the situation in other settings, i.e. undertake benchmarking.

Additionally, when hovering over 'Explore inequality' or 'Compare inequality', you can choose between two different subcomponents:

- **Disaggregated data** show the situation by population subgroups. They are important to identify patterns of inequality in the population and identify vulnerable subgroups that are being left behind.
- **Summary measures** quantify the level of inequality across multiple population subgroups. They are useful to compare the situation between different indicators and inequality dimensions and assess changes in inequality over time.

3.4.2 Views

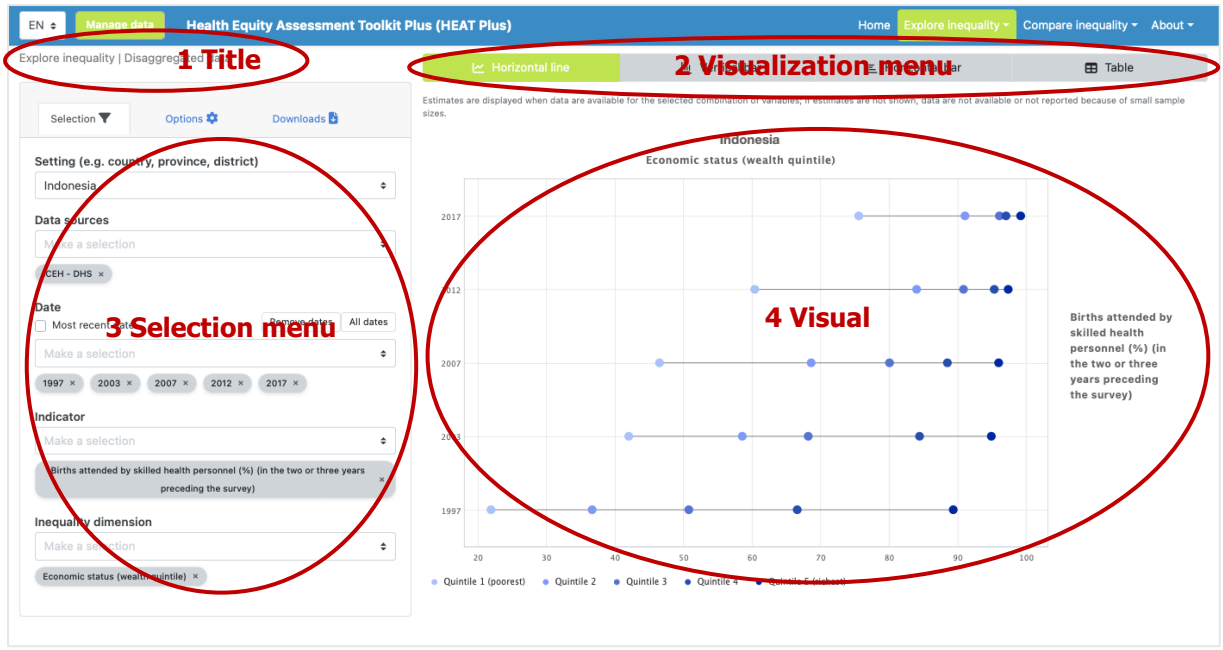
Click 'Disaggregated data' or 'Summary measures' under 'Explore inequality' or 'Compare inequality' to access different views. Each view has the same layout:

1 The **title** in the top-left corner indicates the component and subcomponent you are looking at, such as 'Explore inequality' and 'Disaggregated data'.

2 The **visualization menu** across the top allows you to navigate between different visualization types, including bar graphs, line graphs and tables.

3 The **selection menu** on the left enables further customization of your view, for example you can select your data, use different options to modify your view and download results.

4 The **visual** at the centre shows your results.

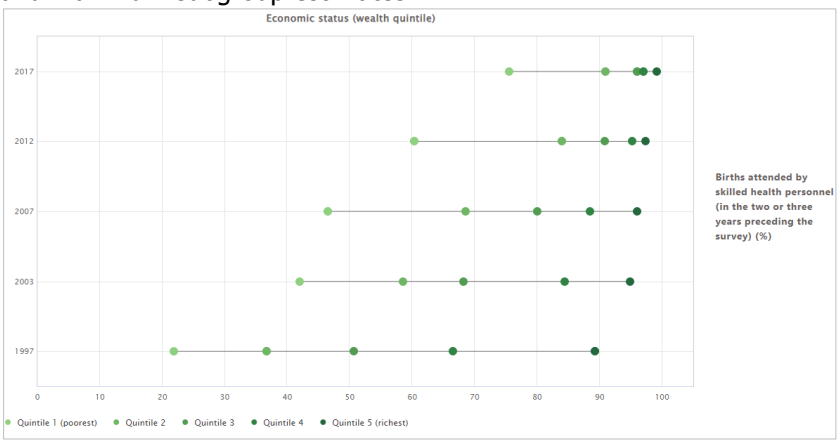


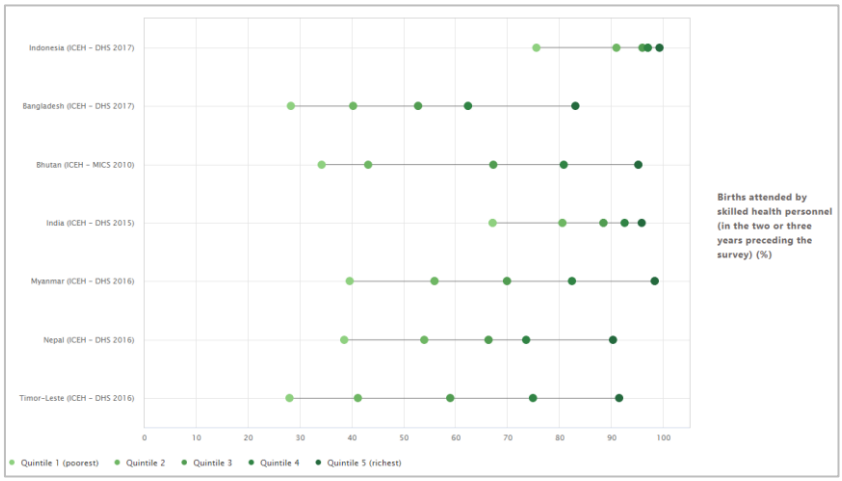
3.4.3 Visualization menu

The visualization menu across the top of each view allows you to navigate between different visualizations types. Table 1 lists the visualization types available in HEAT Plus.

Table 1 Visualization types

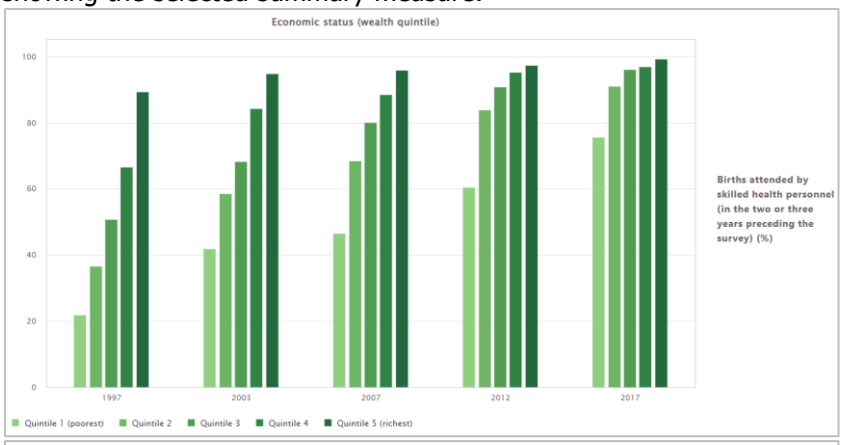
Visualization type	Description
Horizontal line graph	Disaggregated data are presented in horizontal line graphs (also called equiplots). Data are shown by date (under 'Explore inequality') or setting (under 'Compare inequality'). For each date/setting (displayed on the y-axis), there are multiple coloured data points – one for each population subgroup. Black horizontal lines indicate the difference between minimum and maximum subgroup estimates.

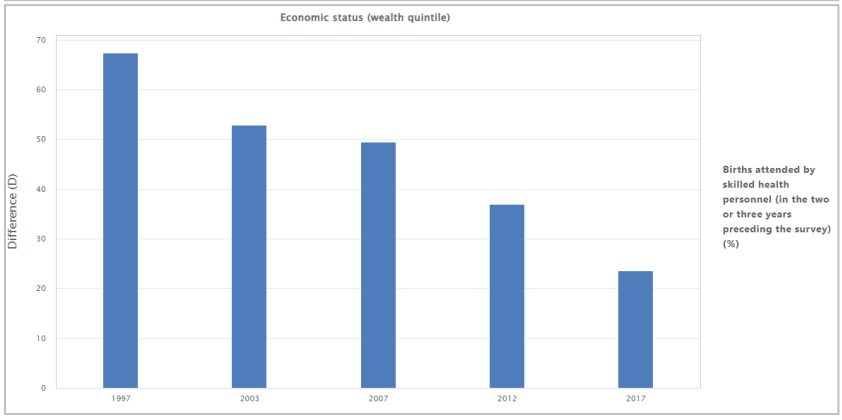




Vertical bar graph

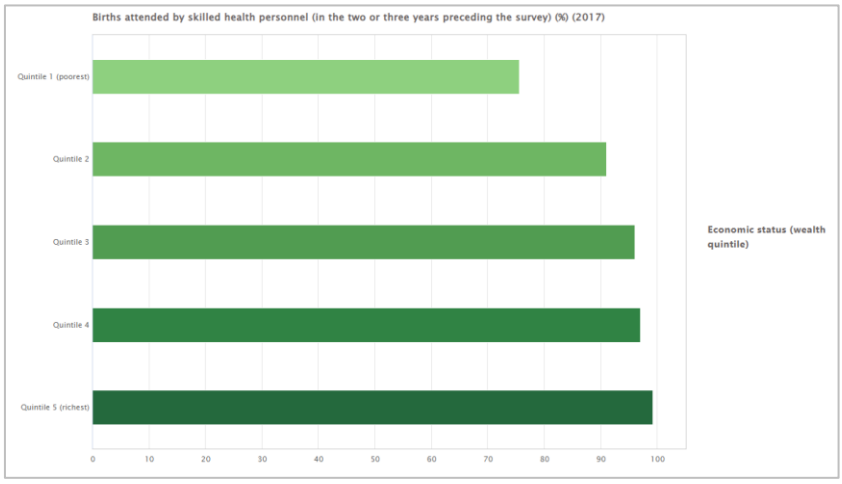
Disaggregated data and summary measures are presented in vertical bar graphs. For each date (displayed on the x-axis), there are one or more coloured bars: for disaggregated data, there are multiple bars – one for each population subgroup; for summary measures there is one bar showing the selected summary measure.





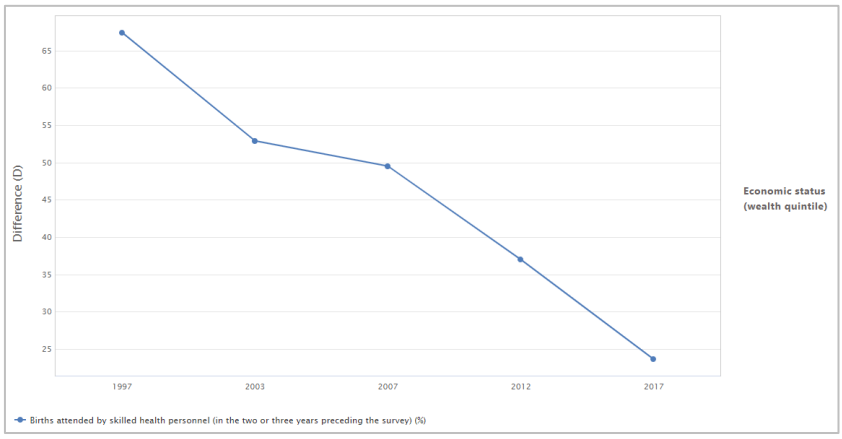
Horizontal bar graph

Disaggregated data are shown in horizontal bar graphs. Each population subgroup (displayed on the y-axis) is represented by one bar.



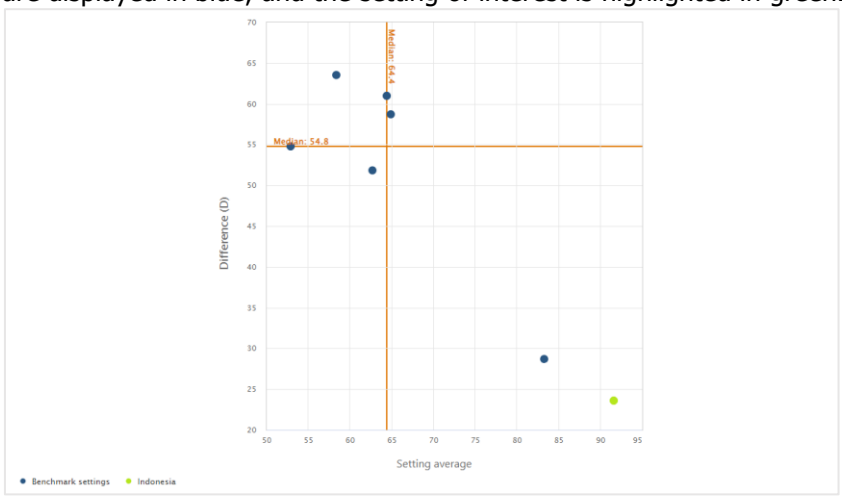
Line graph

Summary measures are shown in line graphs. For each date (displayed on the x-axis), there is one data point showing the selected summary measure. Data points are connected by lines. Lines are coloured by indicator.



Scatterplot

Scatterplots show setting average (on the x-axis) and within-setting inequality as measured by a selected summary measure (on the y-axis). Each setting is represented by one coloured circle: benchmark settings are displayed in blue, and the setting of interest is highlighted in green.



Table

Disaggregated data and Summary measures are displayed in tables and provide detailed information about the data points.

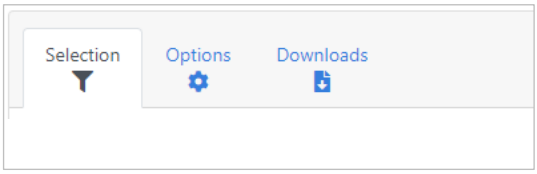
Setting	Date	Indicator name	Dimension	Subgroup	Estimate	Population share
Indonesia	2017	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Quintile 1 (poorest)	75.6	20.5
Indonesia	2017	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Quintile 2	91.0	20.9
Indonesia	2017	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Quintile 3	96.0	19.6
Indonesia	2017	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Quintile 4	97.0	20.3
Indonesia	2017	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Quintile 5 (richest)	99.2	18.7

Setting	Date	Indicator name	Dimension	Summary measure name	Estimate
Indonesia	2017	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Difference (D)	23.6
Indonesia	2012	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Difference (D)	37.0
Indonesia	2007	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Difference (D)	49.5
Indonesia	2003	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Difference (D)	52.9
Indonesia	1997	Births attended by skilled health personnel (%) (in the two or three years preceding the survey)	Economic status (wealth quintile)	Difference (D)	67.4

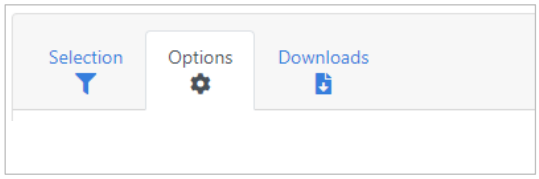
3.4.4 Selection menu

The **selection menu** on the left of each view allows you to customize the results displayed in the visual. The selection menu comprises three or four tabs, depending on the view you are looking at.

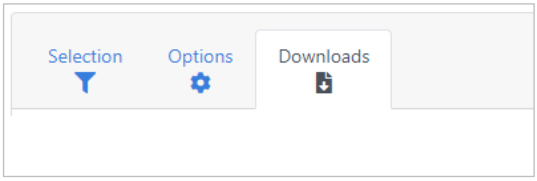
- **Selection** Select the data displayed in the visual, including your setting of interest, data source(s), date(s), indicator(s), inequality dimension(s) and summary measure(s), if applicable.



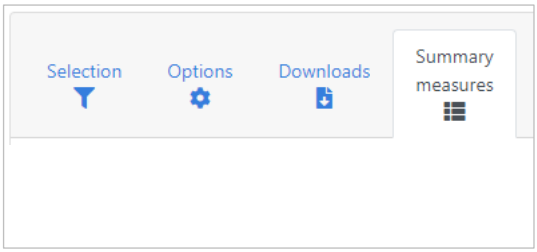
- **Options** Use different options to modify your visual, such as selecting axis ranges and adding titles. The options that are available vary from view to view, depending on what data and visualization type you are looking at.



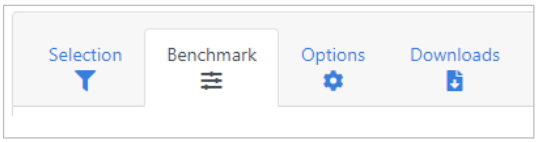
- **Downloads** Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files). Note that in table views, you are only able to download the data (i.e. no graph).



- **Summary measures** See specific summary measure calculations. Note that this tab is only available under the 'Explore inequality' component for 'Disaggregated data' displayed in 'Horizontal bar graphs'. Specific difference and ratio measures are calculated for inequality dimensions with more than 30 population subgroups.

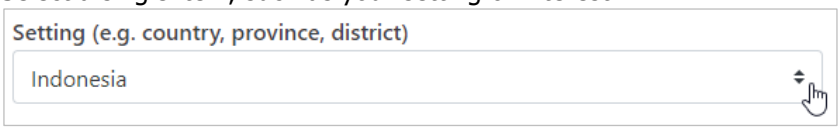
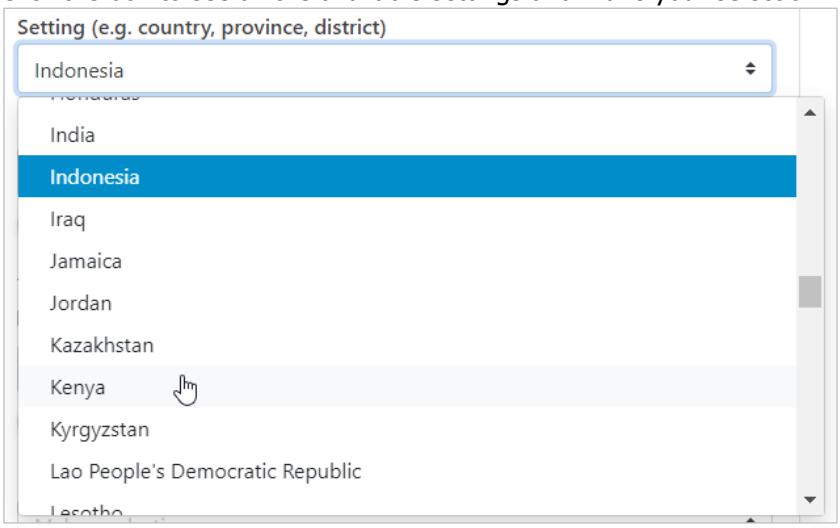
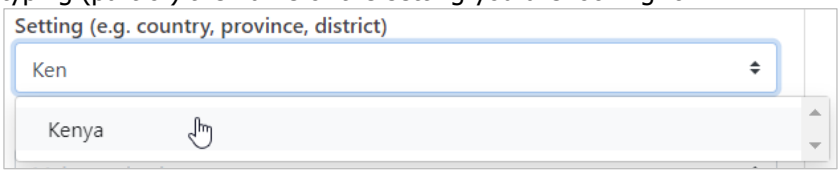
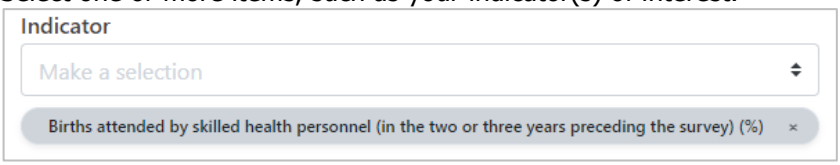


- **Benchmark** Choose the comparison settings for benchmarking. This tab is only available in views under the 'Compare inequality' component of the software.

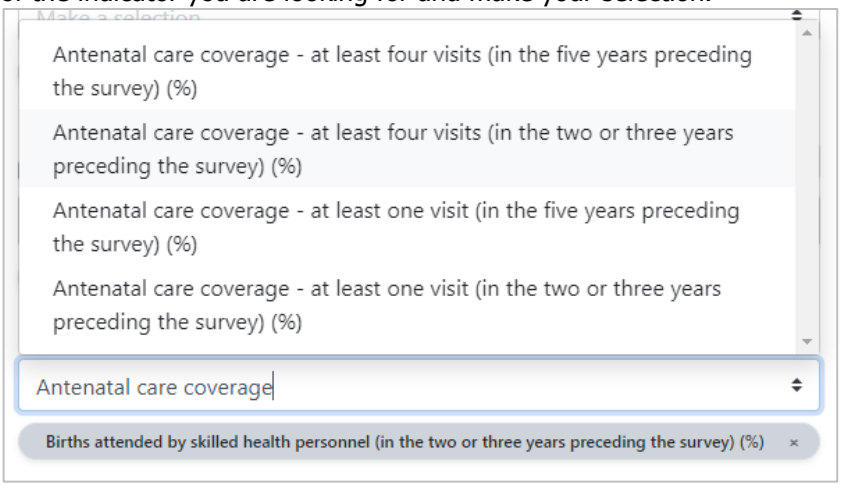


Each tab of the selection menu comprises multiple selectors that allow you to modify the data displayed in the visual. To facilitate navigation, the different **selector types** are described in Table 2.

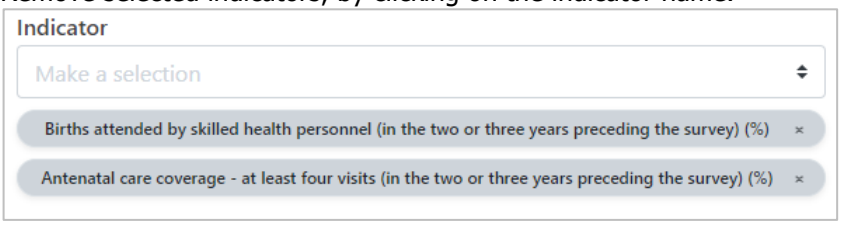
Table 2 Selector types

Selector type	Navigation
Dropdown menu (single select)	Select a single item, such as your setting of interest.  Click the box to see all the available settings and make your selection.  Alternatively, replace an already chosen setting by clicking the box and typing (part of) the name of the setting you are looking for. 
Dropdown menu (multi-select)	Select one or more items, such as your indicator(s) of interest.  Click the box to see all the available indicators and make your selection.

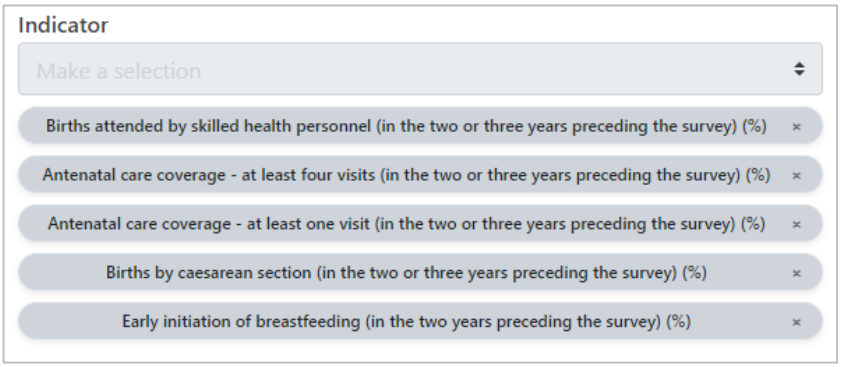
Alternatively, search for a specific indicator by typing (part of) the name of the indicator you are looking for and make your selection.



Remove selected indicators, by clicking on the indicator name.

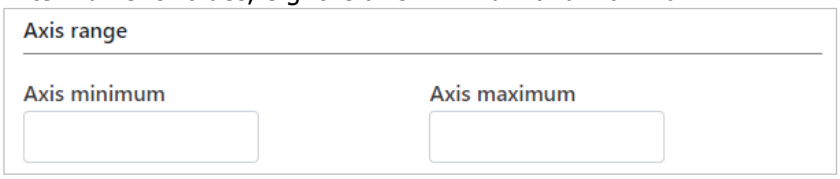


Note that often there is a limit to the number of items that you can display in the visual. For example, in most graphs, you can only show up to five indicators simultaneously. Once you have selected the maximum number of items, the selector will become grey and irresponsive. To make further changes, first remove selected items and then continue add new ones.

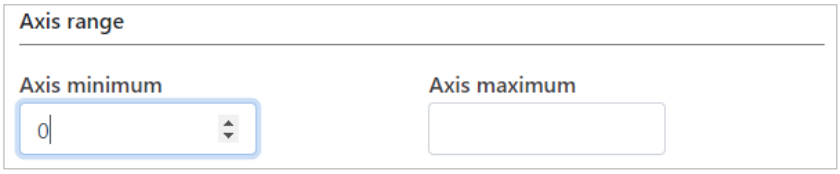


Numeric input

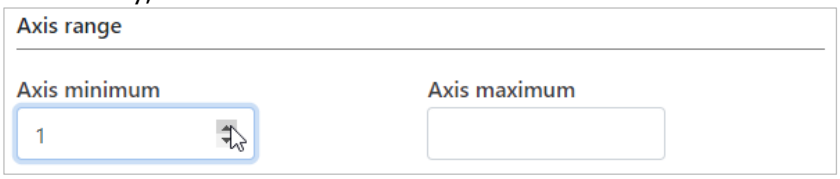
Enter numeric values, e.g. the axis minimum and maximum.



Click inside the box and enter a number.

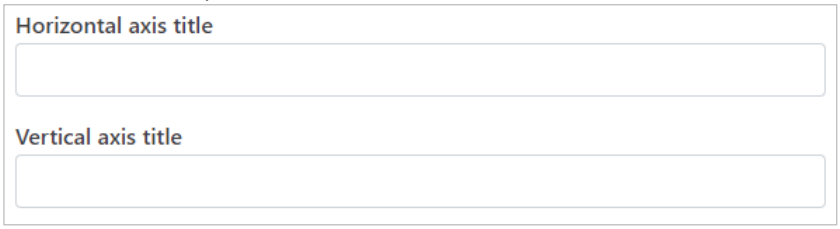


Alternatively, use the arrows to select a number.

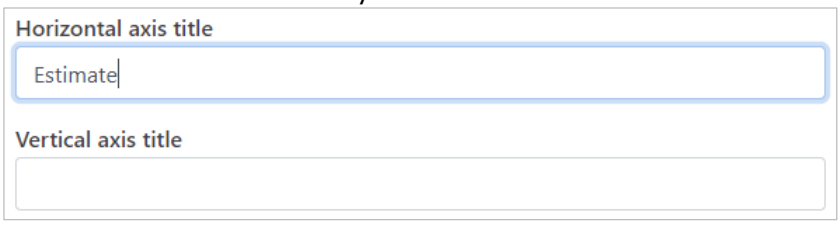


Text input (empty)

Enter information, such as horizontal and vertical axis titles.

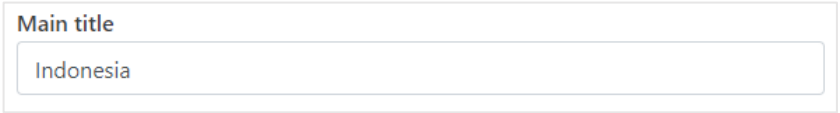


Click inside the box and enter your text.

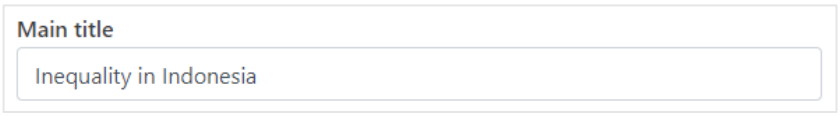


Text input (pre-filled)

Modify existing information, such as the main title (by default, the main title includes information about the setting displayed in the visual).



Click inside the box and delete, alter or replace the main title with the text of your choice.



Checkbox

Limit the view, e.g. to the most recent date, or include information, such as 95% confidence intervals.

Check the box to limit the view to the most recent date or include 95% confidence intervals.

Radio button

Choose between different options, such as the sort order of your data.

Click the sort order of your choice to rearrange data in ascending or descending order.

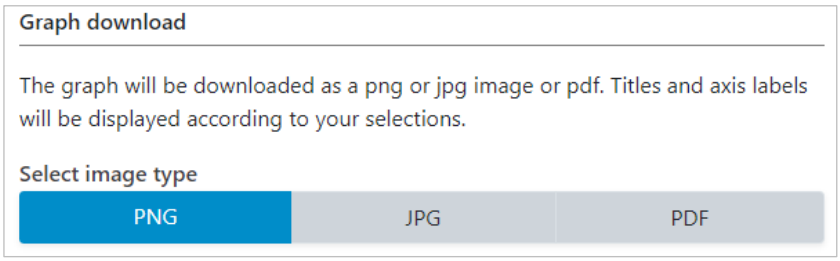
Switch button

Switch an item on or off, such as reference lines in graphs.

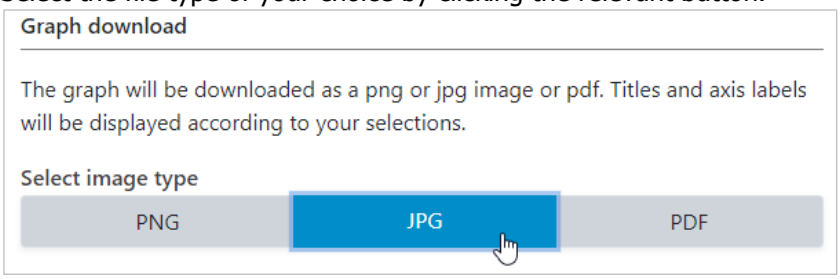
Click the switch to display setting average and/or median lines.

Toggle button

Toggle between different options, such as the file type for graph downloads.

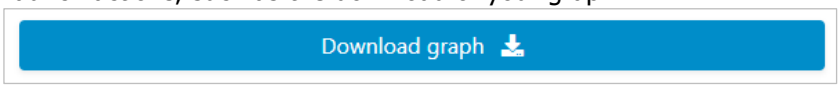


Select the file type of your choice by clicking the relevant button.

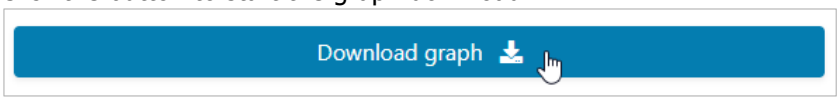


Action button

Launch actions, such as the download of your graph.



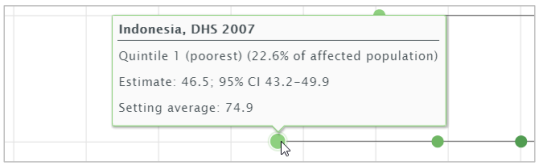
Click the button to start the graph download.



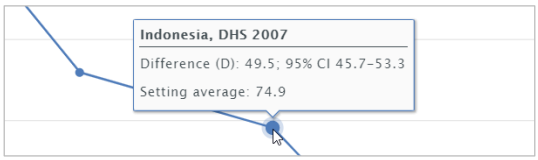
3.4.5 Tooltips

Hover over data points in graphs to see a tooltip with additional information about the data point.

For **disaggregated data**, the tooltip will show information about the setting, source, date, subgroup name and population share, subgroup estimate and 95% confidence interval, as well as the setting average (provided these information are available).

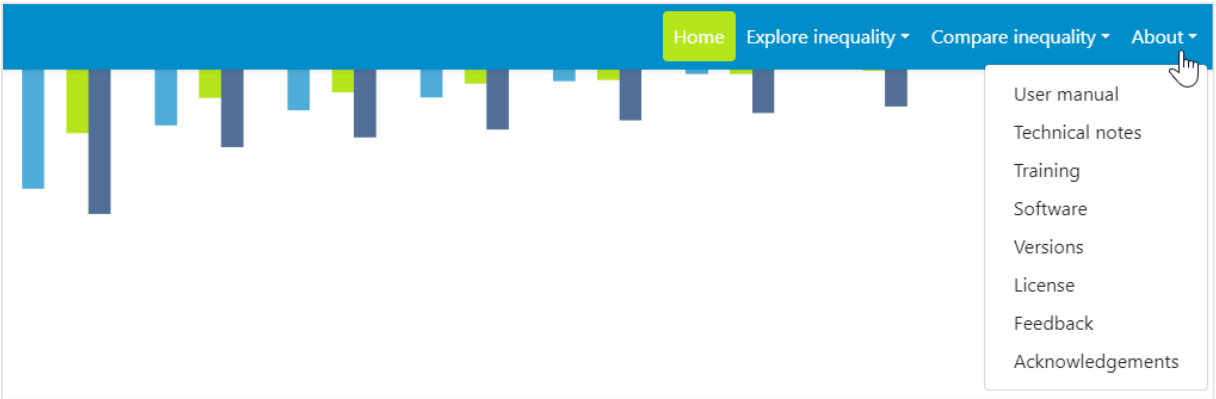


For **summary measures**, the tooltip includes information about the setting, source and date, summary measure name, summary measure estimate and 95% confidence interval, as well as the setting average (provided these information are available).



3.5 Learning more

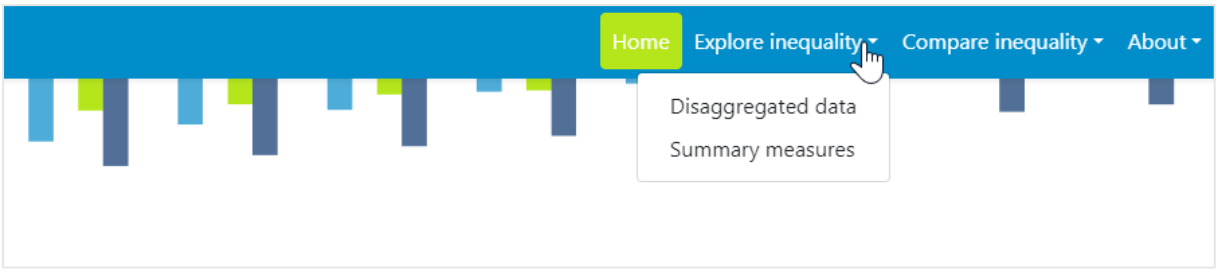
Further information about HEAT Plus are provided in the **About** pages of the software. These can be accessed by hovering over 'About' in the navigation menu in the top-right corner of the software.



- This **user manual** details all features and functionalities of HEAT Plus.
- The **technical notes** provide detailed information about the data displayed in HEAT Plus, including the disaggregated data and summary measures.
- **Training** links to a short, free eLearning course on how to use HEAT and HEAT Plus.
- **Software** provides information about the software used to develop HEAT Plus.
- **Versions** shows the history of the different versions of HEAT Plus.
- **License** contains the terms of use and software license agreement.
- **Feedback** gives instructions on how to provide feedback about the software.
- **Acknowledgements** lists the contributions of our colleagues, collaborators, contractors and partners to developing this software.

4 Explore inequality

Under 'Explore inequality', you can **explore the situation in one setting of interest**. Inequalities can be assessed using disaggregated data and summary measures that are visualized in a variety of different graphs and tables. To access the visualizations, hover over 'Explore inequality' in the navigation menu at the top and click 'Disaggregated data' or 'Summary measures'.



TIPS for exploring inequality

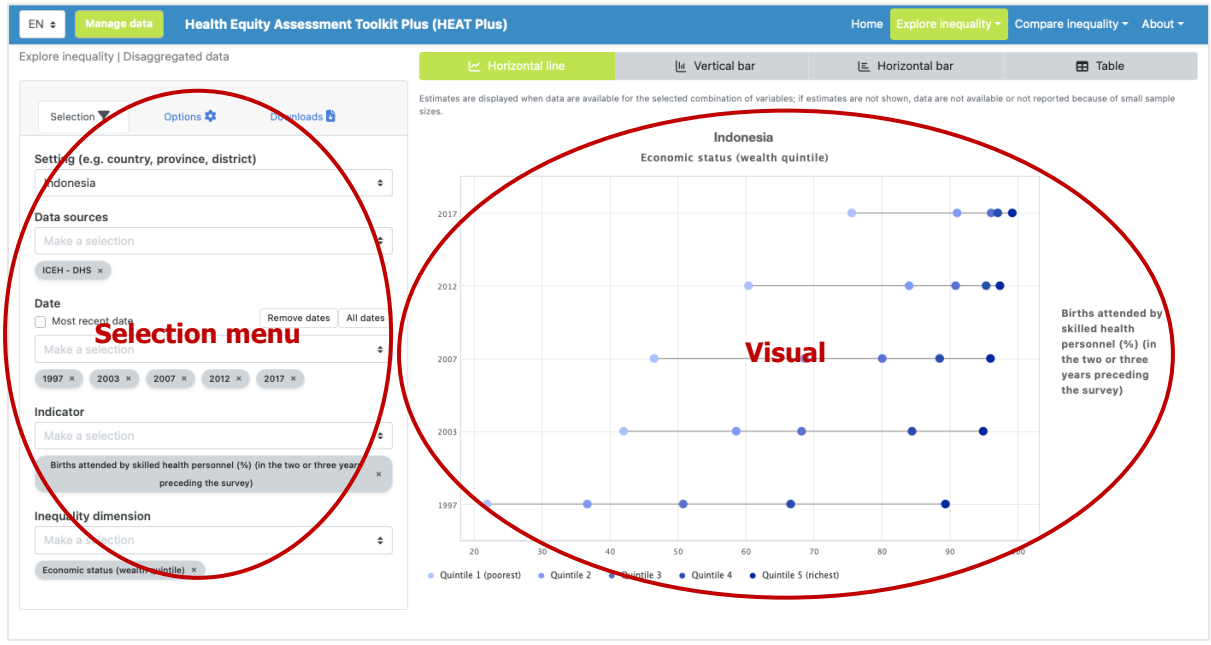
- ✓ Do start by selecting one indicator and one inequality dimension at a time, before looking at multiple indicators and dimensions simultaneously.
- ✗ It is not recommended to show favourable and adverse indicators together in one graph. The interpretation of these is different: for favourable indicators, such as skilled birth attendance, a high value is desirable (meaning high coverage), while for adverse indicators, such as under-five mortality rate, a low value is preferable (meaning low mortality).
- ✗ It is not recommended to assess changes in inequality over time if the number of subgroups differs from one time to another. For example, when looking at the situation by subnational/administrative region (such as provinces or districts), the number of regions may differ between different time points, e.g. because multiple regions are combined into one larger geographic area in one year but not in another (for sample size or other reasons). In this case, assessing changes in inequality over time may lead to false conclusions: Inherently, inequality tends to be lower in years with fewer regions. However, this may mask inequalities that exist between smaller geographic areas.

4.1 Disaggregated data

HEAT Plus allows you to explore disaggregated data in different views; data are visualized in horizontal line graphs, vertical bar graphs, horizontal bar graphs and tables. To access the different visualization types, click the tabs in the visualization menu across the top of the view. The selected visualization type will be highlighted in green.

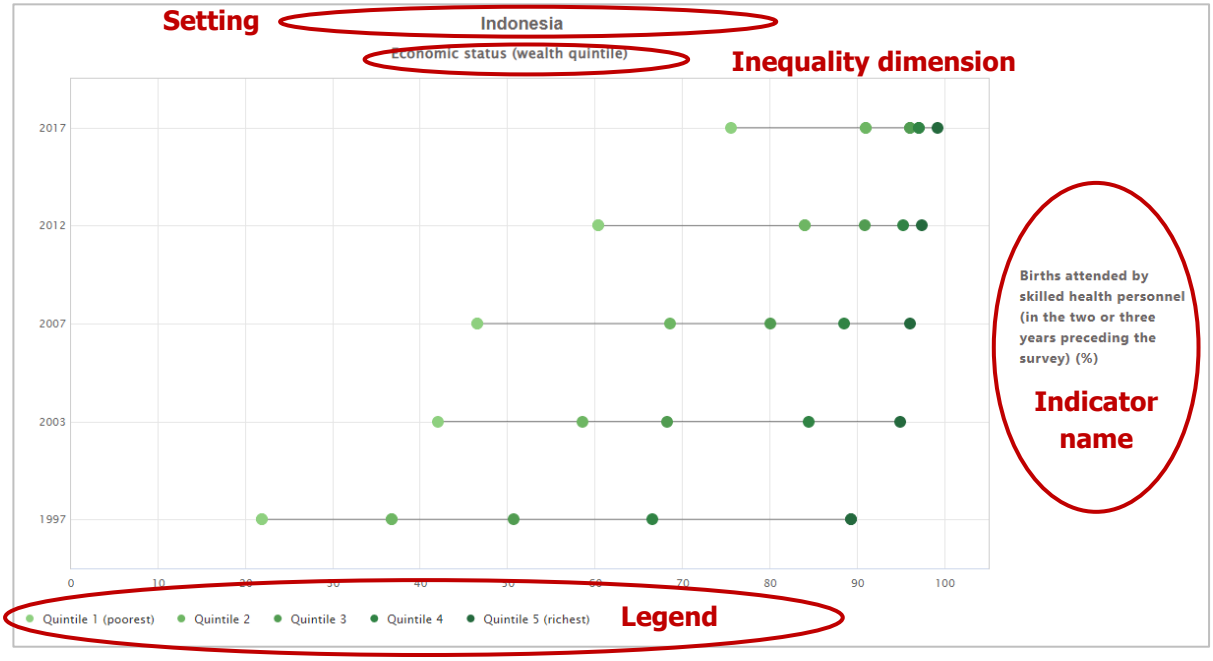
4.1.1 Horizontal line graph

In this view, disaggregated data are displayed in a horizontal line graph. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.

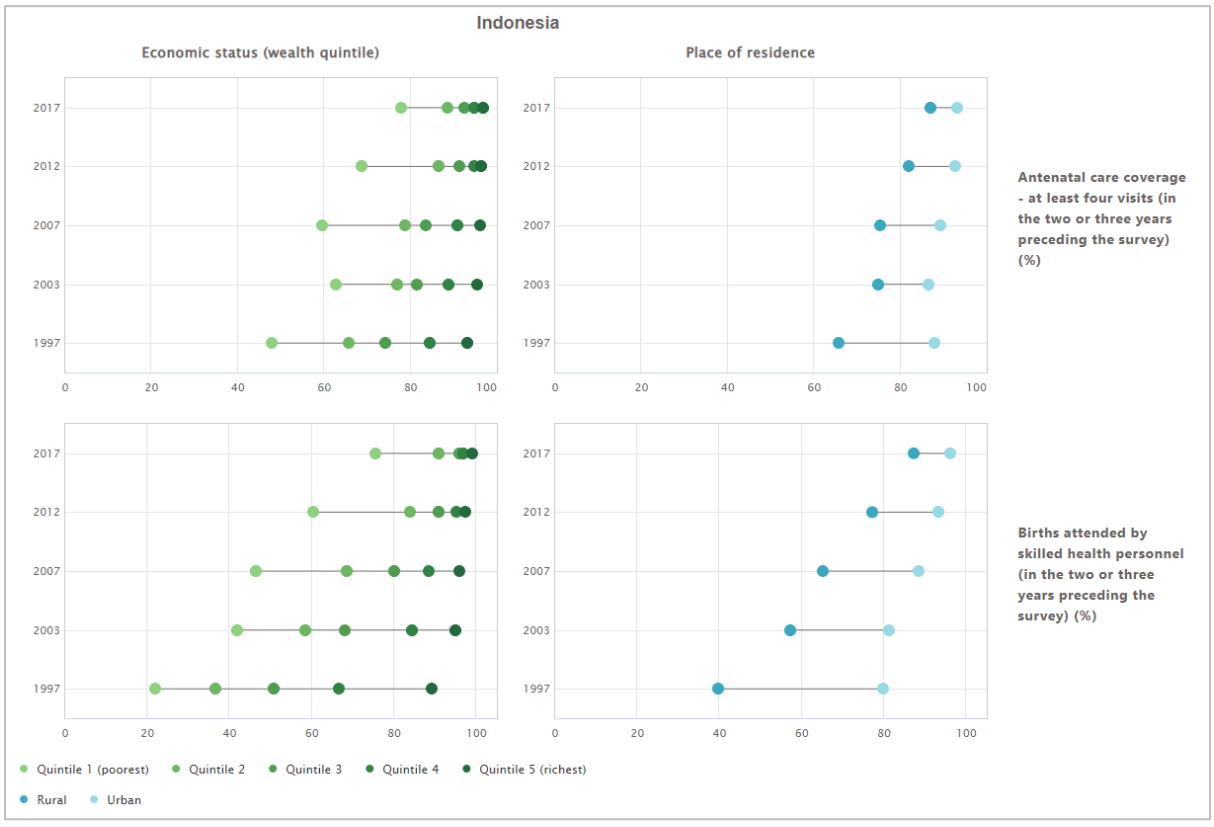


What you see

The visual shows a horizontal line graph (also called equiplot) presenting disaggregated data (displayed on the x-axis) for a selected setting of interest. For each date (displayed on the y-axis), multiple coloured circles are shown – one for each population subgroup. Black horizontal lines indicate the difference between minimum and maximum subgroup estimates. Note that the title of the visual is default and can be changed using the Options tap of the selection menu (see Table 3).



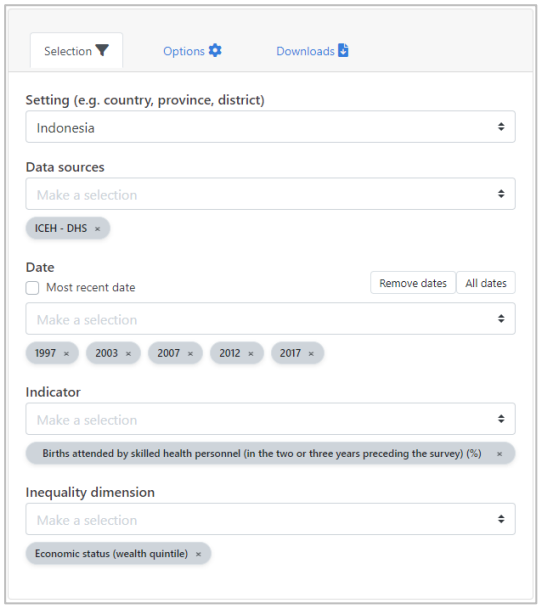
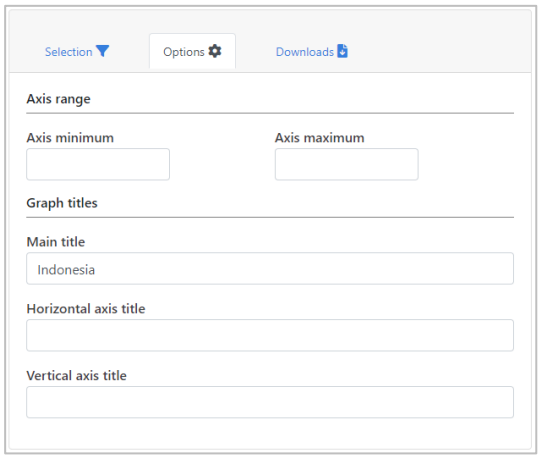
If more than one indicator and/or inequality dimension are selected at the same time, multiple graphs are shown – one for each indicator and/or dimension. You can choose to show up to five indicators and five dimensions simultaneously.

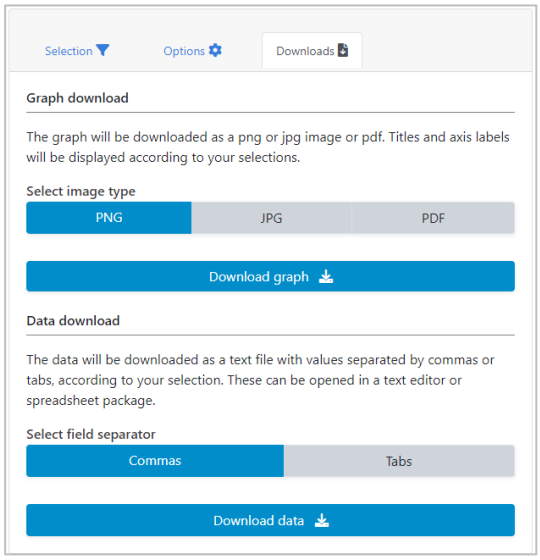


How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 3 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

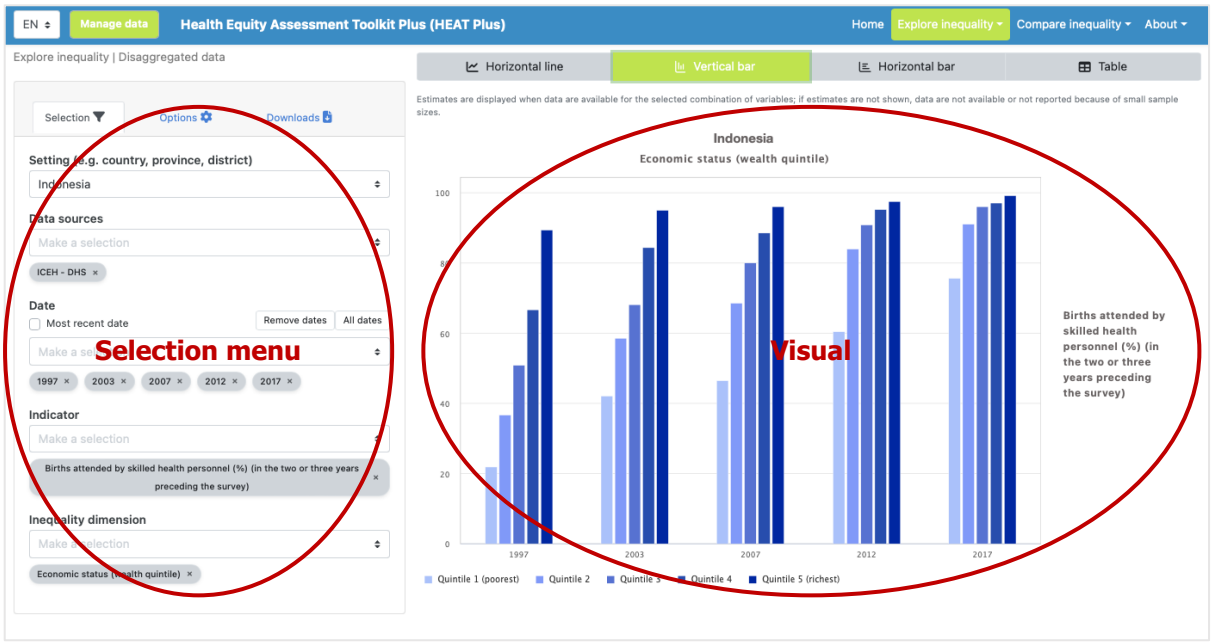
Table 3 Selection menu for the 'Horizontal line graph' showing 'Disaggregated data' under 'Explore inequality'

Tab	Description	
Selection	Select the data displayed in the visual, including your setting of interest, data source(s), date(s), indicator(s) and inequality dimension(s).	
Options	Use different options to modify your view. You can choose custom axis ranges and graph titles.	

Downloads	Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files).	

4.1.2 Vertical bar graph

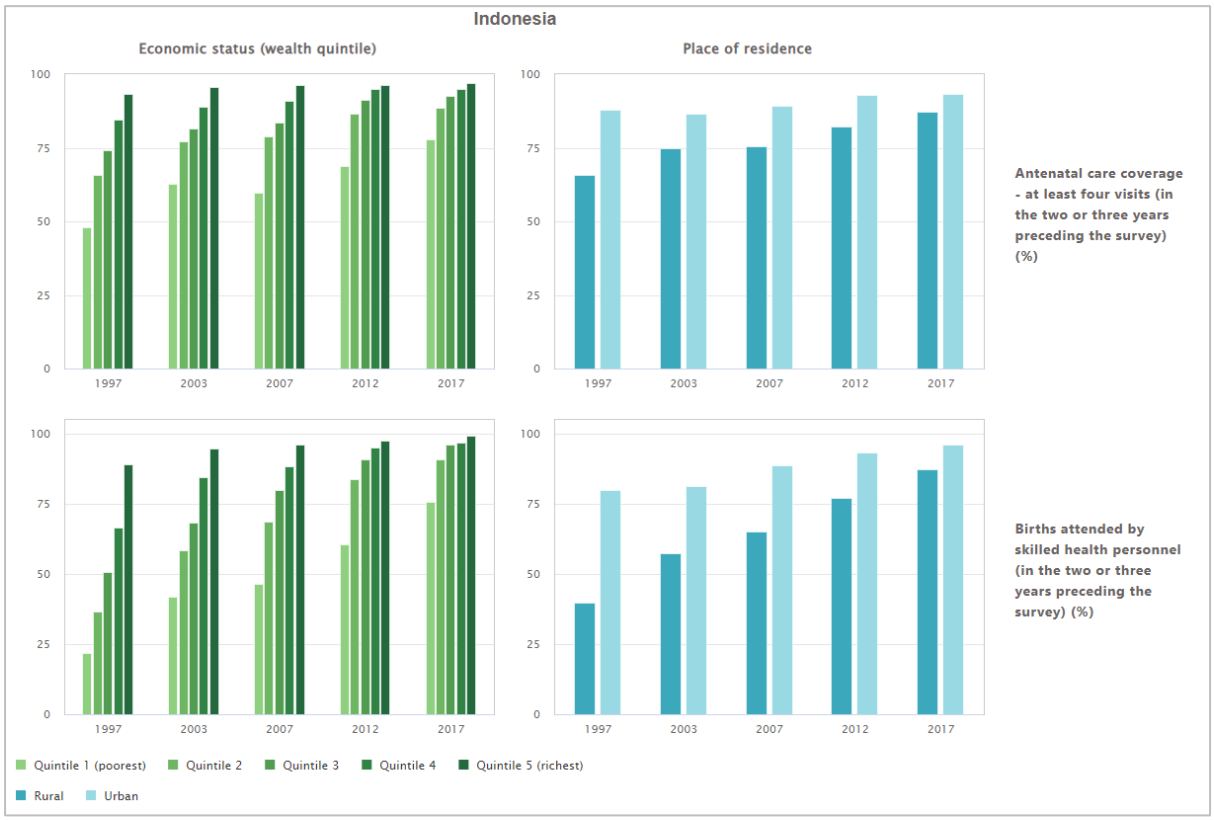
In this view, disaggregated data are displayed in a vertical bar graph. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.



What you see

The visual shows a vertical bar graph presenting disaggregated data (displayed on the y-axis) in a selected setting of interest. For each date (displayed on the x-axis), multiple coloured bars are shown – one for each subgroup. Note that the title of the visual is default and can be changed using the Options tap of the selection menu (see Table 4).

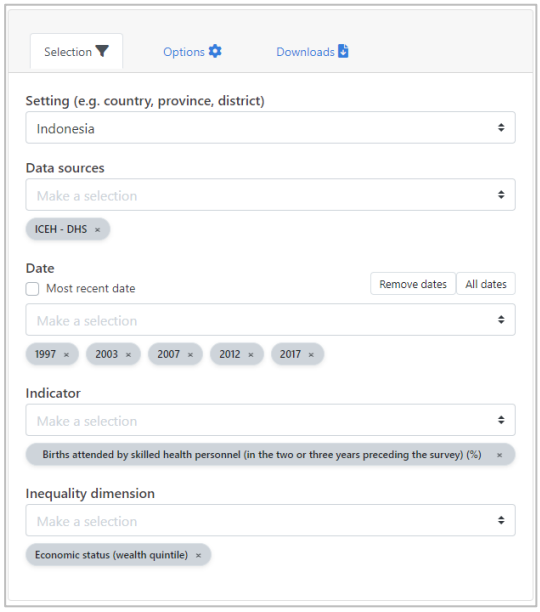
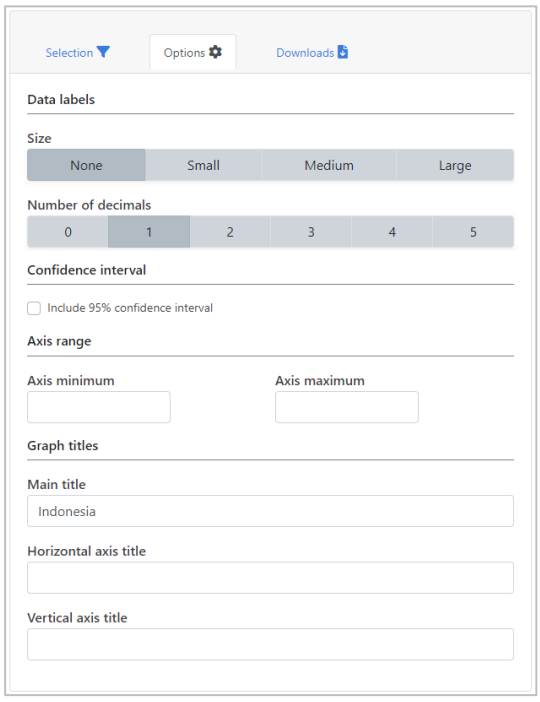
If more than one indicator and/or inequality dimension are selected at the same time, multiple graphs are shown – one for each indicator and/or dimension. You can select to show up to five indicators and five dimensions simultaneously.

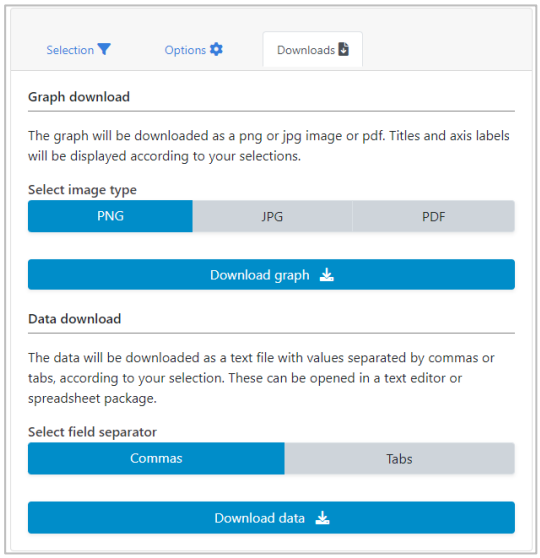


How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 4 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

Table 4 Selection menu for the 'Vertical bar graph' showing 'Disaggregated data' under 'Explore inequality'

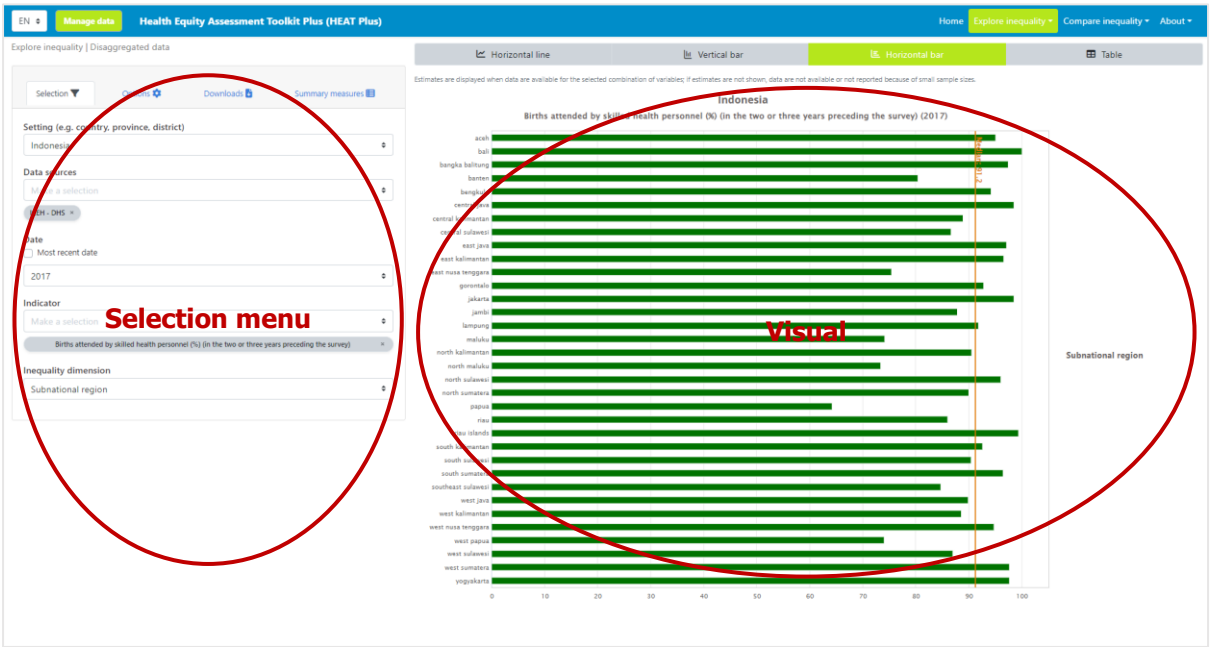
Tab	Description	
Selection	Select the data displayed in the visual, including your setting of interest, data source(s), date(s), indicator(s) and inequality dimension(s).	
Options	Use different options to modify your view. You can choose to show data labels and confidence intervals, and select custom axis ranges and graph titles.	

Downloads	Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files).	

4.1.3 Horizontal bar graph

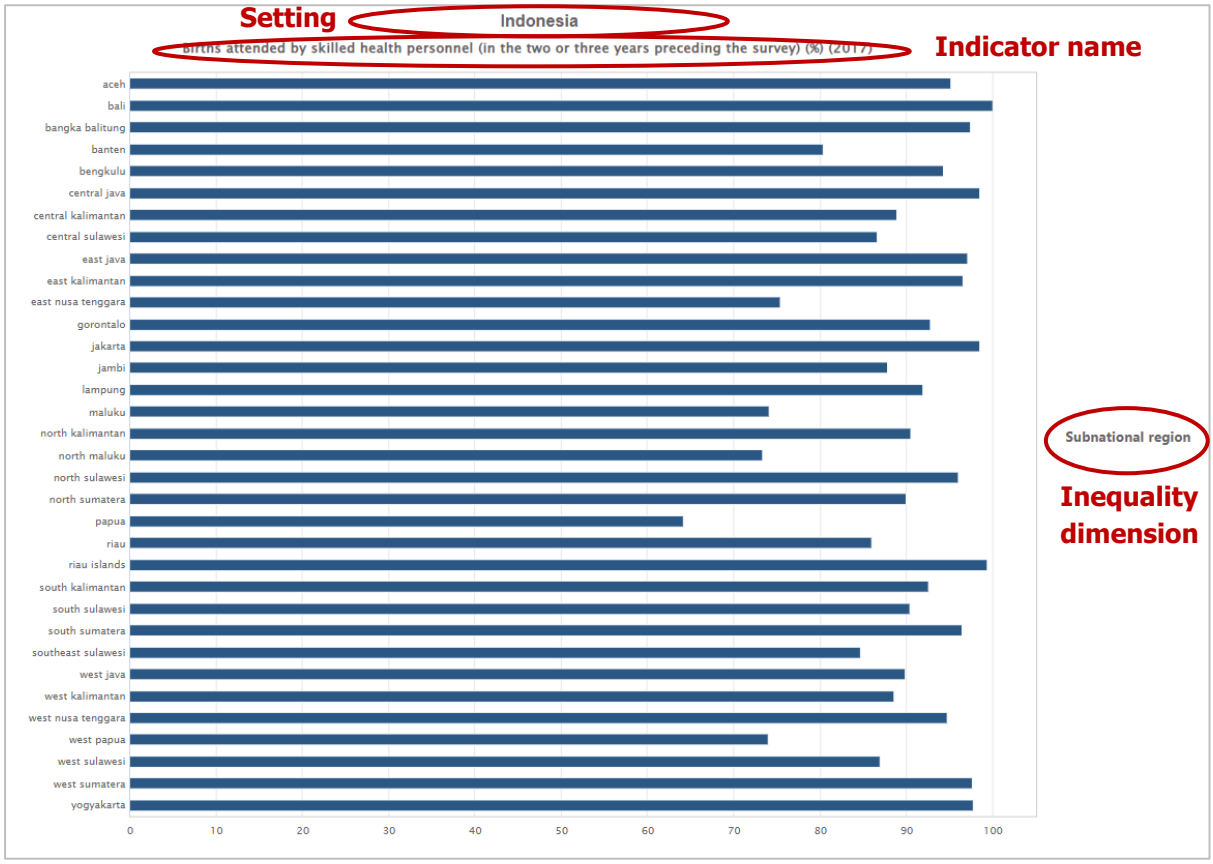
In this view, disaggregated data are displayed in a horizontal bar graph. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.

This visualization type is particularly useful for inequality dimensions with many subgroups, such as subnational/administrative region (e.g. provinces or districts). Data are shown for one date at a time, allowing for a more in-depth assessment of inequalities in your setting of interest.



What you see

The visual shows a horizontal bar graph presenting disaggregated data (displayed on the x-axis) in a selected setting of interest. The vertical orange line indicates the median value (the middle point of your data) across all subgroups. Note that the title of the visual is default and can be changed using the Options tap of the selection menu (see Table 5).



If more than one indicator is selected at the same time, multiple graphs are shown – one for each indicator. You can select to show up to three indicators simultaneously.

How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 5 provides a description of the four tabs that comprise the selection menu: selection, options, downloads and summary measures.

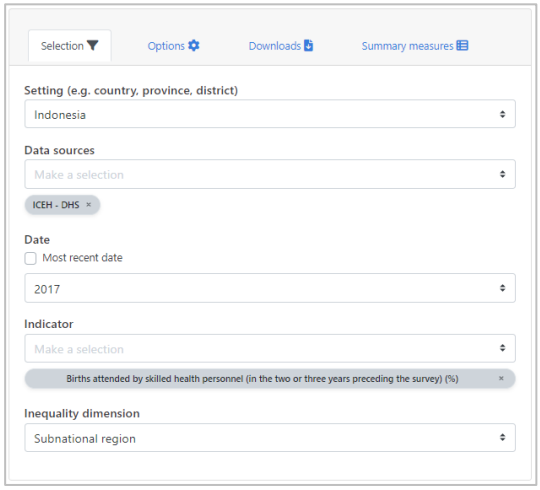
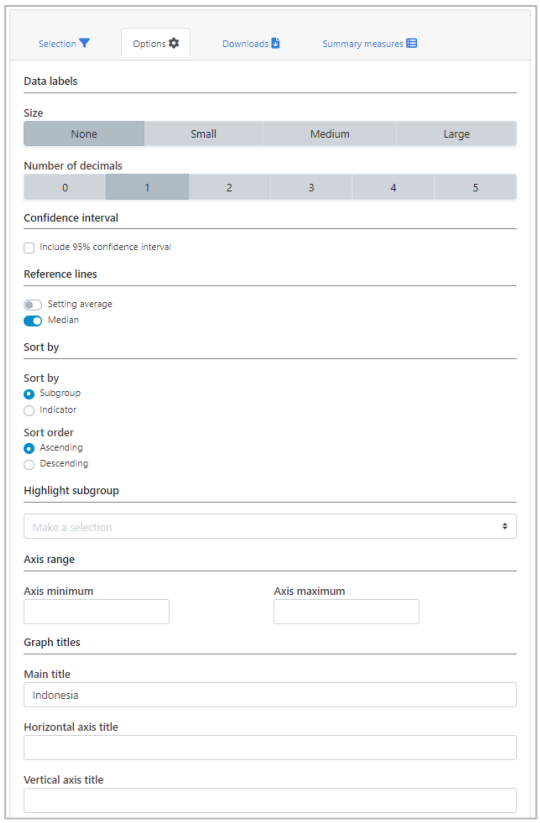
The additional 'Summary measures' tab was designed specifically to facilitate the assessment of inequalities for dimensions with many subgroups, such as subnational/administrative region (e.g. provinces or districts). The following specific difference and ratio measures are calculated for

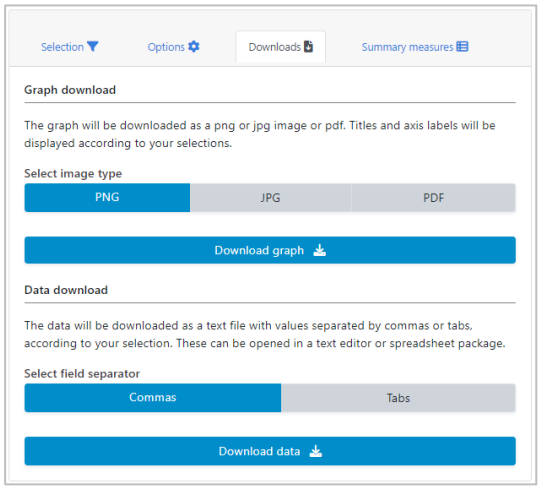
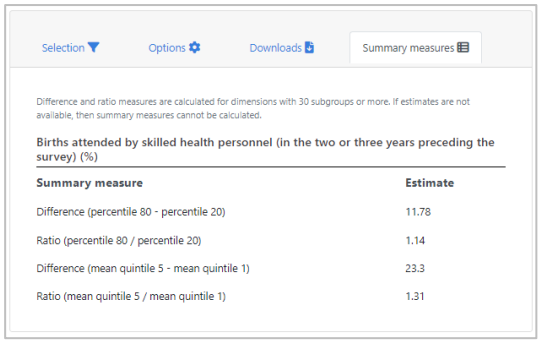
- Dimensions with more than 30 subgroups:
    - Difference between percentile 80 and percentile 20
    - Ratio of percentile 80 to percentile 20
    - Difference between the mean estimates in quintile 5 and quintile 1
    - Ratio of the mean estimates in quintile 5 to quintile 1
- Dimensions with more than 60 subgroups:
    - Difference between percentile 90 and percentile 10
    - Ratio of percentile 90 to percentile 10
    - Difference between the mean estimates in decile 10 and decile 1
    - Ratio of the mean estimates in decile 10 to decile 1
- Dimensions with more than 100 subgroups:
    - Difference between percentile 95 and percentile 5
    - Ratio of percentile 95 to percentile 5

- Difference between the mean estimates in the top 5% and the bottom 5%
- Ratio of the mean estimates in the top 5% to the bottom 5%

For dimensions with many subgroups, these measures may be a more accurate reflection of the level of inequality than measuring the range between the maximum and minimum values using regular (range) difference and ratio measures, as they avoid using possible outlier values.

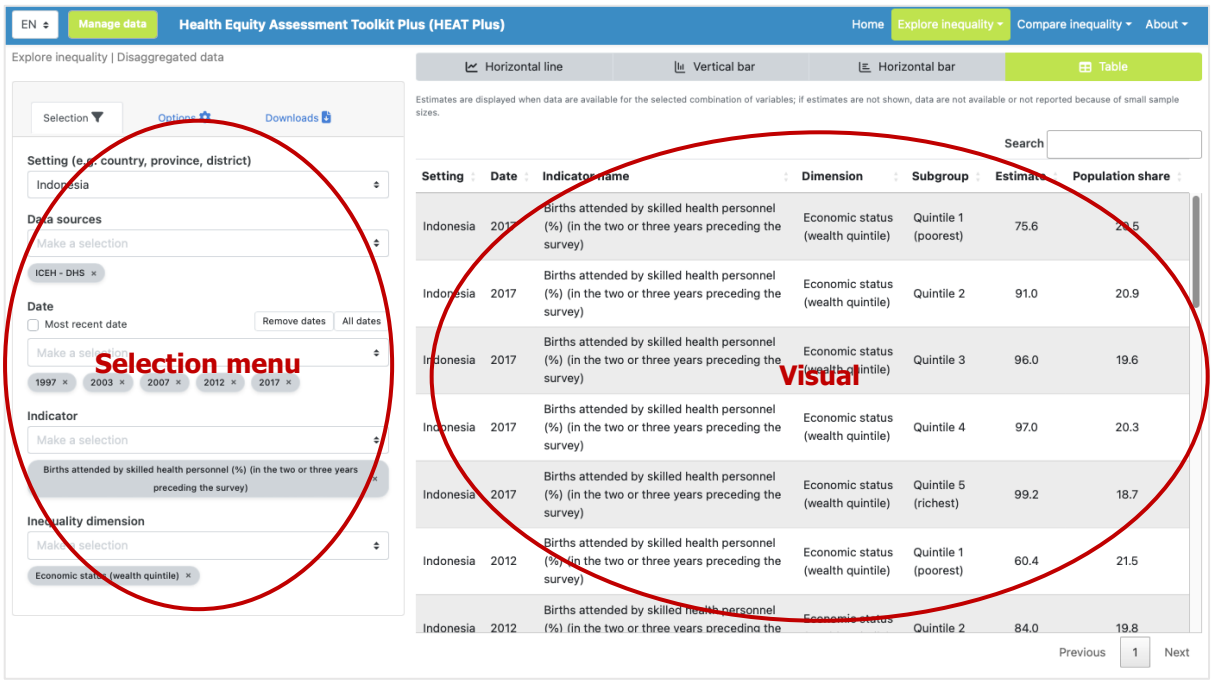
Table 5 Selection menu for the 'Horizontal bar graph' showing 'Disaggregated data' under 'Explore inequality'

Tab	Description	
Selection	Select the data displayed in the visual, including your setting of interest, data source(s), date, indicator(s) and inequality dimension.	
Options	Use different options to modify your view. You can choose to show data labels, confidence intervals and reference lines; change the sort order of your data; highlight selected regions; and select custom axis ranges and graph titles.	

Downloads	Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files).	
Summary measures	View specific summary measures calculations. Specific difference and ratio measures are calculated for dimensions with more than 30 subgroups.	

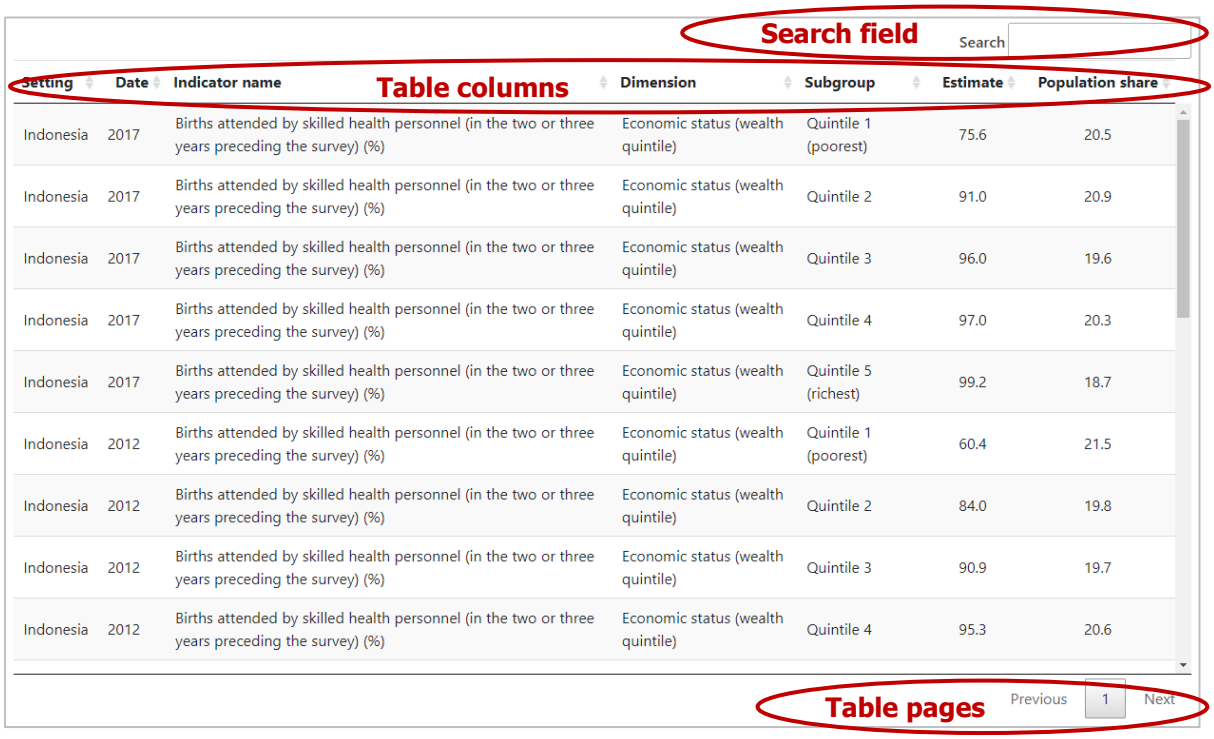
4.1.4 Table

In this view, disaggregated data are displayed in a table. The visual at the centre shows the table; the selection menu on the left allows you to customize the visual.



What you see

The visual shows a table presenting disaggregated data for a selected setting of interest. By default, the table displays information about the setting, date, indicator, inequality dimension, population subgroup, subgroup estimate and subgroup population share (though these can be changed using the selection menu - see Table 6).

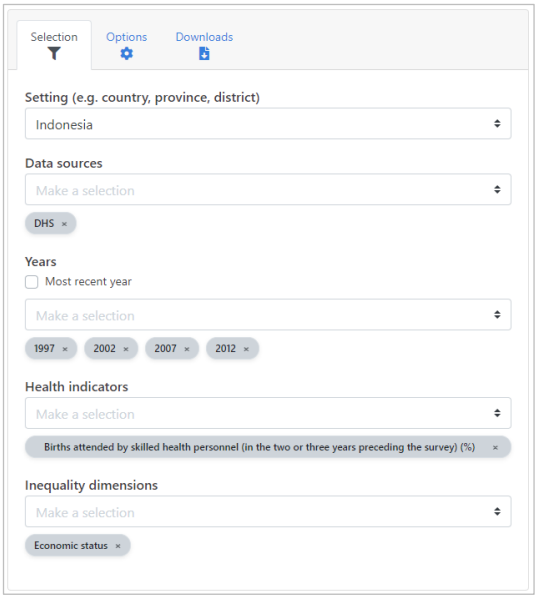
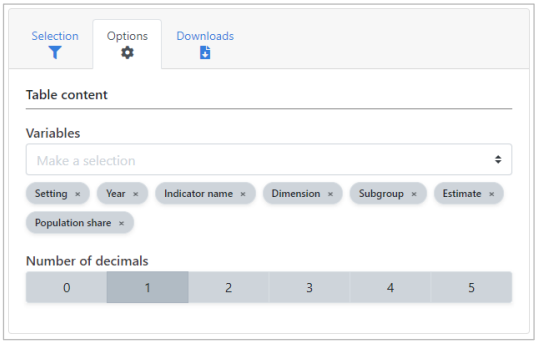
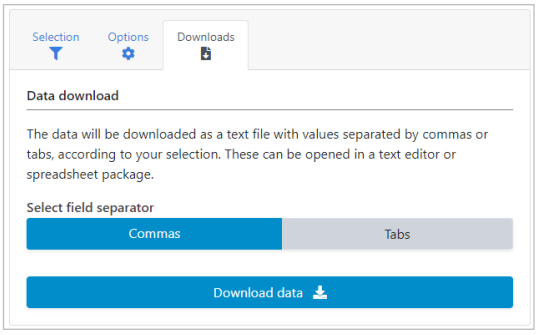


Setting	Date	Indicator name	Dimension	Subgroup	Estimate	Population share
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 1 (poorest)	75.6	20.5
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 2	91.0	20.9
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 3	96.0	19.6
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 4	97.0	20.3
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 5 (richest)	99.2	18.7
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 1 (poorest)	60.4	21.5
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 2	84.0	19.8
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 3	90.9	19.7
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 4	95.3	20.6

How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 6 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

Table 6 Selection menu for the 'Table' showing 'Disaggregated data' under 'Explore inequality'

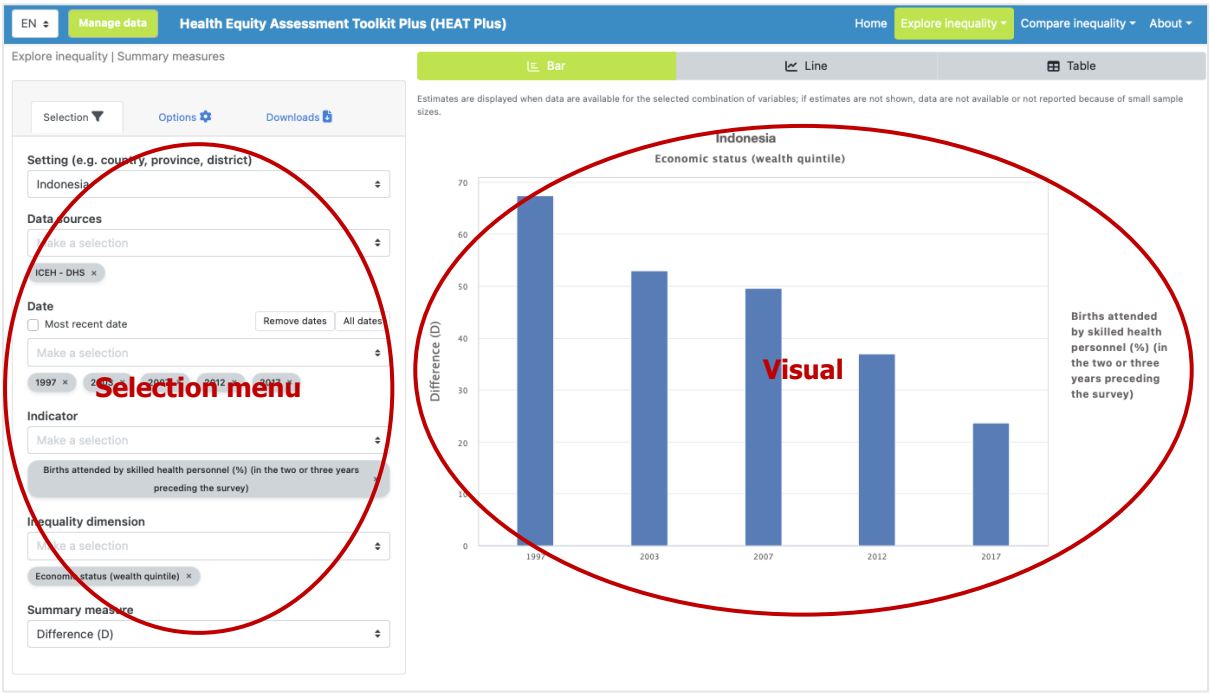
Tab	Description	
Selection	Select the data displayed in the visual, including your setting of interest, data source(s), date(s), indicator(s) and inequality dimension(s).	
Options	Use different options to modify your view. You can add additional variables and determine the number of decimals for numeric values.	
Downloads	Download the data displayed in the visual (as comma or tab separated text files).	

4.2 Summary measures

HEAT Plus allows you to explore summary measures in different views; data are visualized in bar graphs, line graphs and tables. To access the different visualizations, click the tabs in the visualization menu across the top of the view. The selected view will be highlighted in green.

4.2.1 Bar graph

In this view, summary measures are displayed in a bar graph. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.

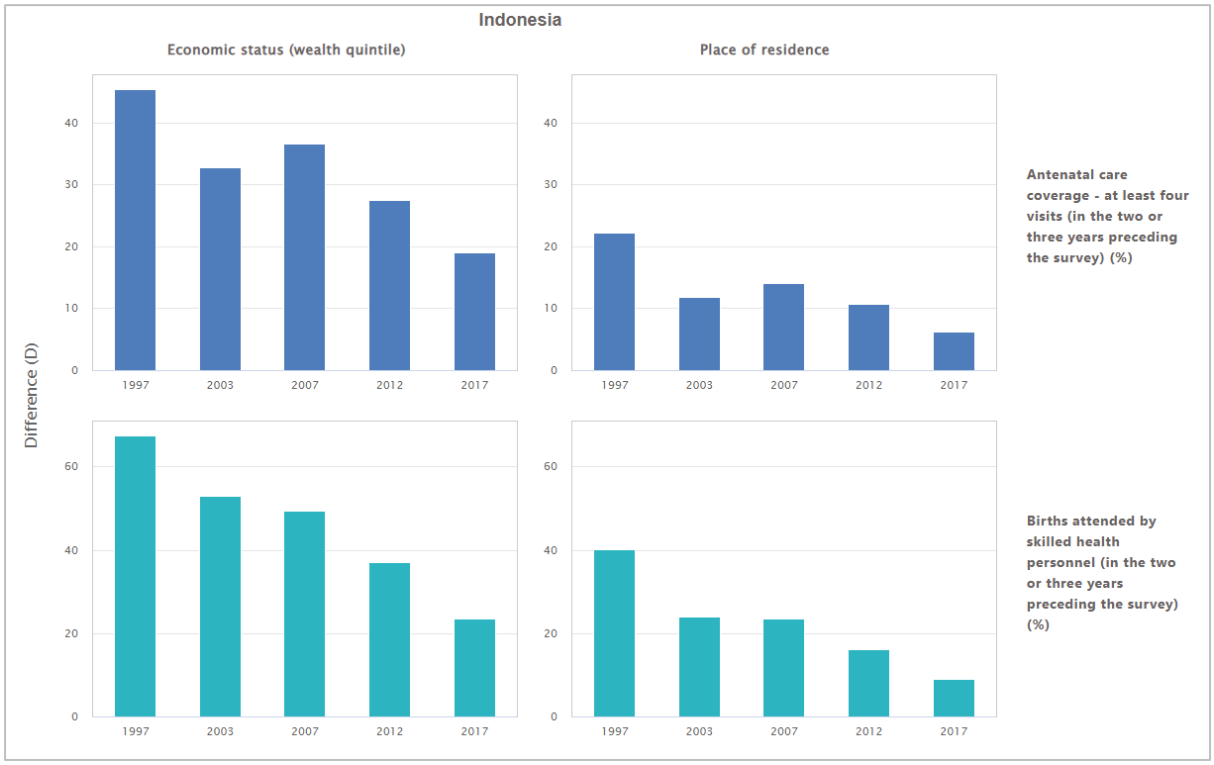


What you see

The visual shows a bar graph presenting summary measure data (displayed on the y-axis) for a selected setting of interest. For each date (displayed on the x-axis), there is one coloured bar showing the value of the selected summary measure. Note that the title of the visual is default and can be changed using the Options tap of the selection menu (see Table 7).

If more than one indicator and/or inequality dimension are selected at the same time, multiple graphs

are shown – one for each indicator and/or dimension. You can choose to show up to five indicators and five dimensions simultaneously.

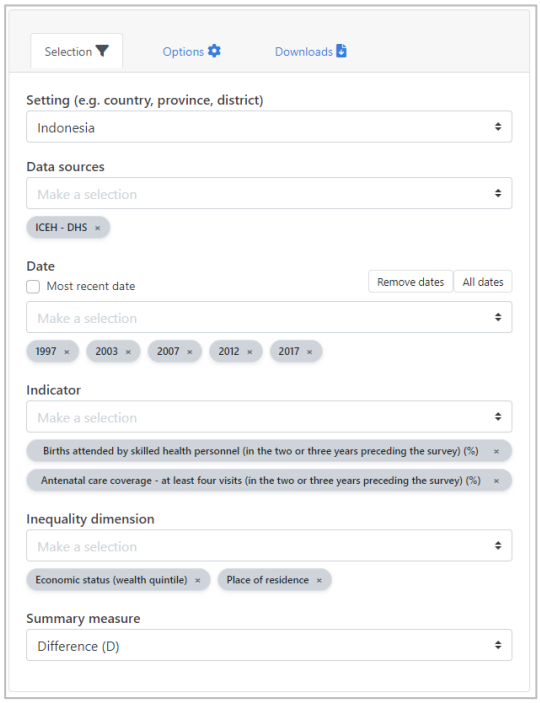
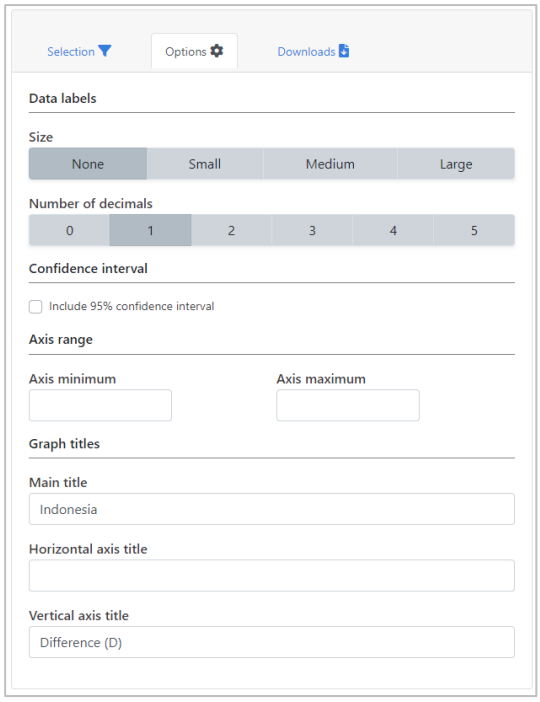


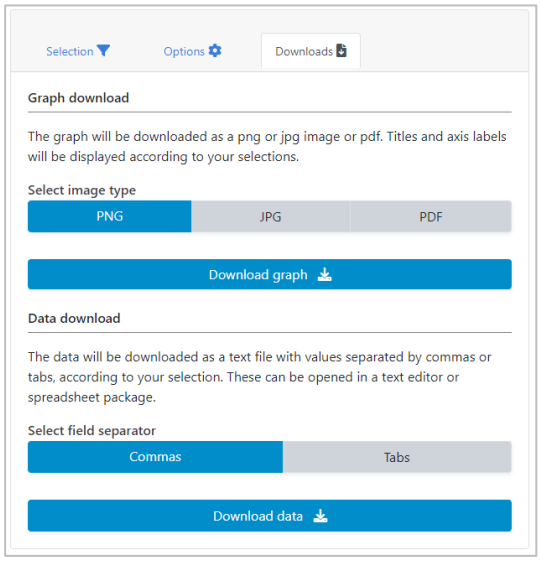
How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 7 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

Table 7 Selection menu for the 'Bar graph' showing 'Summary measures' under 'Explore inequality'

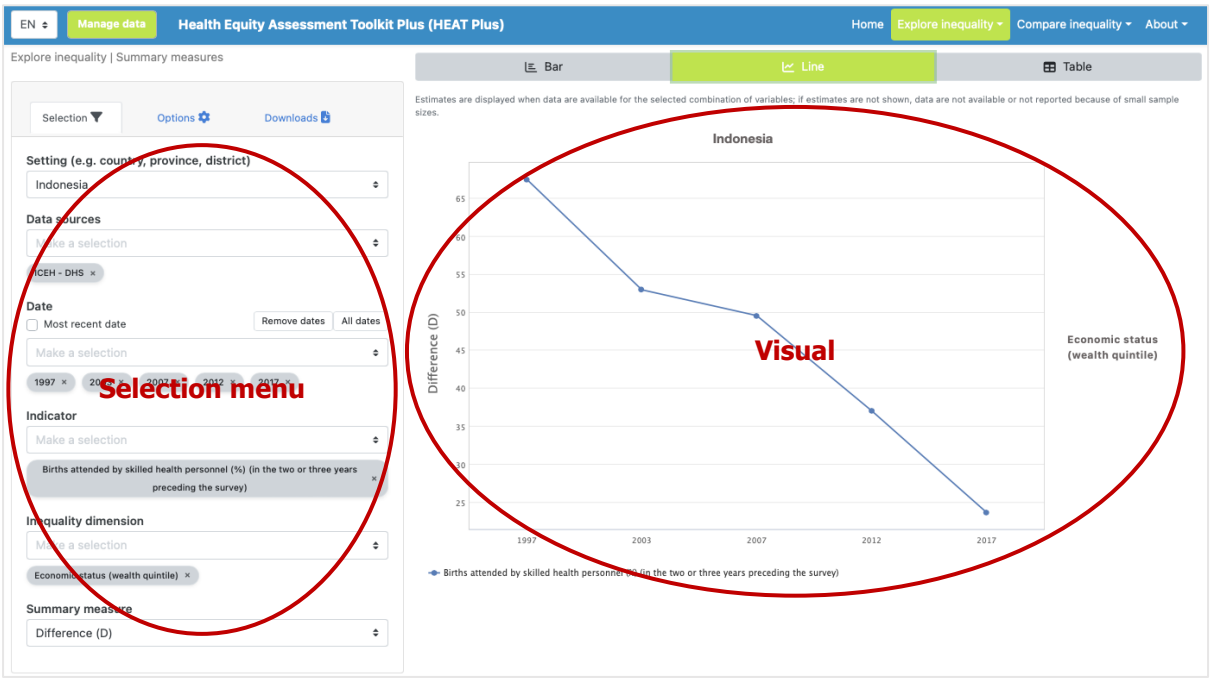
Tab	Description

Selection	Select the data displayed in the visual, including your setting of interest, data source(s), date(s), indicator(s), inequality dimension(s) and summary measure.	
Options	Use different options to modify your view. You can choose to show data labels and confidence intervals, and select custom axis ranges and graph titles.	

Downloads	Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files).	

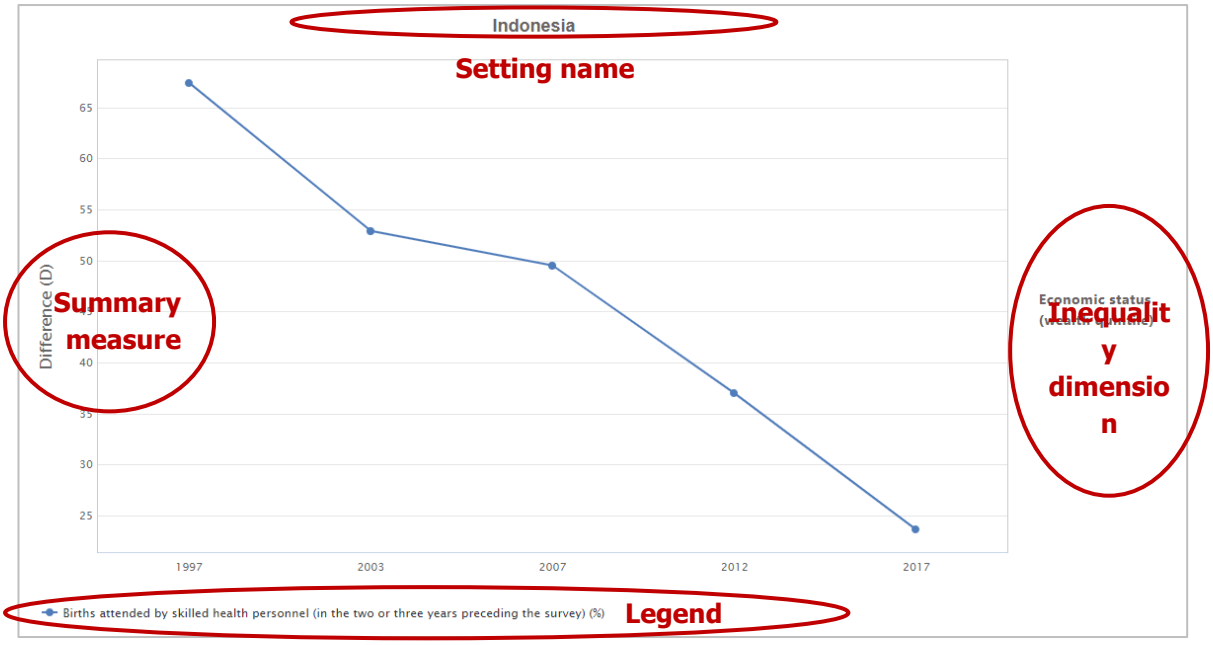
4.2.2 Line graph

In this view, summary measures are displayed in a line graph. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.

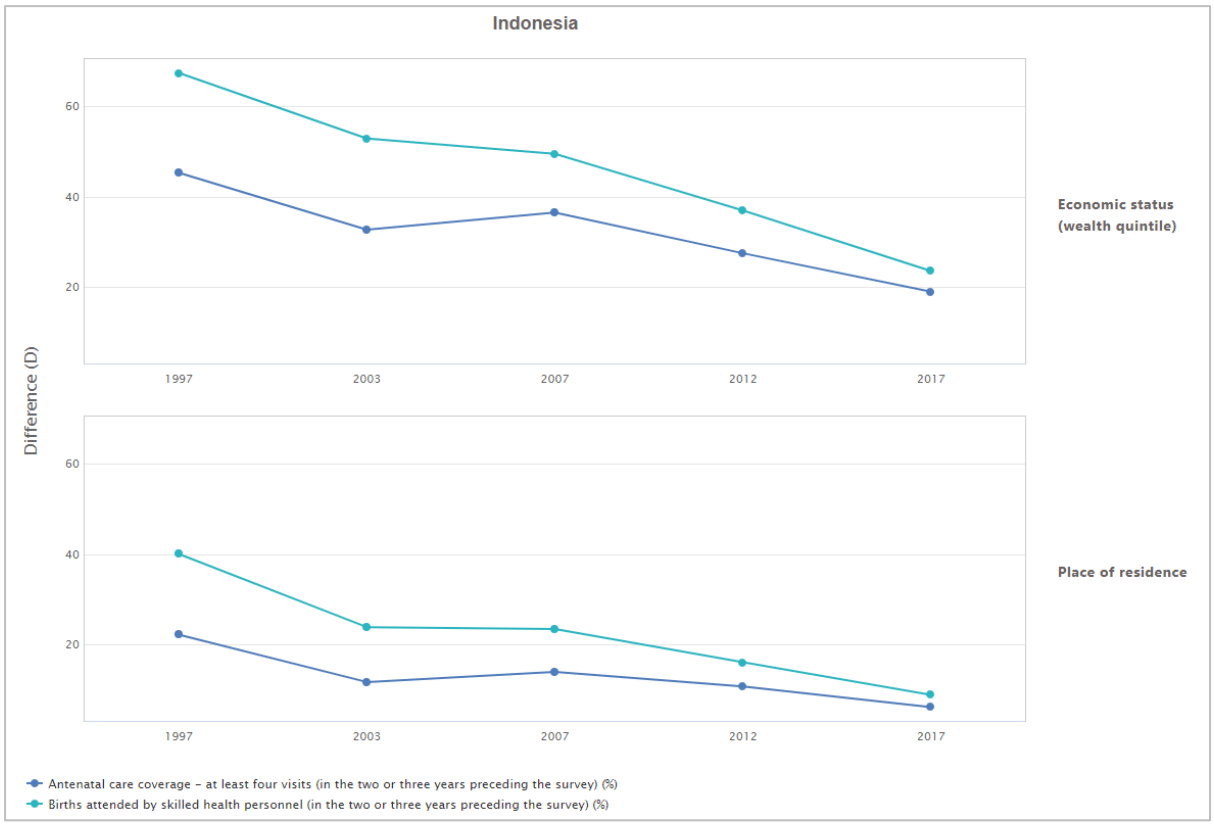


What you see

The visual shows a line graph presenting summary measure data (displayed on the y-axis) for a selected setting of interest. For each date (displayed on the x-axis), there is one data point showing the value of the selected summary measure. Data points are connected by coloured lines. Note that the title of the visual is default and can be changed using the Options tap of the selection menu (see Table 8).



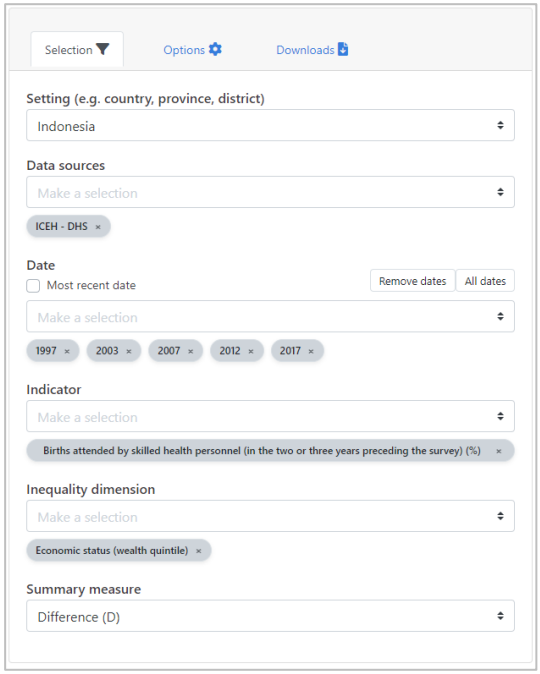
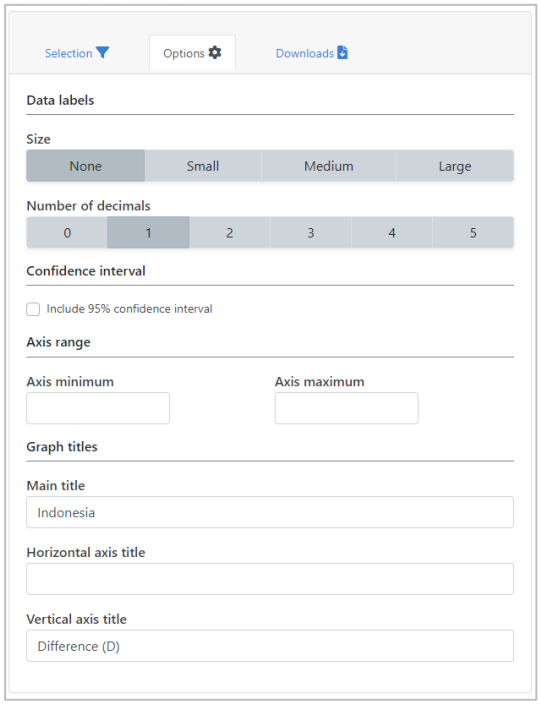
If more than one indicator and/or inequality dimension are selected at the same time, multiple graphs are shown – one for each dimension, with different indicators displayed in different coloured lines. You can choose to show up to five indicators and five dimensions simultaneously.

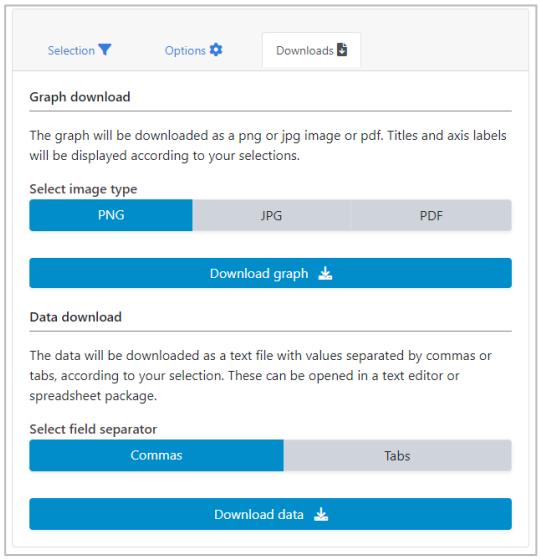


How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 8 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

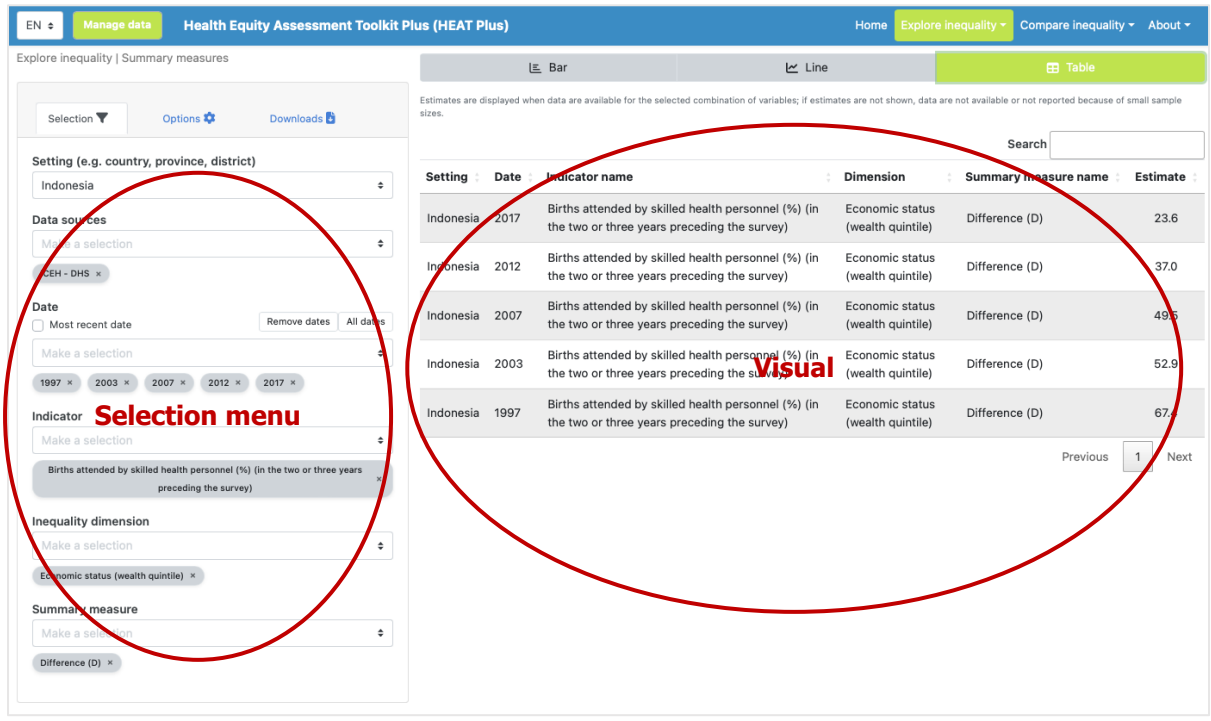
Table 8 Selection menu for the 'Line graph' showing 'Summary measures' under 'Explore inequality'

Tab	Description	
Selection	Select the data displayed in the visual, including your setting of interest, data source(s), date(s), indicator(s), inequality dimension(s) and summary measure.	
Options	Use different options to modify your view. You can choose to show data labels and confidence intervals, and select custom axis ranges and graph titles.	

Downloads	Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files).	

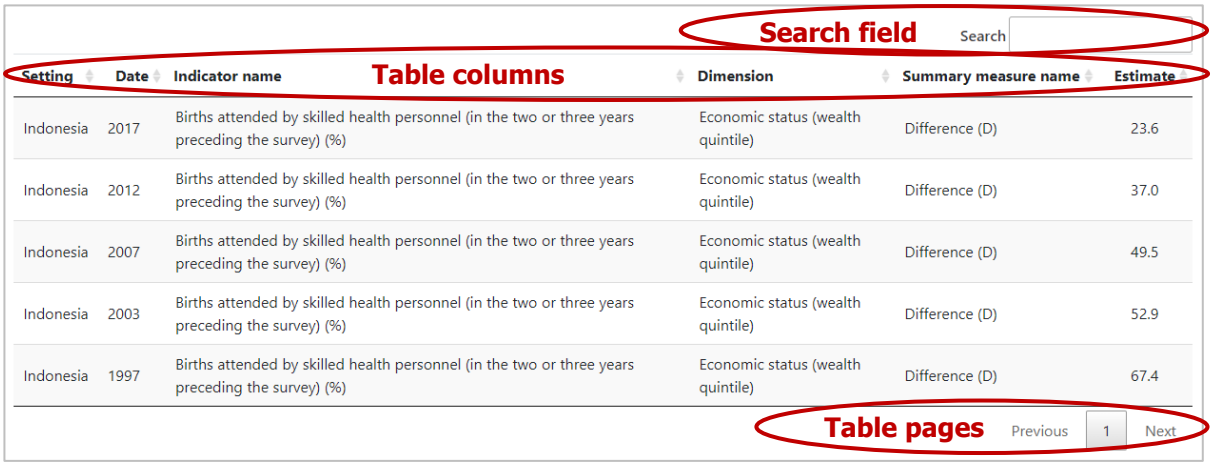
4.2.3 Table

In this view, summary measures are displayed in a table. The visual at the centre shows the table; the selection menu on the left allows you to customize the visual.



What you see

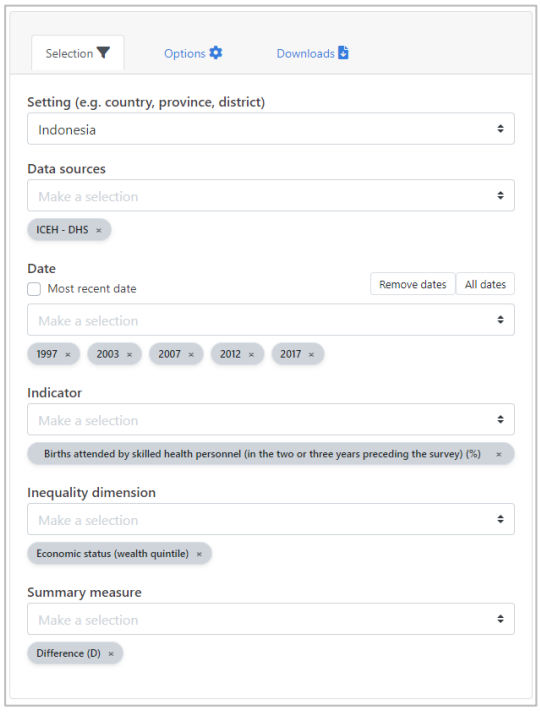
The visual shows a table presenting summary measures for a selected setting of interest. By default, the table displays information about the setting, date, indicator, inequality dimension, summary measure and summary measure estimate (though these can be changed using the selection menu - see Table 9).

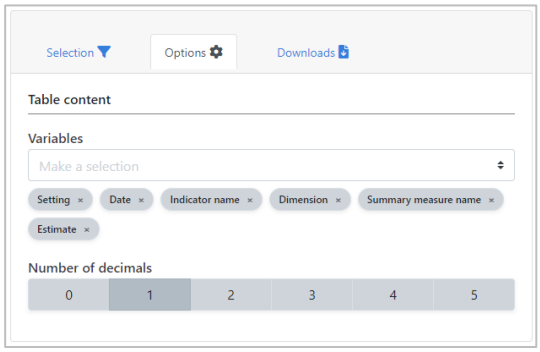
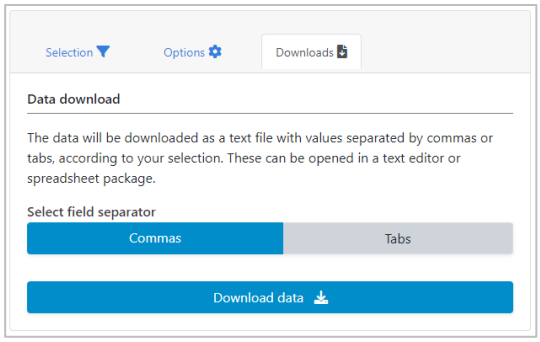


How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 9 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

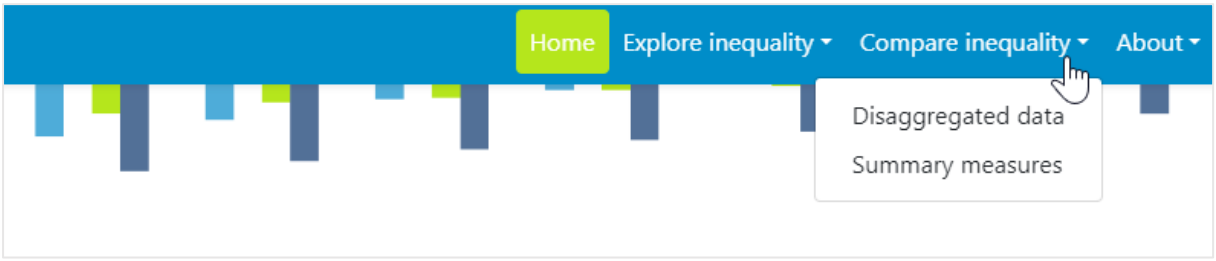
Table 9 Selection menu for the 'Table' showing 'Summary measures' under 'Explore inequality'

Tab	Description	
Selection	Select the data displayed in the visual, including your setting of interest, data source(s), date(s), indicator(s) and inequality dimension(s).	

Options	Use different options to modify your view. You can add additional variables and determine the number of decimals for numeric values.	
Downloads	Download the data displayed in the visual (as comma or tab separated text files).	

5 Compare inequality

Under 'Compare inequality', you can **compare the situation in one setting of interest with the situation in other settings**. Benchmarking can be done using disaggregated data and summary measures that are visualized in different graphs and tables. To access the visualizations, hover over 'Compare inequality' in the navigation menu at the top and click 'Disaggregated data' or 'Summary measures'.

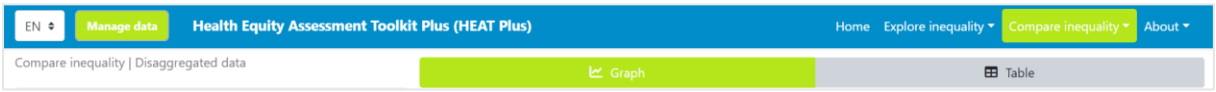


TIPS for comparing inequality

- It is not recommended to compare inequality across settings if the number of subgroups differs between settings. For example, when looking at the situation by subnational/administrative region (such as provinces or districts), the number of regions may differ between countries. In this case, comparing inequality may lead to false conclusions: Inherently, inequality tends to be lower in settings with fewer regions. However, this may mask inequalities that exist between smaller geographic areas within those settings.

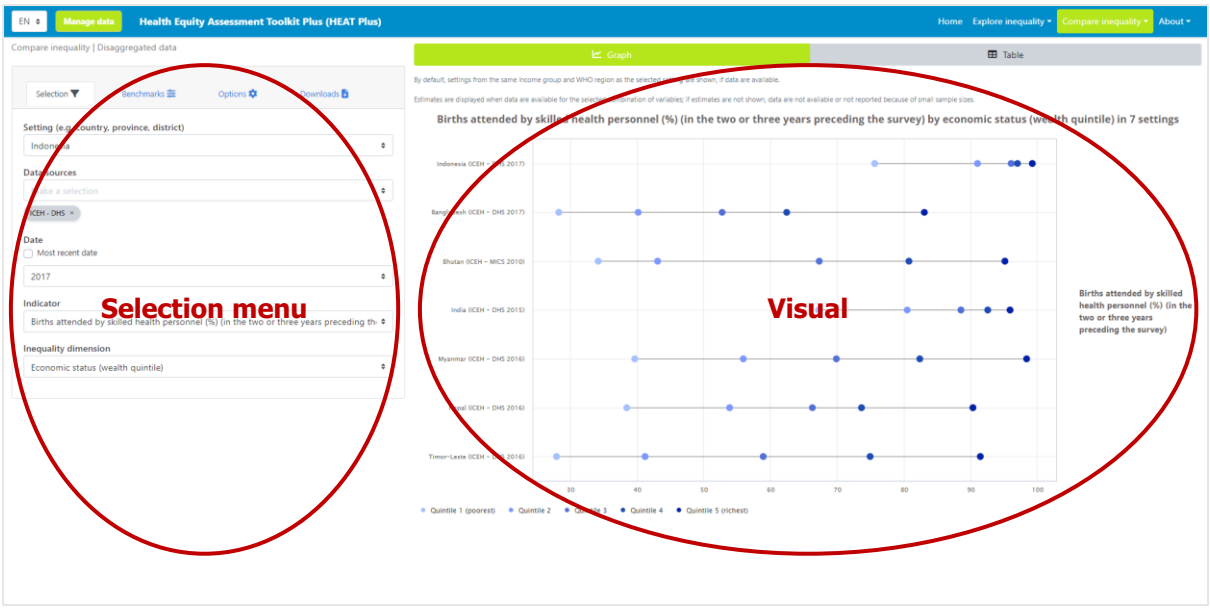
5.1 Disaggregated data

HEAT Plus allows you to compare disaggregated data in different views; data are visualized in graphs and tables. To access the different visualizations, click the tabs in the visualization menu across the top of the view. The selected view will be highlighted in green.



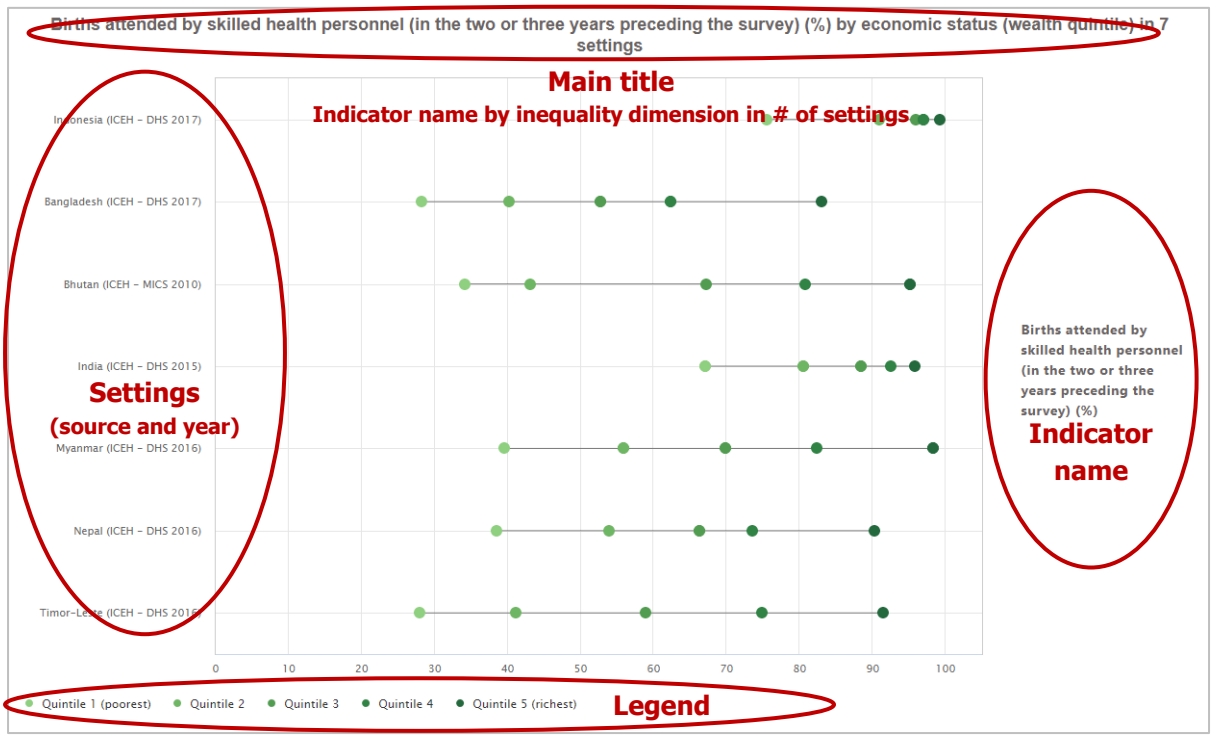
5.1.1 Graph

In this view, disaggregated data are displayed in a horizontal line graph. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.



What you see

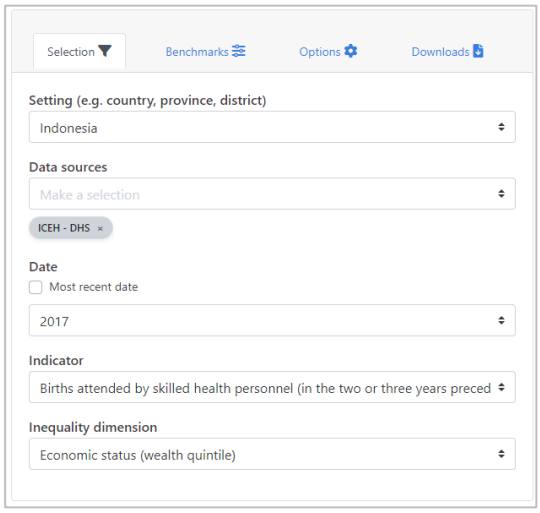
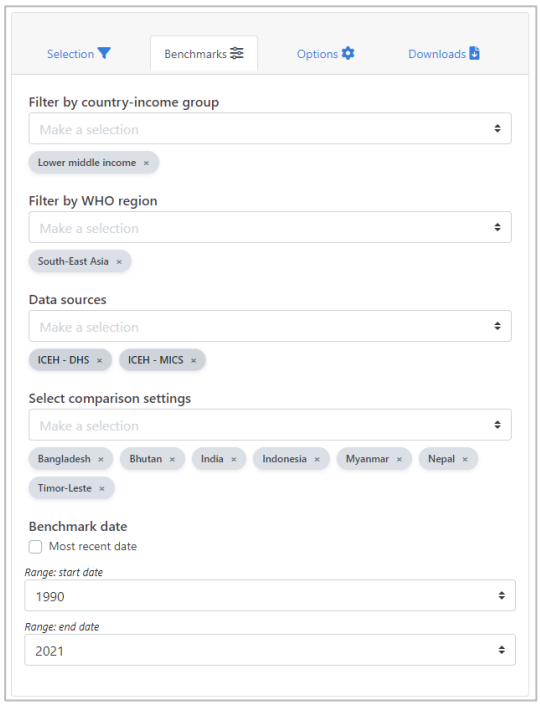
The visual shows a horizontal line graph (also called equiplot) presenting disaggregated data (displayed on the x-axis) for a selected setting of interest and selected benchmark settings. For each setting (displayed on the y-axis), multiple coloured circles are shown – one for each population subgroup. Black horizontal lines indicate the difference between minimum and maximum subgroup estimates. The setting of interest is displayed at the top of the graph; benchmark settings are displayed in alphabetical order below the setting of interest. Note that the title of the visual is default and can be changed using the Options tap of the selection menu (see Table 10).

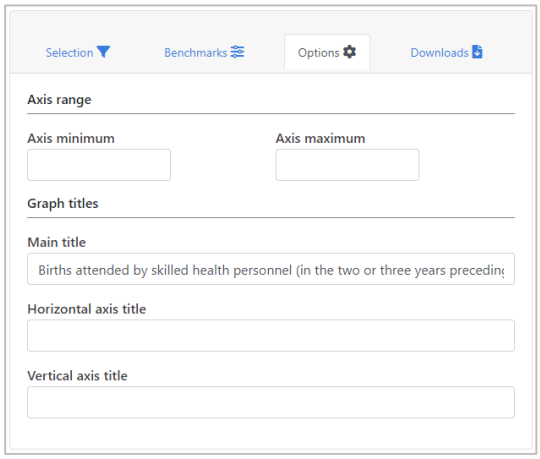
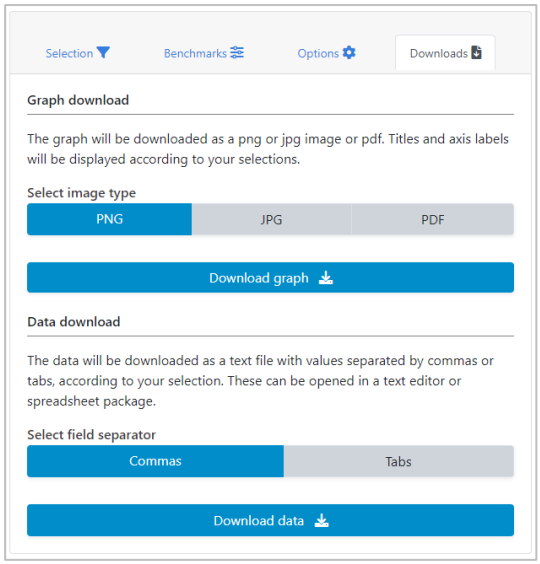


How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 10 provides a description of the four tabs that comprise the selection menu: selection, benchmark, options and downloads.

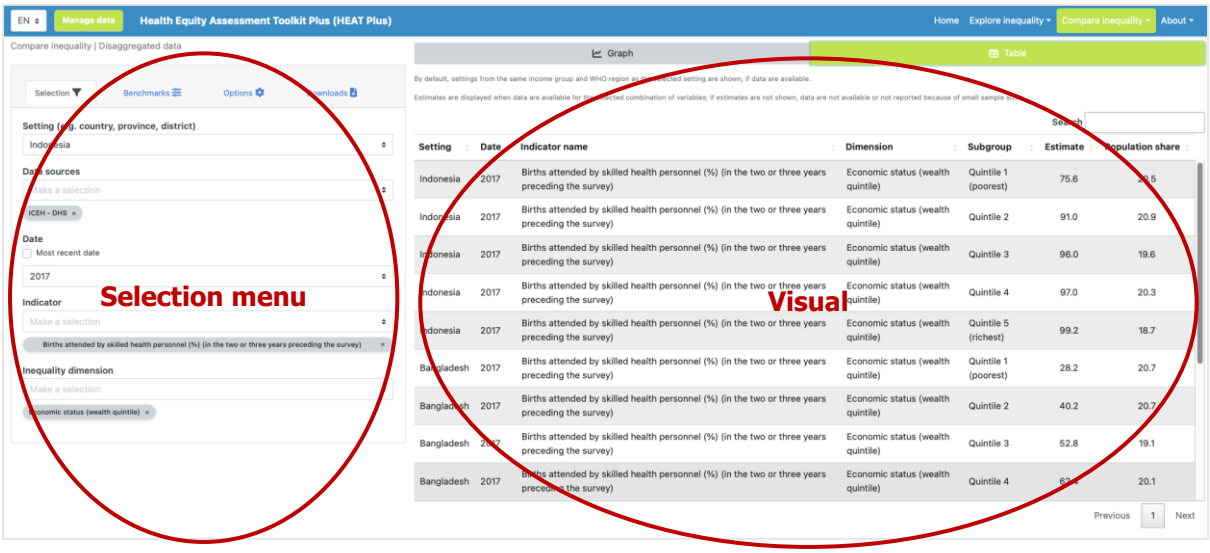
Table 10 Selection menu for the 'Graph' showing 'Disaggregated data' under 'Compare inequality'

Tab	Description	
Selection	Select the data displayed in the visual, including your setting of interest, data source, date, indicator and inequality dimension.	
Benchmark	Choose the comparison settings for benchmarking. You can filter settings by country-income group and/or WHO region (provided you are looking at country-level data and have entered the ISO 3 country code in the HEAT Plus Template). You can also select the date for your benchmark settings, either using the most recent date or defining a custom date range (including a start and end date).	

Options	Use different options to modify your view. You can choose custom axis ranges and graph titles.	
Downloads	Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files).	

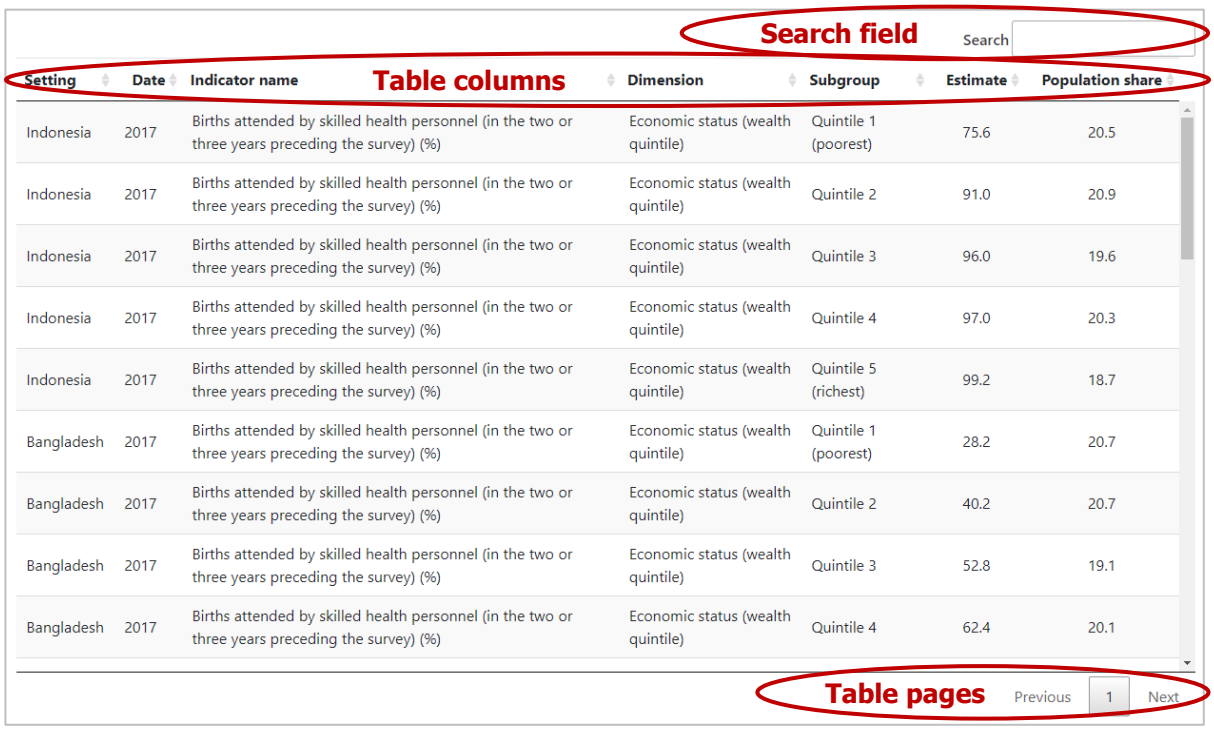
5.1.2 Table

In this view, disaggregated data are displayed in a table. The visual at the centre shows the table; the selection menu on the left allows you to customize the visual.



What you see

The visual shows a table presenting disaggregated data for a selected setting of interest and selected benchmark settings. By default, the table displays information about the setting, date, indicator, inequality dimension, population subgroup, subgroup estimate and subgroup population share (though these can be changed by using the selection menu – see Table 11). The setting of interest is displayed at the top of the table; benchmark settings are displayed in alphabetical order below the setting of interest.



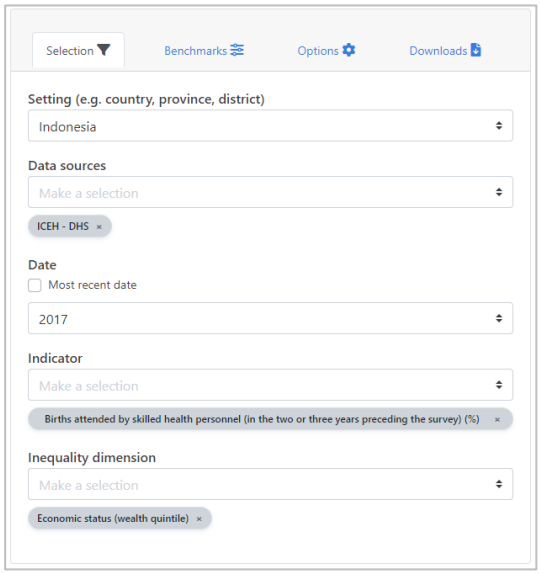
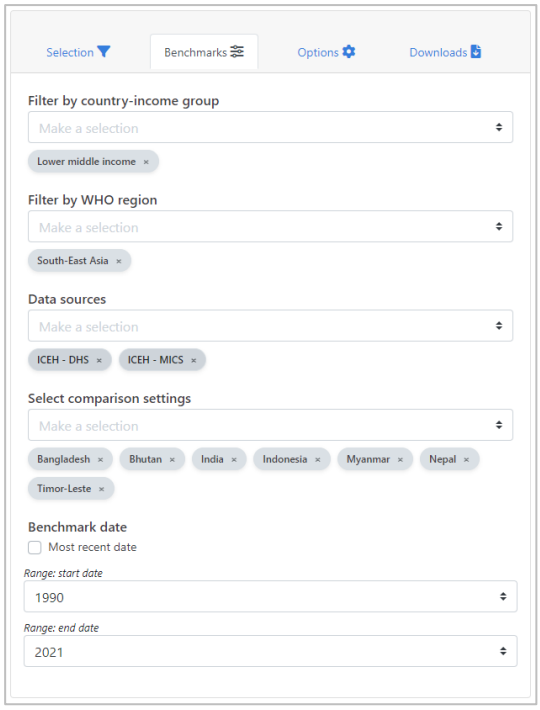
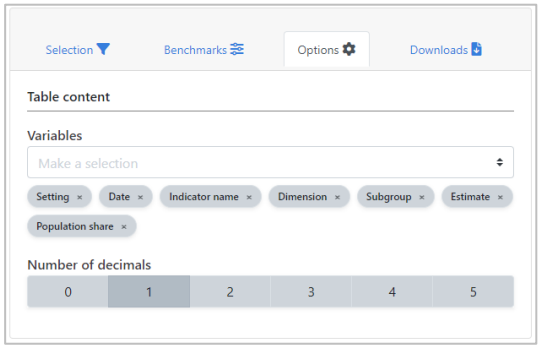
Setting	Date	Indicator name	Dimension	Subgroup	Estimate	Population share
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 1 (poorest)	75.6	20.5
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 2	91.0	20.9
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 3	96.0	19.6
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 4	97.0	20.3
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 5 (richest)	99.2	18.7
Bangladesh	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 1 (poorest)	28.2	20.7
Bangladesh	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 2	40.2	20.7
Bangladesh	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 3	52.8	19.1
Bangladesh	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Quintile 4	62.4	20.1

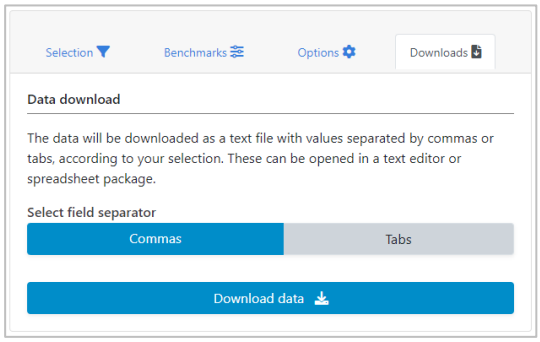
How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 11 provides a description of the four tabs that comprise the selection menu: selection, benchmark, options and downloads.

Table 11 Selection menu for the 'Table' showing 'Disaggregated data' under 'Compare inequality'

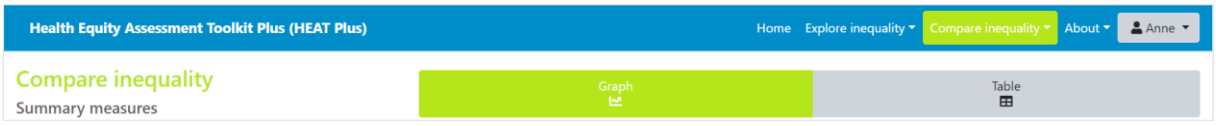
Tab	Description

Selection	Select the data displayed in the visual, including your setting of interest, data source, date, indicator(s) and inequality dimension(s).	
Benchmark	Choose the comparison settings for benchmarking. You can filter settings by country-income group and/or WHO region (provided you are looking at country-level data and have entered the ISO 3 country code in the HEAT Plus Template). You can also select the date for your benchmark settings, either using the most recent date or defining a custom date range (including a start and end date).	
Options	Use different options to modify your view. You can add additional variables and determine the number of decimals for numeric values.	

Downloads	Download the data displayed in the visual (as comma or tab separated text files).	

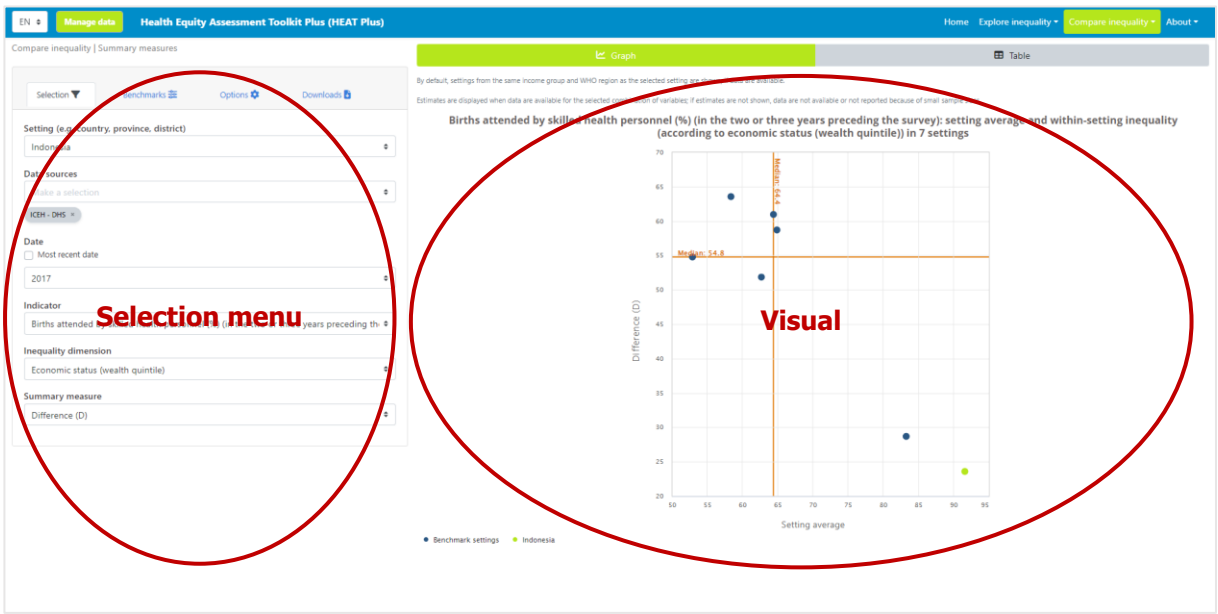
5.2 Summary measures

HEAT allows you to compare summary measures in different views; data are visualized in graphs and tables. To access the different visualizations, click the tabs in the visualization menu across the top of the view. The selected view will be highlighted in green.



5.2.1 Graph

In this view, summary measures are displayed in a scatterplot. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.



What you see

The visual shows a scatterplot presenting the setting average (displayed on the x-axis) and the level of within-setting inequality as measured by the selected summary measure (displayed on the y-axis). Each setting is represented by one coloured shape: benchmark settings are displayed in blue, and the setting

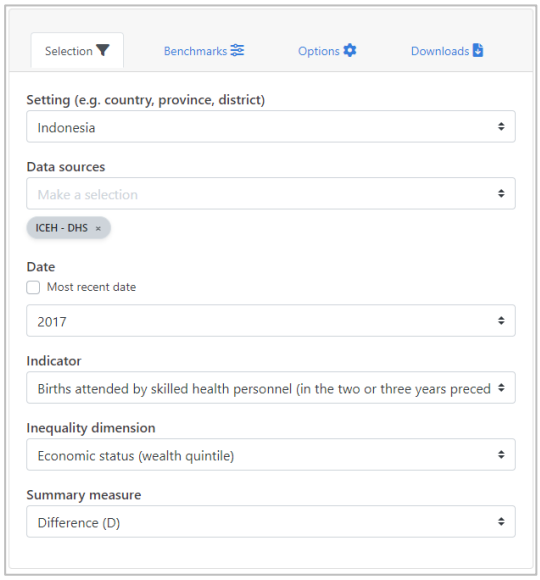
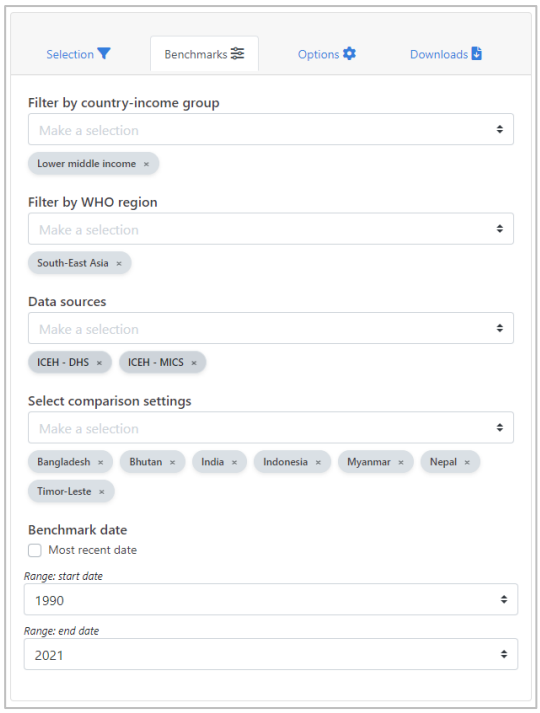
of interest is highlighted in green. Note that the title of the visual is default and can be changed using the Options tap of the selection menu (see Table 12).

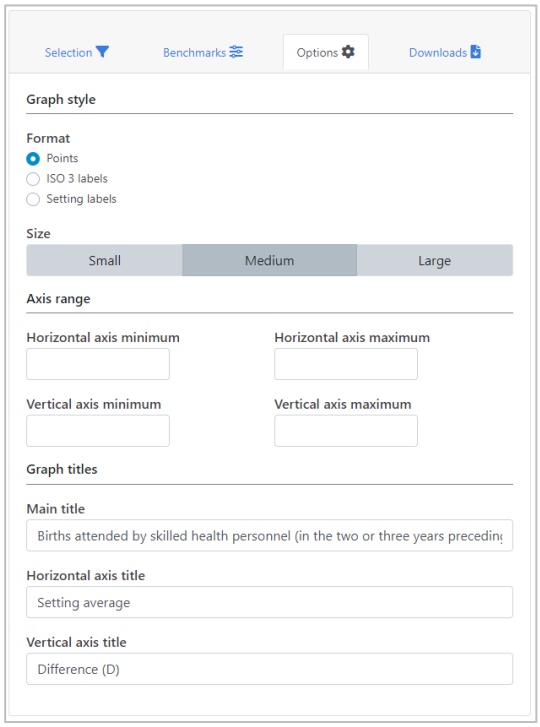
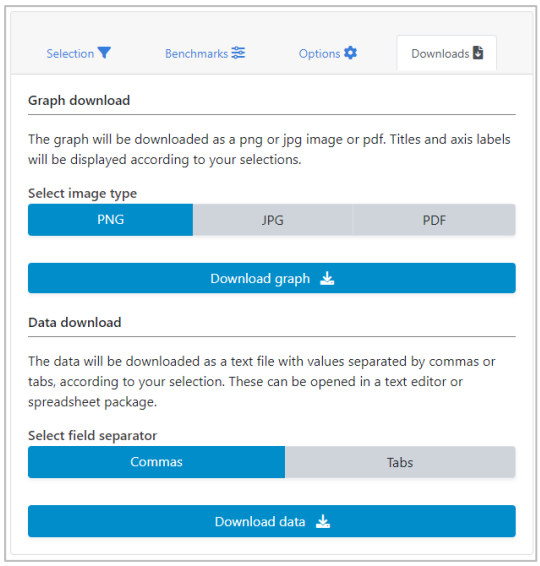
How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 12 provides a description of the four tabs that comprise the selection menu: selection, benchmark, options and downloads.

Table 12 Selection menu for the 'Graph' showing 'Summary measures' under 'Compare inequality'

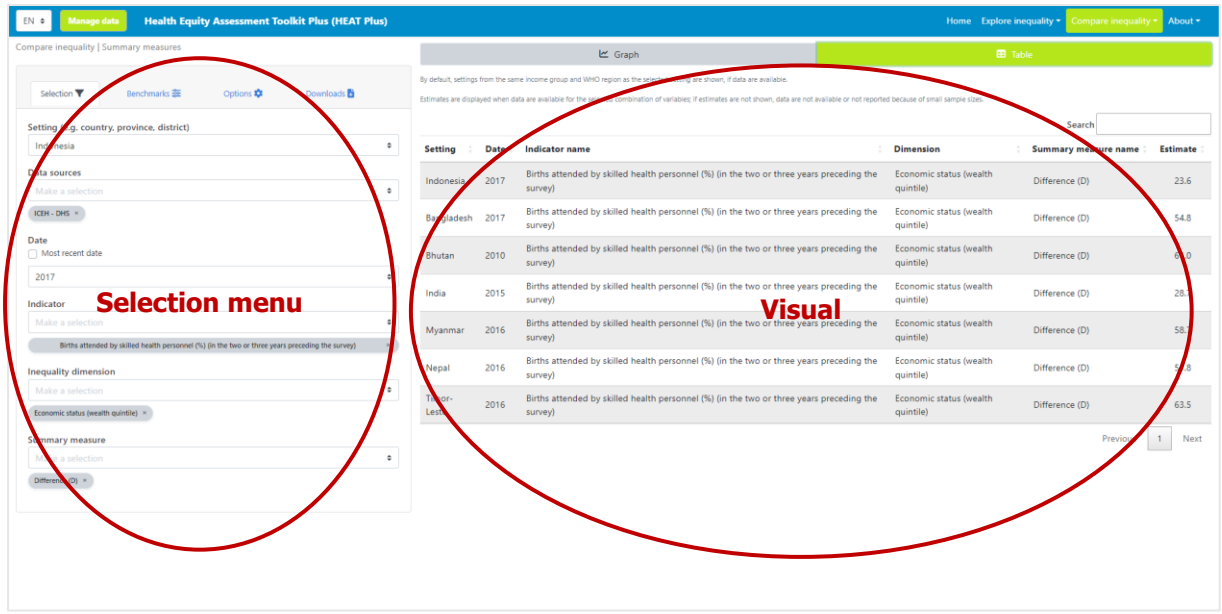
Tab	Description

Selection	Select the data displayed in the visual, including your setting of interest, data source, date, indicator, inequality dimension and summary measure.	
Benchmark	Choose the comparison settings for benchmarking. You can filter settings by country-income group and/or WHO region (provided you are looking at country-level data and have entered the ISO 3 country code in the HEAT Plus Template). You can also select the date for your benchmark settings, either using the most recent date or defining a custom date range (including a start and end date).	

Options	Use different options to modify your view. You can select different formats and sizes for your data points, and choose custom axis ranges and graph titles.	
Downloads	Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files).	

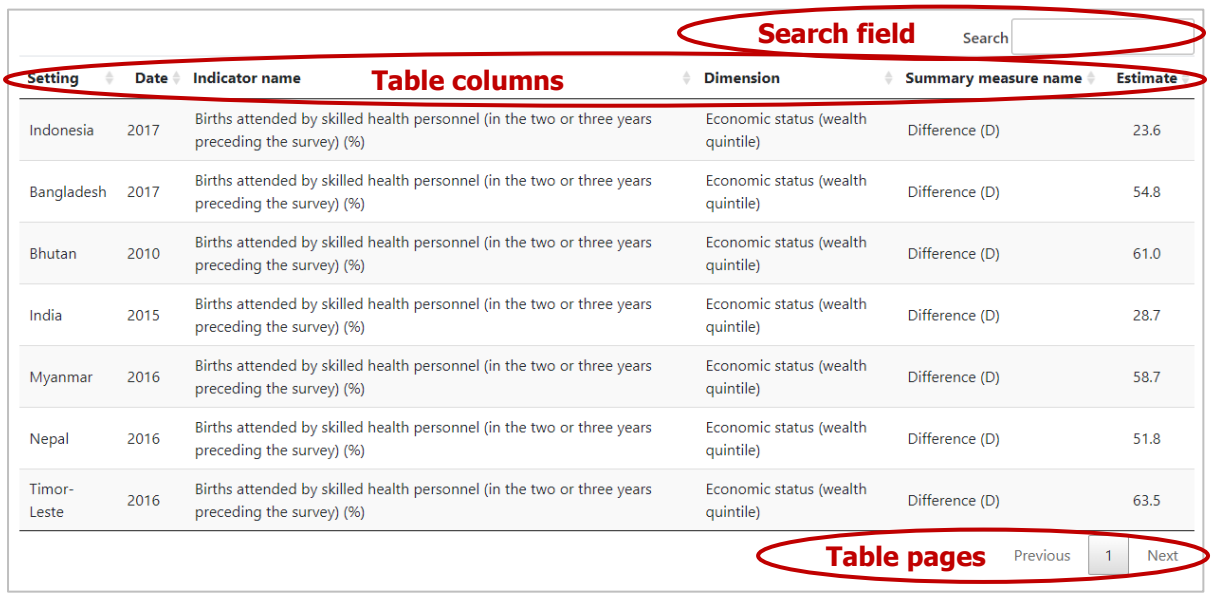
5.2.2 Table

In this view, summary measures are displayed in a table. The visual at the centre shows the table; the selection menu on the left allows you to customize the visual.



What you see

The visual shows a table presenting summary measure data for a selected setting of interest and selected benchmark settings. By default, the table displays information about the setting, date, indicator, inequality dimension, summary measure and summary measure estimate (though these can be changed using the selection menu - see Table 13). The setting of interest is displayed at the top of the table; benchmark settings are displayed in alphabetical order below the setting of interest.

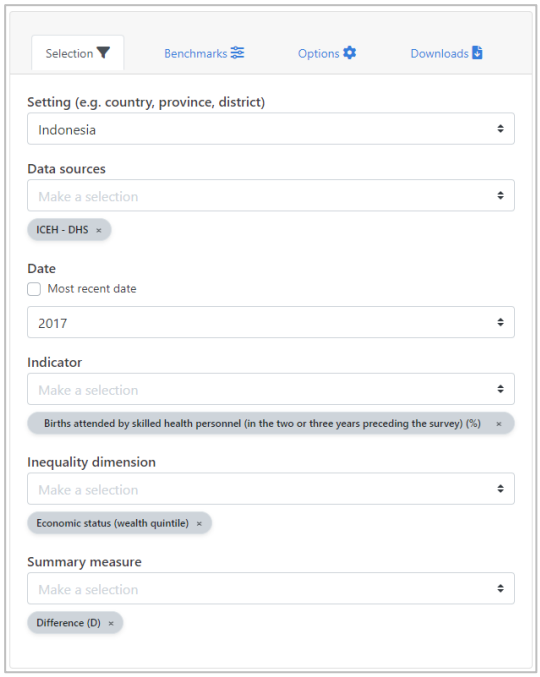
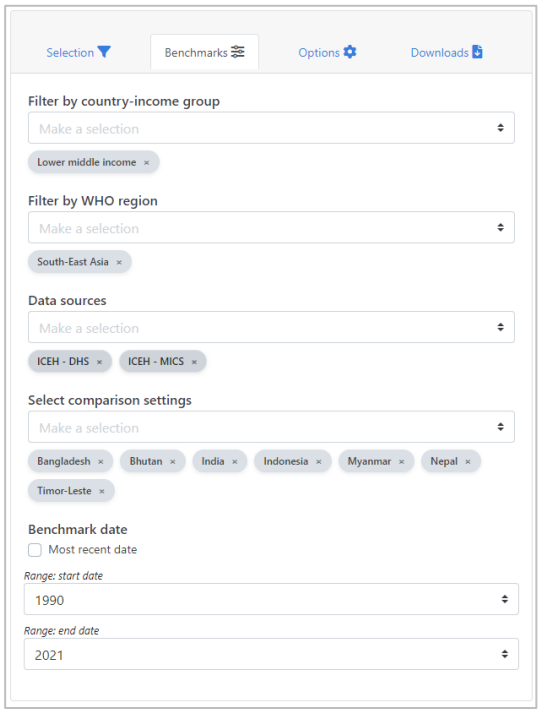


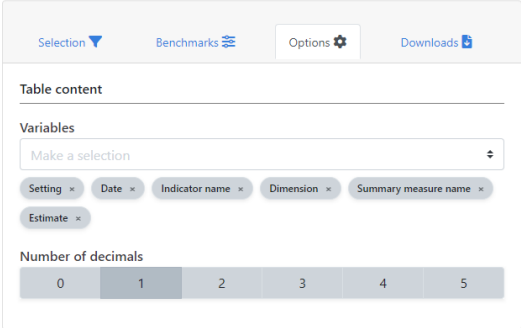
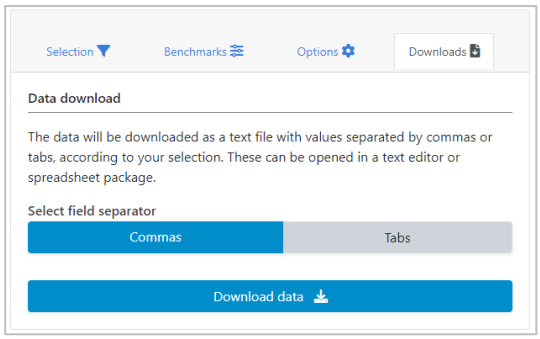
Setting	Date	Indicator name	Dimension	Summary measure name	Estimate
Indonesia	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Difference (D)	23.6
Bangladesh	2017	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Difference (D)	54.8
Bhutan	2010	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Difference (D)	61.0
India	2015	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Difference (D)	28.7
Myanmar	2016	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Difference (D)	58.7
Nepal	2016	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Difference (D)	51.8
Timor-Leste	2016	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status (wealth quintile)	Difference (D)	63.5

How to explore

The selection menu on the left allows you to customize the results displayed in the visual. Table 13 provides a description of the four tabs that comprise the selection menu: selection, benchmark, options and downloads.

Table 13 Selection menu for the 'Table' showing 'Summary measures' under 'Compare inequality'

Tab	Description	
Selection	Select the data displayed in the visual, including your setting of interest, data source, date, indicator(s), inequality dimension(s) and summary measure(s).	
Benchmark	Choose the comparison settings for benchmarking. You can filter settings by country-income group and/or WHO region (provided you are looking at country-level data and have entered the ISO 3 country code in the HEAT Plus Template). You can also select the date for your benchmark settings, either using the most recent date or defining a custom date range (including a start and end date).	

Options	Use different options to modify your view. You can add additional variables and determine the number of decimals for numeric values.	
Downloads	Download the data displayed in the visual (as comma or tab separated text files).	

Annex

Annex 1 Variables in the HEAT Plus Template

Variable	Type	Definition	Note
setting	Mandatory	Setting name (e.g. a country like "Indonesia", or a province like "Bali")	If this variable is missing, data cannot be uploaded.
date	Mandatory	Date of the data (e.g. years, months, weeks, days, or another date format). Note that dates should be sortable numerically / alphabetically in chronological order to ensure correct display in HEAT Plus visuals. For example, monthly data is best entered with the year and month number (e.g. "2022-12" and "2023-04") instead of text (e.g. December 2022 and "April 2023")	If this variable is missing, data cannot be uploaded.
source	Mandatory	Data source (e.g. "DHS")	If this variable is missing, data cannot be uploaded.
indicator_abbr	Mandatory	Indicator abbreviation (e.g. "anc")	If this variable is missing, data cannot be uploaded.
indicator_name	Mandatory	Indicator name (e.g. "Antenatal care coverage")	If this variable is missing, data cannot be uploaded.
dimension	Mandatory	Dimension of inequality (e.g. "Education")	If this variable is missing, data cannot be uploaded.
subgroup	Mandatory	Population subgroup (e.g. "Primary school")	If this variable is missing, data cannot be uploaded. Subgroup name must be unique within a given combination of setting, year and dimension.
estimate	Mandatory	Subgroup estimate	If this variable is missing for one subgroup (or more), complex summary measures cannot be calculated. Simple measures may be calculated depending on which estimates are missing. Proportions/percentages must be already multiplied by 100 (not left as decimals).
se	Recommended	Standard error of subgroup estimate	If this variable is missing for one subgroup (or more), 95% confidence intervals for some (or all) summary measures cannot be calculated.
ci_lb	Optional	95% confidence interval lower bound of subgroup estimate	
ci_ub	Optional	95% confidence interval upper bound of subgroup estimate	
population	Recommended	The number of people affected or at risk within that subgroup (e.g. weighted sample size by subgroup in household surveys).	If this variable is missing for one subgroup (or more), complex summary measures cannot be calculated.
note	Optional	Notes or observations relevant to the analysis. For example if a subgroup estimate is based on a very small number of cases, this could be indicated in the note.	

Variable	Type	Definition	Note
setting_average	Recommended	Setting average	If this variable is missing, benchmark data cannot be displayed in a scatterplot. Proportions/percentages must be already multiplied by 100 (not left as decimals).
iso3	Recommended	ISO3 country code for country-level data (e.g. "IDN" for Indonesia). Please refer to supplementary table 1 in the user manual for a list of WHO member states and corresponding ISO3 country codes (as well as corresponding WHO regions and country income groups).	Must be a three-character string. If this variable is missing, benchmark data cannot be filtered by country income group or WHO region. If setting is not a country then iso3 should be blank.
favourable_indicator	Mandatory	This dummy variable indicates the indicator type. It must be 1 for favourable indicators and 0 for non-favourable (adverse) indicators. Favourable indicators measure desirable health events that are promoted through public health action. They include health intervention indicators, such as antenatal care coverage, and desirable health outcome indicators, such as life expectancy. For these indicators, the ultimate goal is to achieve a maximum level, either in health intervention coverage or health outcome (e.g. complete coverage of antenatal care or the highest possible life expectancy). Adverse indicators measure undesirable health events that are to be reduced or eliminated through public health action. They include undesirable health outcome indicators, such as stunting prevalence in children aged less than five years or under-five mortality rate. Here, the ultimate goal is to achieve a minimum level (e.g. theoretically 0 deaths per 1000 live births).	Must be zero or one. If this variable is missing, data cannot be uploaded.
indicator_scale	Mandatory	This variable indicates the scale of the indicator, such as "100" for indicators reported as percentages or "1000" for indicators reported as rates per 1000 population.	Must be greater than zero. If this variable is missing, data cannot be uploaded.
ordered_dimension	Mandatory	This dummy variable indicates the dimension type. It must be 0 for dimensions with two subgroups (binary dimensions). For dimensions with more than two subgroups, it must be 1 for ordered dimensions and 0 for non-ordered dimensions. Binary dimensions compare the situation in two population subgroups (e.g. males and females). Ordered dimensions have ordered subgroups that have an inherent positioning and can be ranked. For example, education has an inherent ordering in the sense that those with less education unequivocally have less of something compared to those with more education. Non-ordered dimensions have non-ordered subgroups that are not based on criteria that can be logically ranked. Subnational regions are an example of non-ordered groupings.	Must be zero or one. If this variable is missing, data cannot be uploaded.

Variable	Type	Definition	Note
subgroup_order	Mandatory	This variable indicates the order of subgroups for ordered dimensions. For ordered dimensions (i.e. if ordered_dimension=1), this variable must be an increasing sequence of integers starting with the value 1 for the most-disadvantaged subgroup. For example, for eduction with three subgroups, the most-disadvantaged subgroup "No education" will be assigned the value 1, "Primary school" will be assigned the value 2 and the most-advantaged subgroup "Secondary school +" will be assigned the value 3. For non-ordered dimensions and binary dimensions (i.e. if ordered_dimension=0), this variable must be 0.	Must be zero or an increasing sequence of integers starting with 1. If this variable is missing, data cannot be uploaded.
reference_subgroup	Mandatory	This variable indicates the reference subgroup for non-ordered dimensions and binary dimensions . For ordered dimensions (i.e. if ordered_dimension=1), this variable must be 0. For non-ordered dimensions and binary dimensions (i.e. if ordered_dimension=0), you have the option to choose a reference subgroup. A reference subgroup can be chosen by assigning the value 1 to that subgroup and 0 to all other subgroups. For example, for subnational regions (with more than two subgroups), the capital city can be chosen as the reference subgroup. For place of residence (urban vs. rural), urban can be chosen as the reference subgroup.	Must be zero or one. The selection of a reference subgroup impacts on the calculation of the following summary measures: D, MDBU, MDBW, PAF, PAR and R. If this variable is missing, data cannot be uploaded.

Annex 2 Frequently Asked Questions

Q1 What is the minimum I have to enter in the template?

Q2 What types of data sources can I use in HEAT Plus?

Q3 Can I combine multiple data sources in one dataset?

Q4 What settings can I use in HEAT Plus?

Q5 Can I combine multiple settings in one dataset?

Q6 How do I best enter data in the template to look at subnational inequalities?

Q7 What types of indicators can I use in HEAT Plus?

Q8 Can I include indicators with different units?

Q9 What types of inequality dimensions can I use in HEAT Plus?

Q10 Can I look at intersections of two inequality dimensions (double disaggregation)?

Q11 Can I have missing observations for the variable 'estimate' in the template?

Q12 How do I correctly enter information for the variable 'population' in the template?

Q13 What is meant by 'affected population'?

Q14 Can I look at the setting average and disaggregated data at the same time?

Q15 Do I have to enter an ISO 3 country code?

Q16 How do I correctly enter information for the variable 'favourable_indicator' in the template?

Q17 How do I correctly enter information for the variable 'indicator_scale' in the template?

Q18 How do I correctly enter information for the variable 'ordered_dimension' in the template?

Q19 How do I correctly enter information for the variable 'subgroup_order' in the template?

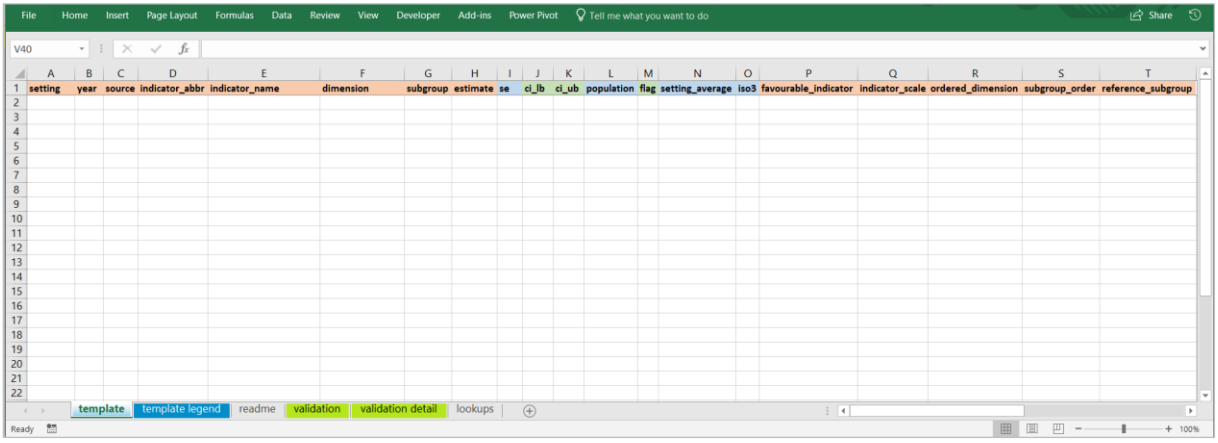
Q20 How do I correctly enter information for the variable 'reference_subgroup' in the template?

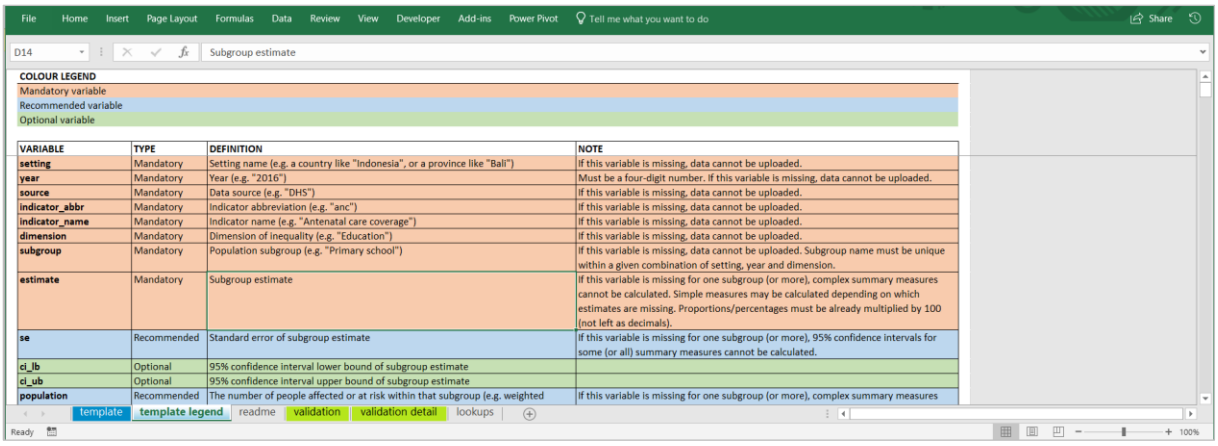
Q1 What is the minimum I have to enter in the template?

In order to upload data to HEAT Plus, you must at least enter information for **mandatory variables**. If data for these variables are missing, datasets cannot be uploaded. These variables are: setting (which can be the name of a country, administrative region, facility or other, as appropriate), date, source, indicator abbreviation, indicator name, inequality dimension, population subgroup, subgroup estimate, specification of whether the indicator is favourable or not, indicator scale, specification of whether the dimension is ordered or not, subgroup order for ordered dimensions and reference subgroup for non-ordered dimensions. Additionally, the subgroup estimate is listed as a mandatory variable. Estimates for population subgroups are key for inequality assessments in HEAT Plus. However, in some cases, subgroup estimates may be missing for good reason (e.g. due to small sample sizes). Therefore, the subgroup estimate is the only mandatory variable that may have missing values.

In addition to entering information for mandatory variables, it is also suggested that you provide information on **recommended variables** and **optional variables**, which are required for the calculation of 95% confidence intervals of summary measures and/or for using certain functionalities in HEAT Plus.

Please refer to Annex 1 of the user manual or the template legend tab in the HEAT Plus Template and Validation Tool for a detailed explanation of these variables.





COLOUR LEGEND
Mandatory variable
Recommended variable
Optional variable

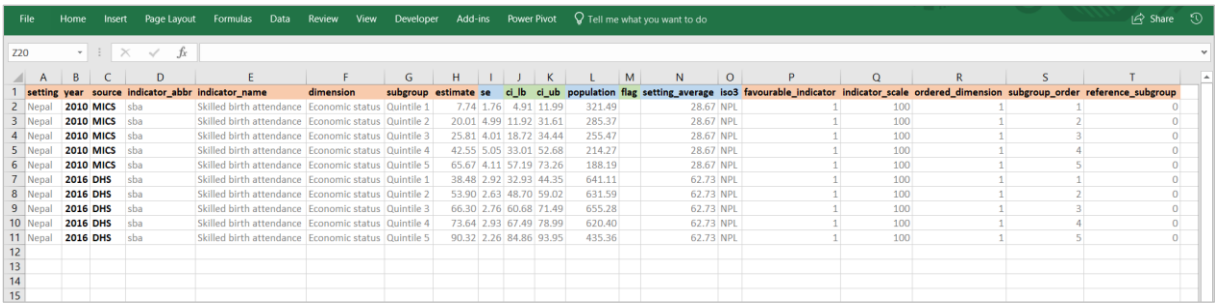
VARIABLE	TYPE	DEFINITION	NOTE
setting	Mandatory	Setting name (e.g. a country like "Indonesia", or a province like "Bali")	If this variable is missing, data cannot be uploaded.
year	Mandatory	Year (e.g. "2016")	Must be a four-digit number. If this variable is missing, data cannot be uploaded.
source	Mandatory	Data source (e.g. "DHS")	If this variable is missing, data cannot be uploaded.
indicator_abbr	Mandatory	Indicator abbreviation (e.g. "anc")	If this variable is missing, data cannot be uploaded.
indicator_name	Mandatory	Indicator name (e.g. "Antenatal care coverage")	If this variable is missing, data cannot be uploaded.
dimension	Mandatory	Dimension of inequality (e.g. "Education")	If this variable is missing, data cannot be uploaded.
subgroup	Mandatory	Population subgroup (e.g. "Primary school")	If this variable is missing, data cannot be uploaded. Subgroup name must be unique within a given combination of setting, year and dimension.
estimate	Mandatory	Subgroup estimate	If this variable is missing for one subgroup (or more), complex summary measures cannot be calculated. Simple measures may be calculated depending on which estimates are missing. Proportions/percentages must be already multiplied by 100 (not left as decimals).
se	Recommended	Standard error of subgroup estimate	If this variable is missing for one subgroup (or more), 95% confidence intervals for some (or all) summary measures cannot be calculated.
ci_lb	Optional	95% confidence interval lower bound of subgroup estimate	
ci_ub	Optional	95% confidence interval upper bound of subgroup estimate	
population	Recommended	The number of people affected or at risk within that subgroup (e.g. weighted	If this variable is missing for one subgroup (or more), complex summary measures

Q2 What types of data sources can I use in HEAT Plus?

HEAT Plus allows you to use data from any data source. Commonly used data sources for inequality monitoring include population-based surveys as well as facility and administrative data, civil registration and vital statistics, surveillance systems and censuses. However, you can use data from any source that is available to you.

Q3 Can I combine multiple data sources in one dataset?

Yes, data from multiple sources may be combined in one dataset. For example, in the screenshot below, data on skilled birth attendance disaggregated by economic status, are available from different data sources for different years: for 2010, estimates come from a Multiple Indicator Cluster Survey (MICS), and for 2016, estimates come from a Demographic and Health Survey (DHS).



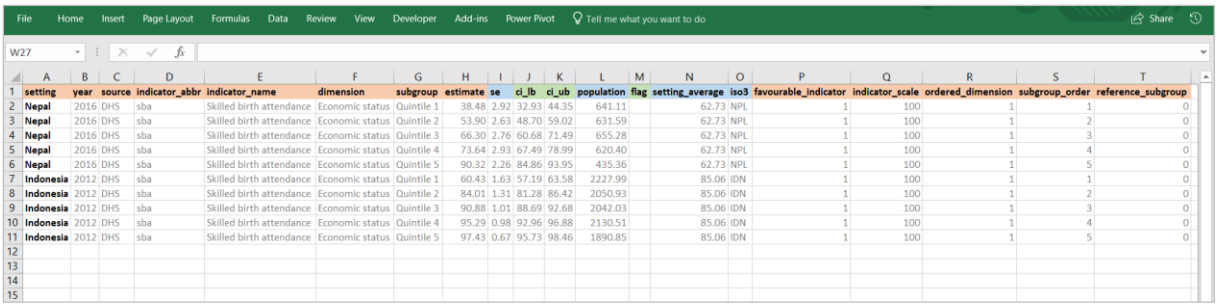
setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Nepal	2010	MICS	sba	Skilled birth attendance	Economic status	Quintile 1	7.74	1.76	4.91	11.99	321.49		28.67	NPL	1	100	1	1	0
Nepal	2010	MICS	sba	Skilled birth attendance	Economic status	Quintile 2	20.01	4.99	11.92	31.61	285.37		28.67	NPL	1	100	1	2	0
Nepal	2010	MICS	sba	Skilled birth attendance	Economic status	Quintile 3	25.81	4.01	18.72	34.44	255.47		28.67	NPL	1	100	1	3	0
Nepal	2010	MICS	sba	Skilled birth attendance	Economic status	Quintile 4	42.55	5.05	33.01	52.68	214.27		28.67	NPL	1	100	1	4	0
Nepal	2010	MICS	sba	Skilled birth attendance	Economic status	Quintile 5	65.67	4.11	57.19	73.26	188.19		28.67	NPL	1	100	1	5	0
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 1	38.48	2.92	32.93	44.35	641.11		62.73	NPL	1	100	1	1	0
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 2	53.90	2.63	48.70	59.02	631.59		62.73	NPL	1	100	1	2	0
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 3	66.30	2.76	60.68	71.49	655.28		62.73	NPL	1	100	1	3	0
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 4	73.64	2.93	67.49	78.99	620.40		62.73	NPL	1	100	1	4	0
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 5	90.32	2.26	84.86	93.95	435.36		62.73	NPL	1	100	1	5	0

Q4 What settings can I use in HEAT Plus?

HEAT Plus allows you to assess the situation in any setting. Inequalities can be assessed at global, regional, national or subnational levels (e.g. within a province or district), depending on your data availability and research interests.

Q5 Can I combine multiple settings in one dataset?

Yes, data from multiple settings may be combined in one dataset. For example, in the screenshot below, data on skilled birth attendance disaggregated by economic status have been entered for two countries: Indonesia and Nepal.



setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 1	38.48	2.92	32.93	44.35	641.11		62.73	NPL	1	100	1	1	0
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 2	53.90	2.63	48.70	59.02	631.59		62.73	NPL	1	100	1	2	0
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 3	66.30	2.76	60.68	71.49	655.28		62.73	NPL	1	100	1	3	0
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 4	73.64	2.93	67.49	78.99	620.40		62.73	NPL	1	100	1	4	0
Nepal	2016	DHS	sba	Skilled birth attendance	Economic status	Quintile 5	90.32	2.26	84.86	93.95	435.36		62.73	NPL	1	100	1	5	0
Indonesia	2012	DHS	sba	Skilled birth attendance	Economic status	Quintile 1	60.43	1.63	57.19	63.58	2227.99		85.06	IDN	1	100	1	1	0
Indonesia	2012	DHS	sba	Skilled birth attendance	Economic status	Quintile 2	84.01	1.31	81.28	86.42	2050.93		85.06	IDN	1	100	1	2	0
Indonesia	2012	DHS	sba	Skilled birth attendance	Economic status	Quintile 3	90.88	1.01	88.69	92.68	2042.03		85.06	IDN	1	100	1	3	0
Indonesia	2012	DHS	sba	Skilled birth attendance	Economic status	Quintile 4	95.29	0.98	92.96	96.88	2130.51		85.06	IDN	1	100	1	4	0
Indonesia	2012	DHS	sba	Skilled birth attendance	Economic status	Quintile 5	97.43	0.67	95.73	98.46	1890.85		85.06	IDN	1	100	1	5	0

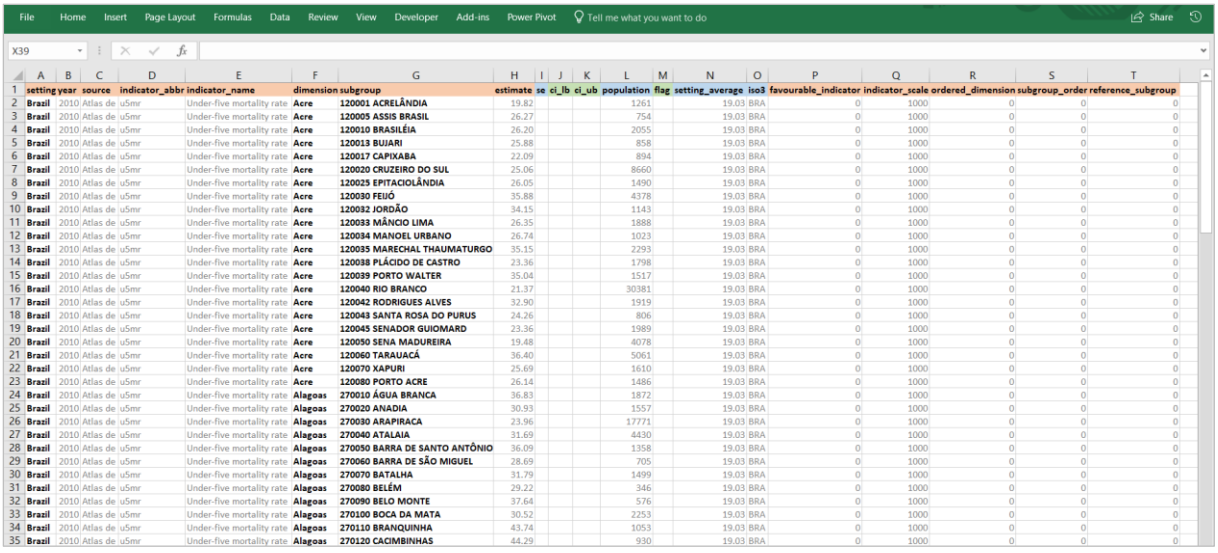
Q6 How do I best enter data in the template to look at subnational inequalities?

Monitoring subnational inequalities uses data disaggregated by smaller administrative units, including first and second subnational administrative levels. The first administrative level generally refers to regions, states or provinces, while the second level usually refers to districts, counties, municipalities or similar subdivisions.

There are different ways of entering subnational administrative data in the template. Depending on how you enter your data in the template, the results will be presented differently in HEAT Plus. Which format is best for you, depends on your data availability and research interests.

For example, if you have data available for one country (e.g. Brazil) disaggregated by first and second subnational administrative levels (e.g. provinces and municipalities), you have two options for entering your data in the template:

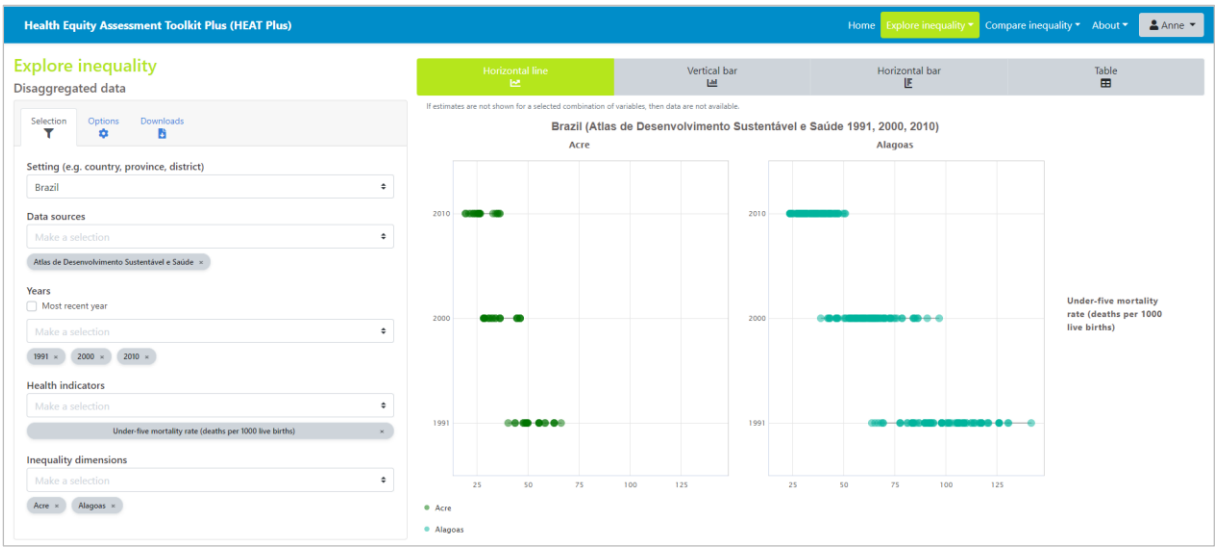
Firstly, you can enter the country (Brazil) as the setting, the first administrative levels (provinces) as dimensions and the second administrative levels (municipalities) as subgroups.



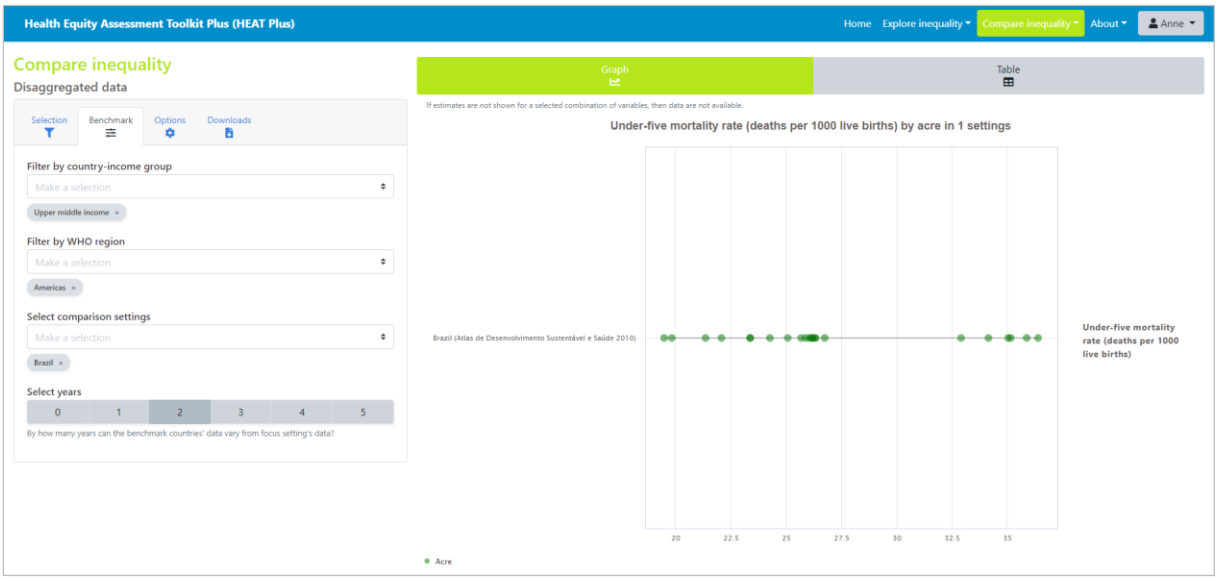
setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120001 ACRELÂNDIA	19.82				1261		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120005 ASSIS BRASIL	26.27				754		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120010 BRASILÉIA	26.20				2055		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120013 BUJARI	25.88				858		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120017 CAPIXABA	22.09				894		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120020 CRUZEIRO DO SUL	25.06				8660		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120025 EPITACIOLÂNDIA	26.05				1490		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120030 FEIJÓ	35.88				4378		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120032 JORDÃO	34.15				1143		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120033 MÂNCIO LIMA	26.35				1888		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120034 MANOEL URBANO	26.74				1023		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120035 MARECHAL THAUMATURGO	35.15				2293		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120038 PLÁCIDO DE CASTRO	23.36				1798		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120039 PORTO WALTER	35.04				1517		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120040 RIO BRANCO	21.37				30381		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120042 RODRIGUES ALVES	32.90				1919		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120043 SANTA ROSA DO PURUS	24.26				806		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120045 SENADOR GUIOMARD	23.36				1989		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120050 SENA MADUREIRA	19.48				4078		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120060 TARAUACÁ	36.40				5061		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120070 XAPURI	25.69				1610		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Acre	120080 PORTO ACRE	26.14				1486		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270010 ÁGUA BRANCA	36.83				1872		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270020 ANADIA	30.93				1557		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270030 ARAPIRACA	23.96				17771		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270040 ATALAIA	31.69				4430		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270050 BARRA DE SANTO ANTÔNIO	36.09				1358		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270060 BARRA DE SÃO MIGUEL	28.69				705		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270070 BATALHA	31.79				1499		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270080 BELÉM	29.22				346		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270090 BELO MONTE	37.64				576		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270100 BOCA DA MATA	30.52				2253		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270110 BRANQUINHA	43.74				1053		19.03	BRA	0	1000	0	0	0
Brazil	2010	Atlas de	u5mr	Under-five mortality rate	Alagoas	270120 CACIMBINHAS	44.29				930		19.03	BRA	0	1000	0	0	0

Data source: Corvalan C, Duarte E, Mujica OJ, Ramalho W, Vazquez E. Atlas de Desenvolvimento Sustentável e Saúde: Brasil 1991 a 2010. Brasília: Organização Pan-Americana da Saúde (OPAS), 2015.

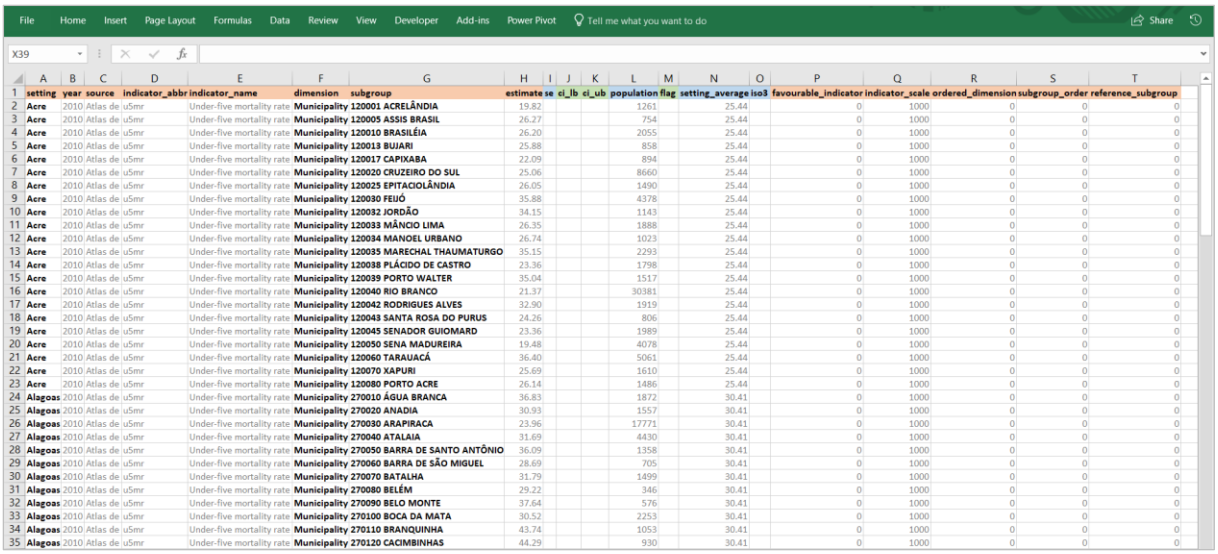
In this case, under 'Explore inequality', you will be able to explore the situation for your one setting/country (Brazil) and simultaneously assess different years, indicators and dimensions/provinces.



The 'Compare inequality' component of HEAT Plus allows you to compare the situation between different settings. However, if you only have one setting/country (Brazil), the view will be limited to this one setting/country (no benchmarking possible). You can assess the situation for one year, indicator and dimension/province at a time.



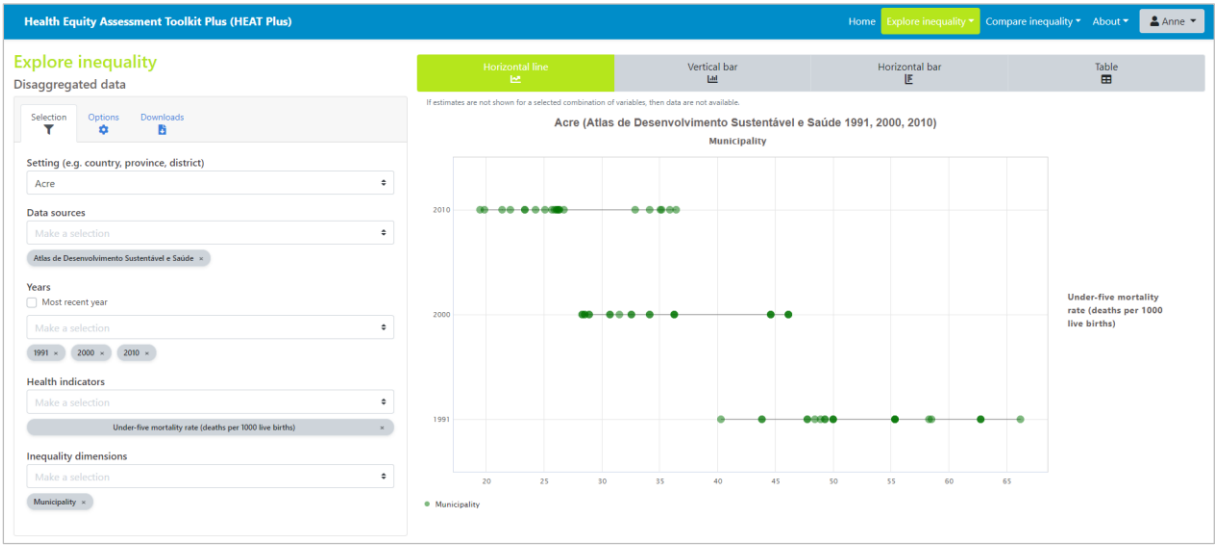
Alternatively, you can enter the first administrative levels (provinces) as settings and the second administrative levels (municipalities) as subgroups. In this case, the dimension will be a generic term describing the nature of the second administrative level (e.g. "Municipality").



setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120001 ACRELÂNDIA	19.82				1261		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120005 ASSIS BRASIL	26.27				754		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120010 BRASILÉIA	26.20				2055		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120013 BUJARI	25.88				858		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120017 CAPIXABA	22.09				894		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120020 CRUZEIRO DO SUL	25.06				8660		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120025 EPITACIOLÂNDIA	26.05				1490		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120030 FEIJÓ	35.88				4378		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120032 JORDÃO	34.15				1143		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120033 MÂNCIO LIMA	26.35				1888		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120034 MANOEL URBANO	26.74				1023		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120035 MARECHAL THAUMATURGO	35.15				2293		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120038 PLÁCIDO DE CASTRO	23.36				1798		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120039 PORTO WALTER	35.04				1517		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120040 RIO BRANCO	21.37				30381		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120042 RODRIGUES ALVES	32.90				1919		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120043 SANTA ROSA DO PURUS	24.26				806		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120045 SENADOR GUIOMARD	23.36				1989		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120050 SENA MADUREIRA	19.48				4078		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120060 TARAUACÁ	36.40				5061		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120070 XAPURI	25.69				1610		25.44		0	1000	0	0	0
Acre	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	120080 PORTO ACRE	26.14				1486		25.44		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270010 ÁGUA BRANCA	36.83				1872		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270020 ANADIA	30.93				1557		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270030 ARAPIRACA	23.96				17771		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270040 ATALAIA	31.69				4430		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270050 BARRA DE SANTO ANTÔNIO	36.09				1358		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270060 BARRA DE SÃO MIGUEL	28.69				705		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270070 BATALHA	31.79				1499		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270080 BELÉM	29.22				346		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270090 BELO MONTE	37.64				576		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270100 BOCA DA MATA	30.52				2253		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270110 BRANQUINHA	43.74				1053		30.41		0	1000	0	0	0
Alagoas	2010	Atlas de	u5mr	Under-five mortality rate	Municipality	270120 CACIMBINHAS	44.29				930		30.41		0	1000	0	0	0

Data source: Corvalan C, Duarte E, Mujica OJ, Ramalho W, Vazquez E. Atlas de Desenvolvimento Sustentável e Saúde: Brasil 1991 a 2010. Brasília: Organização Pan-Americana da Saúde (OPAS), 2015.

Under 'Explore inequality', you will be able to explore one setting/province at a time and simultaneously assess different years, indicators and dimensions. However, if you only have one dimension ("Municipality"), the view will be limited to this one dimension.



Under 'Compare inequality', you will be able to compare the situation between different settings/provinces, looking at one year, indicator and dimension at a time.

Q7 What types of indicators can I use in HEAT Plus?

HEAT Plus allows you to assess the situation for any indicator. In addition to health and health-related indicators, HEAT Plus also enables you to use indicators from beyond the health sector, including all SDG indicators.

Q8 Can I include indicators with different units?

Yes, you can use indicators with different units, provided you enter the correct indicator scale for each indicator in the dataset. See Q17 for details on how to correctly enter information for the variable 'indicator_scale' in the template.

Q9 What types of inequality dimensions can I use in HEAT Plus?

HEAT Plus allows you to assess the situation for any inequality dimension. Inequality dimensions that are frequently used for inequality monitoring (and recommended for disaggregation of SDG indicators) include income, sex, age, race, ethnicity, migratory status, disability and geographic location (urban/rural). In addition, education is a commonly used inequality dimensions. You can also use other inequality dimensions that are relevant to your specific context, such as indigenous status, occupation, religion and subnational/administrative region (e.g. provinces or districts). Moreover, you can assess the situation for intersections of two inequality dimensions (double disaggregation), provided that data have been entered accordingly in the template. See Q9 for further information about double disaggregation.

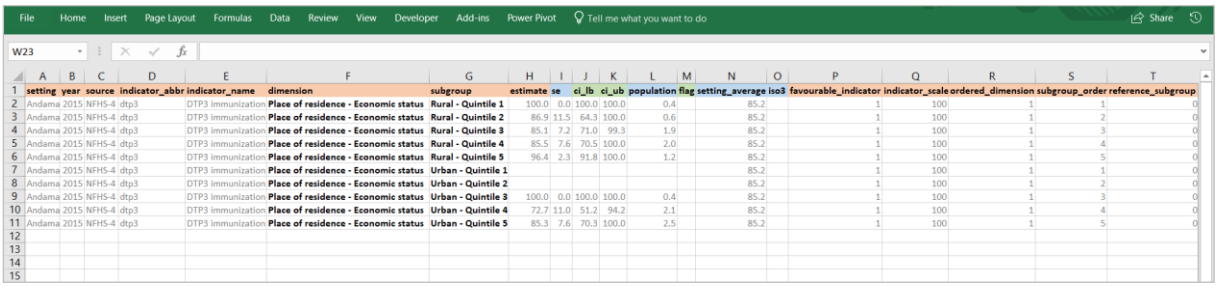
Q10 Can I look at intersections of two inequality dimensions (double disaggregation)?

Yes, you can look at intersections of two or more inequality dimensions, provided data have been entered accordingly in the HEAT Plus template.

For example, if you have data simultaneously disaggregated by place of residence (urban/rural) and economic status (quintile 1-5), you have three options of entering your data:

Firstly, you can enter the data as one combined dimension with 10 subgroups:

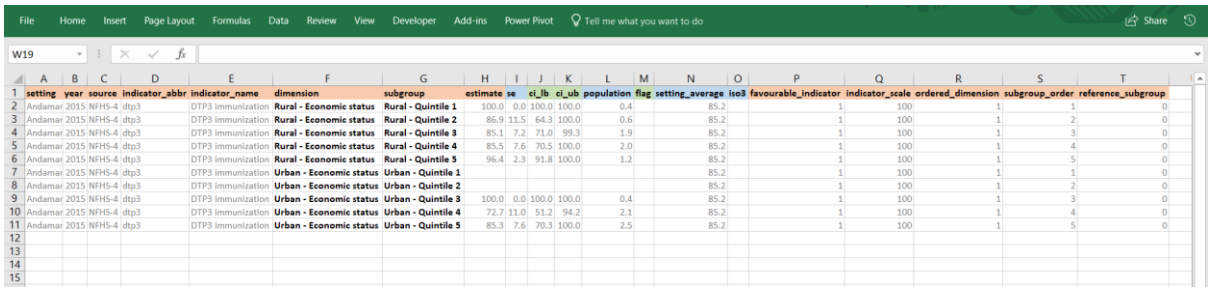
Dimension	Subgroup
Place of residence - Economic status	Rural - Quintile 1
	Rural - Quintile 2
	Rural - Quintile 3
	Rural - Quintile 4
	Rural - Quintile 5
	Urban - Quintile 1
	Urban - Quintile 2
	Urban - Quintile 3
	Urban - Quintile 4
	Urban - Quintile 5



setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Rural - Quintile 1	100.0	0.0	100.0	100.0	0.4		85.2		1	100	1	1	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Rural - Quintile 2	86.9	11.5	64.3	100.0	0.6		85.2		1	100	1	2	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Rural - Quintile 3	85.1	7.2	71.0	99.3	1.9		85.2		1	100	1	3	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Rural - Quintile 4	85.5	7.6	70.5	100.0	2.0		85.2		1	100	1	4	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Rural - Quintile 5	96.4	2.3	91.8	100.0	1.2		85.2		1	100	1	5	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Urban - Quintile 1							85.2		1	100	1	1	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Urban - Quintile 2							85.2		1	100	1	2	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Urban - Quintile 3	100.0	0.0	100.0	100.0	0.4		85.2		1	100	1	3	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Urban - Quintile 4	72.7	11.0	51.2	94.2	2.1		85.2		1	100	1	4	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Urban - Quintile 5	85.3	7.6	70.3	100.0	2.5		85.2		1	100	1	5	0

Another option is to enter your data as two dimensions with five subgroups each.

Dimension	Subgroup
Rural - Economic status	Rural - Quintile 1
	Rural - Quintile 2
	Rural - Quintile 3
	Rural - Quintile 4
	Rural - Quintile 5
Urban - Economic status	Urban - Quintile 1
	Urban - Quintile 2
	Urban - Quintile 3
	Urban - Quintile 4
	Urban - Quintile 5

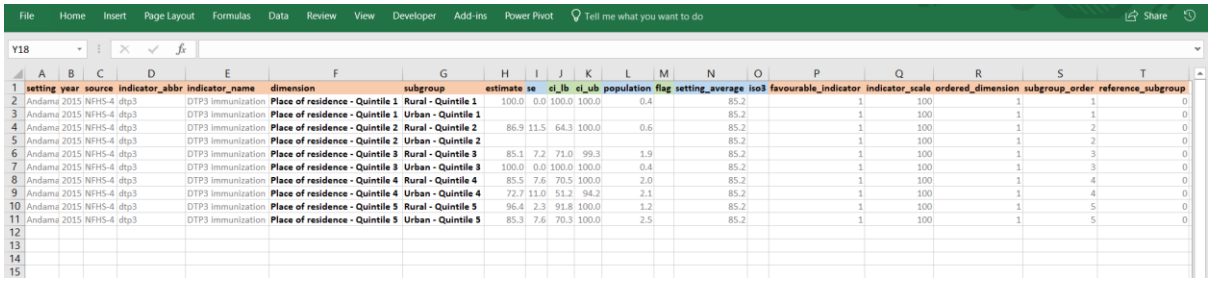


setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Rural - Economic status	Rural - Quintile 1	100.0	0.0	100.0	100.0	0.4		85.2		1	100	1	1	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Rural - Economic status	Rural - Quintile 2	86.9	11.5	64.3	100.0	0.6		85.2		1	100	1	2	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Rural - Economic status	Rural - Quintile 3	85.1	7.2	71.0	99.3	1.9		85.2		1	100	1	3	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Rural - Economic status	Rural - Quintile 4	85.5	7.6	70.5	100.0	2.0		85.2		1	100	1	4	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Rural - Economic status	Rural - Quintile 5	96.4	2.3	91.8	100.0	1.2		85.2		1	100	1	5	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Urban - Economic status	Urban - Quintile 1							85.2		1	100	1	1	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Urban - Economic status	Urban - Quintile 2							85.2		1	100	1	2	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Urban - Economic status	Urban - Quintile 3	100.0	0.0	100.0	100.0	0.4		85.2		1	100	1	3	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Urban - Economic status	Urban - Quintile 4	72.7	11.0	51.2	94.2	2.1		85.2		1	100	1	4	0
Andamar	2015	NFHS-4	dtp3	DTP3 immunization	Urban - Economic status	Urban - Quintile 5	85.3	7.6	70.3	100.0	2.5		85.2		1	100	1	5	0

Or you can enter your data as five dimensions with two subgroups each.

Dimension	Subgroup
Place of residence - Quintile 1	Rural - Quintile 1
	Urban - Quintile 1
Place of residence - Quintile 2	Rural - Quintile 2

	Urban - Quintile 2
Place of residence - Quintile 3	Rural - Quintile 3
	Urban - Quintile 3
Place of residence - Quintile 4	Rural - Quintile 4
	Urban - Quintile 4
Place of residence - Quintile 5	Rural - Quintile 5
	Urban - Quintile 5



setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 1	Rural - Quintile 1	100.0	0.0	100.0	100.0	0.4		85.2		1	100	1	1	0
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 1	Urban - Quintile 1							85.2		1	100	1	1	0
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 2	Rural - Quintile 2	86.9	11.5	64.3	100.0	0.6		85.2		1	100	1	2	0
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 2	Urban - Quintile 2							85.2		1	100	1	2	0
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 3	Rural - Quintile 3	85.1	7.2	71.0	99.3	1.9		85.2		1	100	1	3	0
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 3	Urban - Quintile 3	100.0	0.0	100.0	100.0	0.4		85.2		1	100	1	3	0
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 4	Rural - Quintile 4	85.5	7.6	70.5	100.0	2.0		85.2		1	100	1	4	0
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 4	Urban - Quintile 4	72.7	11.0	51.2	94.2	2.1		85.2		1	100	1	4	0
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 5	Rural - Quintile 5	96.4	2.3	91.8	100.0	1.2		85.2		1	100	1	5	0
Andama	2015	NFHS-4	dtp3	DTP3 immunization	Place of residence - Quintile 5	Urban - Quintile 5	85.3	7.6	70.3	100.0	2.5		85.2		1	100	1	5	0

Q11 Can I have missing observations for the variable 'estimate' in the template?

The variable 'estimate' is considered a mandatory variable in the template. This is because estimates for population subgroups are key for inequality assessments in HEAT Plus. However, in some cases, subgroup estimates may be missing for good reason (e.g. due to small sample sizes). Therefore, the subgroup estimate is the only mandatory variable that may have missing values.

Q12 How do I correctly enter information for the variable 'population' in the template?

The variable 'population' refers to the number of people affected or at risk in each population subgroup. It represents the denominator of an indicator in each population subgroup. For example, for skilled birth attendance disaggregated by economic status, the affected population is the number of live births in each quintile. For population-based survey data, the affected population size can easily be calculated as the weighted sample size for each subgroup using the statistical codes for R, SAS, SPSS, and Stata available at https://www.who.int/data/inequality-monitor/tools-resources/statistical_codes.

HEAT Plus uses information about the population size to calculate the population share, i.e. the proportion of the population belonging to each population subgroup. The population share is displayed alongside disaggregated estimates in the tooltips of all graphs. Moreover, the population share is used for the calculation of certain summary measures.

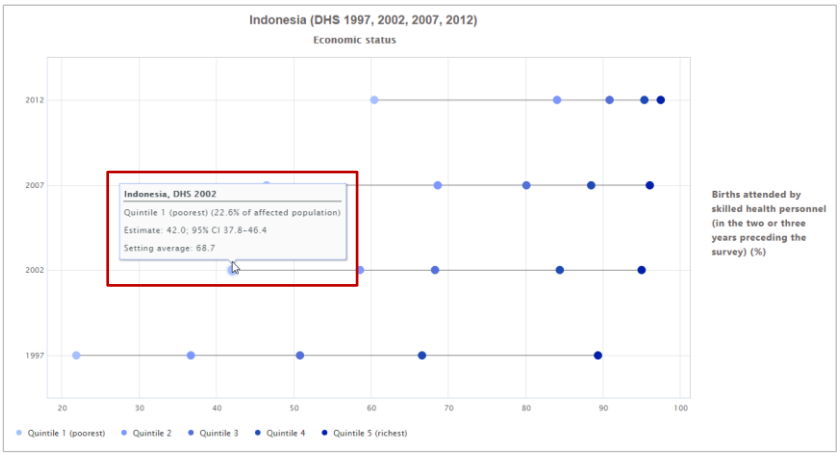
Q13 What is meant by 'affected population'?

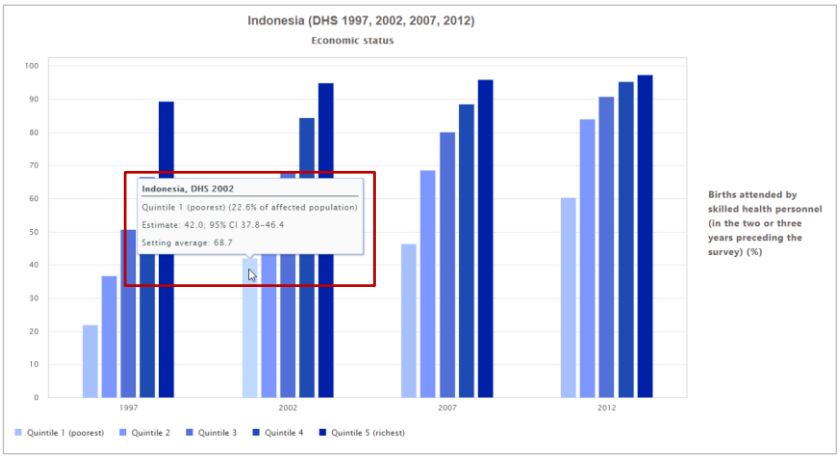
Please refer to Q12 for information about 'affected population'.

Q14 Can I look at the setting average and disaggregated data at the same time?

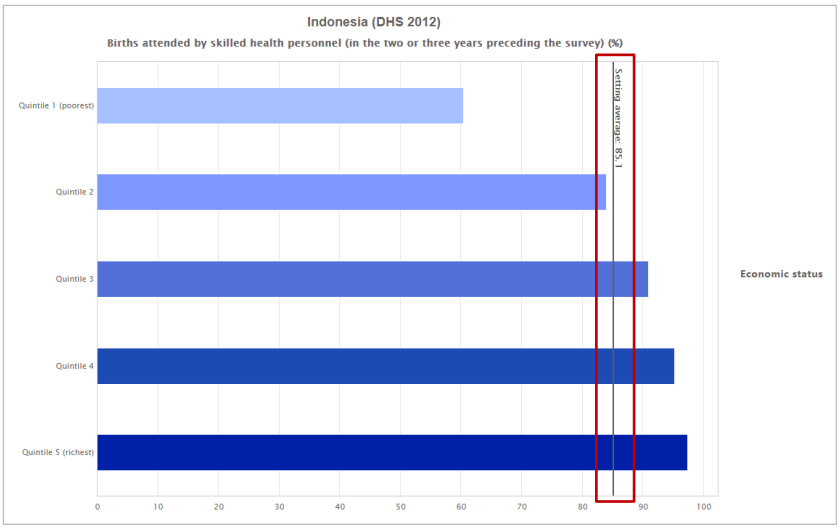
Yes, provided that you entered the setting average in the uploaded dataset, HEAT Plus allows you to simultaneously look at the setting average and disaggregated data.

In the 'Disaggregated data' subcomponents of HEAT Plus (under 'Explore inequality' and 'Compare inequality'), the setting average will be displayed alongside disaggregated estimates in the tooltips of all graphs, including line graphs and bar graphs.





Additionally, in horizontal bar graphs, the setting average can be shown as a vertical reference line in the graph (see the 'Options' tab of the Selection panel on the left).



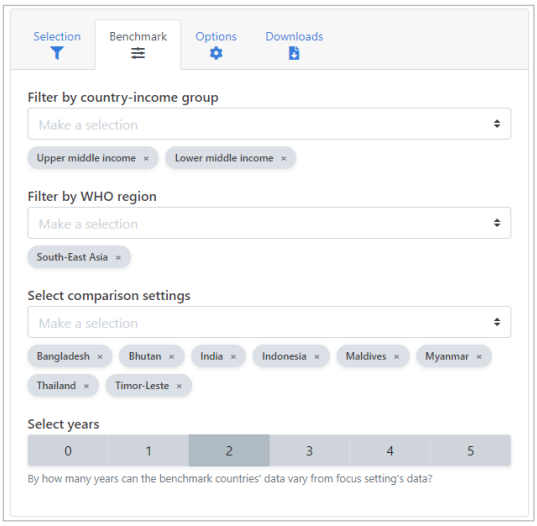
In tables, the setting average can be added as an additional variable and shown alongside disaggregated data estimates (see the 'Options' tab in the Selection panel on the left).

Setting	Year	Indicator name	Dimension	Subgroup	Estimate	Setting average
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 1 (poorest)	60.4	85.1
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 2	84.0	85.1
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 3	90.9	85.1
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 4	95.3	85.1
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 5 (richest)	97.4	85.1
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 1 (poorest)	46.5	74.9
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 2	68.6	74.9
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 3	80.1	74.9
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 4	88.5	74.9

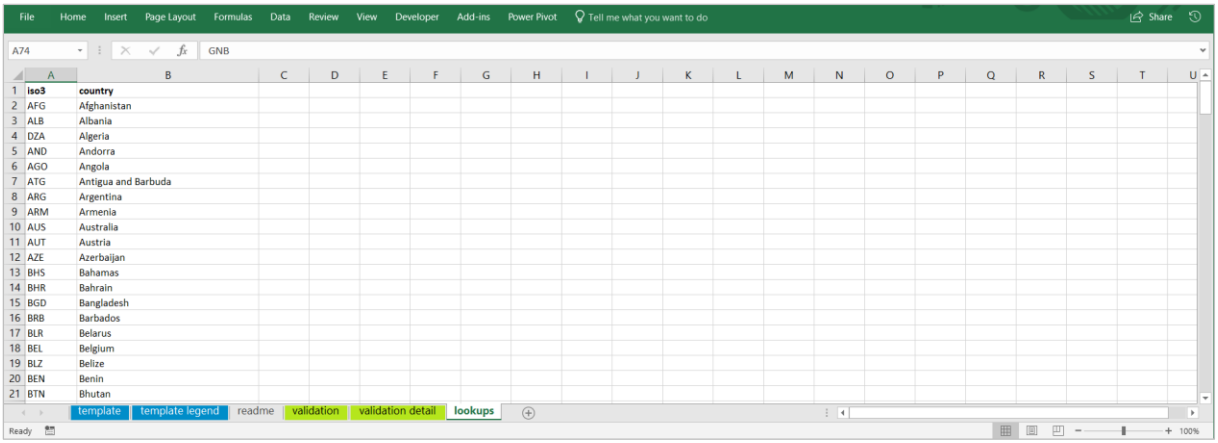
Q15 Do I have to enter an ISO 3 country code?

It is recommended that you enter an ISO 3 country code for country-level data (i.e. if your setting is a country). Based on the ISO 3 country code, HEAT Plus will recognize the World Bank income group and WHO Region for WHO Member State countries in your dataset. This will allow you to easily select countries for benchmarking in the 'Compare inequality' component of HEAT Plus. Specifically, in the Benchmark tab of the Selection menu on the left, you will be able to filter comparison countries by country income group and WHO region.

For example, in the screenshot below, from the countries available in the uploaded dataset, all lower and upper middle income countries from the WHO South-East Asia region have been selected for benchmarking.



Please refer to the lookups tab in the HEAT Plus Template and Validation Tool for a list of WHO Member States and corresponding ISO 3 country codes.



Q16 How do I correctly enter information for the variable 'favourable_indicator' in the template?

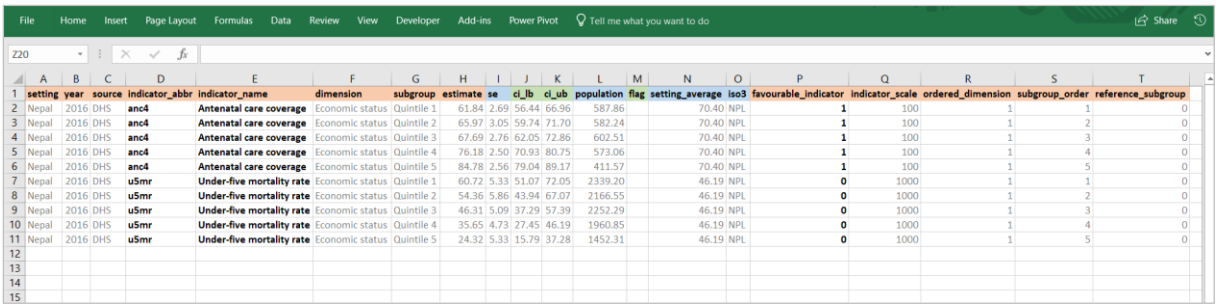
The variable 'favourable_indicators' indicates the indicator type. HEAT Plus requires information about the indicator type for the correct calculation of summary measures. The variable must be 1 for favourable indicators and 0 for non-favourable (adverse) indicators.

Favourable indicators measure desirable events that are to be promoted. They include health intervention indicators, such as antenatal care coverage, and desirable health outcome indicators, such as life expectancy. For these indicators, the ultimate goal is to achieve a maximum level, either in health intervention coverage or health outcome (e.g. complete coverage of antenatal care or the highest possible life expectancy).

Adverse indicators measure undesirable events that are to be reduced or eliminated. They include undesirable health outcome indicators, such as stunting prevalence in children aged less than five years or under-five mortality rate. Here, the ultimate goal is to achieve a minimum level (e.g. theoretically 0 deaths per 1,000 live births).

For example, in the screenshot below, data for antenatal care coverage and under-five mortality rate disaggregated by economic status have been entered in the template. For antenatal care coverage, a

favourable indicator, the variable 'favourable_indicator' takes the value 1, and for under-five mortality rate, an adverse indicator, the variable 'favourable_indicator' takes the value 0.

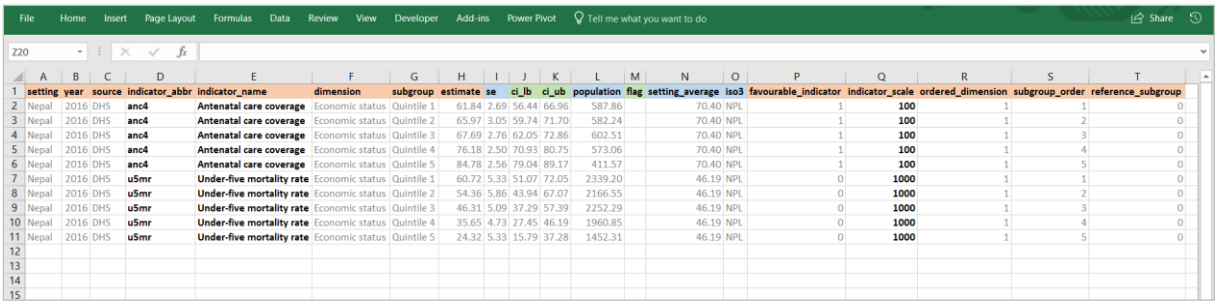


setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 1	61.84	2.69	56.44	66.96	587.86		70.40	NPL	1	100	1	1	0
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 2	65.97	3.05	59.74	71.70	582.24		70.40	NPL	1	100	1	2	0
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 3	67.69	2.76	62.05	72.86	602.51		70.40	NPL	1	100	1	3	0
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 4	76.18	2.50	70.93	80.75	573.06		70.40	NPL	1	100	1	4	0
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 5	84.78	2.56	79.04	89.17	411.57		70.40	NPL	1	100	1	5	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 1	60.72	5.33	51.07	72.05	2339.20		46.19	NPL	0	1000	1	1	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 2	54.36	5.86	43.94	67.07	2166.55		46.19	NPL	0	1000	1	2	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 3	46.31	5.09	37.29	57.39	2252.29		46.19	NPL	0	1000	1	3	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 4	35.65	4.73	27.45	46.19	1960.85		46.19	NPL	0	1000	1	4	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 5	24.32	5.33	15.79	37.28	1452.31		46.19	NPL	0	1000	1	5	0

Q17 How do I correctly enter information for the variable 'indicator_scale' in the template?

The variable 'indicator_scale' indicates the scale of the indicator, such as '100' for indicators reported as percentages or '1000' for indicators reported as rates per 1000 population. HEAT Plus requires information about the indicator scale for the correct calculation of summary measures.

For example, in the screenshot below, data for antenatal care coverage and under-five mortality rate disaggregated by economic status have been entered in the template. For antenatal care coverage, reported as a percentage, the variable 'indicator_scale' takes the value 100, and for under-five mortality rate, reported as a rate per 1000 live births, the variable 'indicator_scale' takes the value 1000.



setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 1	61.84	2.69	56.44	66.96	587.86		70.40	NPL	1	100	1	1	0
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 2	65.97	3.05	59.74	71.70	582.24		70.40	NPL	1	100	1	2	0
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 3	67.69	2.76	62.05	72.86	602.51		70.40	NPL	1	100	1	3	0
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 4	76.18	2.50	70.93	80.75	573.06		70.40	NPL	1	100	1	4	0
Nepal	2016	DHS	anc4	Antenatal care coverage	Economic status	Quintile 5	84.78	2.56	79.04	89.17	411.57		70.40	NPL	1	100	1	5	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 1	60.72	5.33	51.07	72.05	2339.20		46.19	NPL	0	1000	1	1	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 2	54.36	5.86	43.94	67.07	2166.55		46.19	NPL	0	1000	1	2	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 3	46.31	5.09	37.29	57.39	2252.29		46.19	NPL	0	1000	1	3	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 4	35.65	4.73	27.45	46.19	1960.85		46.19	NPL	0	1000	1	4	0
Nepal	2016	DHS	u5mr	Under-five mortality rate	Economic status	Quintile 5	24.32	5.33	15.79	37.28	1452.31		46.19	NPL	0	1000	1	5	0

Q18 How do I correctly enter information for the variable 'ordered_dimension' in the template?

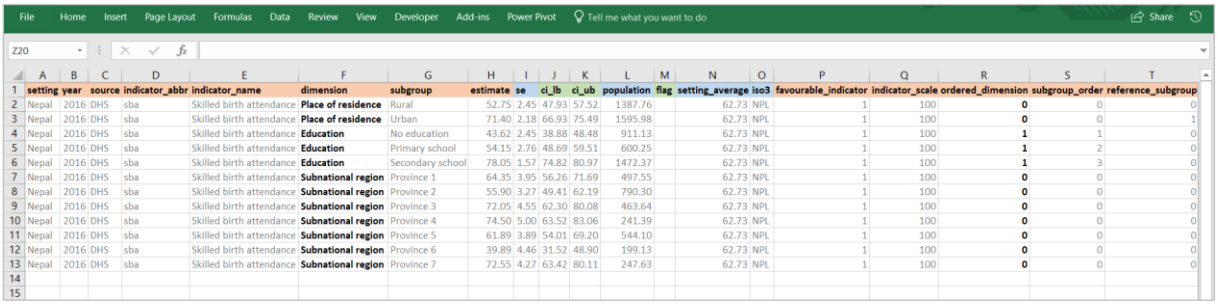
The variable 'ordered_dimension' indicates the dimension type. HEAT Plus requires information about the dimension type for the correct calculation of summary measures. The variable must be 0 for dimensions with two subgroups (binary dimensions). For dimensions with more than two subgroups, it must be 1 for ordered dimensions and 0 for non-ordered dimensions.

Binary dimensions compare the situation in two population subgroups (e.g. males and females).

Ordered dimensions have (more than two) ordered subgroups that have an inherent positioning and can be ranked. For example, education has an inherent ordering in the sense that those with less education unequivocally have less of something compared to those with more education.

Non-ordered dimensions have (more than two) non-ordered subgroups that are not based on criteria that can be logically ranked. Subnational regions are an example of non-ordered groupings.

For example, in the screenshot below, data for skilled birth attendance disaggregated by place of residence, education and subnational region have been entered in the template. For place of residence, a binary dimension with two subgroups (urban and rural), the variable 'ordered_dimension' takes the value 0. For education, an ordered dimension with three subgroups (no education, primary school and secondary school), the variable 'ordered_dimension' takes the value 1. For subnational region, a non-ordered dimension with seven subgroups (seven provinces), the variable 'ordered_dimension' takes the value 0.



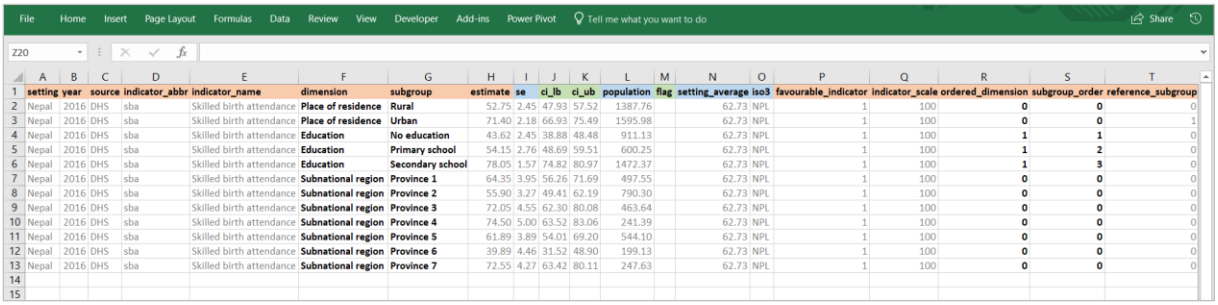
setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Nepal	2016	DHS	sba	Skilled birth attendance	Place of residence	Rural	52.75	2.45	47.93	57.52	1387.76		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Place of residence	Urban	71.40	2.18	66.93	75.49	1595.98		62.73	NPL	1	100	0	0	1
Nepal	2016	DHS	sba	Skilled birth attendance	Education	No education	43.62	2.45	38.88	48.48	911.13		62.73	NPL	1	100	1	1	0
Nepal	2016	DHS	sba	Skilled birth attendance	Education	Primary school	54.15	2.76	48.69	59.51	600.25		62.73	NPL	1	100	1	2	0
Nepal	2016	DHS	sba	Skilled birth attendance	Education	Secondary school	78.05	1.57	74.82	80.97	1472.37		62.73	NPL	1	100	1	3	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 1	64.35	3.95	56.26	71.69	497.55		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 2	55.90	3.27	49.41	62.19	790.30		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 3	72.05	4.55	62.30	80.08	463.64		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 4	74.50	5.00	63.52	83.06	241.39		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 5	61.89	3.89	54.01	69.20	544.10		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 6	39.89	4.46	31.52	48.90	199.13		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 7	72.55	4.27	63.42	80.11	247.63		62.73	NPL	1	100	0	0	0

Q19 How do I correctly enter information for the variable 'subgroup_order' in the template?

The variable 'subgroup_order' indicates the order of subgroups for ordered dimensions. HEAT Plus requires information about the subgroup order for the correct calculation of summary measures.

For ordered dimensions (i.e. if the variable 'ordered_dimension takes the value 1), 'subgroup_order' must be an increasing sequence of integers starting with the value 1 for the most-disadvantaged subgroup. For example, for education (an ordered dimension), the most-disadvantaged subgroup "no education" will be assigned the value 1, "primary school" will be assigned the value 2 and the most-advantaged subgroup "secondary school" will be assigned the value 3.

For binary and non-ordered dimensions (i.e. if the variable 'ordered_dimension' takes the value 0), 'subgroup_order' must be 0. For example, for place of residence (a binary dimension) and subnational region (a non-ordered dimension), 'subgroup_order' must take the value 0.



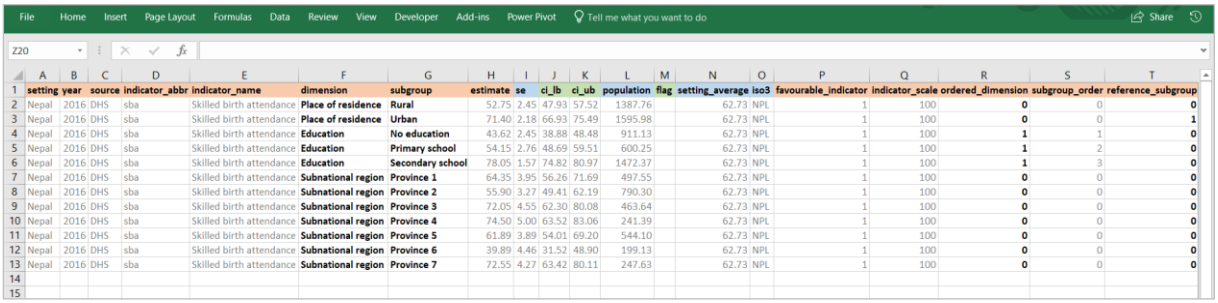
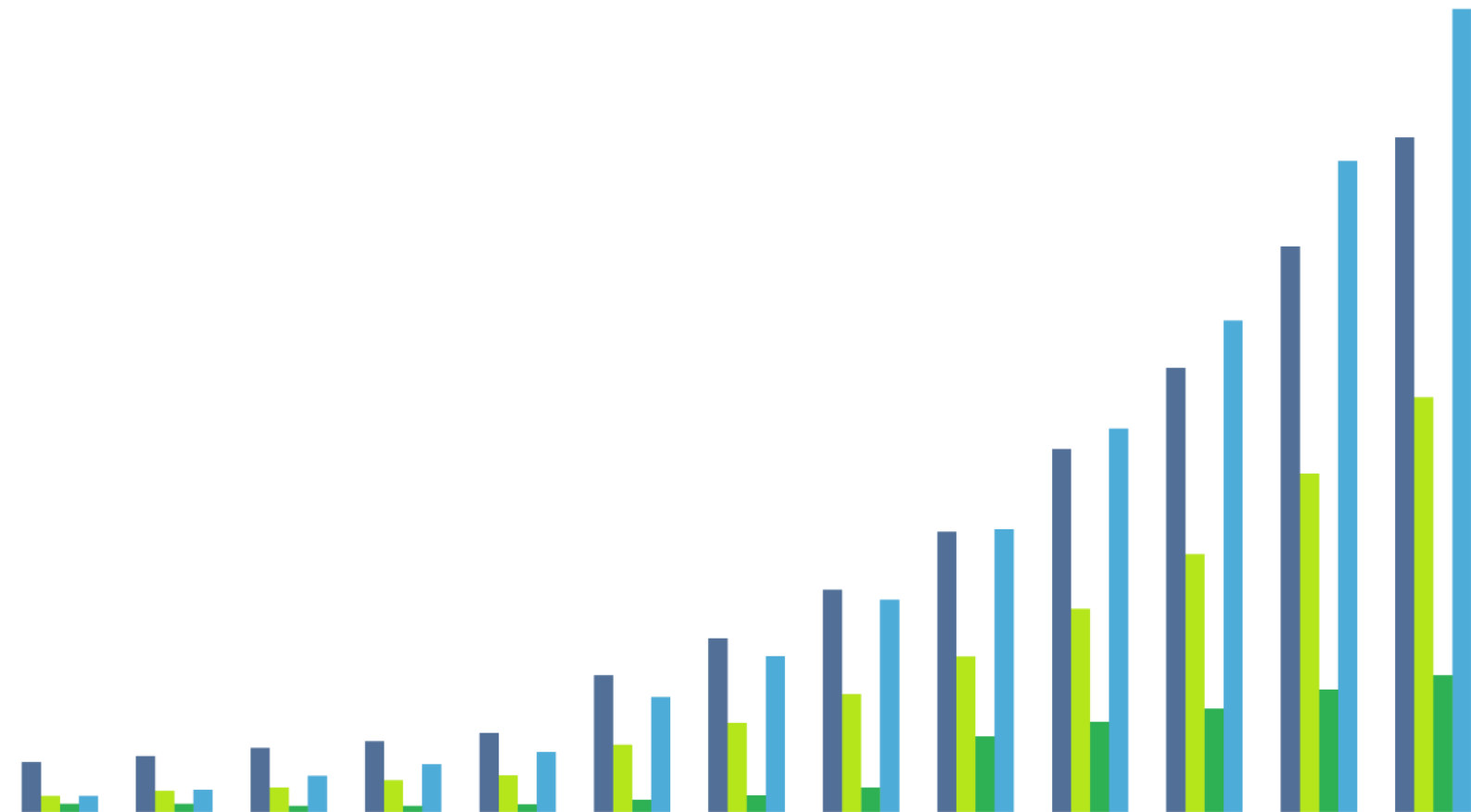
setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Nepal	2016	DHS	sba	Skilled birth attendance	Place of residence	Rural	52.75	2.45	47.93	57.52	1387.76		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Place of residence	Urban	71.40	2.18	66.93	75.49	1595.98		62.73	NPL	1	100	0	0	1
Nepal	2016	DHS	sba	Skilled birth attendance	Education	No education	43.62	2.45	38.88	48.48	911.13		62.73	NPL	1	100	1	1	0
Nepal	2016	DHS	sba	Skilled birth attendance	Education	Primary school	54.15	2.76	48.69	59.51	600.25		62.73	NPL	1	100	1	2	0
Nepal	2016	DHS	sba	Skilled birth attendance	Education	Secondary school	78.05	1.57	74.82	80.97	1472.37		62.73	NPL	1	100	1	3	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 1	64.35	3.95	56.26	71.69	497.55		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 2	55.90	3.27	49.41	62.19	790.30		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 3	72.05	4.55	62.30	80.08	463.64		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 4	74.50	5.00	63.52	83.06	241.39		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 5	61.89	3.89	54.01	69.20	544.10		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 6	39.89	4.46	31.52	48.90	199.13		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 7	72.55	4.27	63.42	80.11	247.63		62.73	NPL	1	100	0	0	0

Q20 How do I correctly enter information for the variable 'reference_subgroup' in the template?

The variable 'reference_subgroup' indicates the reference subgroup for binary and non-ordered dimensions. HEAT Plus requires information about the reference subgroup for the correct calculation of summary measures.

For binary and non-ordered dimensions (i.e. if the variable 'ordered_dimension' takes the value 0), you have the option to choose a reference subgroup. A reference subgroup can be chosen by assigning the value 1 to that subgroup and 0 to all other subgroups. For example, for place of residence (a binary dimension), urban can be chosen as the reference subgroup. In this case, 'reference_subgroup' will take the value 1 for urban and the value 0 for rural. Similarly, a reference subgroup could be chosen for subnational region (a non-ordered dimension), however this is completely optional. If you don't want to select a reference subgroup, the variable 'reference_subgroup' will take the value 0 for all subgroups.

For ordered dimensions (i.e. if the variable 'ordered_dimension takes the value 1), 'reference_subgroup' must be 0. For example, for education (an ordered dimension), 'reference_subgroup' must take the value 0.



setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
Nepal	2016	DHS	sba	Skilled birth attendance	Place of residence	Rural	52.75	2.45	47.93	57.52	1387.76		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Place of residence	Urban	71.40	2.18	66.93	75.49	1595.98		62.73	NPL	1	100	0	0	1
Nepal	2016	DHS	sba	Skilled birth attendance	Education	No education	43.62	2.45	38.88	48.48	911.13		62.73	NPL	1	100	1	1	0
Nepal	2016	DHS	sba	Skilled birth attendance	Education	Primary school	54.15	2.76	48.69	59.51	600.25		62.73	NPL	1	100	1	2	0
Nepal	2016	DHS	sba	Skilled birth attendance	Education	Secondary school	78.05	1.57	74.82	80.97	1472.37		62.73	NPL	1	100	1	3	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 1	64.35	3.95	56.26	71.69	497.55		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 2	55.90	3.27	49.41	62.19	790.30		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 3	72.05	4.55	62.30	80.08	463.64		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 4	74.50	5.00	63.52	83.06	241.39		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 5	61.89	3.89	54.01	69.20	544.10		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 6	39.89	4.46	31.52	48.90	199.13		62.73	NPL	1	100	0	0	0
Nepal	2016	DHS	sba	Skilled birth attendance	Subnational region	Province 7	72.55	4.27	63.42	80.11	247.63		62.73	NPL	1	100	0	0	0