

# USER MANUAL

## Health Equity Assessment Toolkit Plus (HEAT Plus)

UPLOAD DATABASE EDITION, VERSION 4.0



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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 is essential for achieving equity: 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. With a strong commitment to achieving equity in health, the World Health Organization (WHO) has developed a number of tools and resources to build and strengthen capacity for health inequality monitoring, including the Health Equity Assessment Toolkit.

The **Health Equity Assessment Toolkit** is a free and open-source software application that facilitates the assessment of within-country inequalities, i.e. differences that exist between population subgroups within a country. Through innovative and interactive data visualizations, the toolkit makes it easy to analyse and communicate data about inequalities. Disaggregated data and summary measures are visualized in a variety of graphs, maps and tables that can be customized according to your needs. Results can be exported to communicate findings to different audiences and inform evidence-based decision making.

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



**HEAT** (built-in database edition), which contains the WHO Health Equity Monitor database



**HEAT Plus** (upload database edition), which allows users to upload their own datasets

While HEAT was developed specifically for assessing inequalities in health, HEAT Plus is designed to be fully flexible: you can upload your own data and undertake equity assessments for any indicator and inequality dimension, in any setting of interest (at global, regional, national and subnational levels). 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 Equity Monitor, and although with a focus on health, the approaches may be applied to any topic.



## LINKS

- [WHO Health Equity Monitor](#)
- [Health Equity Assessment Toolkit \(HEAT and HEAT Plus\)](#)

## 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, as they are used in HEAT, 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.
- ✓ **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.

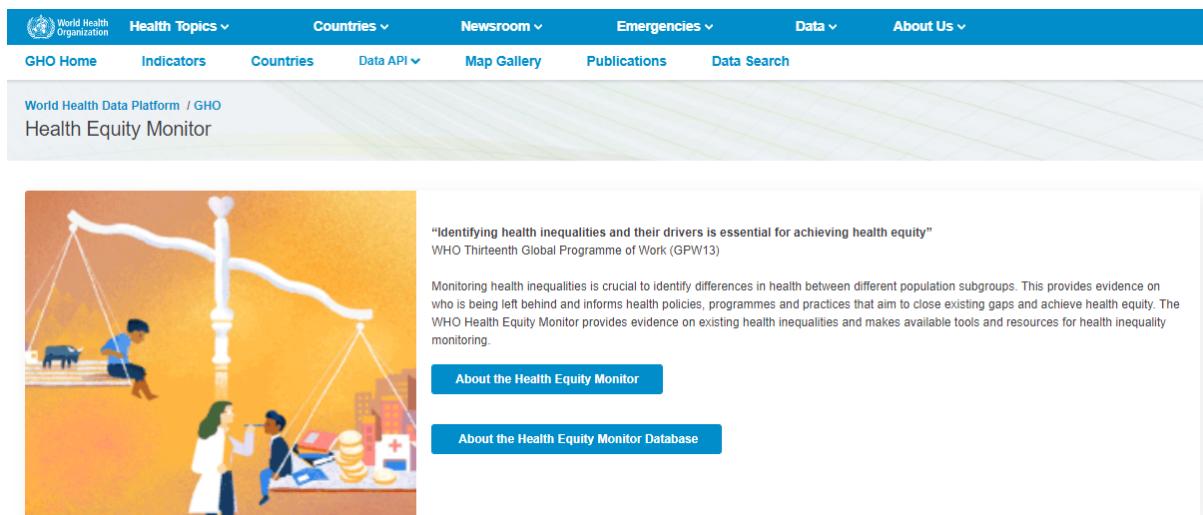
## 1.2 What HEAT Plus cannot do

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 [http://www.who.int/gho/health\\_equity/statistical\\_codes](http://www.who.int/gho/health_equity/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 an online version (HEAT Plus Online) and a downloadable desktop version (HEAT Plus Desktop). While HEAT Plus Online can be used on the web and requires no installation, HEAT Plus Desktop can be installed locally on your machine and also runs without internet connection. The features and functionalities of the online and desktop versions are the same. The latest version of HEAT Plus can be accessed via the WHO Health Equity Monitor at [http://www.who.int/gho/health\\_equity](http://www.who.int/gho/health_equity).



World Health Data Platform / GHO  
Health Equity Monitor

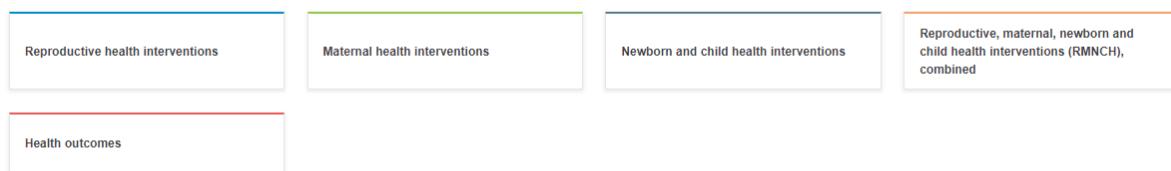
"Identifying health inequalities and their drivers is essential for achieving health equity"  
WHO Thirteenth Global Programme of Work (GPW13)

Monitoring health inequalities is crucial to identify differences in health between different population subgroups. This provides evidence on who is being left behind and informs health policies, programmes and practices that aim to close existing gaps and achieve health equity. The WHO Health Equity Monitor provides evidence on existing health inequalities and makes available tools and resources for health inequality monitoring.

About the Health Equity Monitor

About the Health Equity Monitor Database

### Health Equity Monitor Database



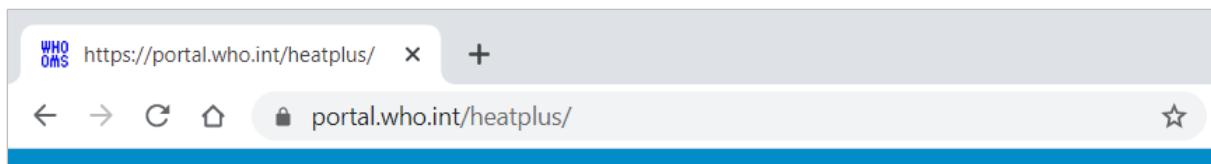
### Health equity monitoring resources



Alternatively, you can directly access HEAT Plus at [http://www.who.int/gho/health\\_equity/assessment\\_toolkit](http://www.who.int/gho/health_equity/assessment_toolkit).

### 2.1 HEAT Plus Online

The online version of HEAT Plus is available at <https://www.portal.who.int/heatplus>. HEAT Plus Online can be accessed in any web browser and on all desktop or laptop computers and mobile devices (minimum screen size of 7.9 inches recommended). This version does not require any installation and can be used online (internet connection required).



## 2.2 HEAT Plus Desktop

The desktop version of HEAT Plus is available as a compressed (zipped) folder for download from the WHO website ([https://www.who.int/data/gho/health-equity/assessment\\_toolkit](https://www.who.int/data/gho/health-equity/assessment_toolkit)). The folder contains both HEAT (the built-in database edition) and HEAT Plus (the upload database edition). The software can be installed locally on your machine and can be used offline (no internet connection required).

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.

### 2.2.1 Windows

To run HEAT Plus Desktop on your Windows machine, download the compressed "HEAT and HEAT Plus for Windows" (zip) file, unzip the file and save the content to your computer's hard drive. Select the "HEAT and 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 (or run HEAT), make sure to close both the browser window and the command window, before double-clicking the 'Start\_HEATPlus.bat' (or 'Start\_HEAT.bat') file.

### 2.2.2 Macintosh

HEAT Plus Desktop version 4.0 for Mac is currently under development. To access previous versions, please see: [https://www.who.int/data/gho/health-equity/assessment\\_toolkit/health-equity/assessment\\_toolkit/previous-versions](https://www.who.int/data/gho/health-equity/assessment_toolkit/health-equity/assessment_toolkit/previous-versions).

## 3 How to use HEAT Plus

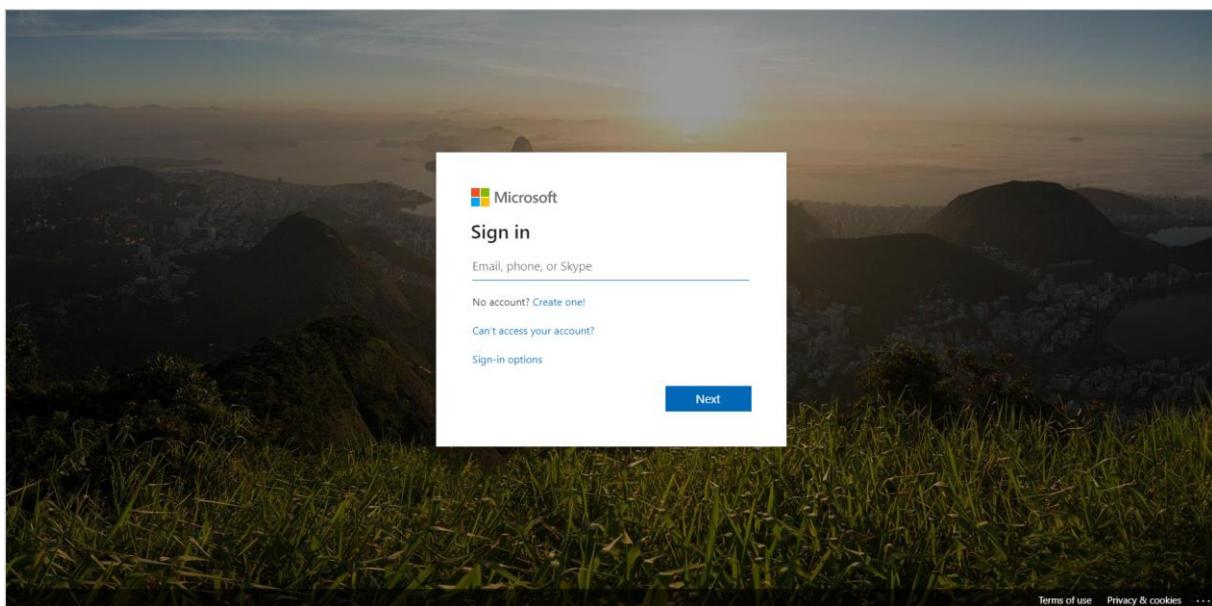
### 3.1 Getting started

#### 3.1.1 Login and user account

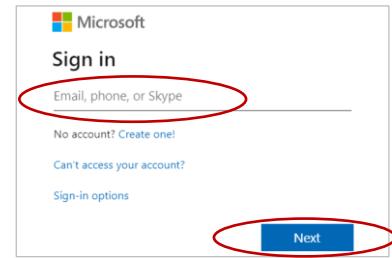
In order to use the online version of HEAT Plus, you first need to **log in**. Note that you require an account with Microsoft to log in to HEAT Plus Online. Click the green 'Login with Microsoft' button to proceed.



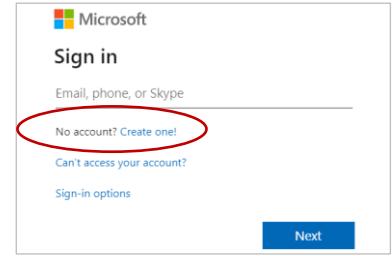
You will be taken to a new page and asked to sign in with your Microsoft account. A Microsoft account is a single sign-in account that allows you to access all Microsoft services, such as Skype, Outlook and OneDrive (HEAT Plus uses Microsoft Azure for login, hence a Microsoft account is required).



If you already have an **existing Microsoft account**, enter the email address, phone number or Skype username associated with your account (note that the email address need not be a Microsoft email address, but may be an address from another provider, such as gmail or yahoo). Click the 'Next' button to proceed. You will be taken to a new page and asked to enter your password. Once you have signed in with Microsoft, you will be logged in to HEAT Plus.



If you do not yet have an account with Microsoft, you can create a **new Microsoft account** by clicking 'Create one!'. You will be taken to a new page and asked to provide information for your new account, including an email address and a password. Once you have created your new account and signed in with Microsoft, you will be logged in to HEAT Plus.



While you are logged in to HEAT Plus, your username will appear in the top-right corner of the software. When hovering over your username, you access the following features:

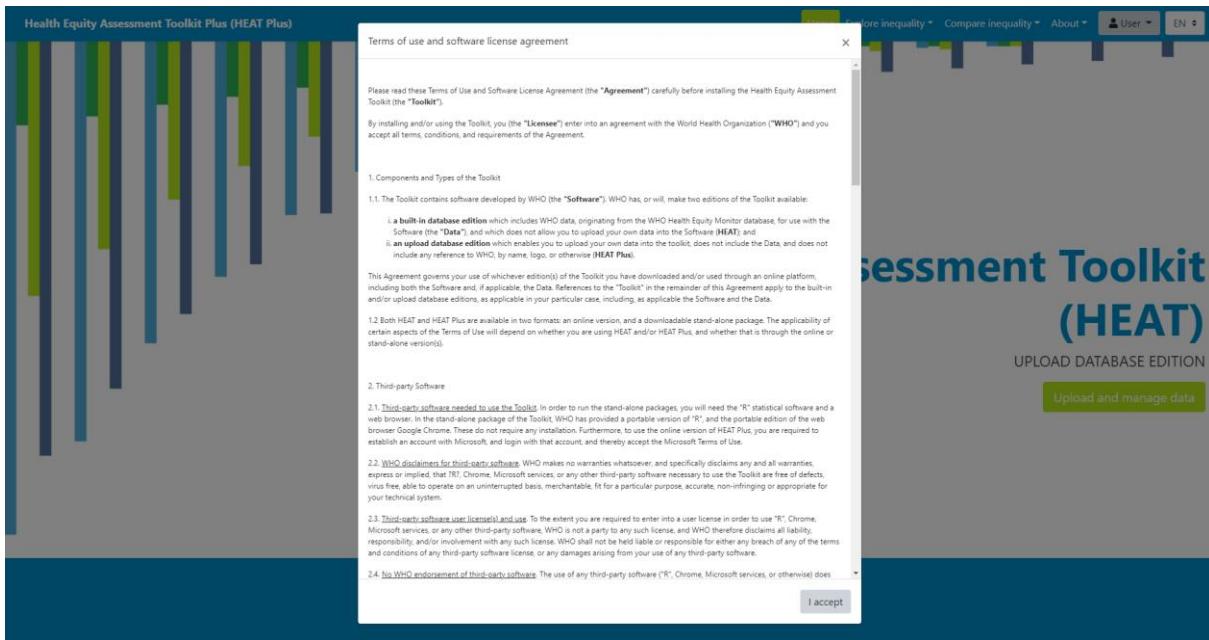
- **Manage data** will open a pop-up window with the data manager, that allows you to upload new datasets and/or open previously uploaded datasets.
- **Go to account** will take you to a new page, where you can access your Microsoft account (e.g. to view your details and change your settings...)
- **Logout** will log you out of HEAT Plus.



Note that the desktop version of HEAT Plus does not require any login.

### 3.1.2 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 'I accept' button to proceed.



### 3.1.3 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)). Note that the tool will be translated into Arabic, Chinese and Russian in the future.

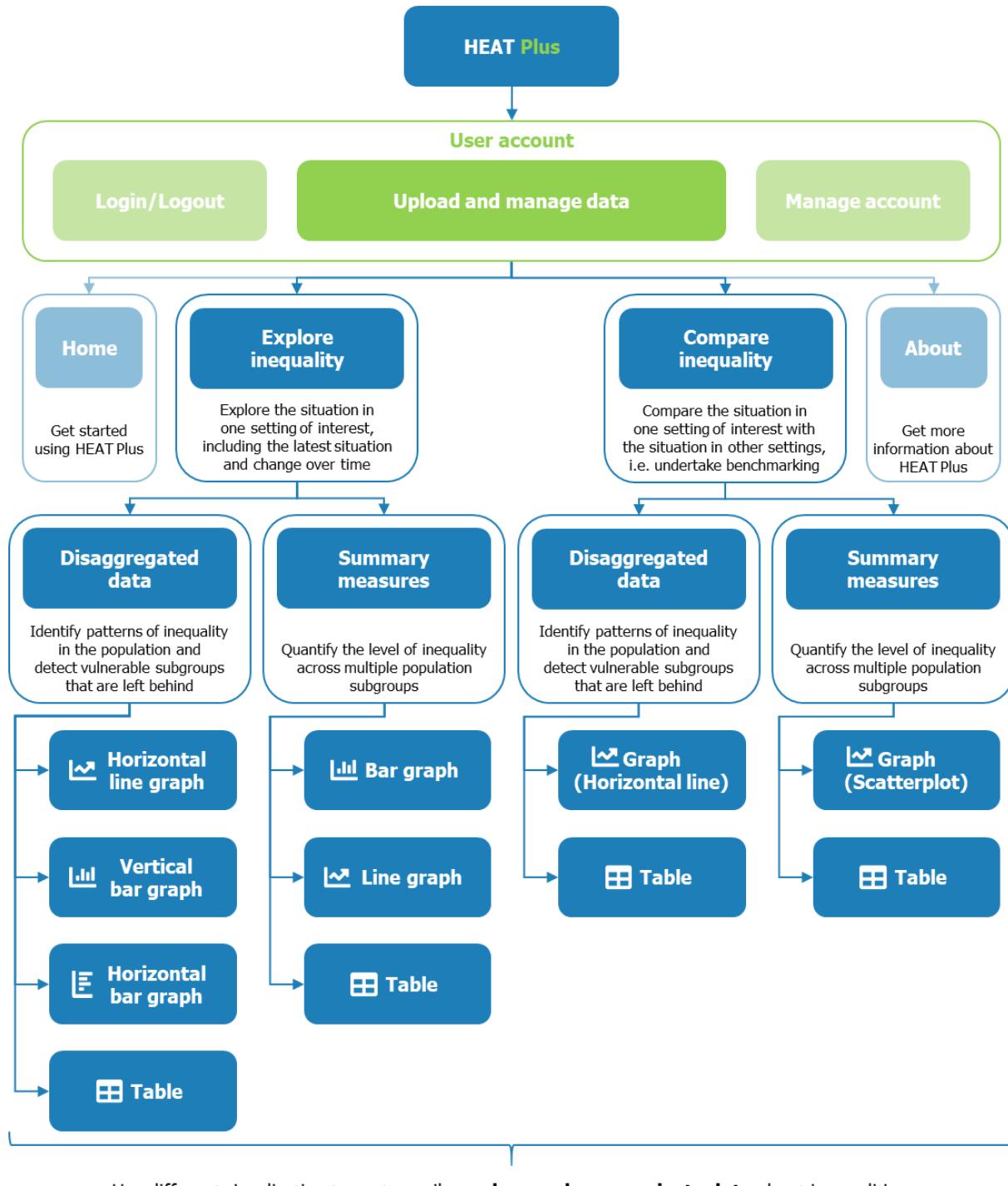
Scroll down the page to get more information about the software.



### 3.1.4 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.

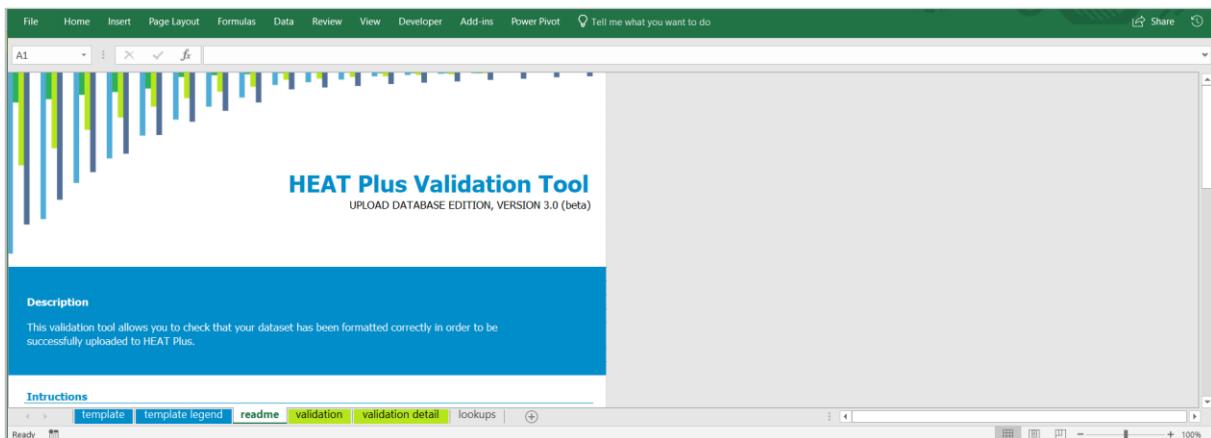
### 3.2.1 HEAT Plus Template and Validation Tool

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.

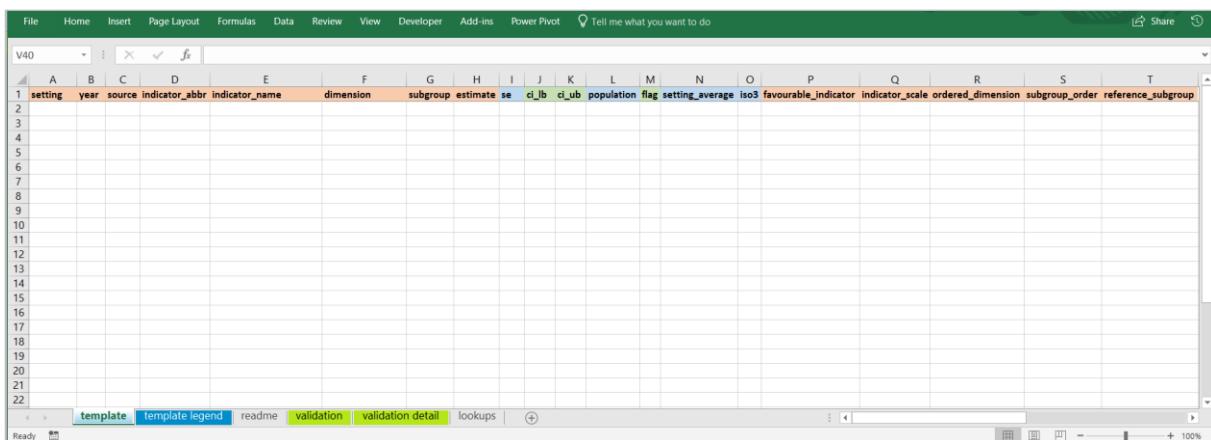


View the **readme** tab for instructions on how to use the validation tool.

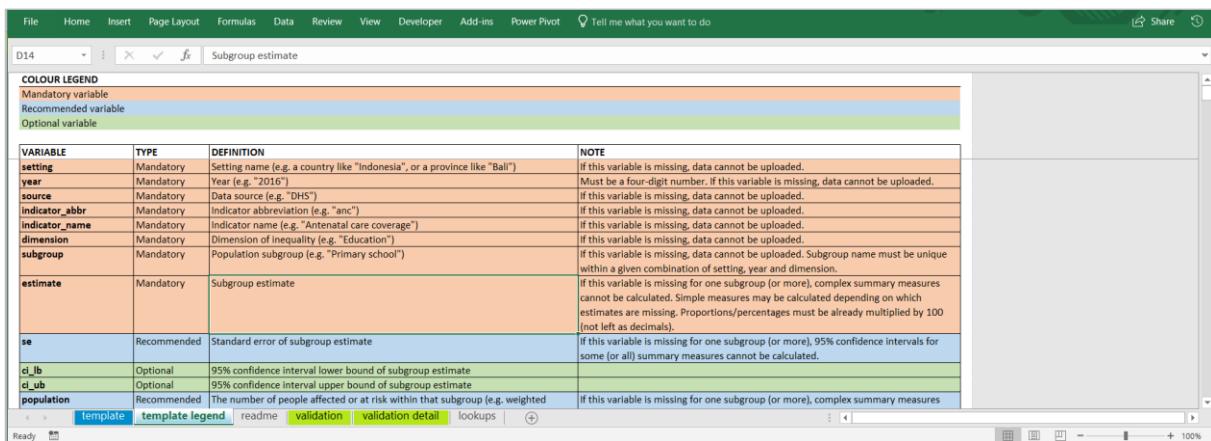


### 3.2.2 Entering your data in the template

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, while 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 (which can be the name of a country, administrative region, facility or other, as appropriate), year, 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 flag (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 2012 Indonesian Demographic and Health Survey were entered in the template tab.

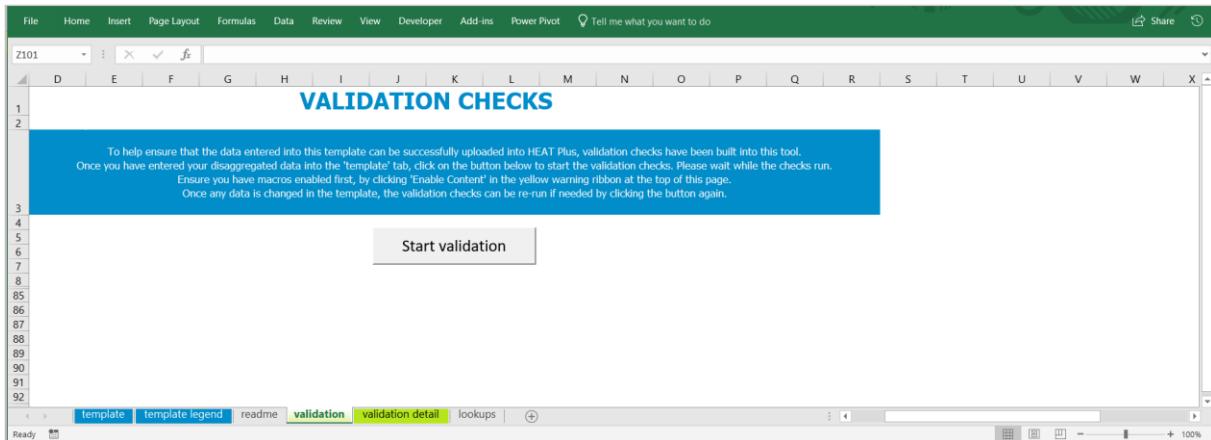
The screenshot shows a Microsoft Excel spreadsheet titled "U28" with data entered into columns A through T. The columns represent various variables: setting, year, source, indicator\_abbr, indicator\_name, dimension, subgroup, estimate, se, ci\_lb, ci\_ub, population, flag, setting\_average, iso3, favourable\_indicator, indicator\_scale, ordered\_dimension, subgroup\_order, and reference\_subgroup. The data includes rows for antenatal care coverage (ANC) and skilled birth attendance (SBA) across Quintiles 1-5 for Rural and Urban areas, comparing Economic Status and Place of residence. The "template" tab is selected at the bottom of the ribbon.

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.



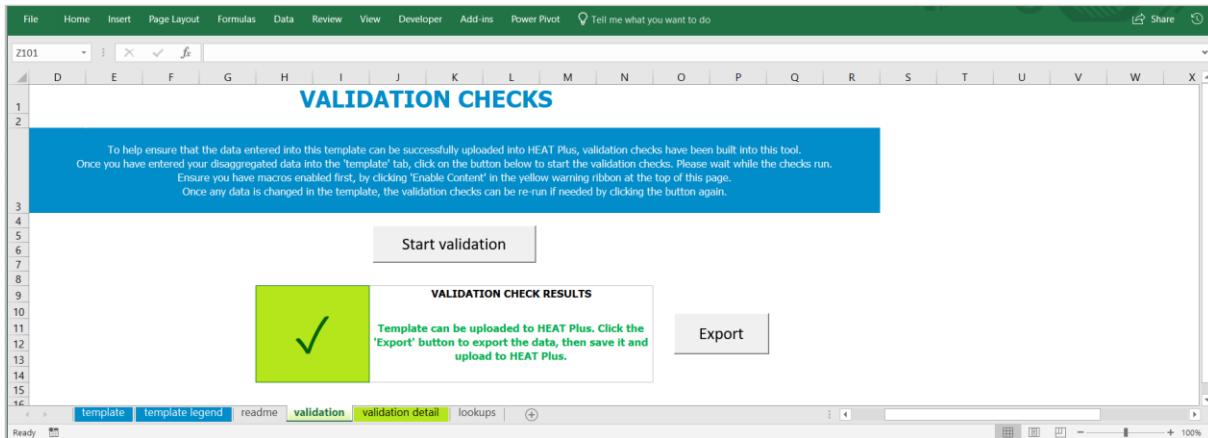
If the validation checks results show that your data has not been entered correctly, a red warning message will appear. In this case, you will need to correct the entries in the template tab.

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

Missing data in mandatory variables	
row number	2
	BQ
	BR
	BS
	BT
	BU
	BV
	BW
	BX
	BY
	BZ
	CA
	CB
	CC
	CD
	CE
	CF
	CG
	CH
	CI
	CJ
	CK

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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.

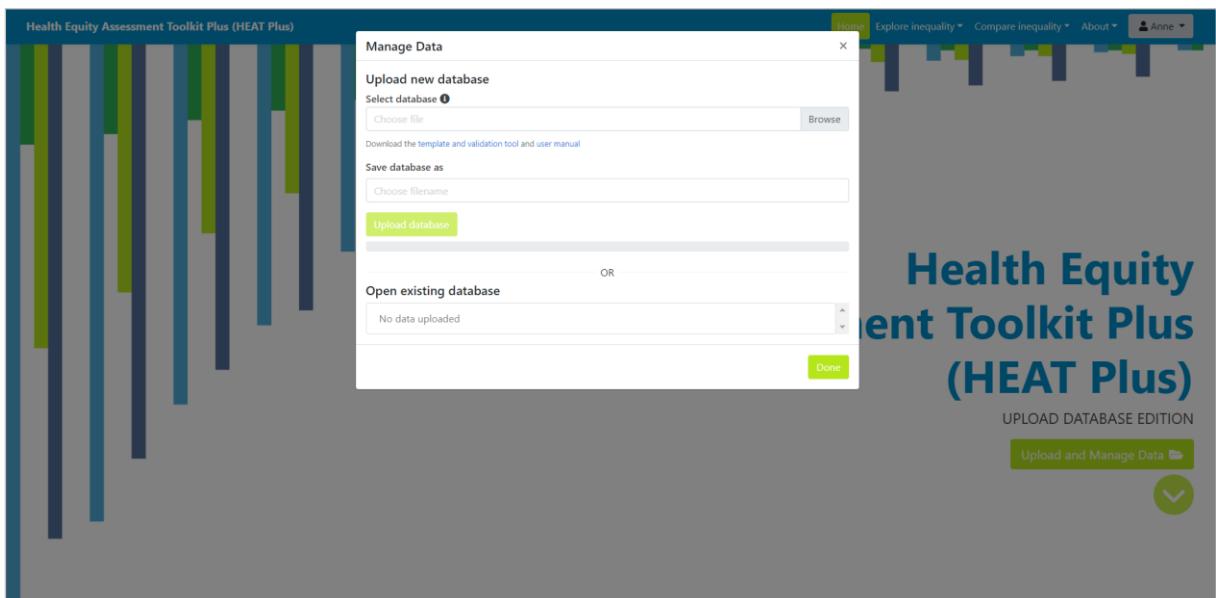
setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	cl_lb	cl_ub	population	flag	setting_average	ios3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
2	Indonesia	2012 DHS	anc4	Antenatal care coverage	Economic status	Quintile 1	68.84	1.35	66.14	71.42	2039.17	87.37	ION	1	100	1	1	1	0
3	Indonesia	2012 DHS	anc4	Antenatal care coverage	Economic status	Quintile 2	86.55	1.08	84.29	88.53	1945.65	87.37	ION	1	100	1	2	0	
4	Indonesia	2012 DHS	anc4	Antenatal care coverage	Economic status	Quintile 3	91.36	0.84	89.57	92.87	1943.45	87.37	ION	1	100	1	3	0	
5	Indonesia	2012 DHS	anc4	Antenatal care coverage	Economic status	Quintile 4	94.92	0.73	93.29	96.18	2043.00	87.37	ION	1	100	1	4	0	
6	Indonesia	2012 DHS	anc4	Antenatal care coverage	Economic status	Quintile 5	96.37	0.62	94.94	97.41	1795.40	87.37	ION	1	100	1	5	0	
7	Indonesia	2012 DHS	anc4	Antenatal care coverage	Place of residence	Rural	82.07	0.76	80.52	83.52	4955.56	87.37	ION	1	100	0	0	0	
8	Indonesia	2012 DHS	anc4	Antenatal care coverage	Place of residence	Urban	92.83	0.55	91.67	93.83	4811.12	87.37	ION	1	100	0	0	1	
9	Indonesia	2012 DHS	sba	Skilled birth attendance	Economic status	Quintile 1	604.3	1.63	571.9	63.58	2227.99	85.06	ION	1	100	1	1	0	
10	Indonesia	2012 DHS	sba	Skilled birth attendance	Economic status	Quintile 2	840.1	1.31	81.28	86.42	2050.93	85.06	ION	1	100	1	2	0	
11	Indonesia	2012 DHS	sba	Skilled birth attendance	Economic status	Quintile 3	90.88	1.01	88.69	92.68	2042.03	85.06	ION	1	100	1	3	0	
12	Indonesia	2012 DHS	sba	Skilled birth attendance	Economic status	Quintile 4	95.29	0.98	92.96	96.88	2130.51	85.06	ION	1	100	1	4	0	
13	Indonesia	2012 DHS	sba	Skilled birth attendance	Economic status	Quintile 5	97.43	0.67	95.73	98.46	1890.85	85.06	ION	1	100	1	5	0	
14	Indonesia	2012 DHS	sba	Skilled birth attendance	Place of residence	Rural	77.15	1.12	74.89	79.27	5274.37	85.06	ION	1	100	0	0	0	
15	Indonesia	2012 DHS	sba	Skilled birth attendance	Place of residence	Urban	93.30	0.82	91.51	94.73	5067.94	85.06	ION	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 hover over your username in the top-right corner of the software and click 'Manage data' in order to open the data manager.



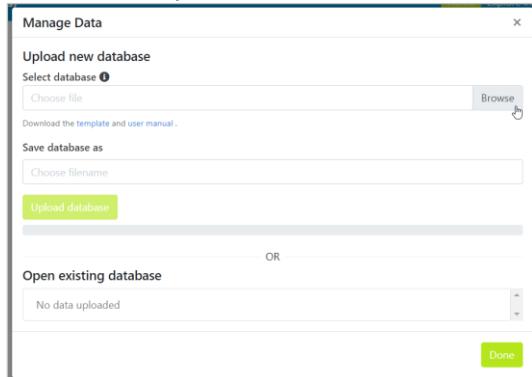
A pop-up window will appear that allows you to manage your data. Here you can upload new databases and/or open existing databases. You can also rename and delete previously uploaded databases.



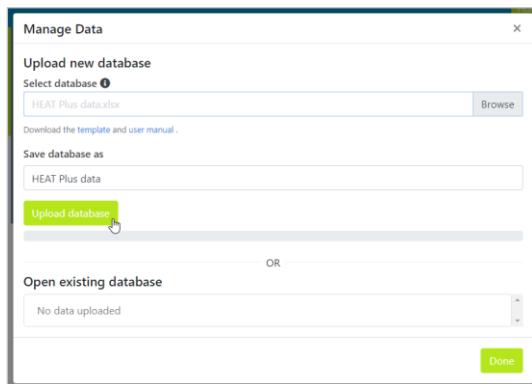
### 3.3.1 Upload a new database

Follow the six steps below to upload a new database.

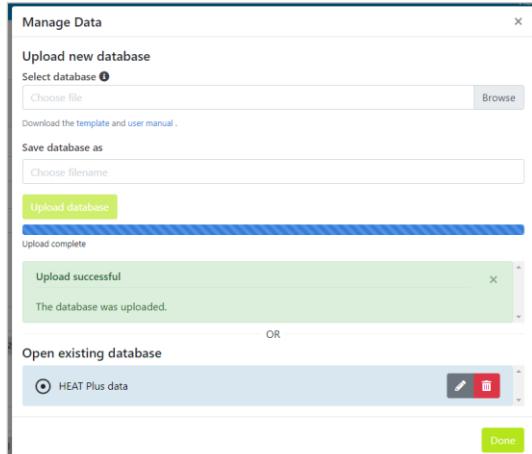
1. Click the 'Browse' button to select a new database for upload to HEAT Plus.



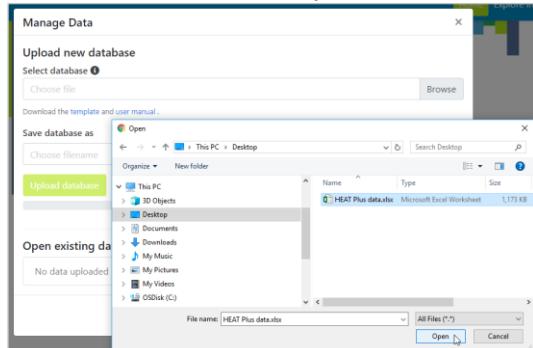
3. Click the 'Upload database' button to commence the upload.



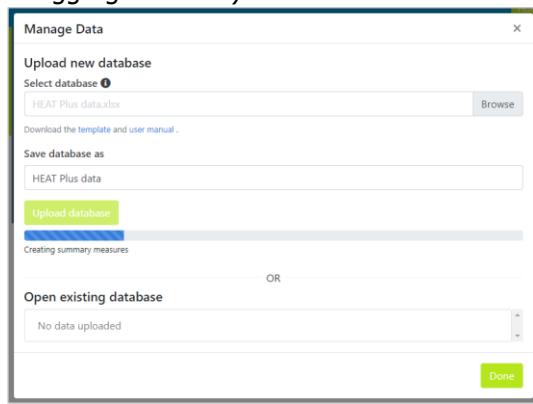
5. Once the upload is complete, a confirmation message will appear. Your uploaded database will now be listed under existing databases.



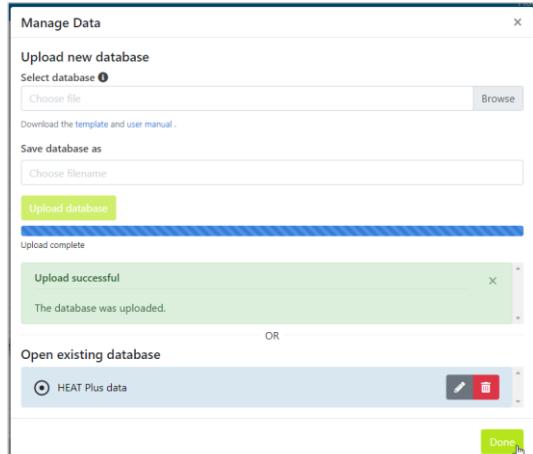
2. A pop-up window will appear that allows you to select a database from your files.



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



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

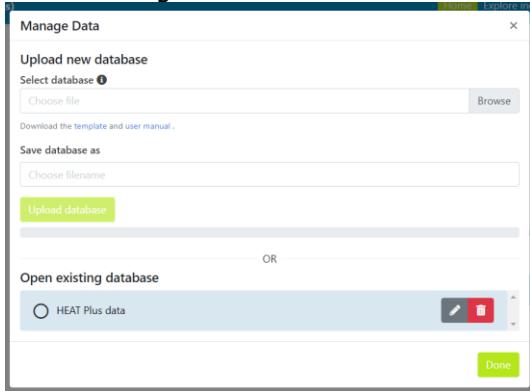


You can repeat these steps to upload additional databases. Uploaded databases will be securely stored in your HEAT Plus account.

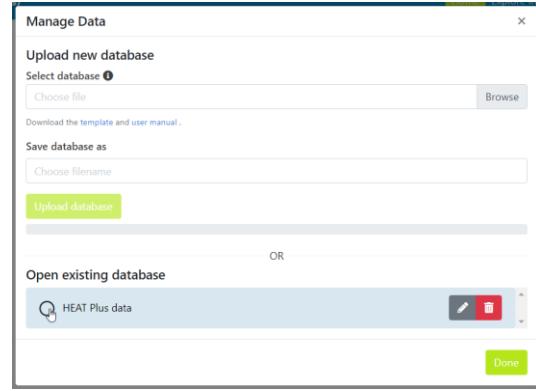
### 3.3.2 Open an existing database

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

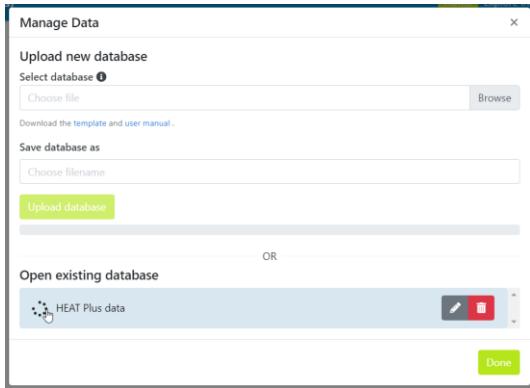
1. Previously uploaded databases will appear under existing databases.



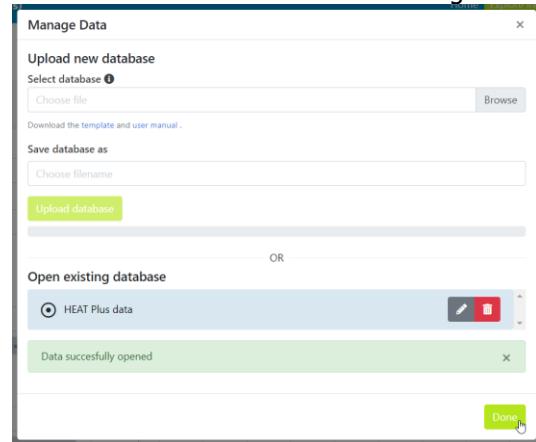
2. Select the database that you want to open.



3. Wait for HEAT Plus to open your database.



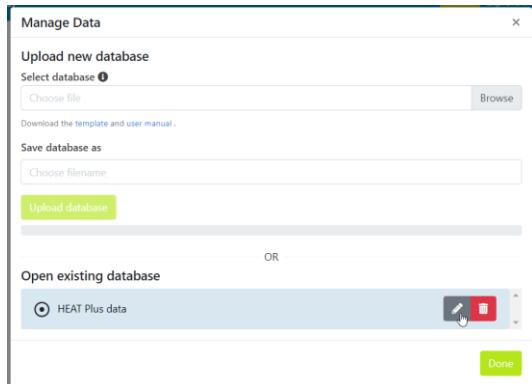
4. Once the database has been opened, a confirmation message will appear. Click the 'Done' button to close the data manager.



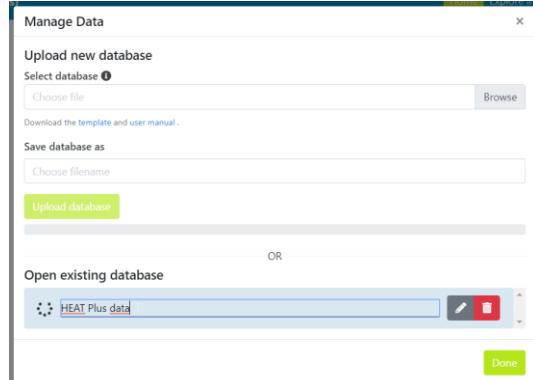
### 3.3.3 Rename an existing database

Follow the four steps below to rename an existing database.

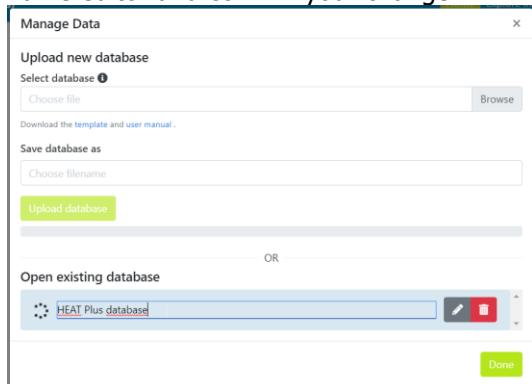
1. Click the pen next to the database whose name you want to change.



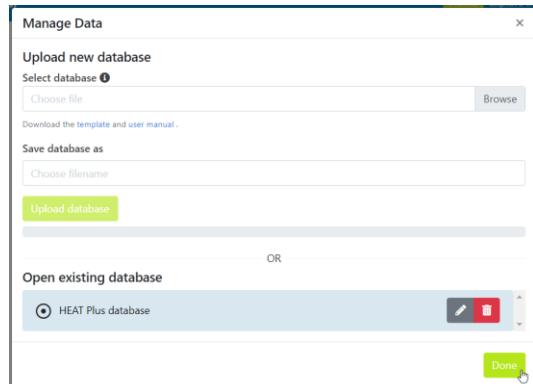
2. This will allow you to edit the name of the database. Click inside the editor field to change the database name.



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



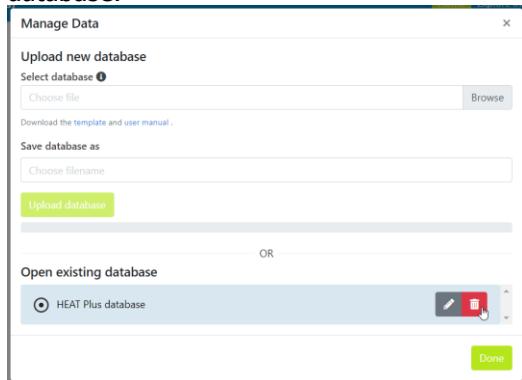
4. Once the name has been changed, click the 'Done' button to close the data manager.



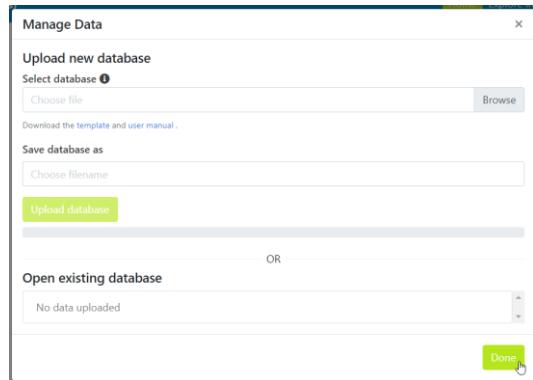
### 3.3.4 Delete an existing database

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:

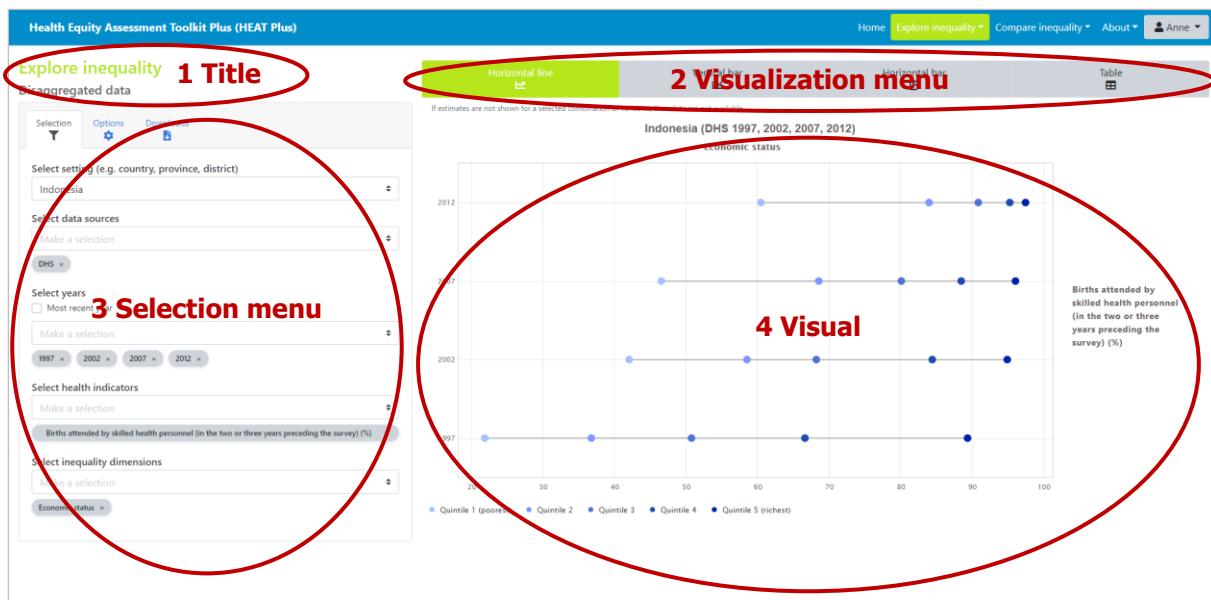
- **Disaggregated data** show the situation by population subgroups. They are important to identify patterns of inequality in the population and identify vulnerable subgroups that are being left behind.
- **Summary measures** quantify the level of inequality across multiple population subgroups. They 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.

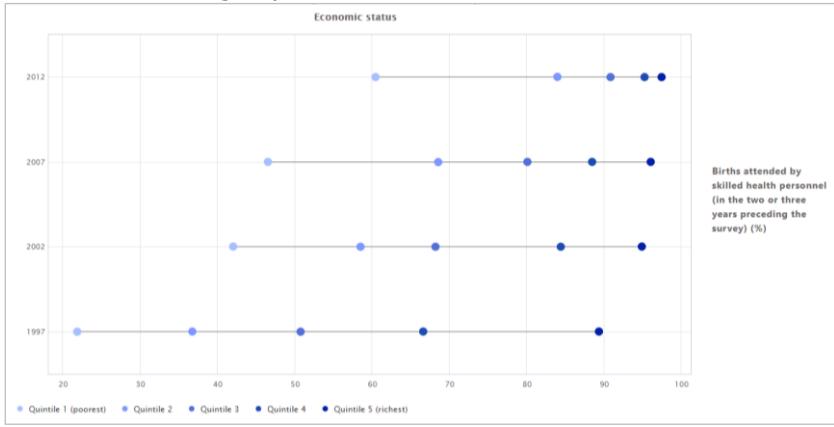


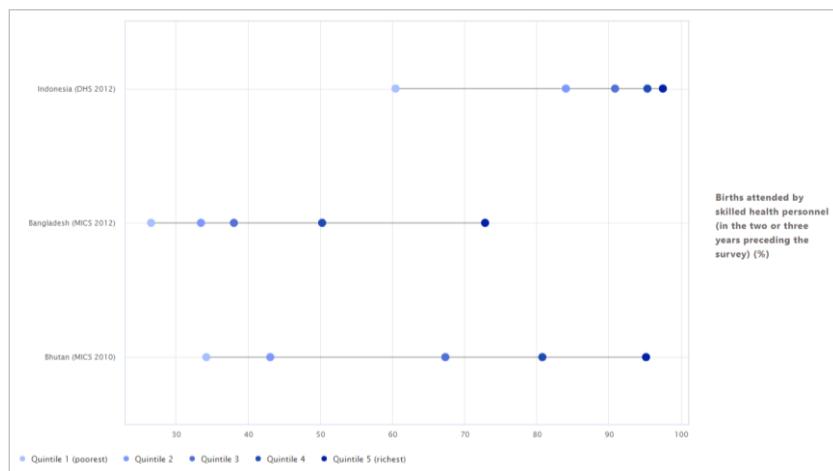
### 3.4.3 Visualization menu

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

**Table 1** Visualization types available in HEAT Plus

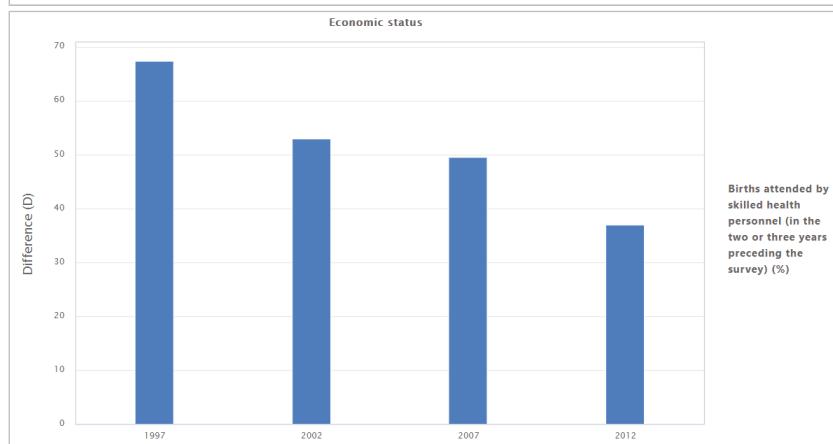
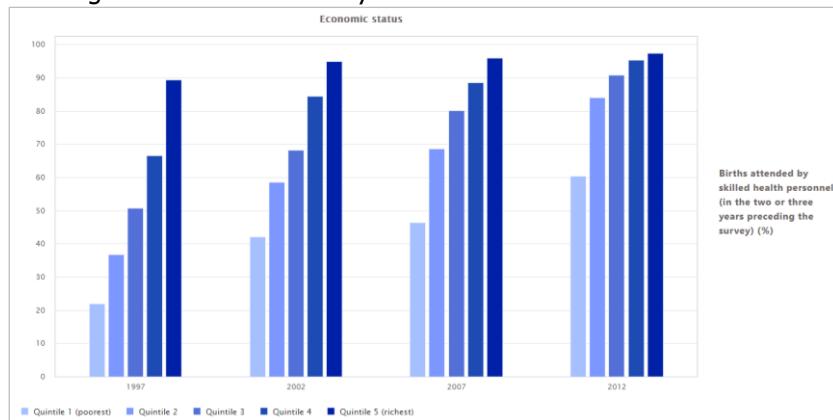
Visualization type	Description
Horizontal line graph	Disaggregated data are presented in horizontal line graphs (also called equiplots). Data are shown by year (under 'Explore inequality') or setting (under 'Compare inequality'). For each year/setting (displayed on the y-axis), there are multiple coloured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





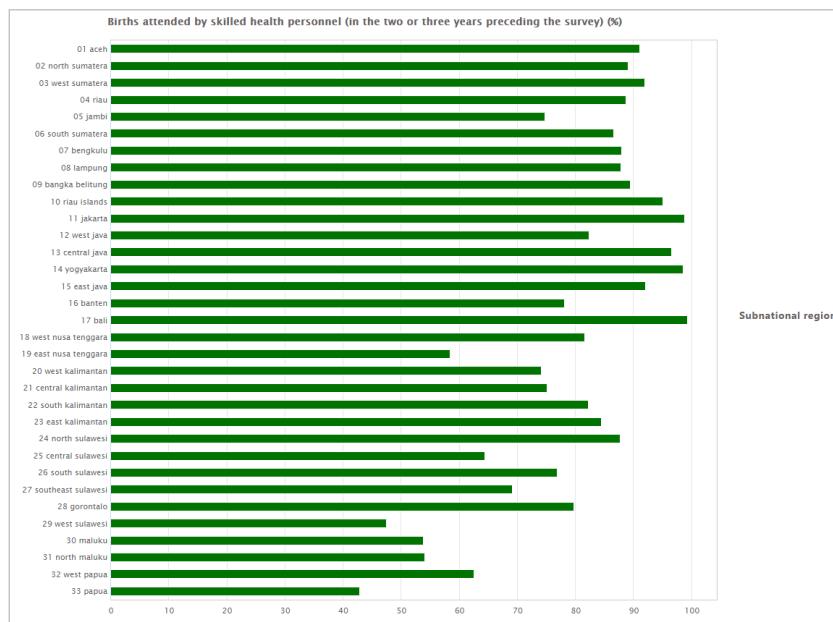
### Vertical bar graph

Disaggregated data and summary measures are presented in vertical bar graphs. For each year (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.



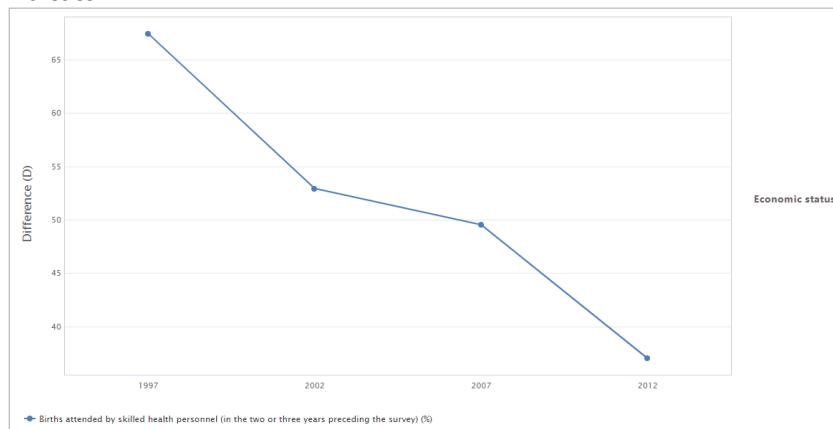
### Horizontal bar graph

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



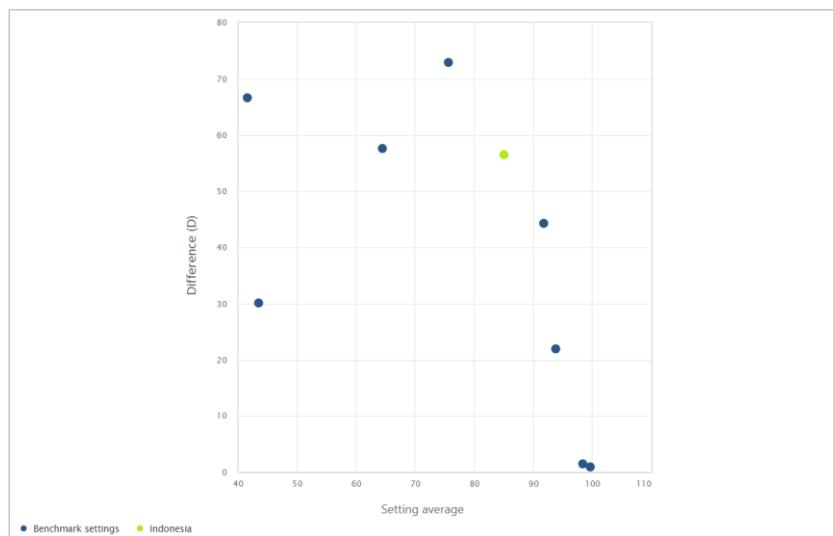
#### Line graph

Summary measures are shown in line graphs. For each year (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.

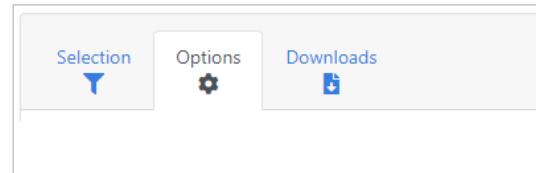
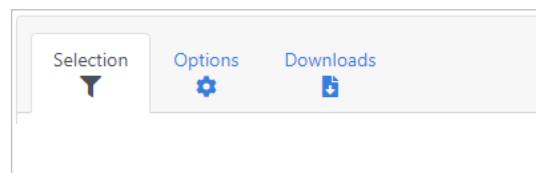
Setting	Year	Indicator name	Dimension	Subgroup	Estimate	Population share
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 1 (poorest)	60.4	21.5
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	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	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	Quintile 4	95.3	20.6
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 5 (richest)	97.4	18.3

Setting	Year	Indicator name	Dimension	Summary measure name	Estimate
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	37.0
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	49.5
Indonesia	2002	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	52.9
Indonesia	1997	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	67.4

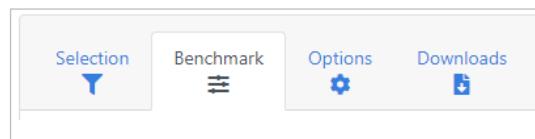
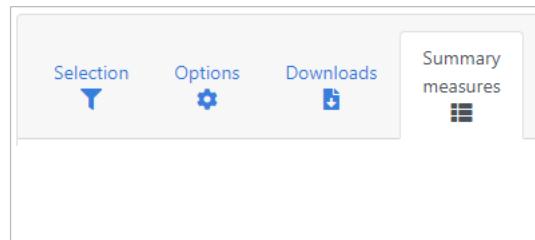
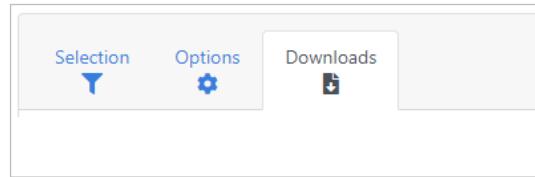
### 3.4.4 Selection menu

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), year(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.

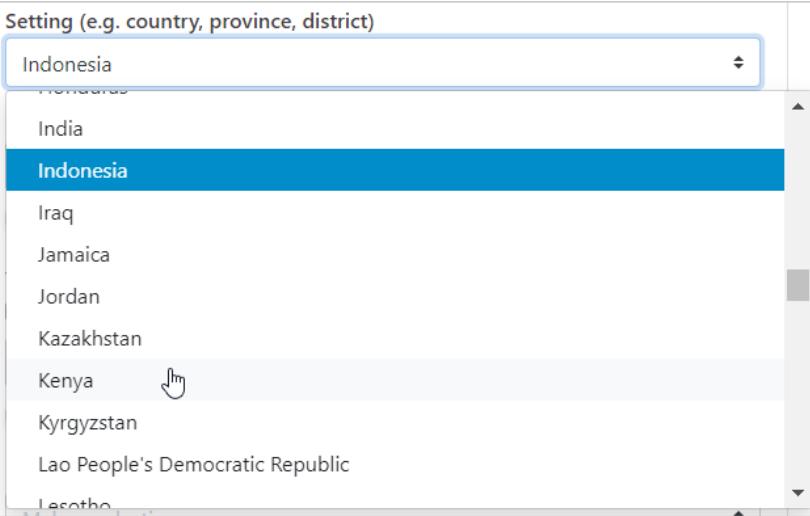


-  **Downloads** Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files). Note that in table views, you are only able to download the data (i.e. no graph).
-  **Summary measures** See specific summary measure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

Selector type	Navigation
<b>Dropdown menu (single select)</b>	<p>Select a single item, such as your setting of interest.</p>  <p>Setting (e.g. country, province, district)</p> <p>Indonesia</p> <p>Click the box to see all the available settings and make your selection.</p>  <p>Setting (e.g. country, province, district)</p> <p>Indonesia</p> <p>India</p> <p>Indonesia</p> <p>Iraq</p> <p>Jamaica</p> <p>Jordan</p> <p>Kazakhstan</p> <p>Kenya</p> <p>Kyrgyzstan</p> <p>Lao People's Democratic Republic</p> <p>Lesotho</p> <p>Alternatively, replace an already chosen setting by clicking the box and typing (part of) the name of the setting you are looking for.</p>

Setting (e.g. country, province, district)

Kenya 

**Dropdown menu  
(multi-select)**

Select one or more items, such as your indicator(s) of interest.

Health indicators

[Make a selection](#)

[Births attended by skilled health personnel \(in the two or three years preceding the survey\) \(%\)](#) 

Click the box to see all the available indicators and make your selection.

[Indonesia](#)

Adolescent fertility rate (births per 1000 women aged 15-19 years)

Antenatal care coverage - at least four visits (in the five years preceding the survey) (%)

Antenatal care coverage - at least four visits (in the two or three years preceding the survey) (%) 

Antenatal care coverage - at least one visit (in the five years preceding the survey) (%)

Antenatal care coverage - at least one visit (in the two or three years preceding the survey) (%)

BCG immunization coverage among one-year-olds (%)

Births attended by skilled health personnel (in the five years preceding the survey) (%)

[Make a selection](#)

[Births attended by skilled health personnel \(in the two or three years preceding the survey\) \(%\)](#) 

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

[Make a selection](#)

Antenatal care coverage - at least four visits (in the five years preceding the survey) (%)

Antenatal care coverage - at least four visits (in the two or three years preceding the survey) (%) 

Antenatal care coverage - at least one visit (in the five years preceding the survey) (%)

Antenatal care coverage - at least one visit (in the two or three years preceding the survey) (%)

[Antenatal care coverage](#)

[Births attended by skilled health personnel \(in the two or three years preceding the survey\) \(%\)](#) 

Remove selected indicators, by clicking on the indicator name.

Health indicators

[Make a selection](#)

[Births attended by skilled health personnel \(in the two or three years preceding the survey\) \(%\)](#) 

[Antenatal care coverage - at least four visits \(in the two or three years preceding the survey\) \(%\)](#) 

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 unresponsive. To make further changes, first remove selected items and then continue add new ones.

**Health indicators**

Make a selection

- Births attended by skilled health personnel (in the two or three years preceding the survey) (%) ×
- Antenatal care coverage - at least four visits (in the two or three years preceding the survey) (%) ×
- Antenatal care coverage - at least four visits (in the five years preceding the survey) (%) ×
- Births by caesarean section (in the two or three years preceding the survey) (%) ×
- Early initiation of breastfeeding (in the two years preceding the survey) (%) ×

**Numeric input**

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

Axis range

Axis minimum Axis maximum

0

Click inside the box and enter a number.

Axis range

Axis minimum Axis maximum

0

Alternatively, use the arrows to select a number.

Axis range

Axis minimum Axis maximum

1

**Text input  
(empty)**

Enter information, such as horizontal and vertical axis titles.

Horizontal axis title

Vertical axis title

Click inside the box and enter your text.

Horizontal axis title

Estimate

Vertical axis title

**Text input  
(pre-filled)**

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

Main title

Indonesia (DHS 2012)

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

Main title

Inequality in Indonesia (DHS 2012)

**Checkbox**

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

Select years

Most recent year

Make a selection

1994 × 1997 × 2002 × 2007 × 2012 ×

Confidence intervals

Include 95% confidence intervals

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

Select years

Most recent year

Confidence intervals

Include 95% confidence intervals

**Radio button**

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

Sort order

Ascending

Descending

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

Sort order

Ascending

Descending

**Switch button**

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

Reference lines

Setting average

Median

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

**Reference lines**

- Setting average  
 Median

**Toggle button**

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

**Graph download**

The graph will be downloaded as a png or jpg image or pdf. Titles and axis labels will be displayed according to your selections.

**Select image type**

PNG

JPG

PDF

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

**Graph download**

The graph will be downloaded as a png or jpg image or pdf. Titles and axis labels will be displayed according to your selections.

**Select image type**

PNG

JPG

PDF

**Action button**

Launch actions, such as the download of your graph.

Download graph

Click the button to start the graph download.

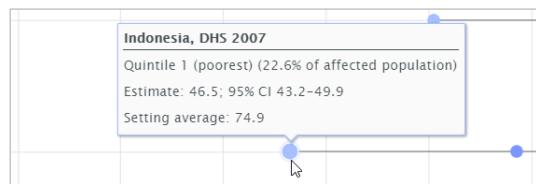
Download graph



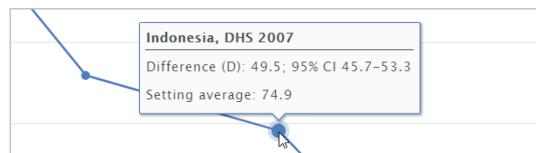
### 3.4.5 Tooltips

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, year, subgroup name and population share, subgroup estimate and 95% confidence interval, as well as the setting average (provided these information are available).

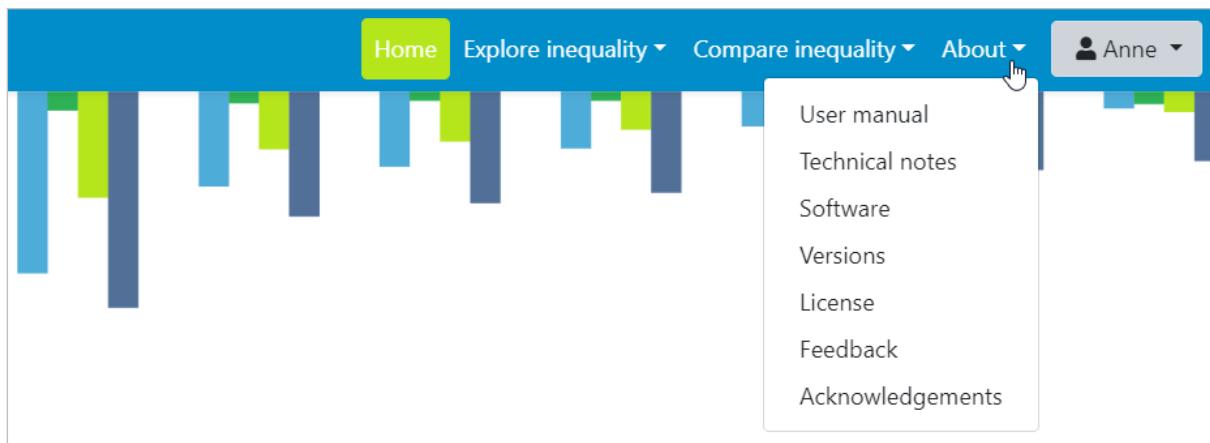


For **summary measures**, the tooltip includes information about the setting, source and year, summary measure name, summary measure estimate and 95% confidence interval, as well as the setting average (provided these information are available).



### 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** provides detailed information about the data displayed in HEAT Plus, including the disaggregated data and summary measures.
- **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 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.

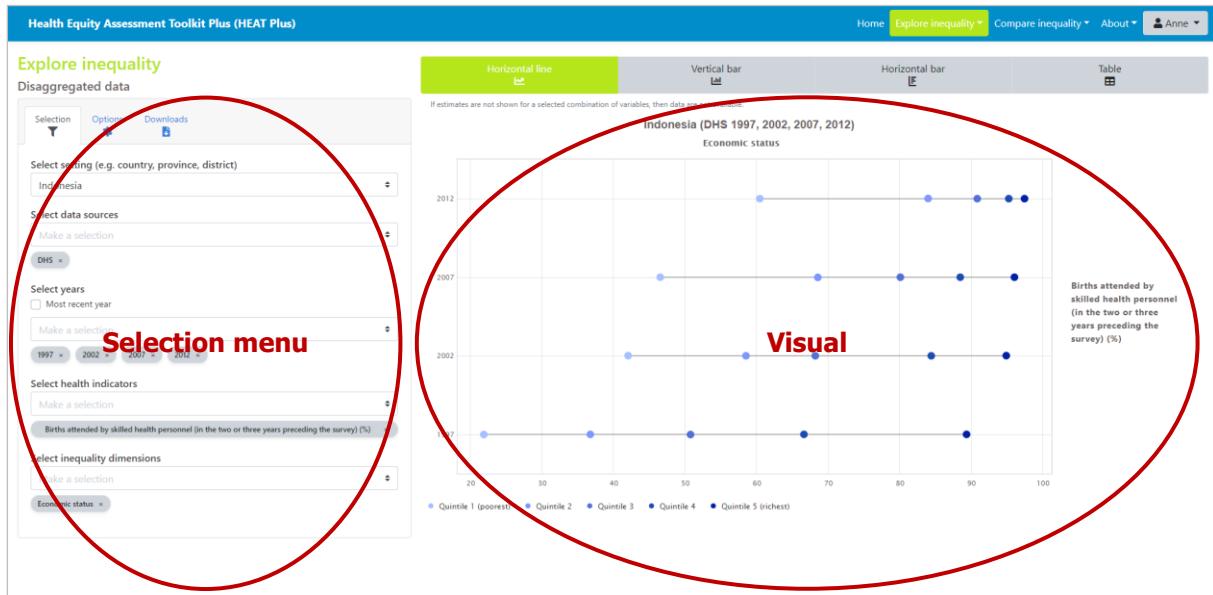
### 4.1 Disaggregated data

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.

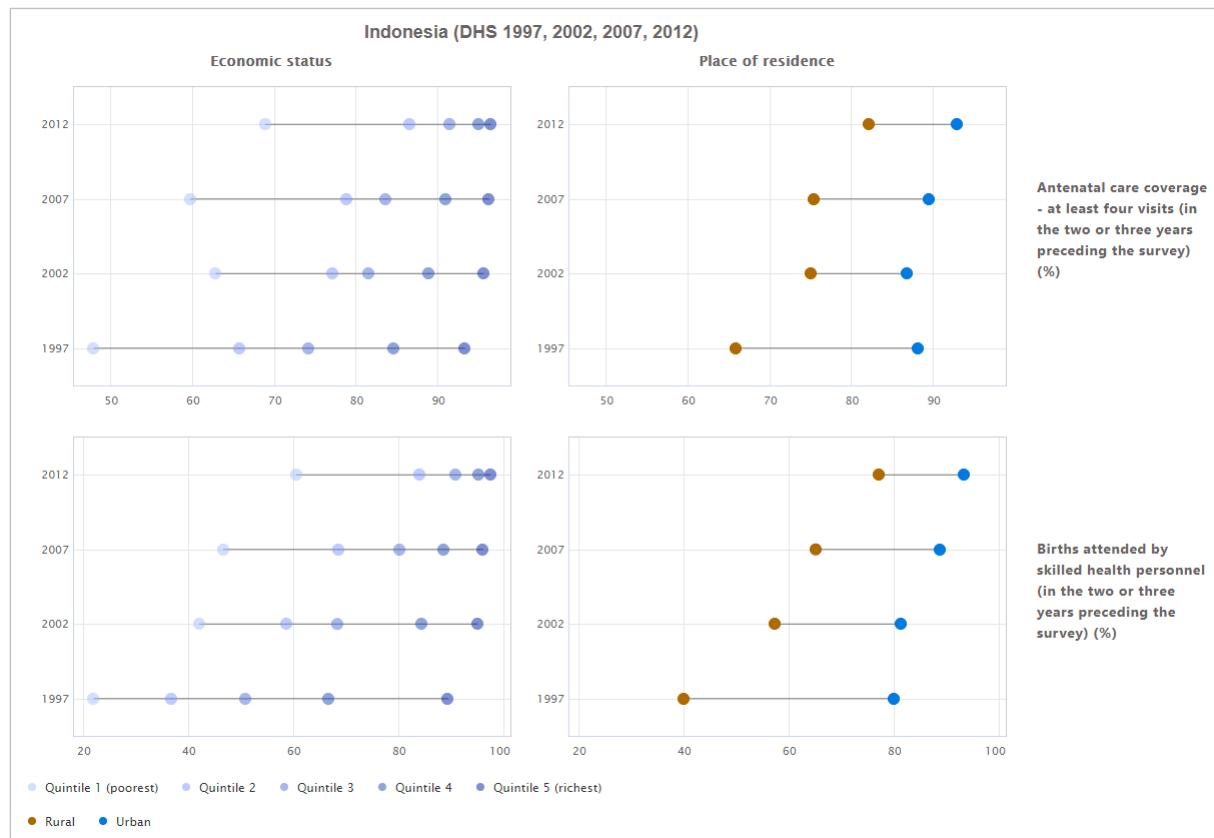


#### What you see

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 year (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).



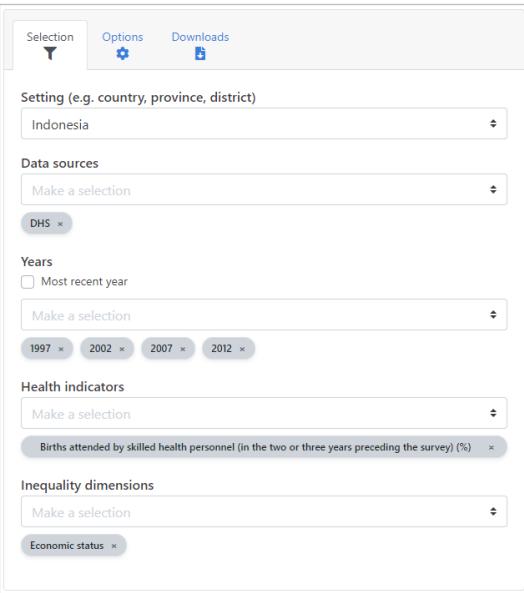
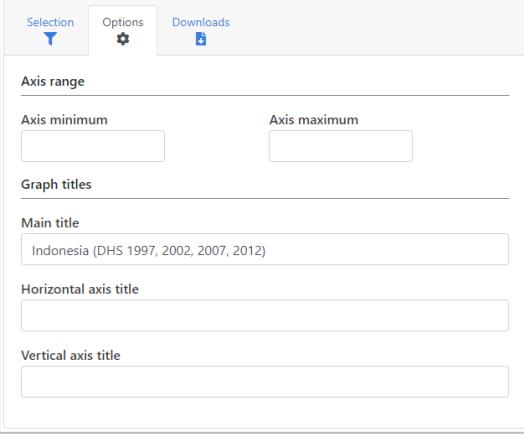
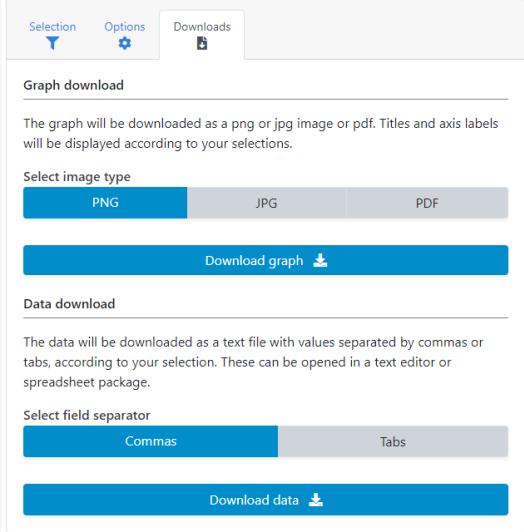
If more than one indicator and/or inequality dimension are selected at the same time, multiple graphs are shown – one for each indicator and/or dimension. You can choose to show up to five indicators and five dimensions simultaneously.



## How to explore

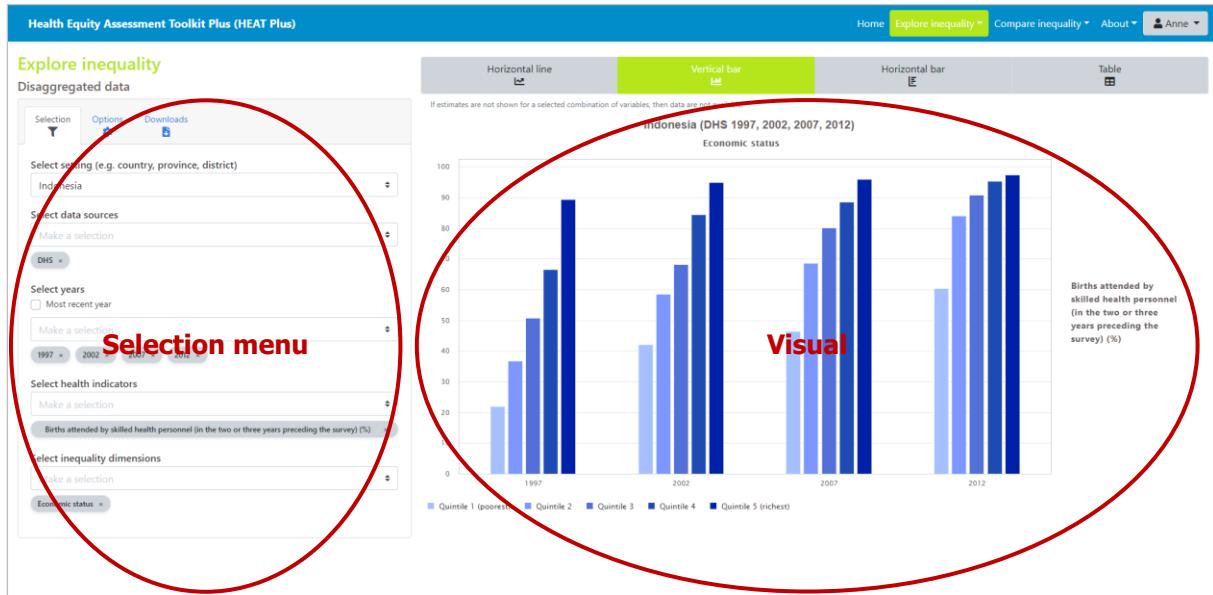
The selection menu on the left allows you to customize the results displayed in the visual. Table 3 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

**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), year(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).
	

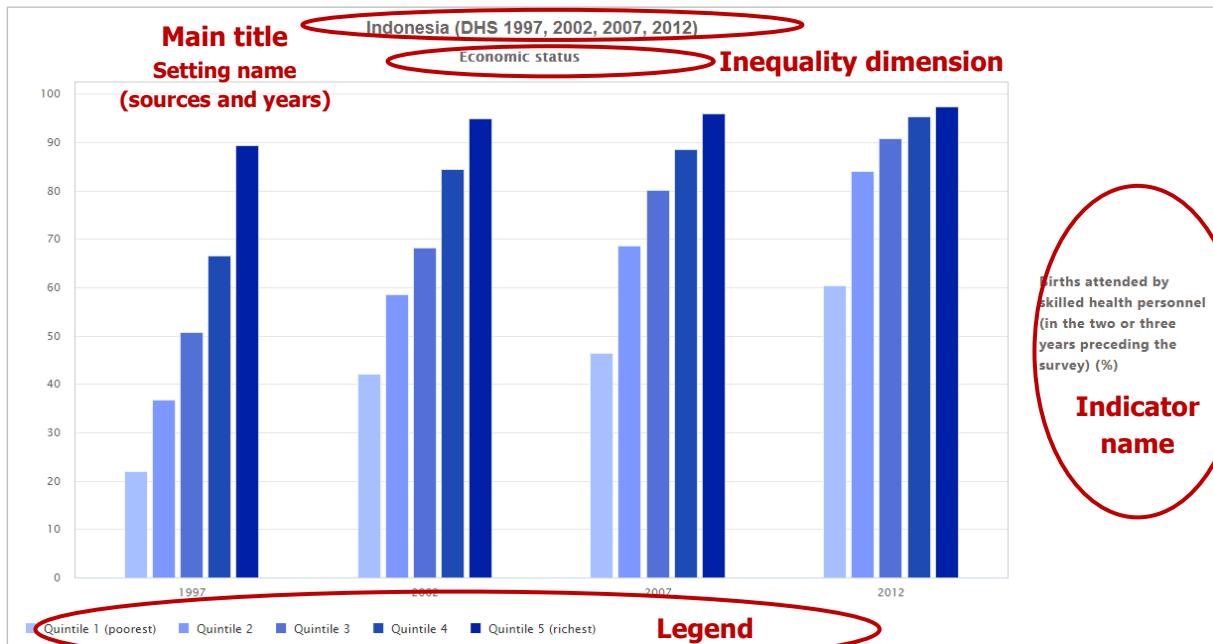
## 4.1.2 Vertical bar graph

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.

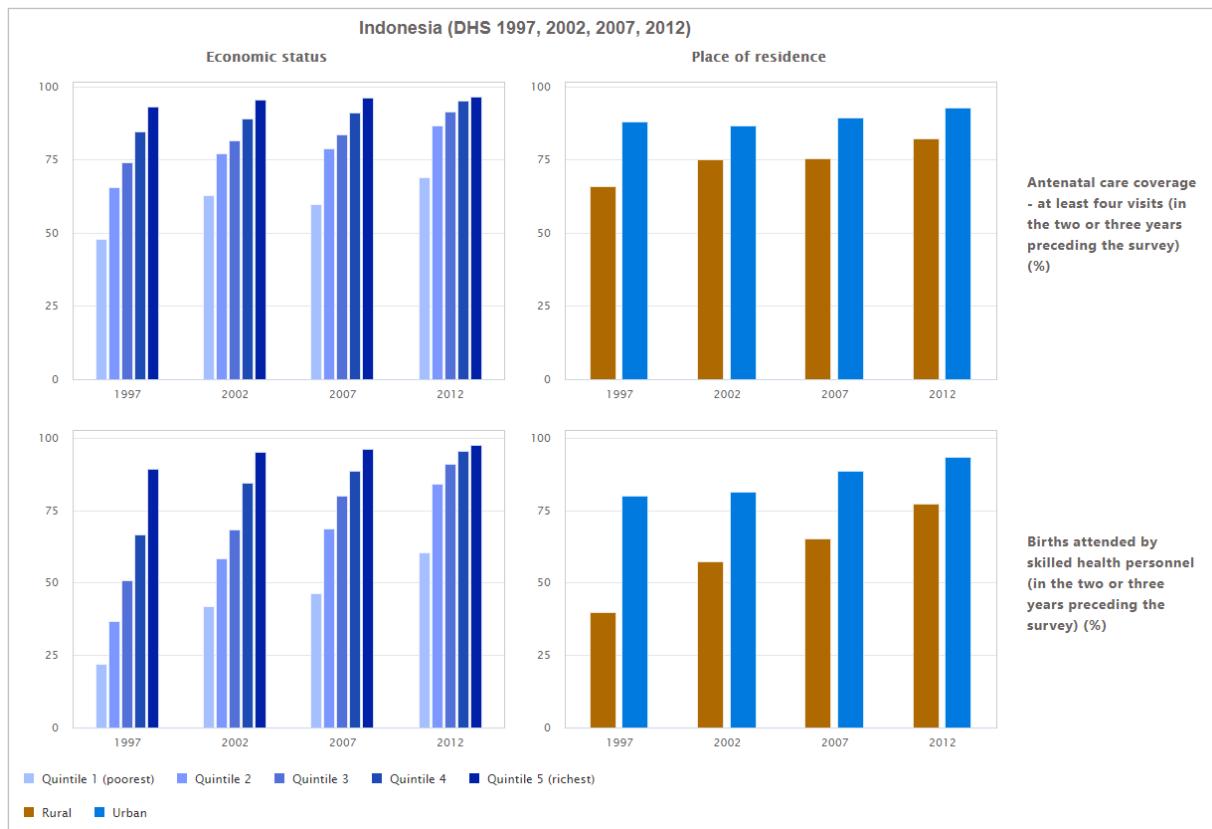


### What you see

The visual shows a vertical bar graph presenting disaggregated data (displayed on the y-axis) in a selected setting of interest. For each year (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.

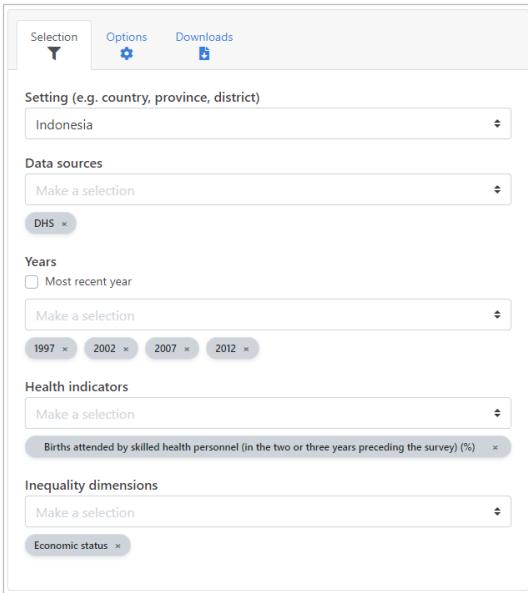
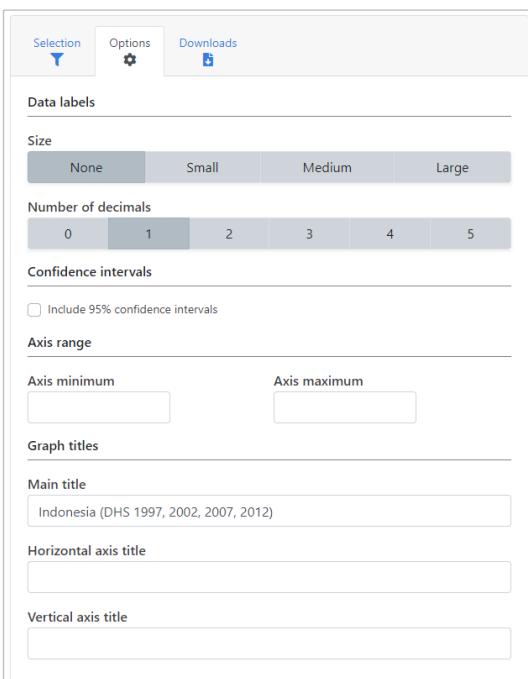


## How to explore

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.

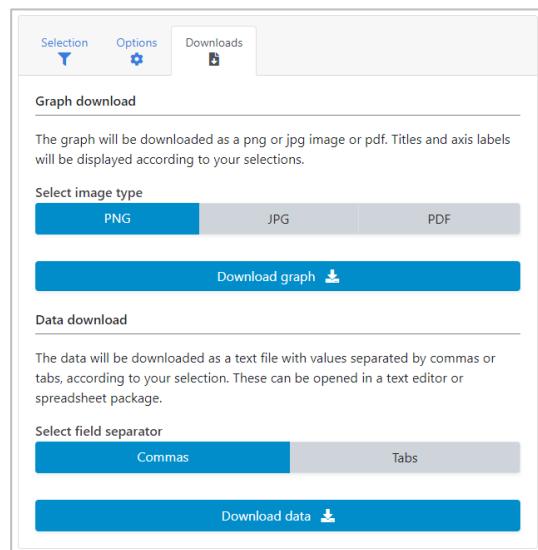
**Table 4** Selection menu for the ‘Vertical bar graph’ showing ‘Disaggregated data’ under ‘Explore inequality’

Tab	Description
 Selection	Select the data displayed in the visual, including your setting of interest, data source(s), year(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

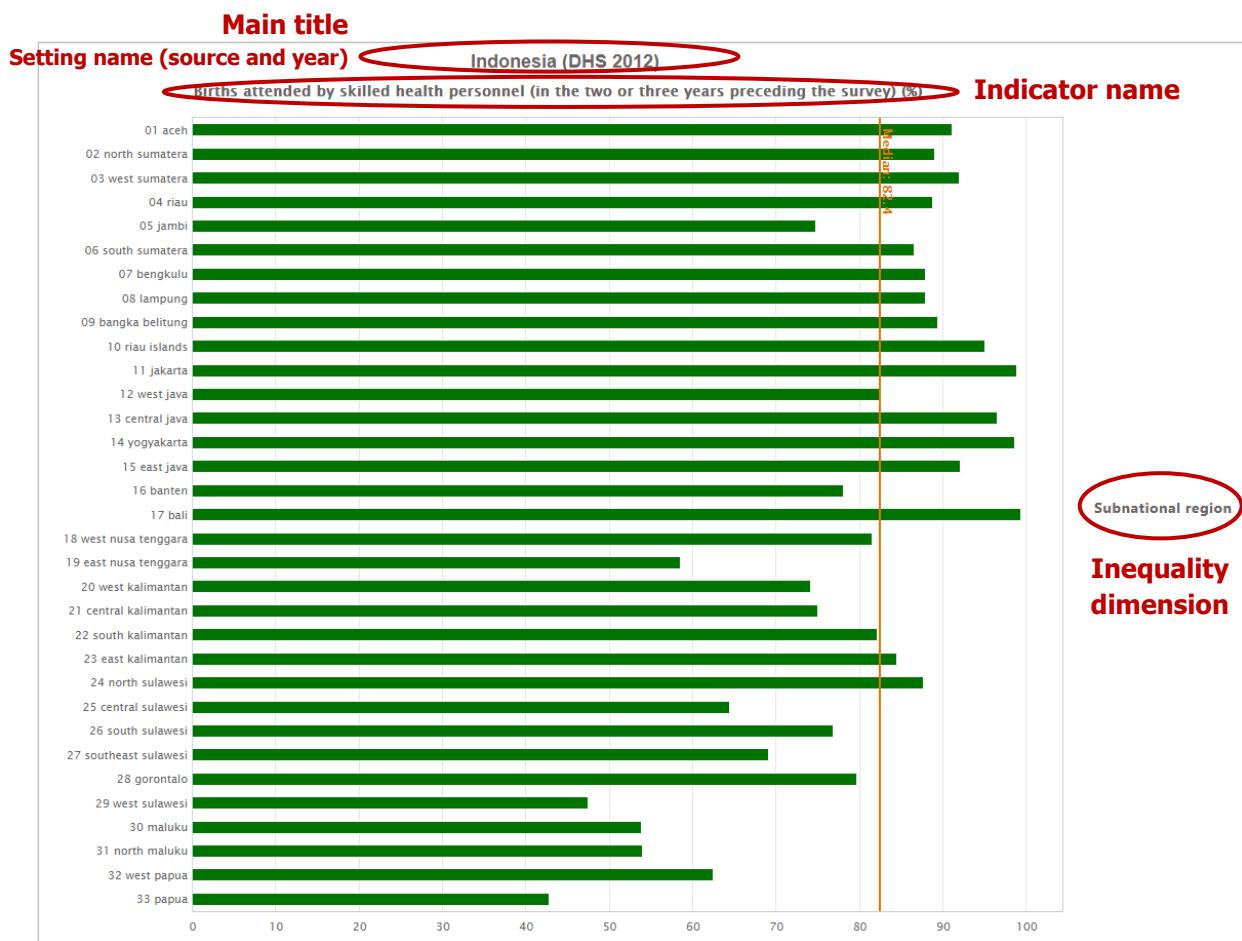
In this view, disaggregated data are displayed in a horizontal bar graph. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.

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 year at a time, allowing for a more in-depth assessment of inequalities in your setting of interest.

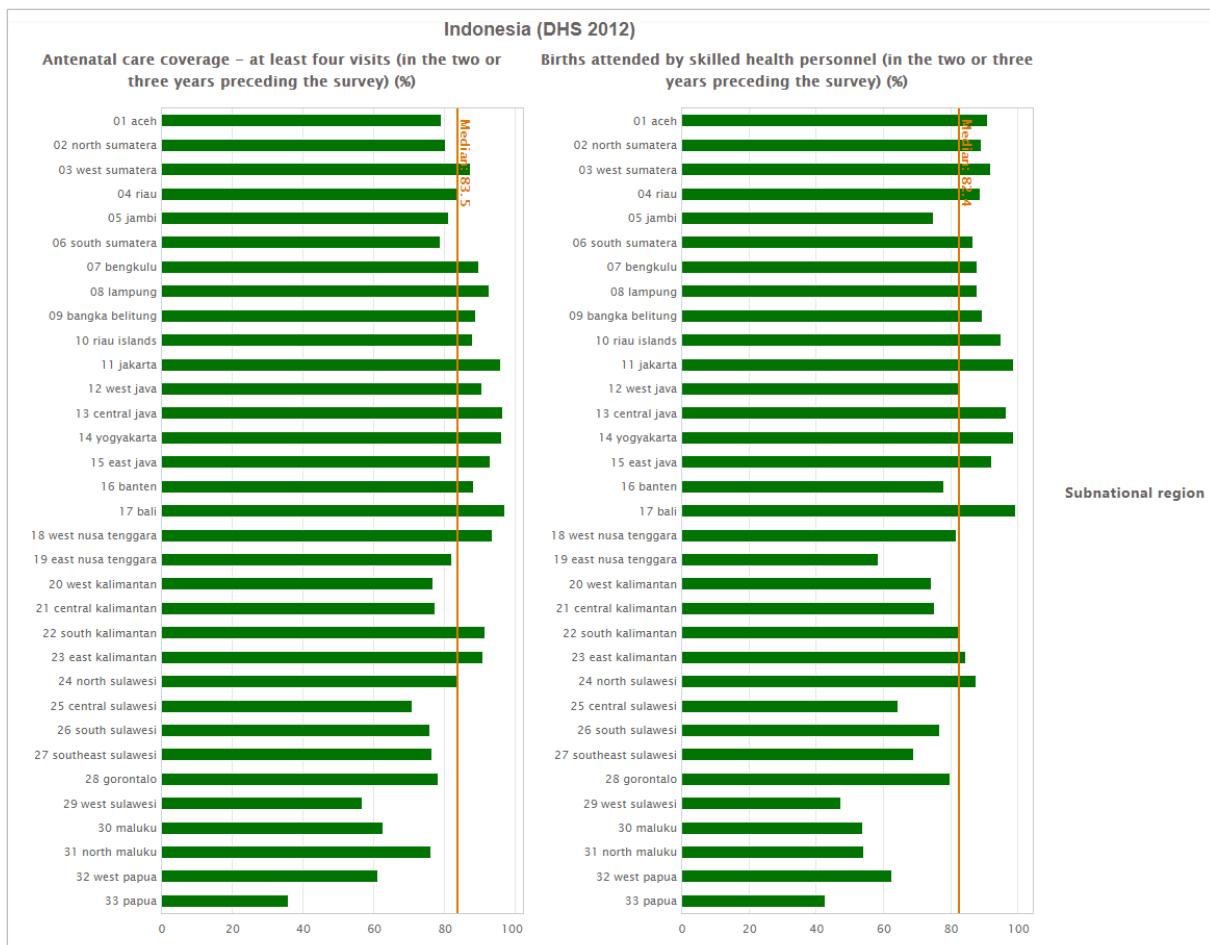


#### What you see

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

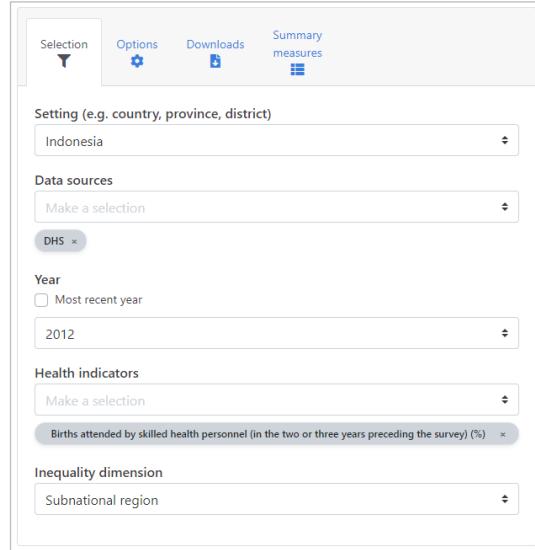
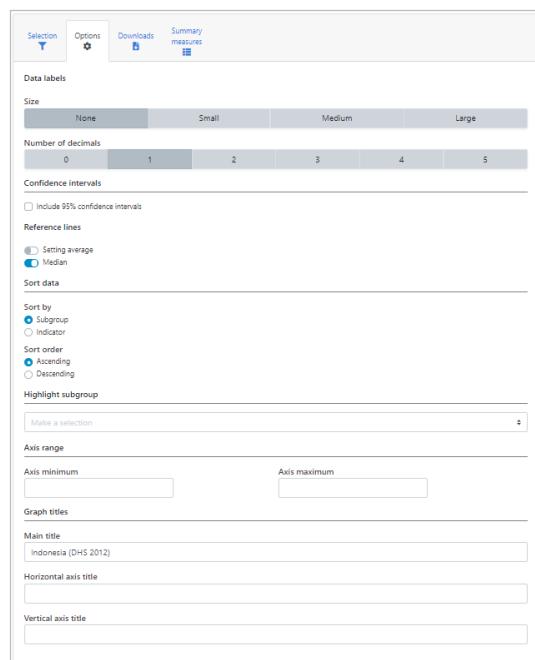
- Dimensions with more than 30 subgroups:
  - Difference between percentile 80 and percentile 20
  - Ratio of percentile 80 to percentile 20
  - Difference between the mean estimates in quintile 5 and quintile 1
  - Ratio of the mean estimates in quintile 5 to quintile 1
- Dimensions with more than 60 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), year, 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).

The screenshot shows a user interface for downloading analysis results. At the top, there are four tabs: Selection, Options, Downloads (which is selected), and Summary measures. Under 'Graph download', it says 'The graph will be downloaded as a png or jpg image or pdf. Titles and axis labels will be displayed according to your selections.' Below are buttons for 'PNG' (selected), 'JPG', and 'PDF'. A large blue button labeled 'Download graph' with a download icon is at the bottom. Under 'Data download', it says 'The data will be downloaded as a text file with values separated by commas or tabs, according to your selection. These can be opened in a text editor or spreadsheet package.' Below are buttons for 'Commas' (selected) and 'Tabs', with a 'Download data' button at the bottom.

**Summary measures**

View specific summary measures calculations. Specific difference and ratio measures are calculated for dimensions with more than 30 subgroups.

The screenshot shows a user interface for viewing summary measures. At the top, there are four tabs: Selection, Options, Downloads, and Summary measures (selected). It states: 'Difference and ratio measures are calculated for dimensions with 30 subgroups or more. If estimates are not available, then summary measures cannot be calculated.' Below is a table titled 'Births attended by skilled health personnel (in the two or three years preceding the survey) (%)'. The table has columns for 'Summary measure' and 'Estimate'. The data includes:

Summary measure	Estimate
Difference (percentile 80 - percentile 20)	25.32
Ratio (percentile 80 / percentile 20)	1.38
Difference (mean quintile 5 - mean quintile 1)	41.26
Ratio (mean quintile 5 / mean quintile 1)	1.75

#### 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.

The screenshot shows the 'Table' view of the Health Equity Assessment Toolkit Plus (HEAT Plus). On the left, a red circle highlights the 'Selection menu' which includes fields for 'Select setting (e.g. country, province, district)', 'Select data sources', 'Select years', 'Select health indicators', and 'Select inequality dimensions'. On the right, a red circle highlights the 'Visual' area which displays a table of data. The table has columns for 'Setting', 'Year', 'Indicator name', 'Dimension', 'Subgroup', 'Estimate', and 'Population share'. The data is for Indonesia in 2012 and 2007, showing birth statistics by economic status across quintiles. The table includes a search bar and navigation buttons for 'Previous' and 'Next'.

Setting	Year	Indicator name	Dimension	Subgroup	Estimate	Population share
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	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	Quintile 2	84.0	19.1
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	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	Quintile 4	95.3	20.6
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 5 (richest)	97.4	18.3
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 1 (poorest)	46.5	22.6
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 2	68.6	19.0
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 3	80.1	20.4
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 4	88.5	18.7

## What you see

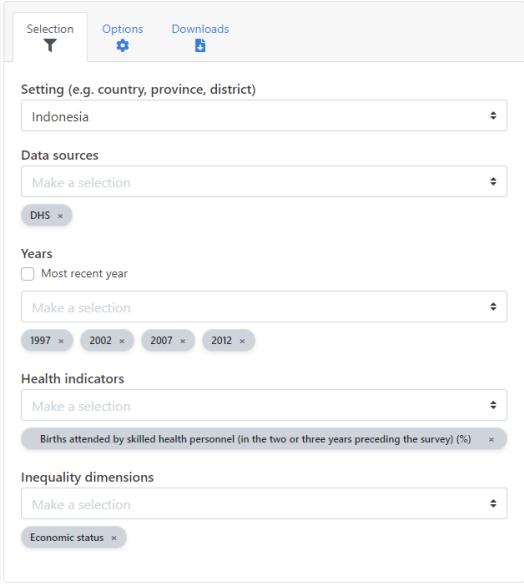
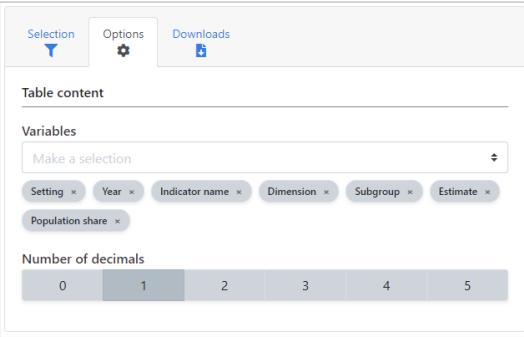
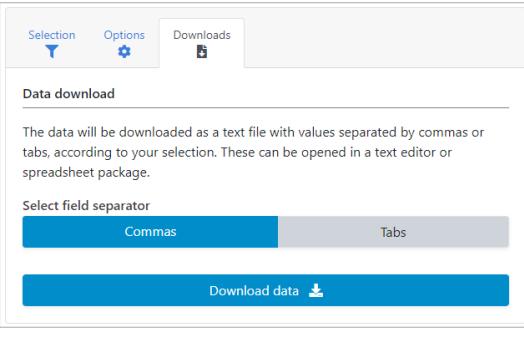
The visual shows a table presenting disaggregated data for a selected setting of interest. By default, the table displays information about the setting, survey year, indicator, inequality dimension, population subgroup, subgroup estimate and subgroup population share (though these can be changed using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

Setting	Year	Indicator name	Table columns	Dimension	Subgroup	Estimate	Population share
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	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	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	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	Quintile 4	95.3	20.6	
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 5 (richest)	97.4	18.3	
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 1 (poorest)	46.5	22.6	
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 2	68.6	19.3	
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 3	80.1	20.4	
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 4	88.5	18.7	

## 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), year(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

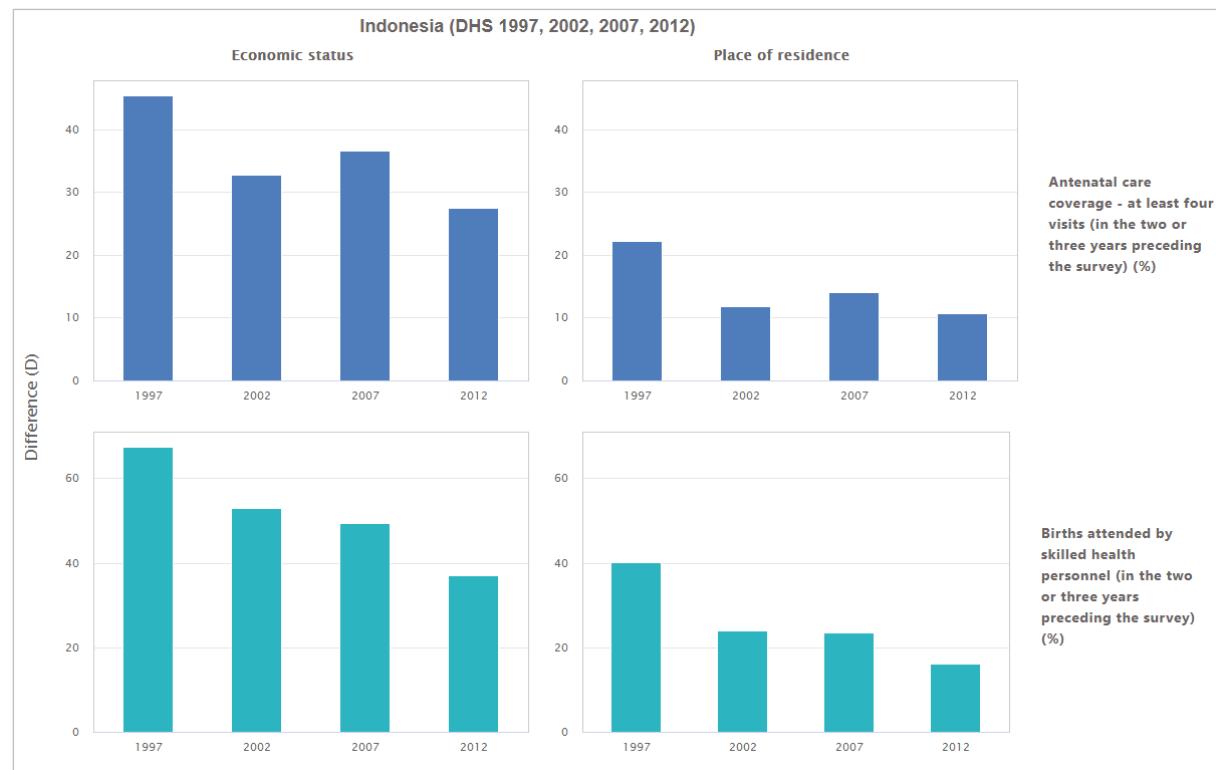
In this view, summary measures are displayed in a bar graph. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.

## 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 year (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).



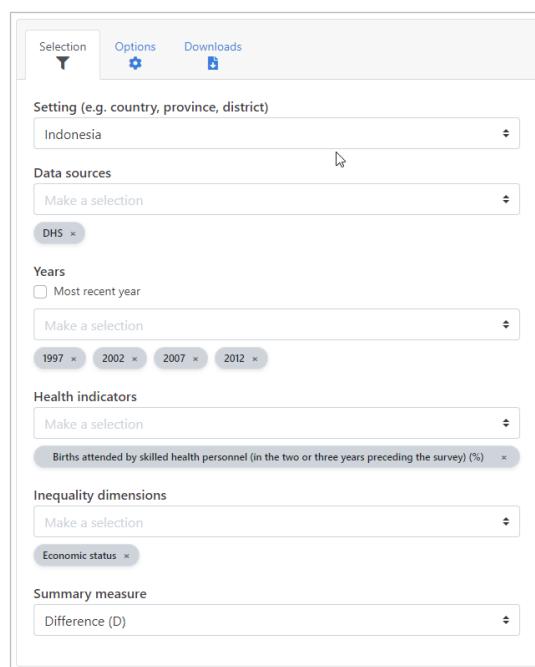
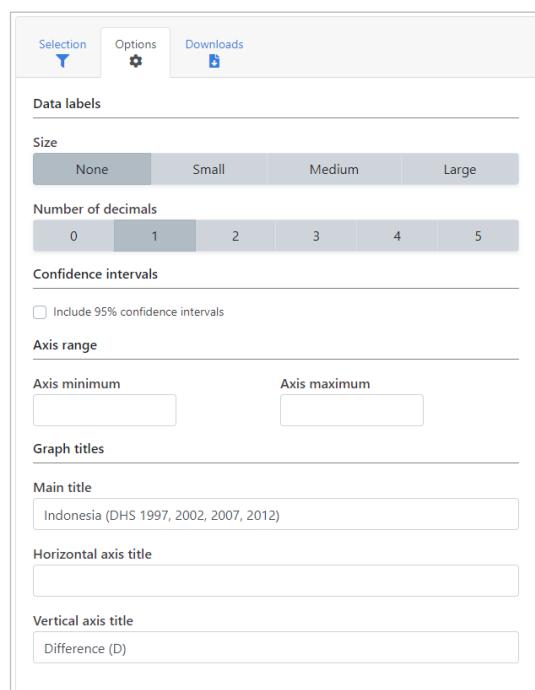
If more than one indicator and/or inequality dimension are selected at the same time, multiple graphs are shown – one for each indicator and/or dimension. You can choose to show up to five indicators and five dimensions simultaneously.



## How to explore

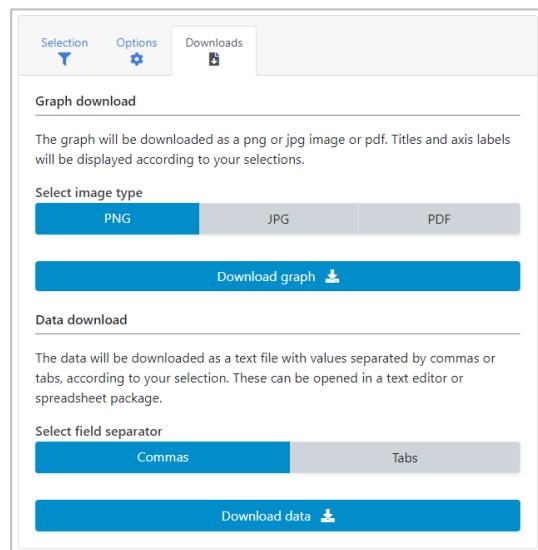
The selection menu on the left allows you to customize the results displayed in the visual. Table 7 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

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

Tab	Description
 Selection	<p>Select the data displayed in the visual, including your setting of interest, data source(s), year(s), indicator(s), inequality dimension(s) and summary measure.</p>
 Selection	
 Options	<p>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.</p>
 Options	

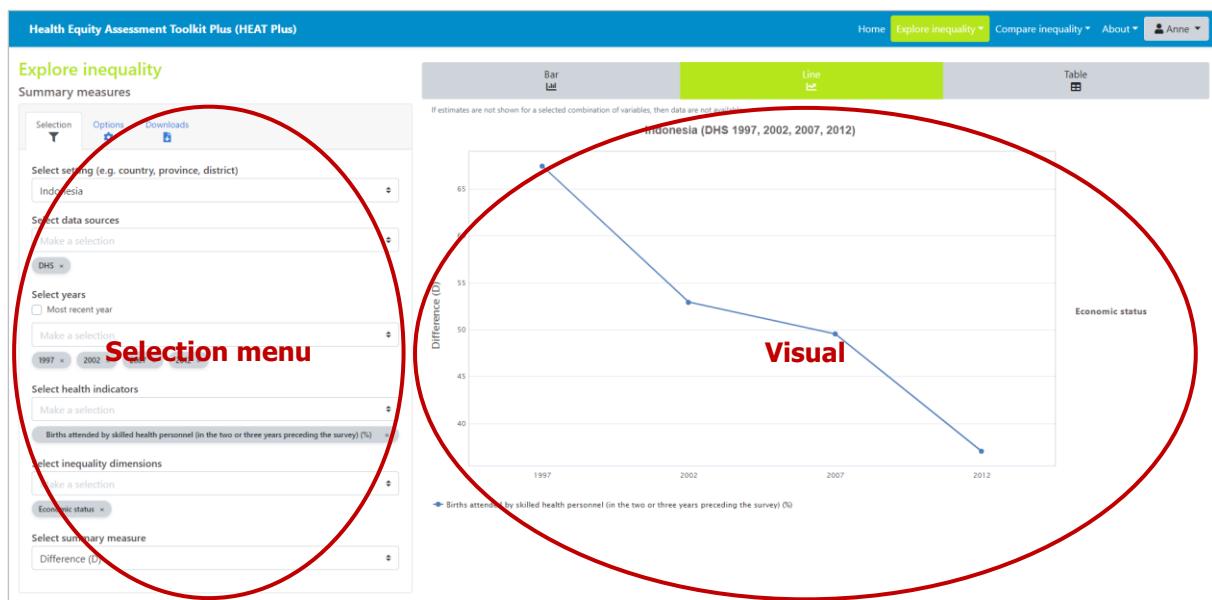
## Downloads

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).



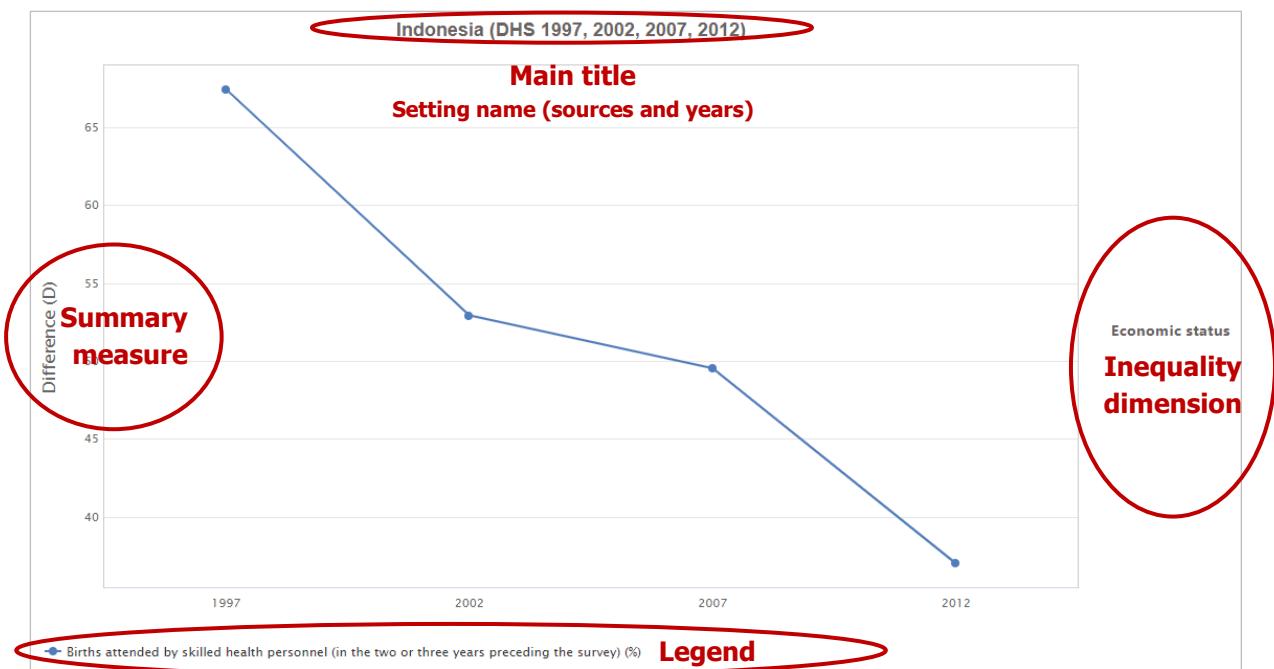
## 4.2.2 Line graph

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.

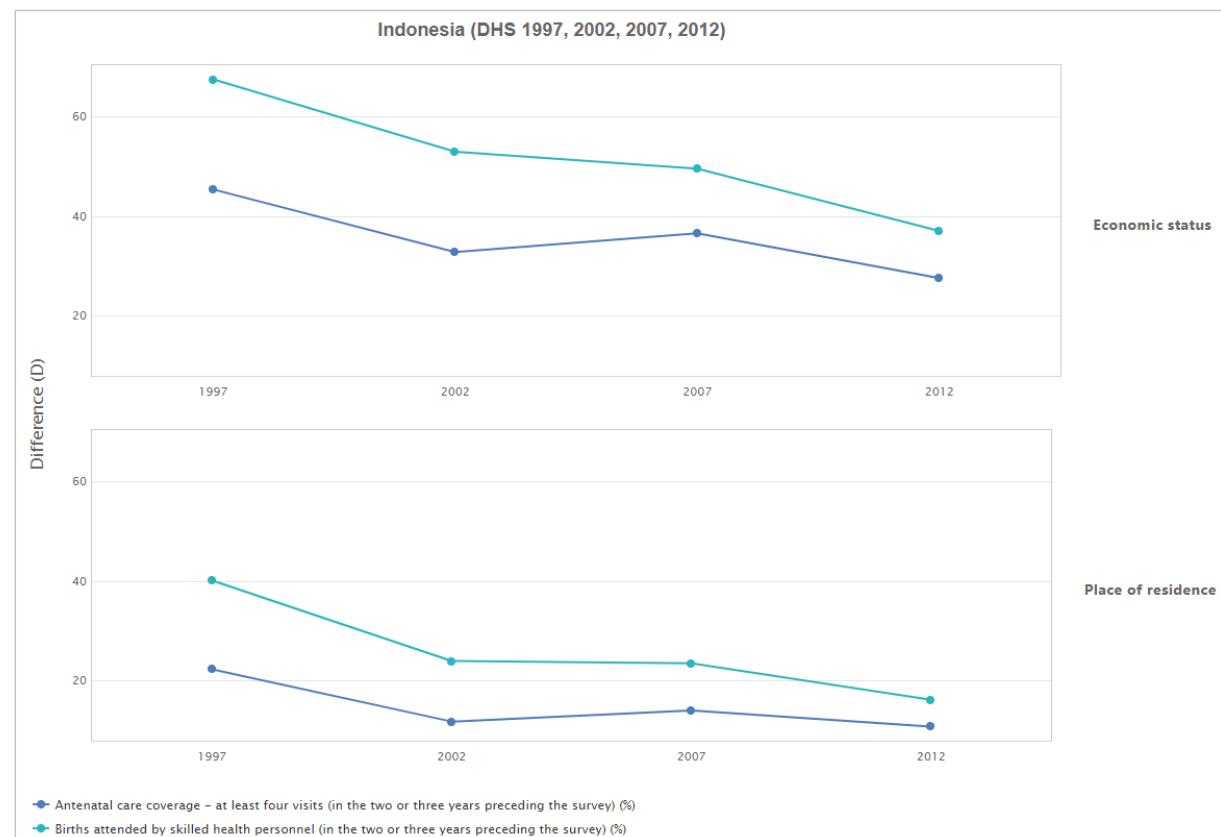


## What you see

The visual shows a line graph presenting summary measure data (displayed on the y-axis) for a selected setting of interest. For each year (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

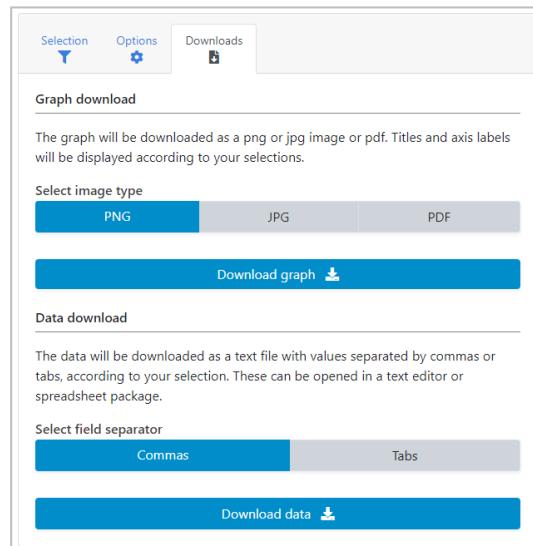
The selection menu on the left allows you to customize the results displayed in the visual. Table 8 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

**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), year(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.

Setting	Year	Indicator name	Dimension	Summary measure name	Estimate
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	37.0
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	49.5
Indonesia	2002	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	52.0
Indonesia	1997	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	67.4

## 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, survey year, indicator, inequality dimension, summary measure and summary measure estimate (though these can be changed using the selection menu - see Table 9).

Setting	Year	Indicator name	Dimension	Summary measure name	Estimate
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	37.0
Indonesia	2007	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	49.5
Indonesia	2002	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	52.9
Indonesia	1997	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	67.4

**Table pages** Previous 1 Next

## How to explore

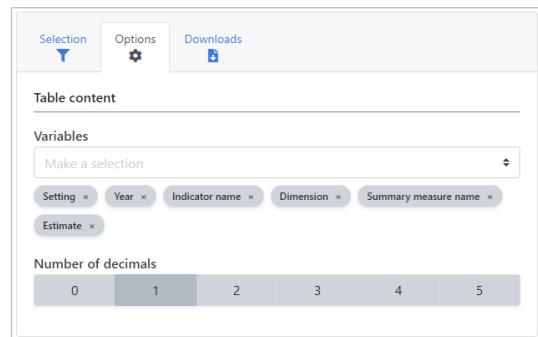
The selection menu on the left allows you to customize the results displayed in the visual. Table 9 provides a description of the three tabs that comprise the selection menu: selection, options and downloads.

**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), year(s), indicator(s) and inequality dimension(s).

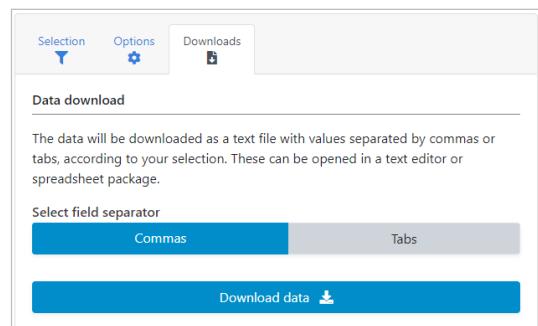
### ⚙️ Options

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 countries. 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.



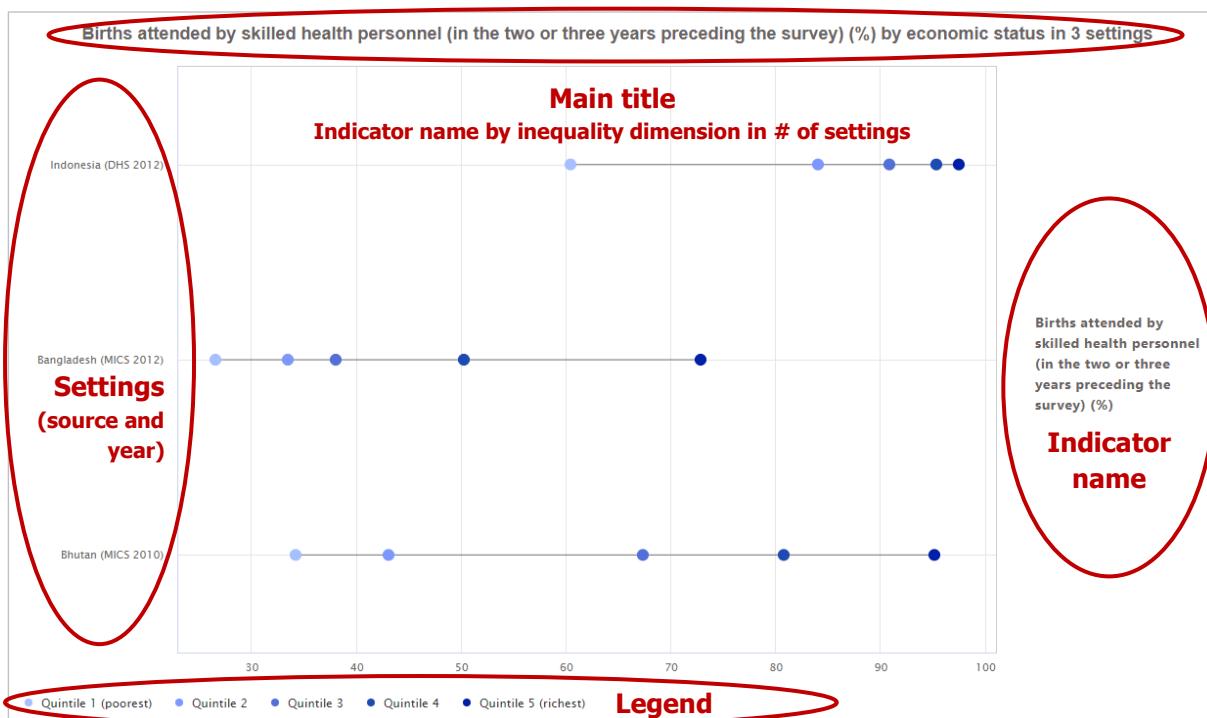
#### 5.1.1 Graph

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).

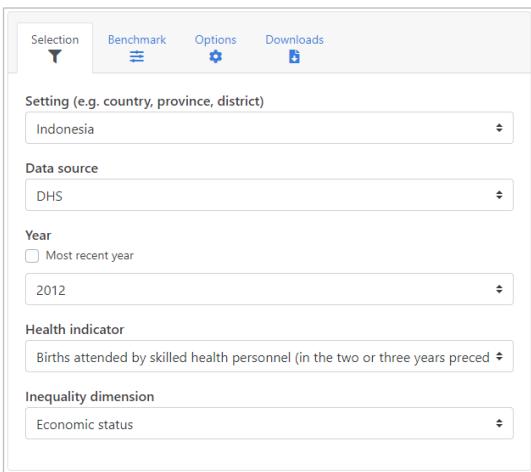
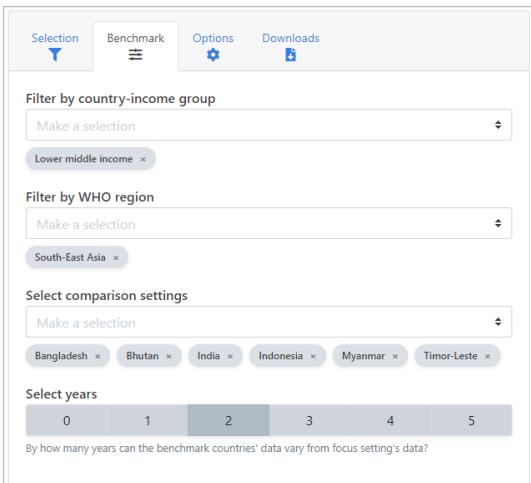


## How to explore

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.

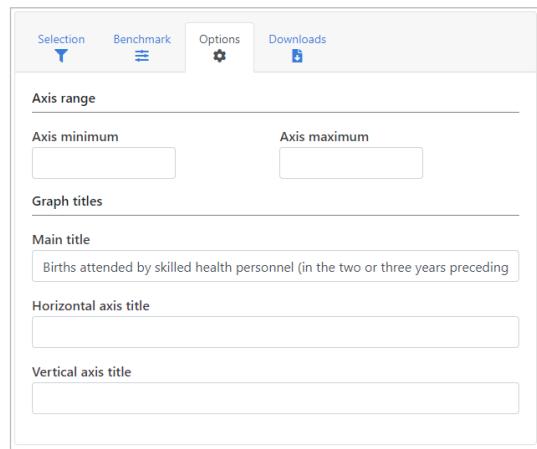
**Table 10** Selection menu for the ‘Graph’ showing ‘Disaggregated data’ under ‘Compare inequality’

Tab	Description
 Selection	Select the data displayed in the visual, including your setting of interest, data source, year, 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 number of years by which comparison settings’ data may vary from the data for your setting of interest.

### Options

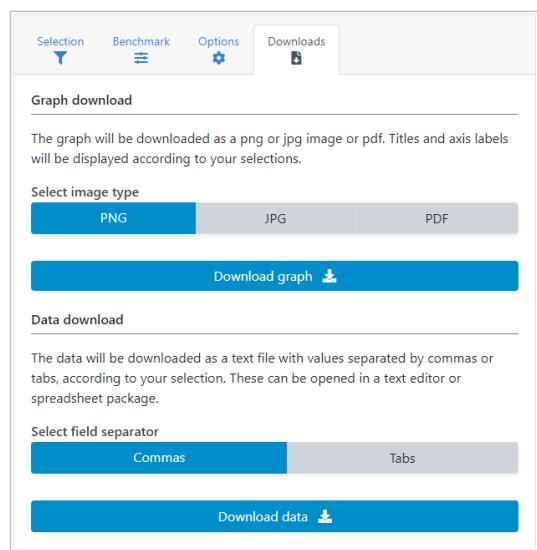
Use different options to modify your view. You can choose custom axis ranges and graph titles.



The screenshot shows a user interface for modifying a graph's appearance. At the top, there are tabs: Selection (highlighted), Benchmark, Options (selected), and Downloads. Under 'Axis range', there are fields for 'Axis minimum' and 'Axis maximum'. In the 'Graph titles' section, there is a 'Main title' field containing the text 'Births attended by skilled health personnel (in the two or three years preceding'. Below that are fields for 'Horizontal axis title' and 'Vertical axis title'.

### 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).



The screenshot shows a user interface for downloading results. At the top, there are tabs: Selection (highlighted), Benchmark, Options, and Downloads (selected). Under 'Graph download', it says 'The graph will be downloaded as a png or jpg image or pdf. Titles and axis labels will be displayed according to your selections.' Below that is a 'Select image type' section with radio buttons for PNG (selected), JPG, and PDF. A large blue button labeled 'Download graph' with a download icon is below. Under 'Data download', it says 'The data will be downloaded as a text file with values separated by commas or tabs, according to your selection. These can be opened in a text editor or spreadsheet package.' Below that is a 'Select field separator' section with radio buttons for Commas (selected) and Tabs. A large blue button labeled 'Download data' with a download icon is at the bottom.

## 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.

Setting	Year	Indicator name	Dimension	Subgroup	Estimate	Population share
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	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	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	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	Quintile 4	95.3	20.6
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 5 (richest)	97.4	18.3
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 1 (poorest)	26.5	23.0
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 2	33.4	20.2
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 3	38.0	19.2
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 4	50.2	17.8

## 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, survey year, 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	Year	Indicator name	Dimension	Subgroup	Estimate	Population share
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	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	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	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	Quintile 4	95.3	20.6
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 5 (richest)	97.4	18.3
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 1 (poorest)	26.5	23.0
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 2	33.4	20.2
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 3	38.0	19.2
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 4	50.2	17.8

## How to explore

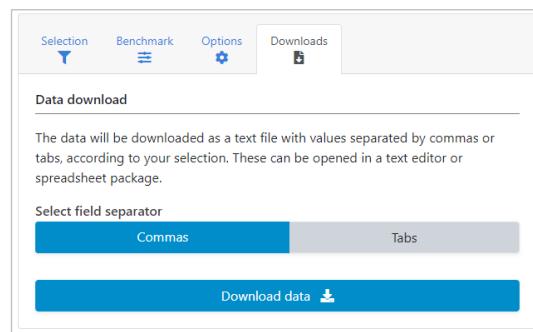
The selection menu on the left allows you to customize the results displayed in the visual. Table 11 provides a description of the four tabs that comprise the selection menu: selection, benchmark, options and downloads.

**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, year, 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 number of years by which comparison settings’ data may vary from the data for your setting of interest.
 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).

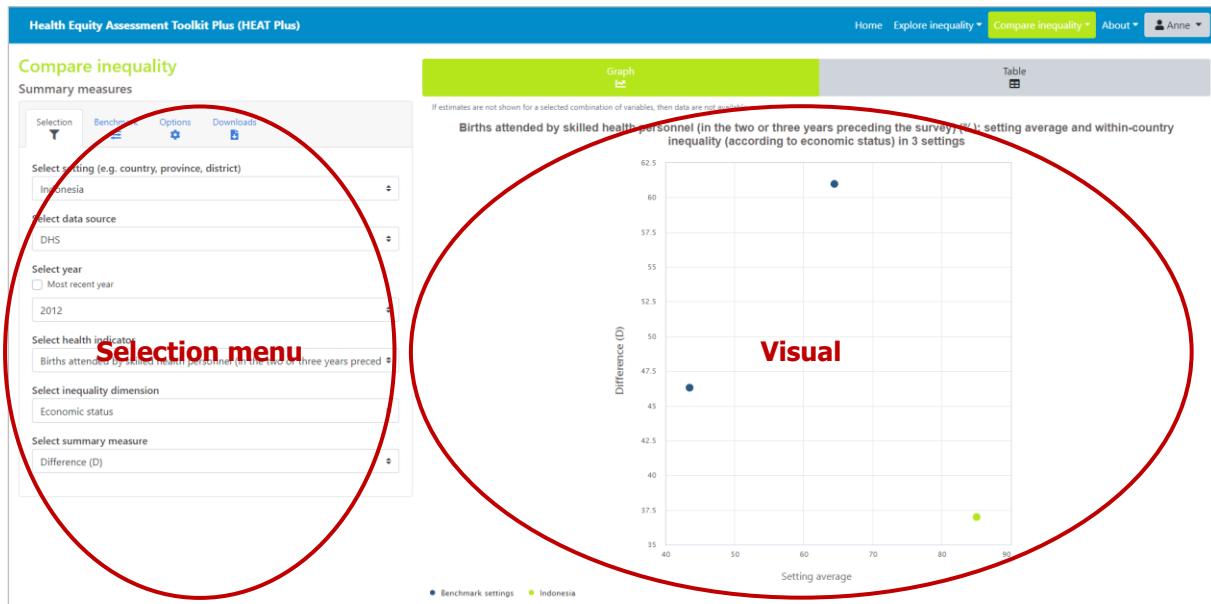


## 5.2 Summary measures

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

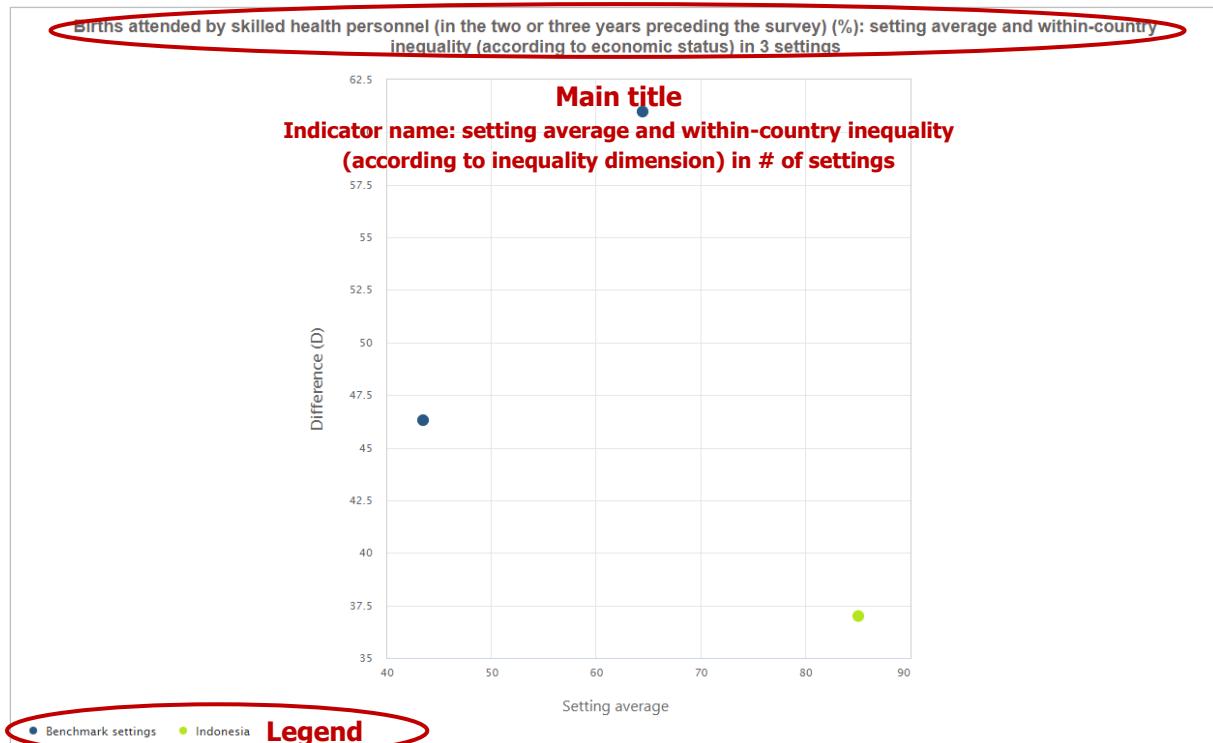
In this view, summary measures are displayed in a scatterplot. The visual at the centre shows the graph; the selection menu on the left allows you to customize the visual.



### What you see

The visual shows a scatterplot presenting the setting average (displayed on the x-axis) and the level of within-country 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, year, indicator, inequality dimension and summary measure.

Selection    Benchmark    Options    Downloads

Setting (e.g. country, province, district)  
Indonesia

Data source  
DHS

Year  
 Most recent year  
2012

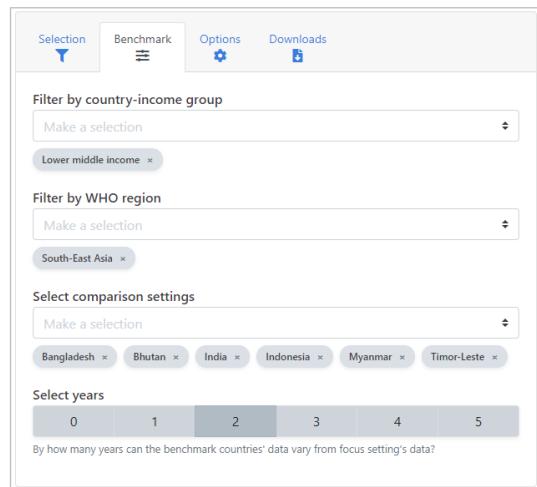
Health indicator  
Births attended by skilled health personnel (in the two or three years preceding the survey) (%)

Inequality dimension  
Economic status

Summary measure  
Difference (D)

 Benchmark

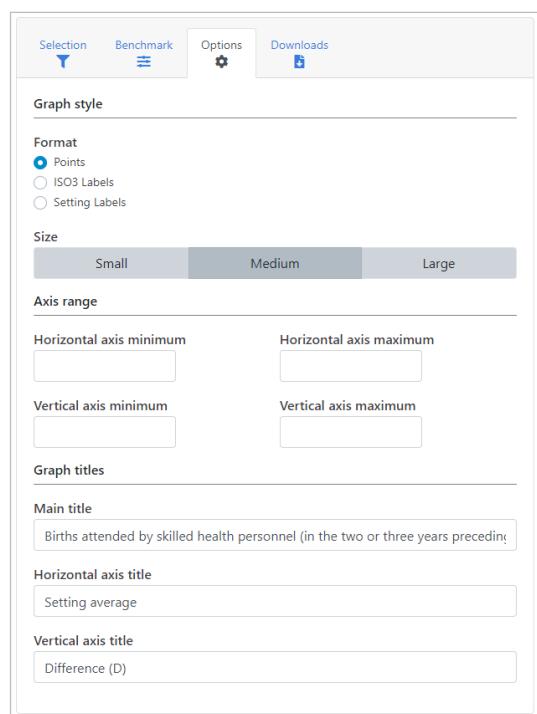
Choose the comparison settings for benchmarking. You can filter settings by country-income group and/or WHO region (provided you are looking at country-level data and have entered the ISO 3 country code in the HEAT Plus Template). You can also select the number of years by which comparison settings' data may vary from the data for your setting of interest.



The screenshot shows the 'Benchmark' tab selected in the top navigation bar. It includes sections for 'Filter by country-income group' (with a dropdown menu for 'Lower middle income'), 'Filter by WHO region' (with a dropdown menu for 'South-East Asia'), 'Select comparison settings' (listing Bangladesh, Bhutan, India, Indonesia, Myanmar, and Timor-Leste), and 'Select years' (a slider from 0 to 5).

 Options

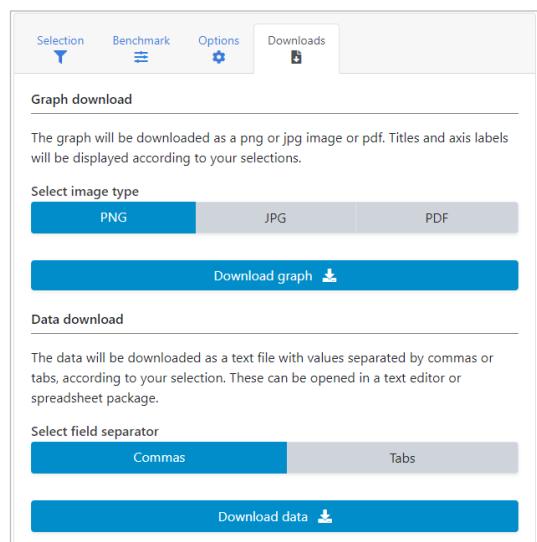
Use different options to modify your view. You can select different formats and sizes for your data points, and choose custom axis ranges and graph titles.



The screenshot shows the 'Options' tab selected. It includes sections for 'Graph style' (Format: Points selected), 'Size' (Small, Medium, Large), 'Axis range' (Horizontal and Vertical minimum/maximum), and 'Graph titles' (Main title: 'Births attended by skilled health personnel (in the two or three years preceding the survey)'), (Horizontal axis title: 'Setting average'), and (Vertical axis title: 'Difference (D)').

 Downloads

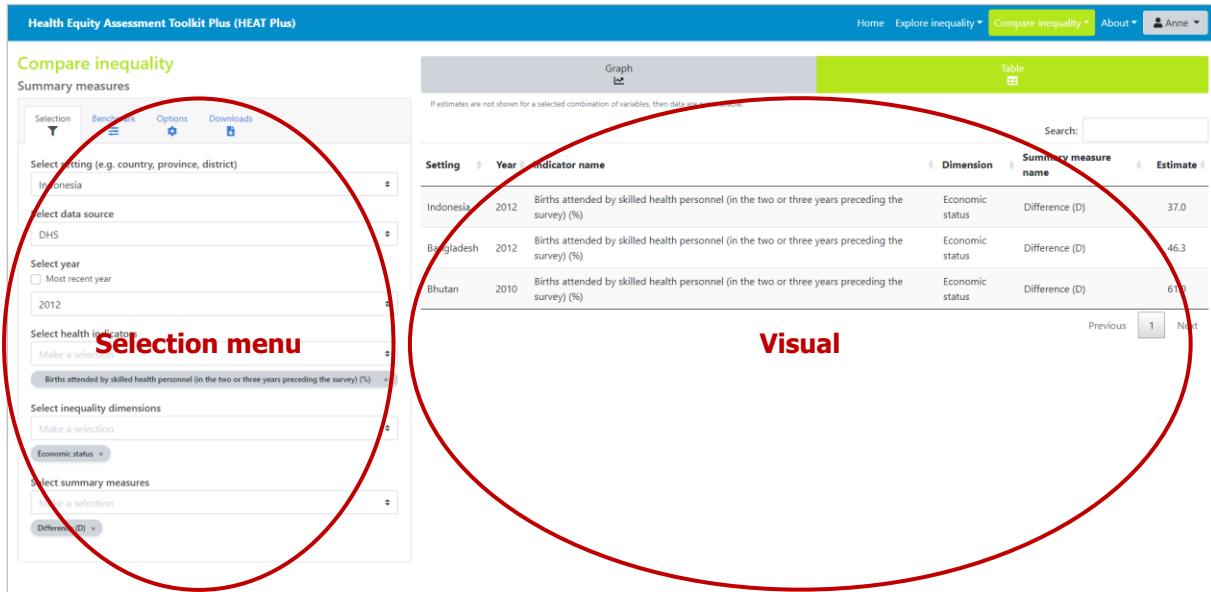
Download the results displayed in the visual, including the graph (as png or jpg images or pdf) and/or the data (as comma or tab separated text files).



The screenshot shows the 'Downloads' tab selected. It includes sections for 'Graph download' (Select image type: PNG selected, JPG, PDF) and 'Data download' (Select field separator: Commas selected, Tabs).

## 5.2.2 Table

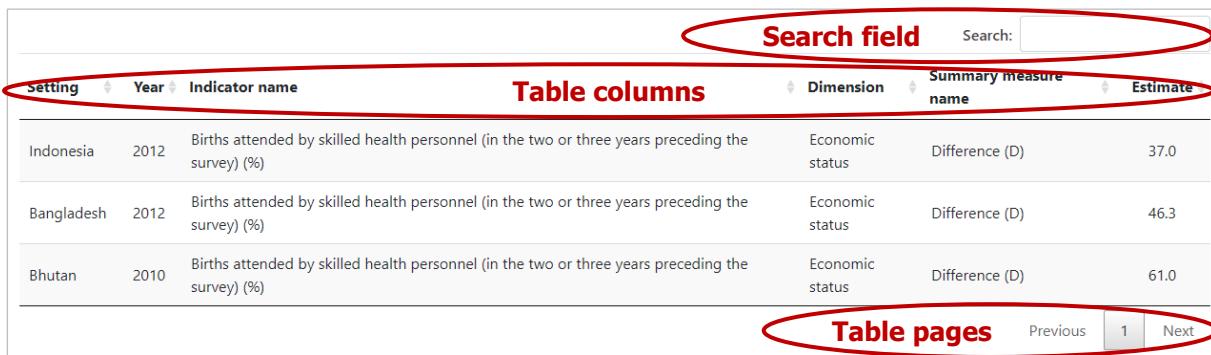
In this view, summary measures are displayed in a table. The visual at the centre shows the table; the selection menu on the left allows you to customize the visual.



Setting	Year	Indicator name	Dimension	Summary measure name	Estimate
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	37.0
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	46.3
Bhutan	2010	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	61.0

### 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, survey year, 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.

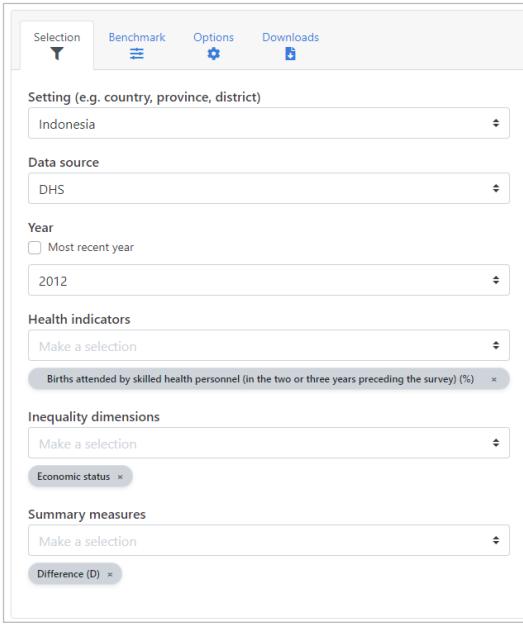
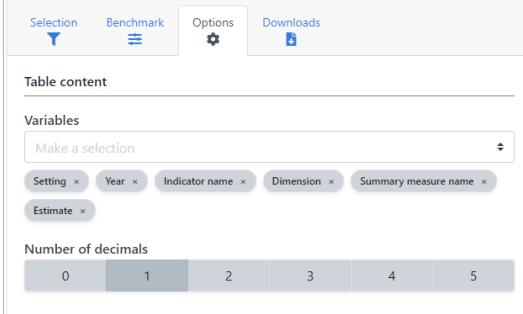


Setting	Year	Indicator name	Dimension	Summary measure name	Estimate
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	37.0
Bangladesh	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	46.3
Bhutan	2010	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Difference (D)	61.0

### How to explore

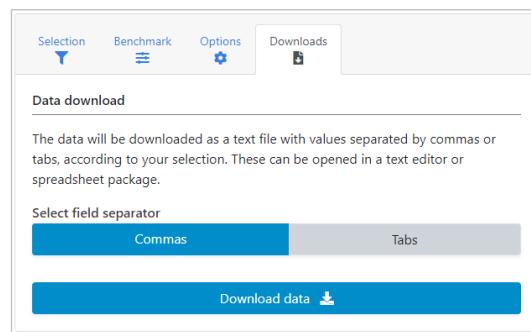
The selection menu on the left allows you to customize the results displayed in the visual. Table 13 provides a description of the four tabs that comprise the selection menu: selection, benchmark, options and downloads.

**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, year, indicator(s), inequality dimension(s) and summary measure(s).
	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 number of years by which comparison settings' data may vary from the data for your setting of interest.
 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
<b>setting</b>	Mandatory	Setting name (e.g. a country like "Indonesia", or a province like "Bali")	If this variable is missing, data cannot be uploaded.
<b>year</b>	Mandatory	Year (e.g. "2016")	Must be a four-digit number. If this variable is missing, data cannot be uploaded.
<b>source</b>	Mandatory	Data source (e.g. "DHS")	If this variable is missing, data cannot be uploaded.
<b>indicator_abbr</b>	Mandatory	Indicator abbreviation (e.g. "anc")	If this variable is missing, data cannot be uploaded.
<b>indicator_name</b>	Mandatory	Indicator name (e.g. "Antenatal care coverage")	If this variable is missing, data cannot be uploaded.
<b>dimension</b>	Mandatory	Dimension of inequality (e.g. "Education")	If this variable is missing, data cannot be uploaded.
<b>subgroup</b>	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.
<b>estimate</b>	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).
<b>se</b>	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.
<b>ci_lb</b>	Optional	95% confidence interval lower bound of subgroup estimate	
<b>ci_ub</b>	Optional	95% confidence interval upper bound of subgroup estimate	
<b>population</b>	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.
<b>flag</b>	Optional	Flag of subgroup estimate, indicating 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 flag.	
<b>setting_average</b>	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).

Variable	Type	Definition	Note
<b>iso3</b>	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.
<b>favourable_indicator</b>	Mandatory	<p>This dummy variable indicates the indicator type. It must be 1 for favourable indicators and 0 for non-favourable (adverse) indicators.</p> <p>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).</p> <p>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).</p>	Must be zero or one. If this variable is missing, data cannot be uploaded.
<b>indicator_scale</b>	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.
<b>ordered_dimension</b>	Mandatory	<p>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.</p> <p>Binary dimensions compare the situation in two population subgroups (e.g. males and females).</p> <p>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.</p> <p>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.</p>	Must be zero or one. If this variable is missing, data cannot be uploaded.

Variable	Type	Definition	Note
<b>subgroup_order</b>	Mandatory	<p>This variable indicates the order of subgroups for ordered dimensions.</p> <p>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 education 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.</p> <p>For non-ordered dimensions and binary dimensions (i.e. if ordered_dimension=0), this variable must be 0.</p>	Must be zero or an increasing sequence of integers starting with 1. If this variable is missing, data cannot be uploaded.
<b>reference_subgroup</b>	Mandatory	<p>This variable indicates the reference subgroup for non-ordered dimensions and binary dimensions .</p> <p>For ordered dimensions (i.e. if ordered_dimension=1), this variable must be 0.</p> <p>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.</p>	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), year, 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.

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
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22																			

The screenshot shows the Microsoft Excel ribbon at the top. Below it is a validation legend titled 'COLOUR LEGEND' with three rows: 'Mandatory variable' (orange), 'Recommended variable' (light blue), and 'Optional variable' (green). The main area contains a table with columns for 'VARIABLE', 'TYPE', 'DEFINITION', and 'NOTE'. Key entries include 'setting' (Mandatory, Setting name), 'year' (Mandatory, Year), 'source' (Mandatory, Data source), 'indicator\_abbr' (Mandatory, Indicator abbreviation), 'indicator\_name' (Mandatory, Indicator name), 'dimension' (Mandatory, Dimension of Inequality), 'subgroup' (Mandatory, Population subgroup), 'estimate' (Mandatory, Subgroup estimate), 'se' (Recommended, Standard error of subgroup estimate), 'ci\_lb' (Optional, 95% confidence interval lower bound), 'ci\_ub' (Optional, 95% confidence interval upper bound), and 'population' (Recommended, Number of people affected or at risk within that subgroup). The 'NOTE' column provides specific instructions for each variable.

## 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).

The screenshot shows an Excel spreadsheet with a header row containing various columns: 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. The data starts with a row for Nepal in 2010 from MICS, followed by data for Nepal in 2010 and 2016 from DHS, and finally data for Nepal in 2016 from MICS. The data shows estimates for Skilled birth attendance across five quintiles for each year and survey source.

## 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
2 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	1	0
3 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	
4 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	
5 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	
6 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	
7 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	
8 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	
9 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	
10 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	
11 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.

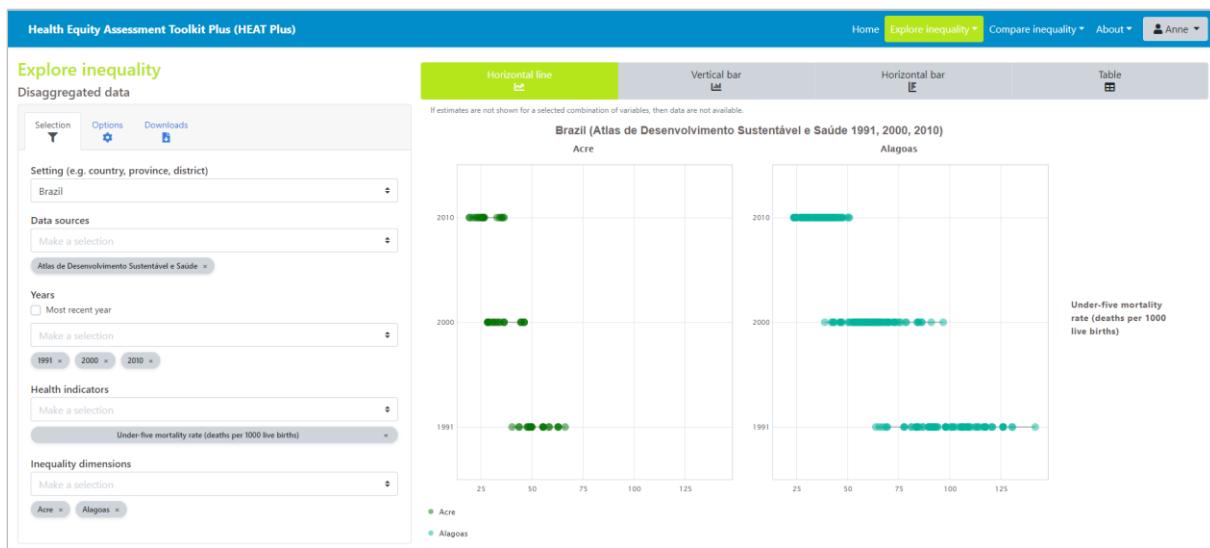
For example, if you have data available for one country (e.g. Brazil) disaggregated by first and second subnational administrative levels (e.g. provinces and municipalities), you have two options for entering your data in the template:

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.

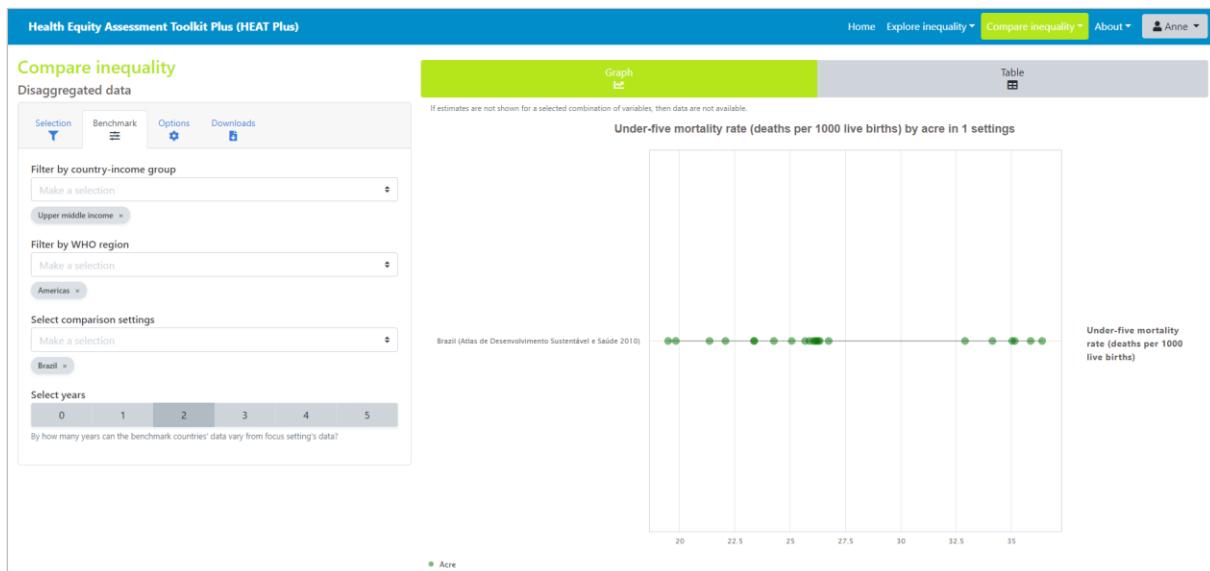
setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
2 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120001 ACRELÂNDIA	19.82		1261		19.03 BRA	0	1000	0	0	0	0	0	0
3 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120002 ARAUÁ BRASIL	26.27		754		19.03 BRA	0	1000	0	0	0	0	0	0
4 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120010 BRASÍLEIA	26.20		2055		19.03 BRA	0	1000	0	0	0	0	0	0
5 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120013 BUIARI	25.88		858		19.03 BRA	0	1000	0	0	0	0	0	0
6 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120017 CAPIXABA	22.09		894		19.03 BRA	0	1000	0	0	0	0	0	0
7 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120020 CRUZEIRO DO SUL	25.06		8660		19.03 BRA	0	1000	0	0	0	0	0	0
8 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120023 EPITACIOLÂNDIA	26.05		1490		19.03 BRA	0	1000	0	0	0	0	0	0
9 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120038 GUARAPARI	35.88		4378		19.03 BRA	0	1000	0	0	0	0	0	0
10 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120039 JAPÓ	34.13		1143		19.03 BRA	0	1000	0	0	0	0	0	0
11 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120039 MÂNCIO LIMA	26.35		1888		19.03 BRA	0	1000	0	0	0	0	0	0
12 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120038 MANOEL URBANO	26.74		1023		19.03 BRA	0	1000	0	0	0	0	0	0
13 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120038 MARCHEL THAUMATURGO	35.15		2293		19.03 BRA	0	1000	0	0	0	0	0	0
14 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120038 PLÁCIDO DE CASTRO	33.36		1798		19.03 BRA	0	1000	0	0	0	0	0	0
15 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120038 PORTO WALTER	35.04		1517		19.03 BRA	0	1000	0	0	0	0	0	0
16 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120040 RIO BRANCO	21.37		30381		19.03 BRA	0	1000	0	0	0	0	0	0
17 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120042 RODRIGUES ALVES	32.90		1919		19.03 BRA	0	1000	0	0	0	0	0	0
18 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120043 SANTA ROSA DO PURUS	24.26		806		19.03 BRA	0	1000	0	0	0	0	0	0
19 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120045 SENADOR GUIMARÃES	23.36		1989		19.03 BRA	0	1000	0	0	0	0	0	0
20 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120050 SENA MADUREIRA	19.48		4078		19.03 BRA	0	1000	0	0	0	0	0	0
21 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120060 TARAUACÁ	36.40		5061		19.03 BRA	0	1000	0	0	0	0	0	0
22 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120070 KAPURÍ	25.69		1610		19.03 BRA	0	1000	0	0	0	0	0	0
23 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120080 PORTO ACRE	26.14		1486		19.03 BRA	0	1000	0	0	0	0	0	0
24 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120080 ÁGUA BRANCA	36.83		1872		19.03 BRA	0	1000	0	0	0	0	0	0
25 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120082 ANADIA	30.93		1557		19.03 BRA	0	1000	0	0	0	0	0	0
26 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120080 ARAPIRACA	23.96		17771		19.03 BRA	0	1000	0	0	0	0	0	0
27 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120084 AREIA ALTA	31.69		4430		19.03 BRA	0	1000	0	0	0	0	0	0
28 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120080 BARREIRAS DE SANTO ANTÔNIO	36.09		1358		19.03 BRA	0	1000	0	0	0	0	0	0
29 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120080 BARRA DE SÃO MIGUEL	28.69		705		19.03 BRA	0	1000	0	0	0	0	0	0
30 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120080 BATALHÃ	31.79		1499		19.03 BRA	0	1000	0	0	0	0	0	0
31 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120080 BÉLÉM	29.23		346		19.03 BRA	0	1000	0	0	0	0	0	0
32 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120080 BELO MONTE	37.64		576		19.03 BRA	0	1000	0	0	0	0	0	0
33 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120100 BOCA DA MATA	30.52		2253		19.03 BRA	0	1000	0	0	0	0	0	0
34 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120112 BRANQUINHA	43.74		1053		19.03 BRA	0	1000	0	0	0	0	0	0
35 Brazil	2010	Atlas of uSmr		Under-five mortality rate	Acre	120120 CACIMBINHAS	44.29		930		19.03 BRA	0	1000	0	0	0	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").

## HEAT Plus User Manual

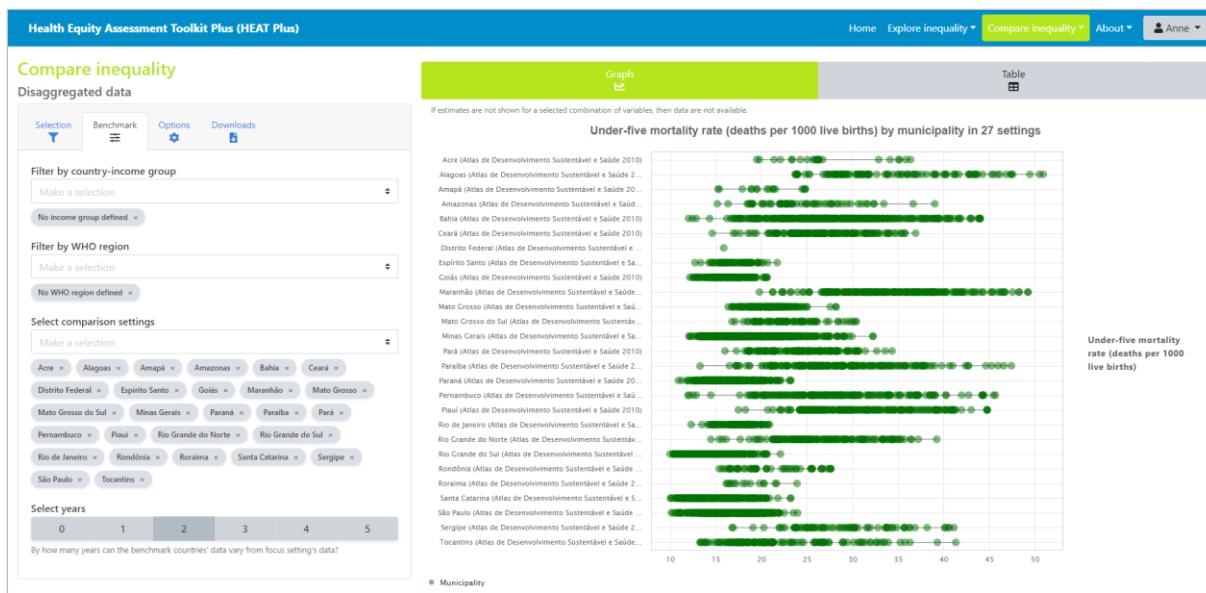
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setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	ci_lb	ci_ub	population	flag	setting_averagelb3	favourable	indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup	
2	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120001 ACRELÂNDIA	19.82	1.26	17.51	25.44	0	1000	0	0	0	0	0	0	0	
3	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120008 ASSIS BRASIL	26.77	2.74	22.29	30.44	0	1000	0	0	0	0	0	0	0	
4	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120010 BRASILÉIA	26.20	2.05	23.11	25.44	0	1000	0	0	0	0	0	0	0	
5	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120013 BUIJARI	25.88	0.85	25.03	25.44	0	1000	0	0	0	0	0	0	0	
6	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120017 CAPIXARA	22.09	0.89	21.20	25.44	0	1000	0	0	0	0	0	0	0	
7	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120020 CRUZEIRO DO SUL	25.06	0.86	24.34	25.44	0	1000	0	0	0	0	0	0	0	
8	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120025 EPITACIOLÂNDIA	26.05	1.49	24.56	25.44	0	1000	0	0	0	0	0	0	0	
9	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120030 FEIJÓ	35.88	3.37	32.51	25.44	0	1000	0	0	0	0	0	0	0	
10	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120032 JORDÃO	34.15	1.13	32.92	25.44	0	1000	0	0	0	0	0	0	0	
11	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120033 MÁRCIO LIMA	26.35	1.88	24.47	25.44	0	1000	0	0	0	0	0	0	0	
12	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120034 MANOEL URBANO	26.74	1.02	25.72	25.44	0	1000	0	0	0	0	0	0	0	
13	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120035 MARECHAL THAUMATURGO	35.15	2.29	32.86	25.44	0	1000	0	0	0	0	0	0	0	
14	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120038 PLÁCIDO DE CASTRO	23.36	1.79	21.57	25.44	0	1000	0	0	0	0	0	0	0	
15	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120039 PORTO WALTER	35.04	1.51	33.53	25.44	0	1000	0	0	0	0	0	0	0	
16	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120040 RIO BRANCO	21.37	3.03	18.34	25.44	0	1000	0	0	0	0	0	0	0	
17	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120042 ROQUE IRIBARNE ALVES	32.90	1.91	30.99	25.44	0	1000	0	0	0	0	0	0	0	
18	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120044 ROQUE IRIBARNE DO PURUS	24.26	0.96	23.29	25.44	0	1000	0	0	0	0	0	0	0	
19	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120045 SENADOR GUIMARÃES	23.96	1.89	22.07	25.44	0	1000	0	0	0	0	0	0	0	
20	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120050 SENA MADUREIRA	19.48	4.07	15.41	25.44	0	1000	0	0	0	0	0	0	0	
21	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120060 TARAUACÁ	36.40	5.06	31.34	25.44	0	1000	0	0	0	0	0	0	0	
22	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120070 XAPURI	25.69	1.61	24.08	25.44	0	1000	0	0	0	0	0	0	0	
23	Acre	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	120080 PORTO ACRE	26.14	1.48	24.66	25.44	0	1000	0	0	0	0	0	0	0	
24	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270010 ÁGUA BRANCA	36.83	1.87	35.00	30.41	0	1000	0	0	0	0	0	0	0	
25	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270020 ANADIA	30.93	1.55	29.38	30.41	0	1000	0	0	0	0	0	0	0	
26	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270030 ARAPIRACA	23.96	1.77	22.19	30.41	0	1000	0	0	0	0	0	0	0	
27	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270040 ATALAIA	31.69	4.43	27.26	30.41	0	1000	0	0	0	0	0	0	0	
28	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270050 BARRA DE SANTO ANTÔNIO	36.09	3.58	32.51	30.41	0	1000	0	0	0	0	0	0	0	
29	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270060 BARRA DE SÃO MIGUEL	28.69	7.05	21.64	30.41	0	1000	0	0	0	0	0	0	0	
30	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270070 BATALHA	31.79	1.49	30.30	30.41	0	1000	0	0	0	0	0	0	0	
31	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270080 BELÉM	29.22	3.46	25.76	30.41	0	1000	0	0	0	0	0	0	0	
32	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270090 BELO MONTE	37.64	5.76	31.88	30.41	0	1000	0	0	0	0	0	0	0	
33	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270100 BOCA DA MATA	30.52	2.25	27.27	30.41	0	1000	0	0	0	0	0	0	0	
34	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270110 BRANquinha	43.74	10.53	33.21	30.41	0	1000	0	0	0	0	0	0	0	
35	Alagoas	2010	Atlas de ú5mr	Under-five mortality rate	Municipality	270120 CACIMBINHAS	44.29	9.90	34.39	30.41	0	1000	0	0	0	0	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, as they are used in HEAT, 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.

## HEAT Plus User Manual

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:

<b>Dimension</b>	<b>Subgroup</b>
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

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1 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	
2 Andama	2015	NHFS-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	1	1	1	0	
3 Andama	2015	NHFS-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	1	2	0			
4 Andama	2015	NHFS-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	1	3	0			
5 Andama	2015	NHFS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Rural - Quintile 4	85.5	7.8	70.5	100.0	2.0	85.2	1	100	1	1	4	0			
6 Andama	2015	NHFS-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	1	5	0			
7 Andama	2015	NHFS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Urban - Quintile 1						85.2	1	100	1	1	1	0			
8 Andama	2015	NHFS-4	dtp3	DTP3 immunization	Place of residence - Economic status	Urban - Quintile 2						85.2	1	100	1	1	2	0			
9 Andama	2015	NHFS-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	1	3	0			
10 Andama	2015	NHFS-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	1	4	0			
11 Andama	2015	NHFS-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	1	5	0			
12																					
13																					
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Another option is to enter your data as two dimensions with five subgroups each.

<b>Dimension</b>	<b>Subgroup</b>
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

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A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T		
1 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	
2 Andamar	2015	NHFS-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	1	0			
3 Andamar	2015	NHFS-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	1	2	0			
4 Andamar	2015	NHFS-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	1	3	0			
5 Andamar	2015	NHFS-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	1	4	0			
6 Andamar	2015	NHFS-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	1	5	0			
7 Andamar	2015	NHFS-4	dtp3	DTP3 immunization	Urban - Economic status	Urban - Quintile 1						85.2	1	100	1	1	1	0			
8 Andamar	2015	NHFS-4	dtp3	DTP3 immunization	Urban - Economic status	Urban - Quintile 2						85.2	1	100	1	1	2	0			
9 Andamar	2015	NHFS-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	1	3	0			
10 Andamar	2015	NHFS-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	1	4	0			
11 Andamar	2015	NHFS-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	1	5	0			
12																					
13																					
14																					
15																					

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

<b>Dimension</b>	<b>Subgroup</b>
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

File	Home	Insert	Page Layout	Formulas	Data	Review	View	Developer	Add-ins	Power Pivot	?	Tell me what you want to do	Share	⋮
Y18	File	Home	Insert	Page Layout	Formulas	Data	Review	View	Developer	Add-ins	Power Pivot	?	Share	⋮
1 setting year source indicator_abbr indicator_name dimension subgroup estimate se cl_lb cl_ub population flag setting_average iso3 favourable_indicator indicator_scale ordered_dimension subgroup_order reference_subgroup	2 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 1 0	3 Andama 2015 NFHS-4 dtp3 DTP3 immunization Place of residence - Quintile 2 Urban - Quintile 1 86.9 11.5 64.3 100.0 0.6 85.2 1 100 1 1 1 0	4 Andama 2015 NFHS-4 dtp3 DTP3 immunization Place of residence - Quintile 2 Rural - Quintile 2 86.5 11.5 64.3 100.0 0.6 85.2 1 100 1 1 2 0	5 Andama 2015 NFHS-4 dtp3 DTP3 immunization Place of residence - Quintile 2 Urban - Quintile 2 85.2 1 100 1 1 2 0	6 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 1 3 0	7 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 1 3 0	8 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 1 4 0	9 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 1 4 0	10 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 1 5 0	11 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 1 5 0	12	13	14	15

## 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 [http://www.who.int/gho/health\\_equity/statistical\\_codes/en/](http://www.who.int/gho/health_equity/statistical_codes/en/).

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.

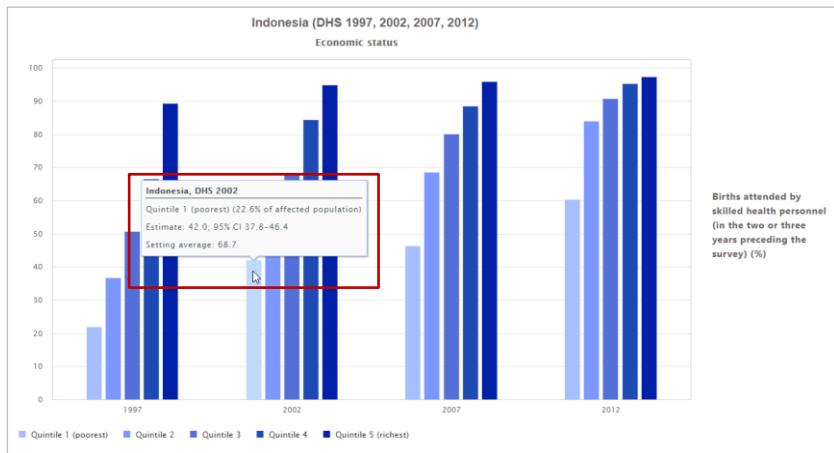
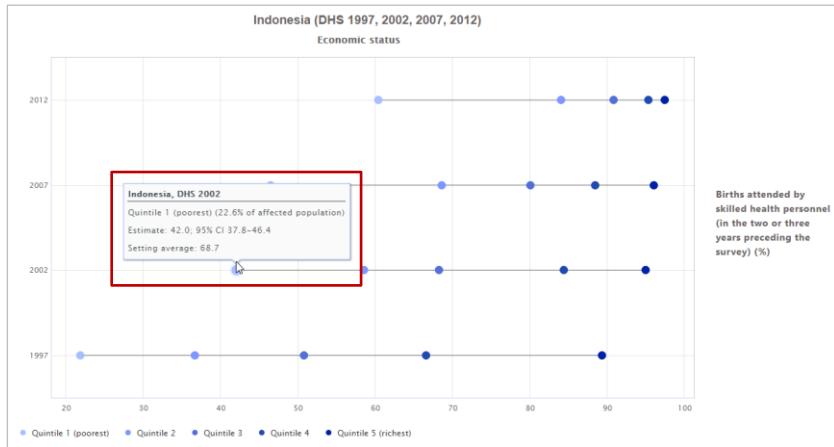
## Q13 What is meant by 'affected population'?

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

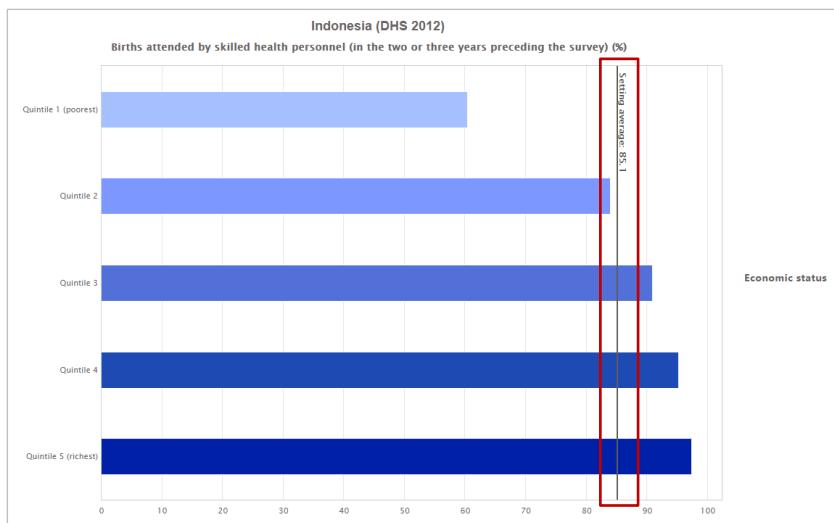
## Q14 Can I look at the setting average and disaggregated data at the same time?

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).

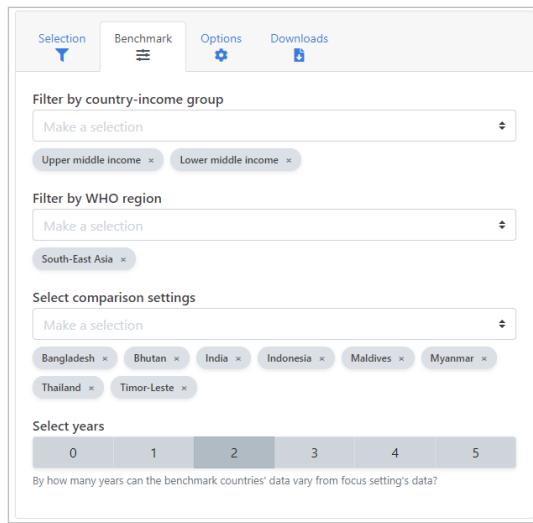
Setting	Year	Indicator name	Dimension	Subgroup	Estimate	Setting average
Indonesia	2012	Births attended by skilled health personnel (in the two or three years preceding the survey) (%)	Economic status	Quintile 1 (poorest)	60.4	85.1
Indonesia	2012	Births attended by skilled health personnel (in the two 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.

## HEAT Plus User Manual



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.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Iso3	country																		
2	AFG	Afghanistan																		
3	ALB	Albania																		
4	DZA	Algeria																		
5	AND	Andorra																		
6	AGO	Angola																		
7	ATG	Antigua and Barbuda																		
8	ARG	Argentina																		
9	ARM	Armenia																		
10	AUS	Australia																		
11	AUT	Austria																		
12	AZE	Azerbaijan																		
13	BHS	Bahamas																		
14	BHR	Bahrain																		
15	BGD	Bangladesh																		
16	BRB	Barbados																		
17	BLR	Belarus																		
18	BEL	Belgium																		
19	BLZ	Belize																		
20	BEN	Benin																		
21	BTN	Bhutan																		

## 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	T
2	Nepal	2016 DHS	an4	Antenatal care coverage	Economic status	Quintile 1	61.84	2.69	56.44	66.96	587.86	70.40	NPL	1	100	1	1	1	0	
3	Nepal	2016 DHS	an4	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		
4	Nepal	2016 DHS	an4	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		
5	Nepal	2016 DHS	an4	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		
6	Nepal	2016 DHS	an4	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		
7	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		
8	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		
9	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		
10	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		
11	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	T
2	Nepal	2016 DHS	an4	Antenatal care coverage	Economic status	Quintile 1	61.84	2.69	56.44	66.96	587.86	70.40	NPL	1	100	1	1	1	0	
3	Nepal	2016 DHS	an4	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		
4	Nepal	2016 DHS	an4	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		
5	Nepal	2016 DHS	an4	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		
6	Nepal	2016 DHS	an4	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		
7	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		
8	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		
9	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		
10	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		
11	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.

1	setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	cl_lb	cl_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
2	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	
3	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	
4	Nepal	2016	DHS	sba	Skilled birth attendance	Education	No education	43.62	2.45	38.86	48.48	911.13	62.73	NPL	1	100	1	1	0	
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	
11	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	
12	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	
13	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.

1	setting	year	source	indicator_abbr	indicator_name	dimension	subgroup	estimate	se	cl_lb	cl_ub	population	flag	setting_average	iso3	favourable_indicator	indicator_scale	ordered_dimension	subgroup_order	reference_subgroup
2	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	
3	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	
4	Nepal	2016	DHS	sba	Skilled birth attendance	Education	No education	43.62	2.45	38.86	48.48	911.13	62.73	NPL	1	100	1	1	0	
5	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	
6	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	
7	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	
8	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	
9	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	
10	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	
11	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	
12	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	
13	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
2	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	0
3	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	0
4	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	0
5	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	0
6	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	0
7	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	0
8	Nepal	2016 DHS	sba	Skilled birth attendance	Subnational region Province 2	55.95	3.27	49.41	62.19	790.30	62.73	NPL	1	100	0	0	0	0
9	Nepal	2016 DHS	sba	Skilled birth attendance	Subnational region Province 3	72.05	4.55	62.38	80.08	463.64	62.73	NPL	1	100	0	0	0	0
10	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	0
11	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	0
12	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	0
13	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	0

