



**dhis2**



**PCF**  
People-Centred-Framework

# DASHBOARD

# TECHNICAL DOCUMENTATION

2021

ANALYTICS  
PART 1

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## Analytics

The analytics resource is a powerful resource that allows users to query and retrieve data along all available data dimensions. For instance, users can query the analytics resource to provide the aggregated data values for a set of data elements, periods, and organization units. Users can also retrieve the data for a combination of any number of dimensions based on data such as partner, organization unit group sets, theme, or other user-defined groupings. The analytics engine is the source for retrieving data in DHIS2 and is used by all analysis modules: tables, charts, and maps.

The analytics engine is exposed as the Web Application Programming Interface (web API). Therefore, to utilize any entered data in the analysis modules, the data must first be sent to the analytics warehouse. This process occurs automatically every 24 hours, so it is important to note the potential delay between data entry and the ability to visualize data immediately. The process can be triggered manually. It may take a significant amount of time depending on the amount of data in your database. During peak (busy) periods, triggering the process manually may crash the server altogether, therefore, it is not recommended.

## Dashboards

The first screen displayed when you log into DHIS2 is the dashboard. Analytic favourites (graphs, maps, and charts) are displayed here for other users to view, explore, and write interpretations for. You can also navigate to the dashboard from the any page by clicking the “small boxes” on the top right-hand corner of the page.

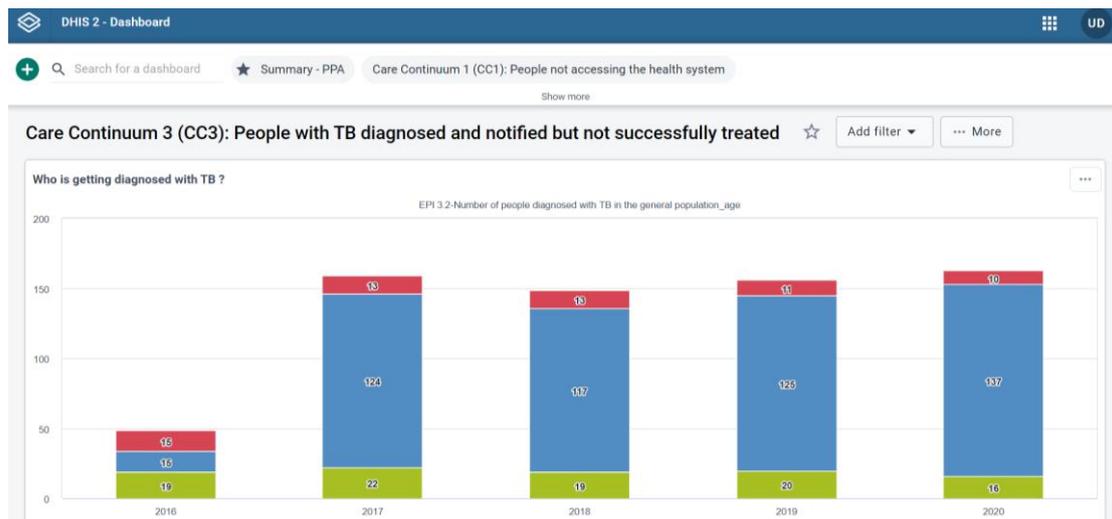


Figure 1: Dashboard landing page

## Interacting with Favourites on the Dashboard

Where the user account has the relevant permissions, you can dynamically interact with the favourites on the dashboard. Each favourite has a top menu from which five actions are possible.

1. Explore the favourite in the analytic module where it was created (Visualizer, Maps, or Pivot Tables)
2. View favourite details and write an interpretation
3. View favourite as pivot table
4. View favourite as a chart
5. View favourite as map

**Note:** While it will always be possible to visualize a chart or map as a table, it may not always work to visualize a table as a chart or map. This is due to the unique layout and number of dimensions in a table being different to that required for charts and maps.

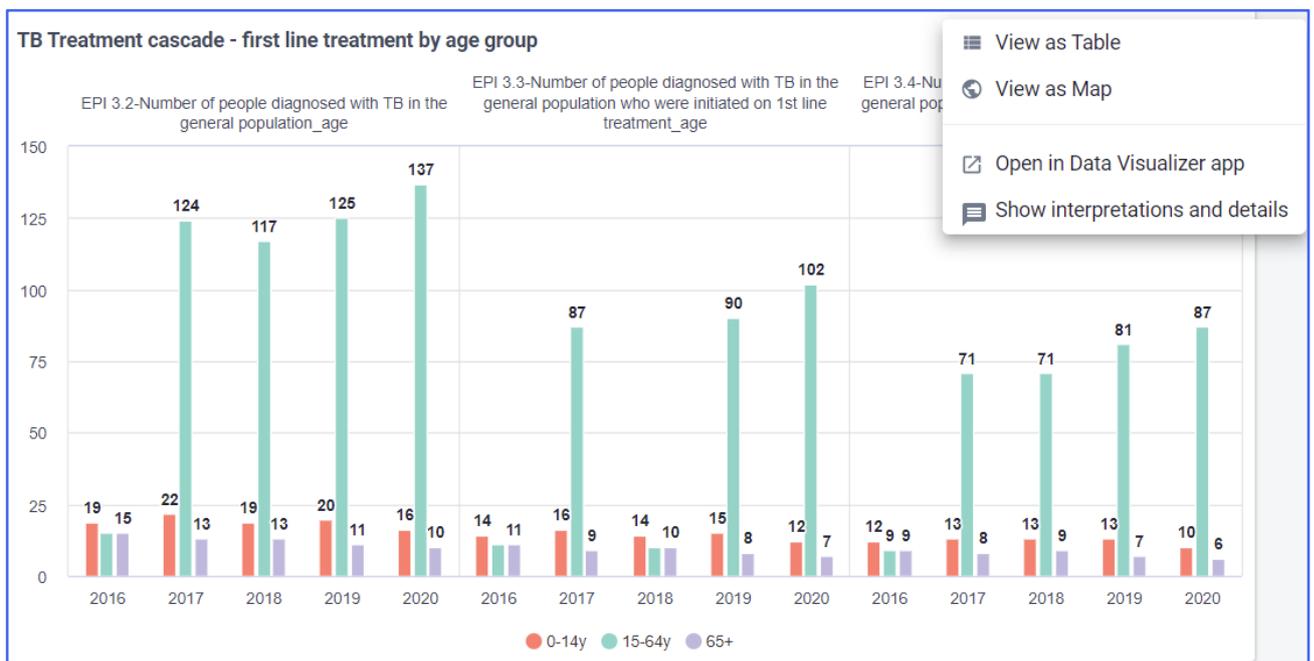


Figure 2: Viewing chart as table

## Home Button

If you navigate away from the dashboard and wish to return to the home screen, click on the DHIS2 logo in the top left-hand corner of the screen. This will take you back to the dashboard.



Figure 3: DHIS2 logo

## Applications

In the top right-hand corner of the dashboard, you can find the applications menu. From here you can navigate to all applications assigned to your user account. Search for specific apps using the search bar.

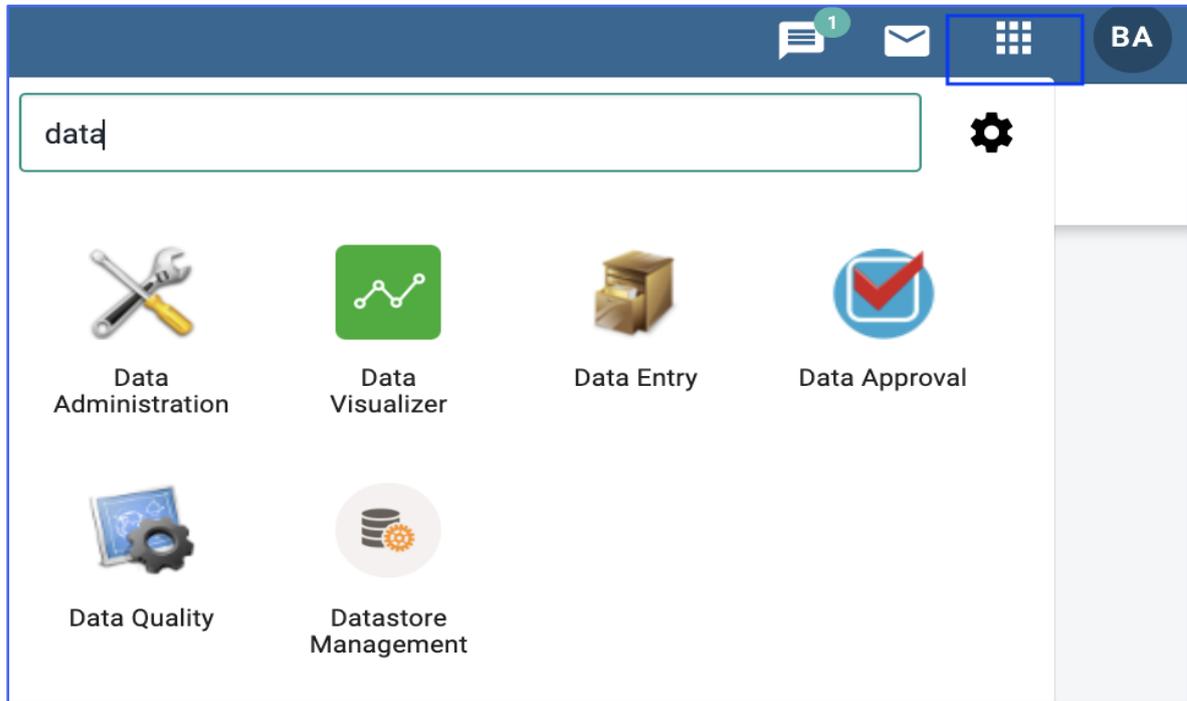


Figure 4: Applications menu

## Data Visualizer

The Data Visualizer application allows the analysis of quantitative (numerical) data using charts and pivot tables. Different data visualizations can be created here, including column, stacked column, bar, stacked bar, line, area, pie, radar, gauge, and year over year line, column charts, single values, and pivot tables. Visualizations can be saved, shared with other users, and added to dashboards for easy access.

## Interface Overview

The Data Visualizer app offers a modern interface and framework that provides new features and tools for visualizing data. To open the Data Visualizer app use the 'Search apps' menu in the upper right corner of the home dashboard.

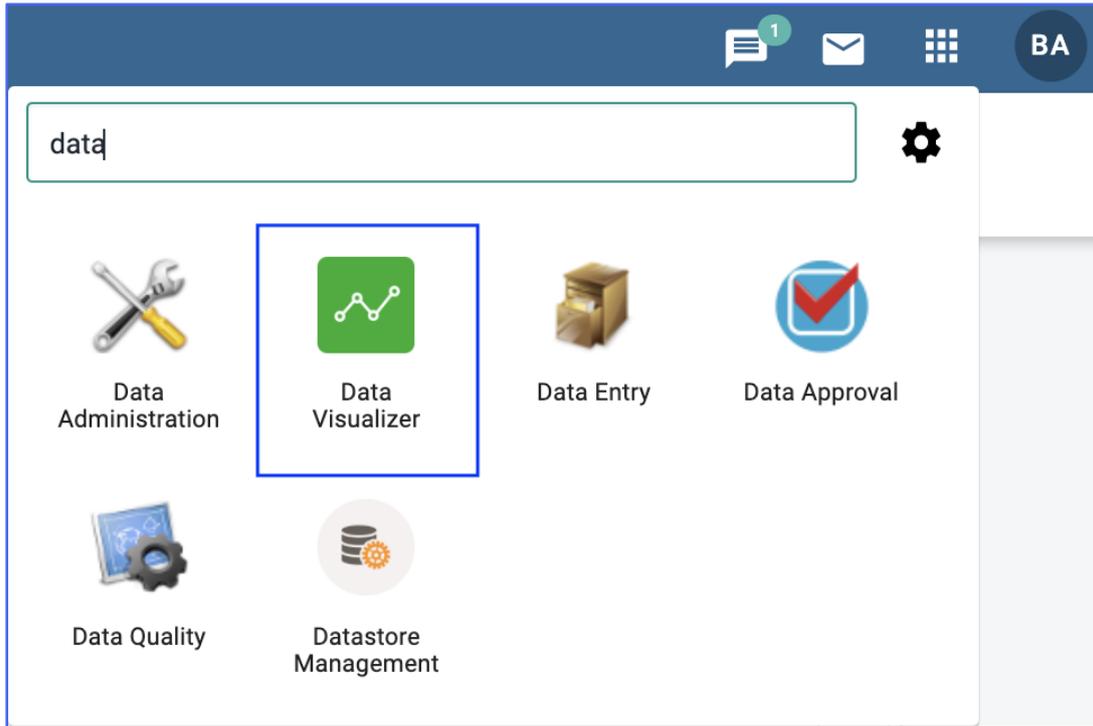


Figure 5: Opening the data visualizer app



Figure 6: Data visualizer app

## Chart Types

To create data visualization using the app select the chart type you want. In a new visualization, this dimension is selectable using the button in the top left corner labelled 'Column'; otherwise in a predefined (existing) visualization, the chart type and its corresponding symbol will be displayed in the top left corner as well.

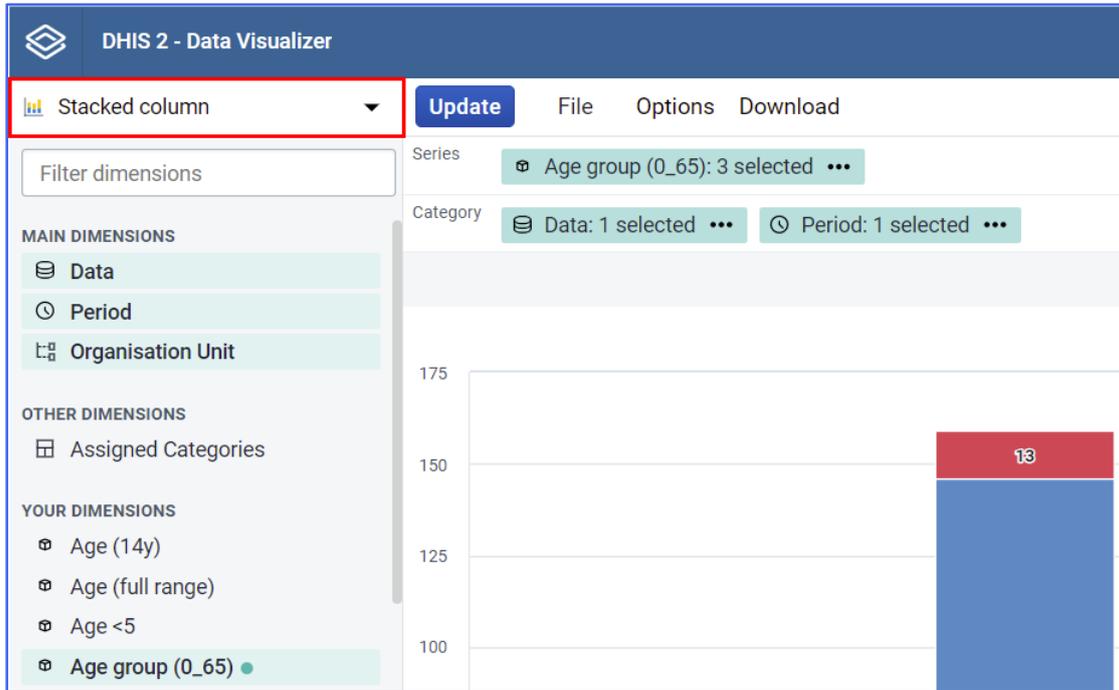


Figure 7: Selecting chart type in the visualisation app

The visualizer module provides 13 different chart types, each with different characteristics.

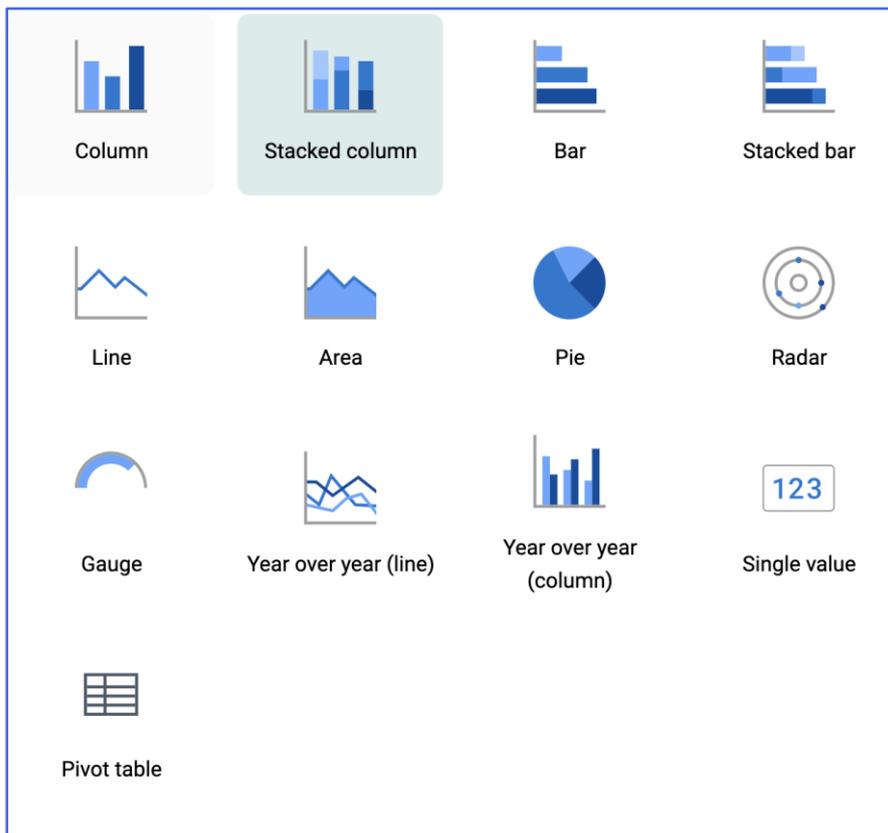


Figure 8: Chart types in the visualiser app

Table 1: Chart types and uses

Chart Type	Description	How it can be used
Column	Displays data in vertical rectangular columns with lengths proportional to the values they represent	Comparing performance of different organization units
Stacked column	Displays data in vertical rectangular columns where bars representing multiple categories are stacked on top of each other	Displaying trends or sums of related data elements
Bar	Same as a column chart, only with horizontal bars	Comparing performance of different organization units
Stacked bar	Same as a stacked column chart, only with horizontal bars	When comparing multiple values or categories to illustrate correlation. The visualization is recommended to use within a dashboard if it applied high data-to-ink ratio and consistent color coding
Line	Displays data in a series of points connected by straight lines	Visualizing trends in indicator data over multiple time periods
Area	Is based on a line chart, with the space between the axis and the line filled with colours and the lines stacked on top of each other	Comparing the trends of related indicators
Pie	Circular chart divided into sectors (or slices)	Visualizing the proportion of data for individual data elements compared to the total sum of all data elements in the chart
Radar	Displays multivariate data on axes starting from the same point	When the categorial scale is related to hours within a day as it can resemble a clock
Gauge	Semi-circle chart which displays values out of 100%	Representing progressive values
Year over year (column)	Categories and series represent a time dimension. A typical chart will display the last years as series and the last 12 months (within those years respectively) as categories	Comparing achievement in each quarter across years over the duration of the project
Year over year (line)	Same as the column chart, only displays data in a series of points connected by straight lines instead	Comparing achievement in each quarter across years over the duration of the project
Single value	Will display a single value	Highlighting a particular number or target of interest

Pivot table	Allows for the aggregation of data elements based on selected dimensions. The data, period, and organization unit dimensions can be arranged in rows, columns, and filters. Disaggregation can be added to tables as another data dimension, and allows for the viewing of data more granularly	Comparing values for different regions within a broader area
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## Selecting Dimensions: Data, Periods and Organization Units

The dimensions required to select to create a data visualization are the same as in a pivot table:

- Data Element
- Period
- Organization Unit (*see analytics part 2*)

These dimensions form the core building blocks of the data model and are essential inputs to form the basis of each visual used for data analysis.

### Data Dimension – ‘What?’

The first dimension to select is the **Data** dimension. This refers to the ‘what’, meaning data elements, indicators, and data sets (reporting rates). In the **Data** tab select the **Data dimension type**. Table 2 below provides a list of the different data dimension types.

Data Dimension Type	Definition	Examples
Indicators	An indicator is a calculated formula based on data elements, constants, and mathematical operators	<i>Target Number of community dialogue meetings held</i>
Data elements	These are the base unit of DHIS2 data, and define data collected  ‘Totals’ and ‘Details’ can also be selected, which allows for the viewing of either data element totals, or the data by a specific disaggregation. This makes it possible for users to view different category combination options together in the same pivot table	<i>Totals: Number of incidents</i>  <i>Details: Number of female incidents</i>
Data sets	A data set is a collection of data elements, or indicators, if applicable, grouped together for data collection	<i>Map Data</i>

Table 2: Types of Dimensions

### Steps to select relevant data types

Step 1: Clicking on the **Data** tab in the left corner of the application.

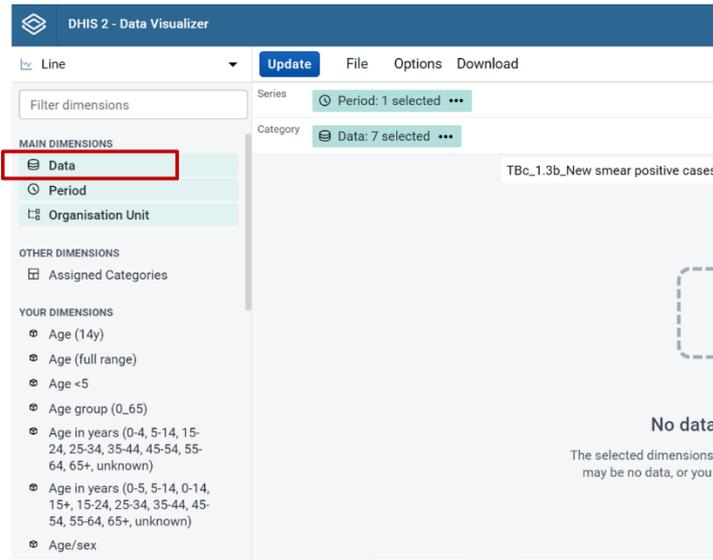


Figure 9: Selecting data items

Step 2: Choose the **Data Type** from the first drop-down menu, by clicking on the downward arrow to expand the menu of options

#### Data

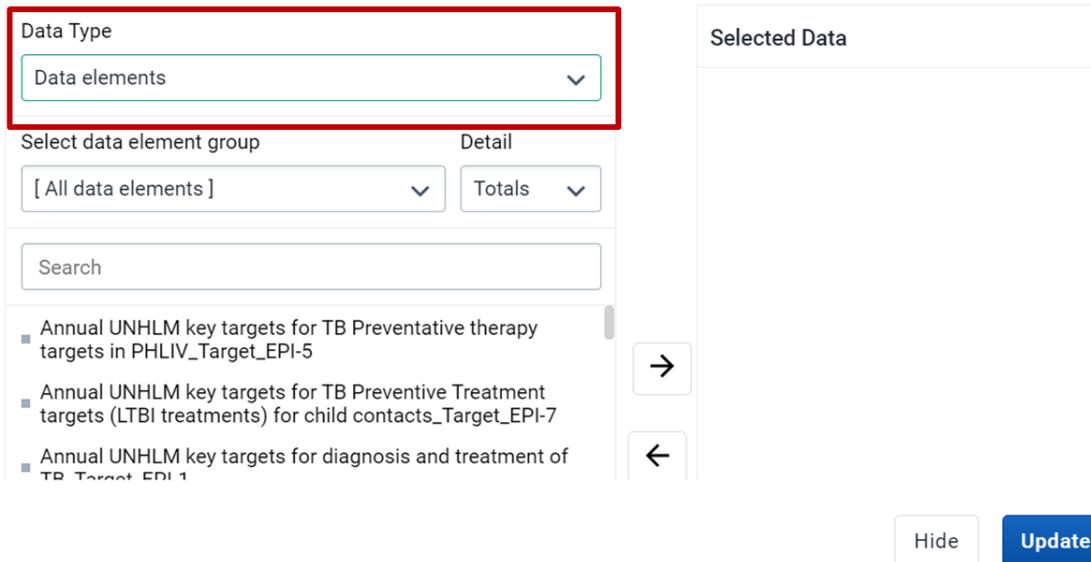


Figure 10: Choosing data type

Step 3: Select a data dimension group

**Data**

Data Type  
Data elements

Select data element group  
CC3 - People with TB diagnosed and notified but not successfully treated

Detail  
Totals

Search

- EPI 3.1-Number and proportion of bacteriologically confirmed patients who were not started on first-line treatment\_Low limit
- EPI 3.1-Number and proportion of bacteriologically confirmed patients who were not started on first-line treatment\_Upper limit

Selected Data

Hide Update

Figure 11: Selecting a dimension type

Step 4: Search for the relevant data items in the available box - the search field (magnifying glass) can be used to narrow the search in the available box

**Data**

epi

- EPI 3.10-Number and proportion of people diagnosed with DR-TB in the general population who were initiated on treatment and completed treatment or were cured\_Lower limit
- EPI 3.10-Number and proportion of people diagnosed with DR-TB in the general population who were initiated on treatment and completed treatment or were cured\_Upper limit
- EPI 3.10-Number of people diagnosed with DR-TB in the general population who were initiated on treatment and completed treatment or were cured\_Absolute value

Select all

Deselect All

Hide Update

Figure 12: Searching for data items

Step 5: Move selected data items from the 'Available box' to the 'Selected box'. This can be done in the following ways:

- Double-clicking on the item
- Selecting an item and clicking on the right pointing arrow
- Using the Command and Shift buttons to select multiple or a range and then clicking on the right pointing arrow
- Clicking on the 'Select All' buttons to move all the items

To deselect items that are not needed, use any of the following methods:

- Click on the item in the 'Selected box' and click the right pointing arrow
- Click on 'Deselect' all button to unselect all the items in the 'Selected box'

### Data

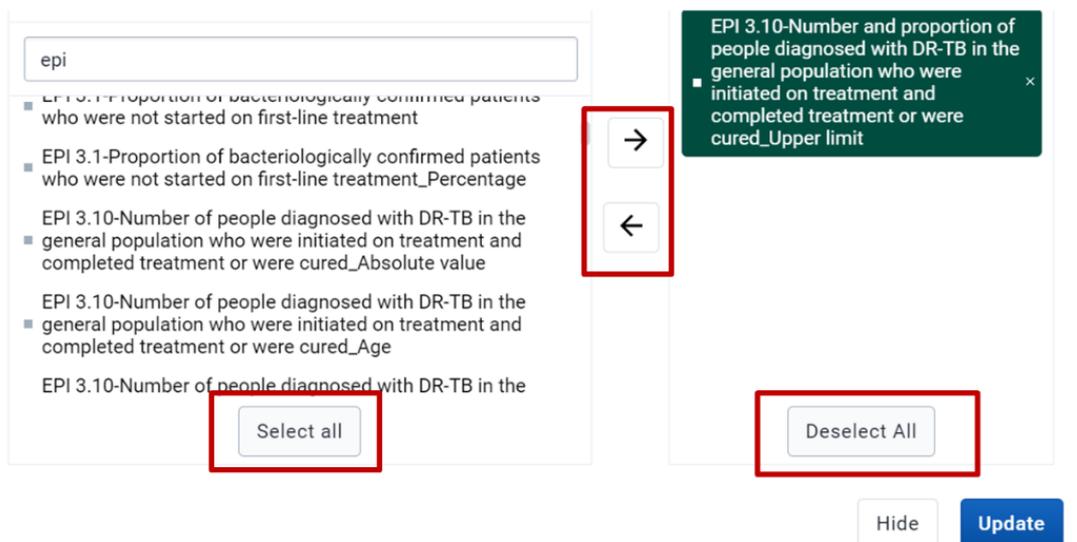


Figure 13: Selecting and deselecting items

Step 6: To save selected items, click **Hide** or **Update**.

- **Hide** will hide the Data box and save the options selected but will not update the visualization.
- **Update** will hide the Data box, save the options selected, and will update the visualization based on the selected data items

Data

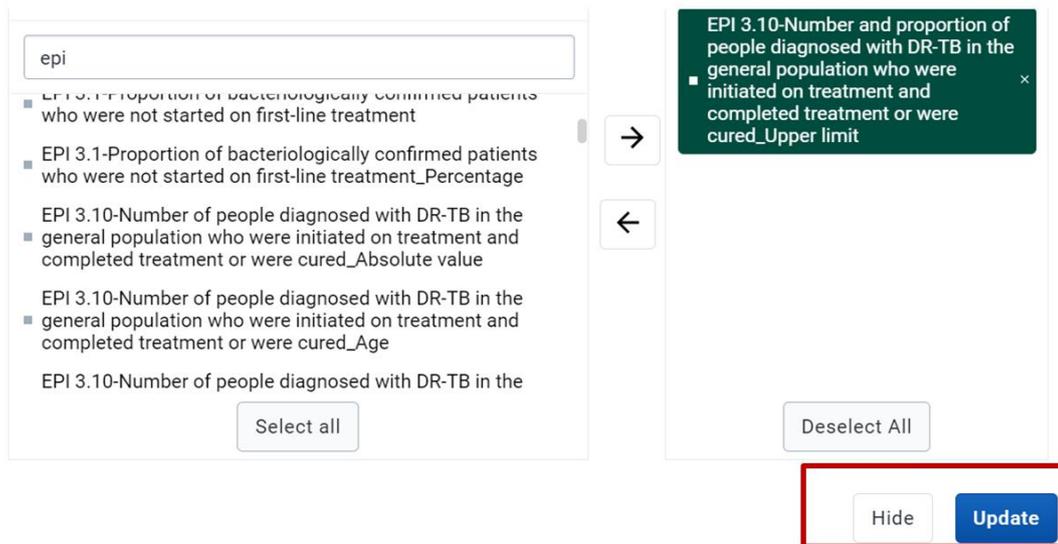


Figure 14: Saving selected items

The Data Visualizer application can display any number of data items in a chart. Also, a combination of any data item can be combined in the same chart. For example, a mix of data elements and indicators.

The order of appearance in the **Selected Data** box is the order in which they will appear in the visualization. To update the order, simply drag and drop them accordingly. Multiple or a range can be moved using the Command or Shift buttons, respectively.

## Period Dimension – ‘Where?’

The next dimension to select is the **Period** dimension. This describes **‘when’** the event took place. This dimension represents the date(s) or period the data represents. The period dimension becomes an important factor when analysing data (e.g., when using cumulative data, when creating quarterly or annual aggregated reports, or when analysing data combinations with different characteristics like monthly routine data, annual/population data or six-monthly staff data).

### Fixed and Relative Periods

There are two types of periods that can be used to create pivot tables: the **fixed period** and the **relative period**. Fixed periods are a specific period that do not change.

- An example of a **fixed period** is ‘January 2021’. If a fixed period is selected and the visualization is saved, it will always show that period.
- **Relative periods** are periods relative to the current date. Examples of relative periods are ‘Last month’, ‘Last 12 months’, and ‘Last 5 years’. The advantage of using relative periods is that if a table has been saved with a relative period, it will stay updated with the latest data as time goes by without the need to manually update.

Any number of periods can be selected for the table, and there can be a combination of both fixed and relative periods in the same table.

### Selecting Periods

Step 1: Click on the **Period** tab in the left corner of the application

Step 2: Select either the fixed or relative period

Step 3: Select a period type from the period type dropdown list

Step 4: If fixed periods are selected, navigate to the correct year by using the year drop down box

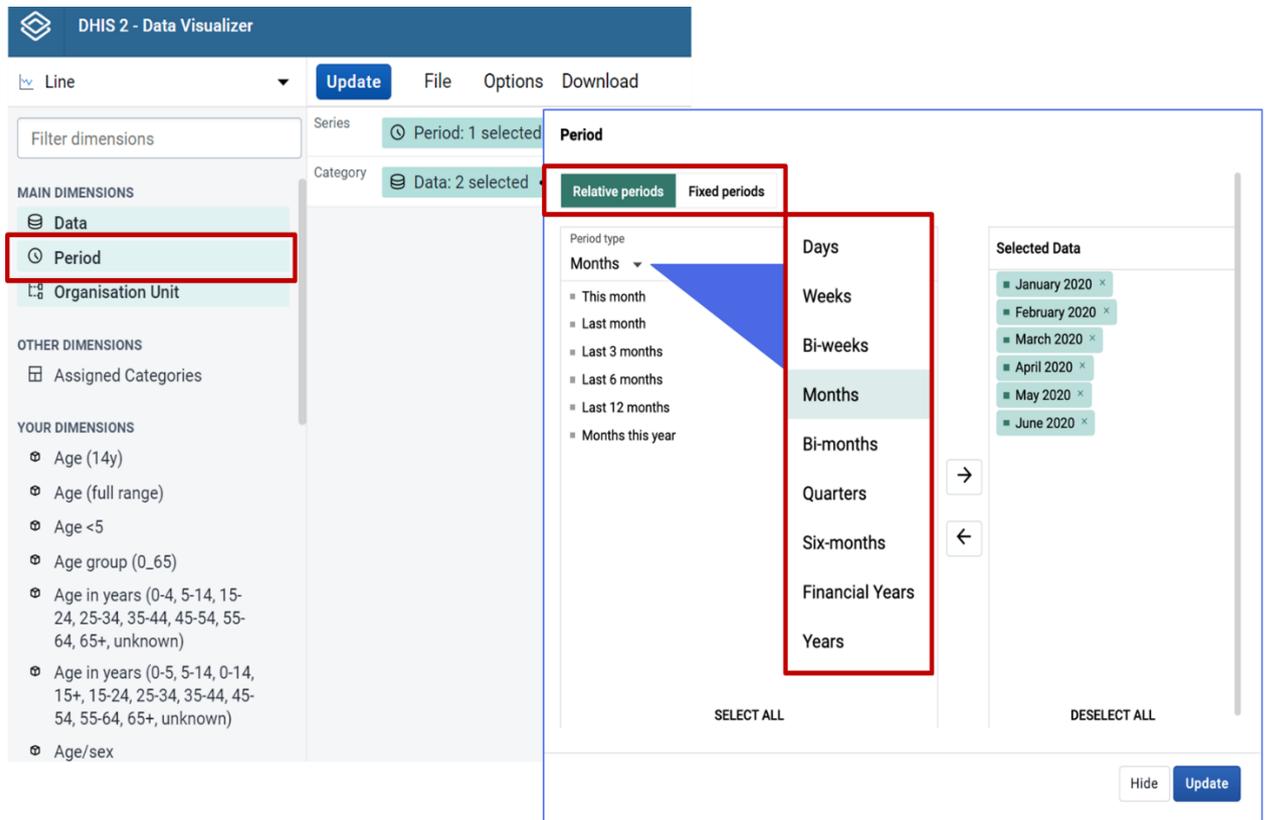


Figure 15: Selecting a fixed period

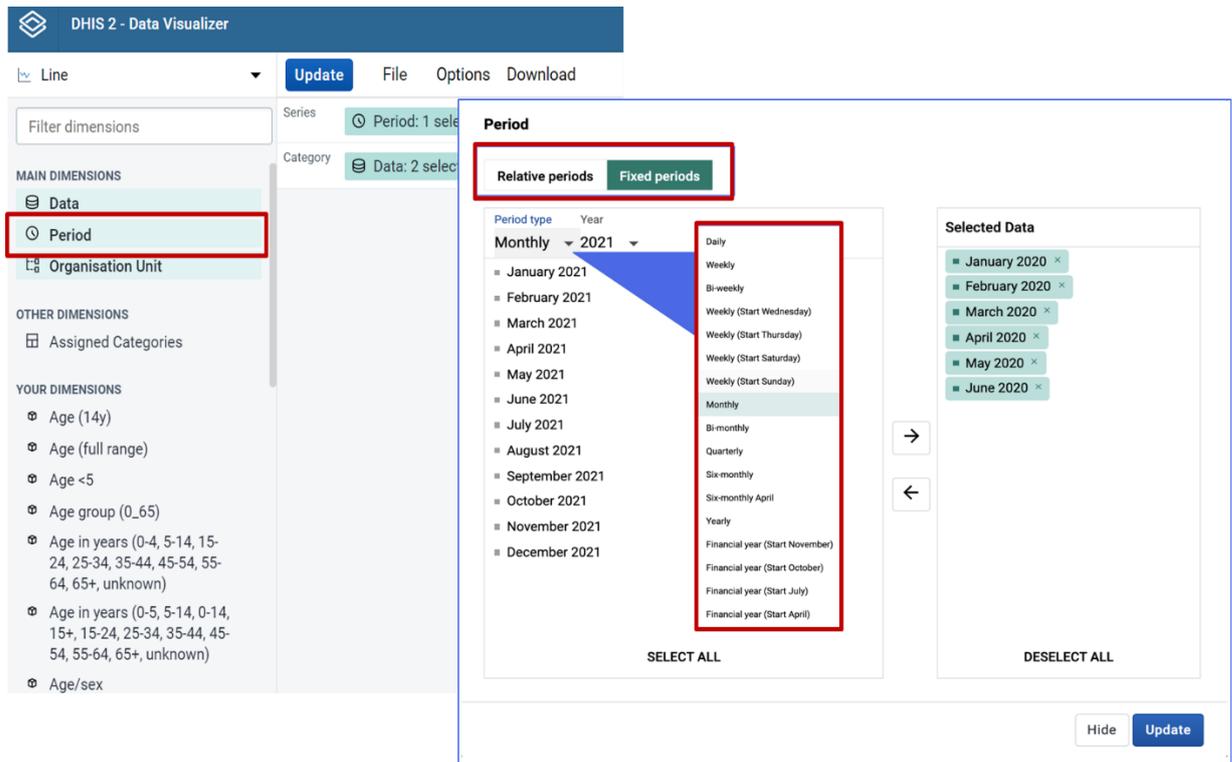


Figure 16: Selecting relative periods

Step 5: Move selected periods from the 'Available box' to the 'Selected box'. This can be done in the following ways:

- Double-clicking on the item
- Selecting an item and clicking on the right pointing arrow
- Using the Command and Shift buttons to select multiple or a range and then clicking on the right pointing arrow
- Clicking on the 'Select All' buttons to move all the items

To deselect items that are not needed, use any of the following methods:

- Click on the item in the 'Selected box' and click the right pointing arrow
- Click on 'Deselect' all button to unselect all the items in the 'Selected box'

Step 6: To save selected items, click **Hide** or **Update**.

- **Hide** will hide the Data box and save the options selected but will not update the visualization.
- **Update** will hide the Data box, save the options selected, and will update the visualization based on the selected data items

**Period**

Relative periods Fixed periods

Period type Year  
Monthly 2020

- June 2020
- July 2020
- August 2020
- September 2020
- October 2020
- November 2020
- December 2020

SELECT ALL

Selected Data

- January 2020
- February 2020
- March 2020
- April 2020
- May 2020

DESELECT ALL

Hide Update

Figure 17: Saving selected period