


DHIS2-to-Tableau Connector

User manual


david@email.com Sign out


IMPORT DATA FROM DHIS2


Choose data elements or  data element groups


Type to search or select from the list


☐ All data elements and data element groups


☐  ANC ▾


☐  ARI Treated Without Antibiotics (Cough) ▾

☐  ARI Treated With Antibiotics (Pneumonia) ▾

☐  ART ▾

☐  Burns ▾

☐  Immunization ▾

☐  Inpatient morbidity/mortality aggregates ▾

2900 K St NW, Suite 506
Washington, DC 20007
+1 (202) 536-1543

info@baosystems.com
www.baosystems.com

Table of contents

Background	3
Getting Started	4
Installing Tableau Desktop	4
Setting up the connector in DHIS2	4
Setting up the connector in Tableau Desktop	6
Data analysis	8
DHIS2 Data Dimensions	8
The “what” dimension	8
The “when” dimension	9
The “where” dimension	9
Tableau Desktop - Data Analysis	10
Troubleshooting	13
Roadmap	14

Background

Funders are increasingly demanding robust data use for adaptive program management. While a number of global health and development NGOs implement DHIS2 to collect, manage, and visualize routine program data, users are increasingly demanding more advanced analytics capabilities beyond the software's core functionality. In addition, NGOs maintain multiple datasets that are housed in formats such as Excel, Access, ODK/Kobo/ONA, SQL, Sharepoint, Salesforce, etc. As a result, there is a growing demand for more robust data analytics platforms that enable data mashups from the variety of sources where data are stored and then support more advanced visualization features.

Tableau is one of several popular business intelligence ("BI") tools used by NGOs working in the global health and development sector. The use of Tableau for visualizing DHIS2 data is increasing among global health and development NGOs. Many users require support to efficiently exchange data between DHIS2 and Tableau. The DHIS2-to-Tableau Connector will enable users to:

- Seamlessly connection between Tableau Desktop and DHIS2;
- Create visualizations in Tableau for data element groups/data elements, for selected organizational units, within specific time periods;
- Establish a data model to maximize flexibility and create robust analytics;
- Interact with DHIS2 data on the Tableau desktop.

Getting Started

Installing Tableau Desktop

In order to use the Tableau desktop connector the user must own a Tableau desktop product license. Please reach out to Tableau directly if you don't currently own a license for this product. If you've purchased a product license, but do not yet have access to the Tableau desktop, you can download it via the following URL - <https://www.tableau.com/support/releases>.

All available versions work with the DHIS2 connector.

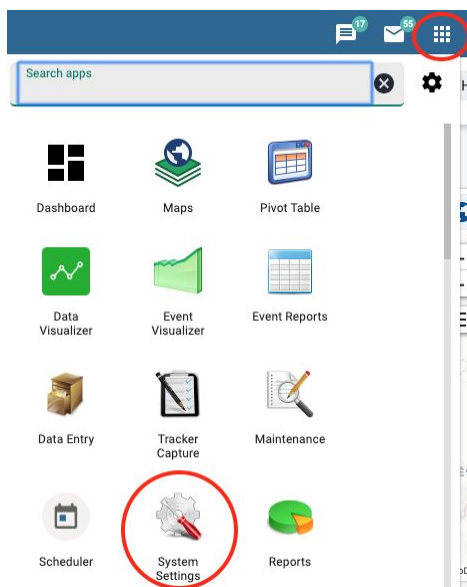
Unlike other integrations, the Tableau Connector does not require an app to be installed in DHIS2 although some configurations will be required on the DHIS2 server for the integration to work.

Setting up the connector in DHIS2

The connector is the means of communication between the DHIS2 server and Tableau Desktop .

To set up the connector in DHIS2:

1. Hover over (or click) the Apps button in the upper right corner on the header bar, and then click the System Settings icon:



2. In the Access section, scroll down to the CORS Whitelist, and add the Tableau Connector server URL: <http://tableau.interoperabilityhub.org>.

Search settings

Access settings

Self registration account user role
Guest

Self registration account organisation unit
Sierra Leone

☐ Do not require recaptcha for self registration

☒ Enable user account recovery

☐ Lock user account temporarily after multiple failed login attempts

☒ Allow users to grant own user roles

☐ Allow assigning object to related objects during add or update

Require user account password change
Never

☐ Enable password expiry alerts

Minimum characters in password
8

OpenID provider

OpenID provider label

CORS whitelist

<http://tableau.interoperabilityhub.org>

<http://localhost:3000>

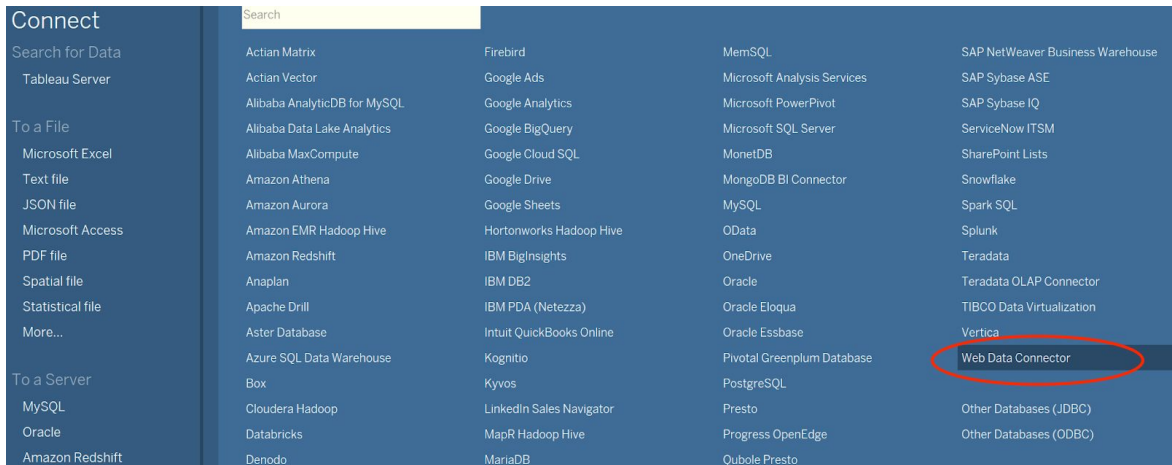
<http://localhost:8080>

<http://localhost:8081>

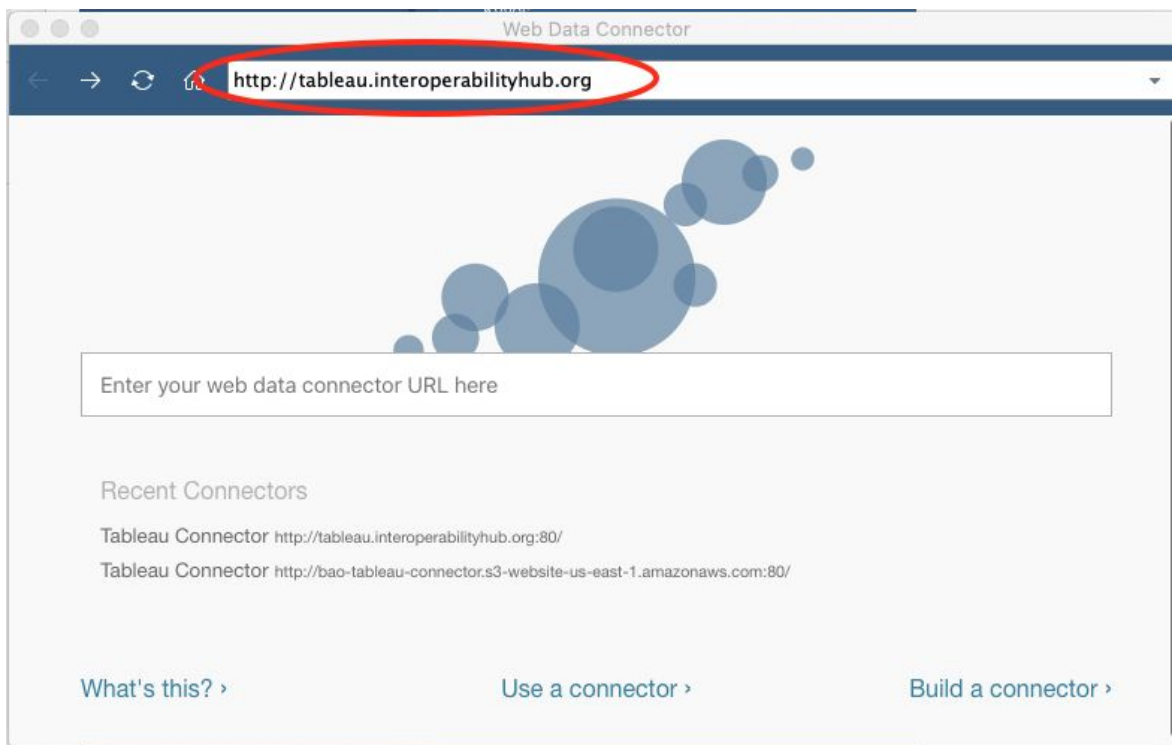
<http://localhost:8082>

Setting up the connector in Tableau Desktop

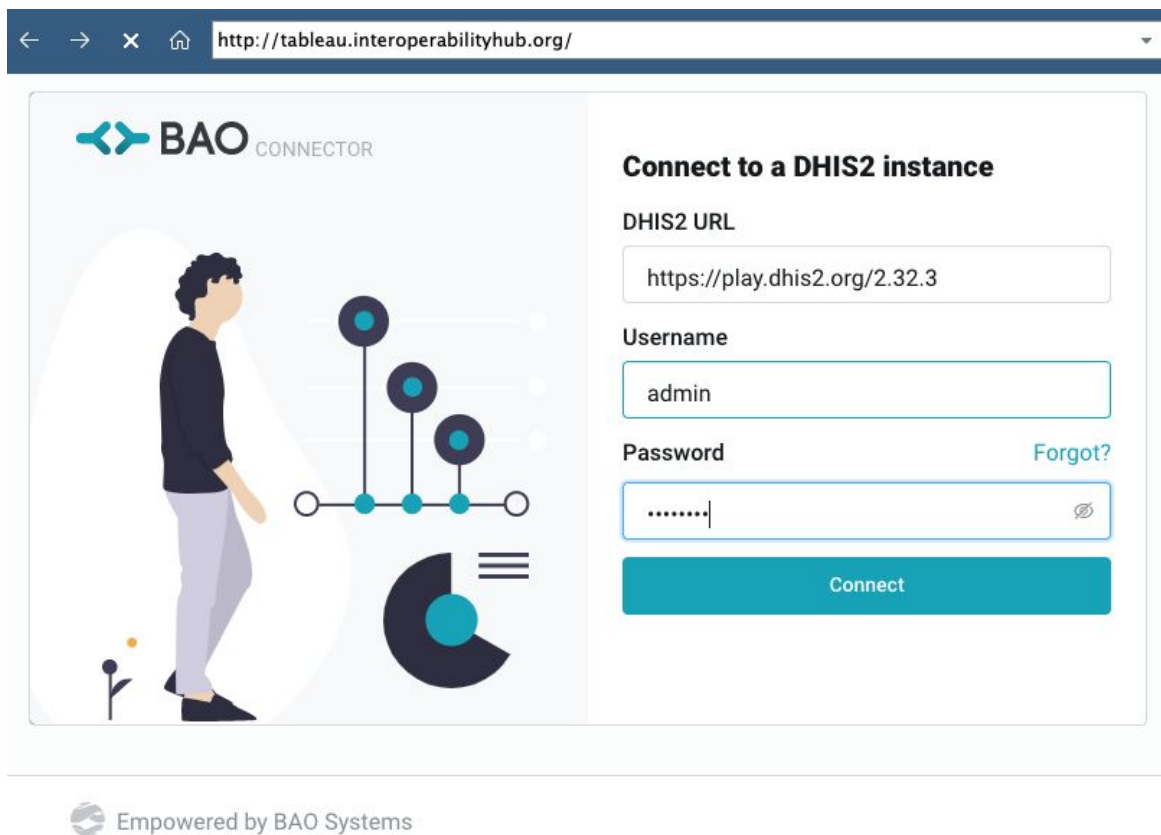
1. Open the Tableau desktop application.
2. On the left ribbon, in the section “To a server” click “More” and select the “Web Data Connector” from the list.



3. After selecting Web Data Connector, copy and paste the Tableau Connector server URL- <http://tableau.interoperabilityhub.org> in the web data connector URL field.



4. The Tableau connector requires you to enter the DHIS2 URL from which to pull data and appropriate credentials. Use the same user credentials that you would normally enter to access your DHIS2 instance.



The screenshot shows a web browser window with the address bar displaying `http://tableau.interoperabilityhub.org/`. The main content area features the BAO CONNECTOR logo on the left, which includes a stylized person icon and a network diagram. On the right, there is a form titled "Connect to a DHIS2 instance". The form contains three input fields: "DHIS2 URL" with the value `https://play.dhis2.org/2.32.3`, "Username" with the value `admin`, and "Password" with masked characters. A "Forgot?" link is next to the password field. Below the inputs is a teal "Connect" button. At the bottom of the page, there is a logo and the text "Empowered by BAO Systems".

5. When the connection is successfully established, the user will have access to the Tableau connector and will be able to import multiple data elements and dimensions from the DHIS2 server. The next chapter provides the data details needed by the connector.

Data analysis

DHIS2 Data Dimensions

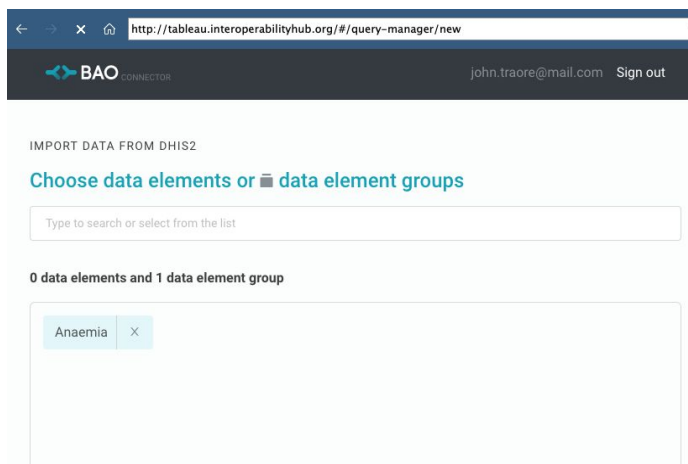
Data values in DHIS2 are described by a minimum of three dimensions. These dimensions form the core building blocks of the data model:

1. Data: data element and data element groups, the “what” dimension.
2. Period: time period in which data occurred, the “when” dimension.
3. Organisation unit: geographic location, the where dimension.

Data values may also be associated with custom dimensions consisting of attributes. A common use of this dimension is to describe data values which are reported by multiple partners in the same location for the same data element and time period or to describe any disaggregation such as age, sex or facility type. In principle, it can be used as a "free-form" dimension, to describe multiple observations of the same phenomena at the same place and time. All these dimensions, and data values, are part of the data that the Tableau connector allows the import to DHIS2, and in this chapter, we will do a walkthrough on how to import these dimensions into Tableau desktop.

The “what” dimension

The “what” data dimension is represented in DHIS2 by the data elements and data element groups. The user can select either single or multiple data elements/data element groups to import from DHIS2 to Tableau desktop. Once the data element group has been selected, the summary of the data elements will be displayed.



The “when” dimension

The “when” dimension is the period. The period dimension becomes important when analysing data over time, when looking at cumulative data, when creating quarterly or annual aggregated reports, or when doing analysis that combines data with different characteristics like monthly routine data, annual census/population data or six-monthly staff data. The period dimension can be selected in the interface within defined timeframes or custom entered as shown below.

The screenshot shows a web browser window with the URL <http://tableau.interoperabilityhub.org/#/query-manager/new>. Below the browser window, there is a section titled "Apply filters". Inside this section, there is a panel titled "Period relative or ...". This panel contains nine radio button options arranged in a 3x3 grid:

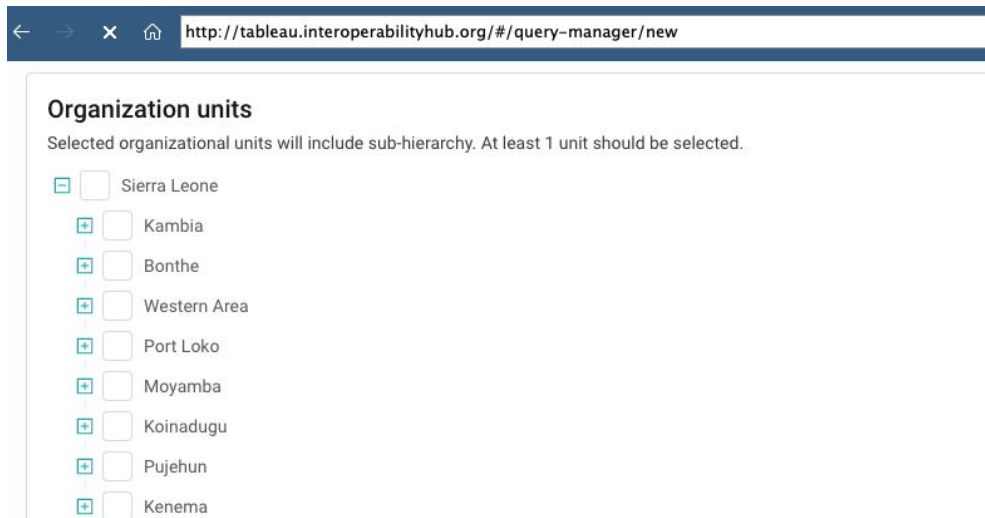
- ☐ This year 2020
- ☐ Last 6 months Sep'19-Feb'20
- ☐ This month March
- ☐ Last year 2019
- ☐ This quarter Jan-Mar
- ☐ Last month February
- ☐ Last 12 months Mar'19-Feb'20
- ☐ Last quarter Oct-Dec
- ☐ (unlabeled)

To the right of the "Period relative or ..." panel is a "custom" panel. It contains two date selection fields:

- From** dd.mm.yyyy
Select date
- To** dd.mm.yyyy
Select date

The “where” dimension

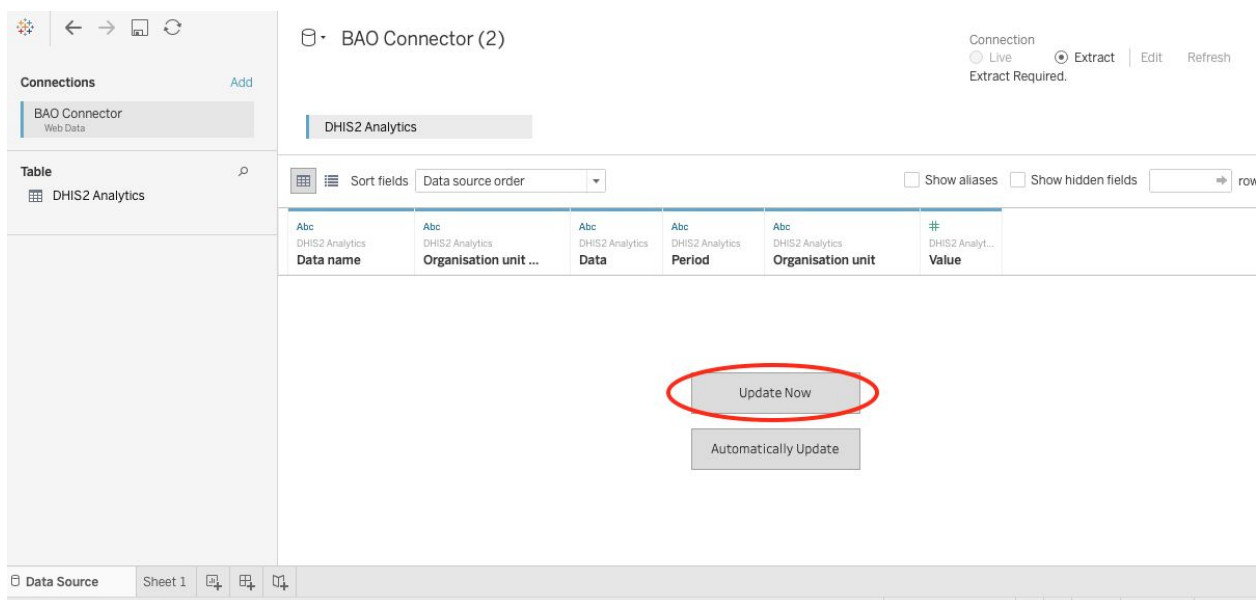
The organization units, the “where” data dimension, typically represents in DHIS2 a location. Organization units (OUs) are represented in a default hierarchy, usually the default administrative hierarchy of a country or region, and are assigned an organizational level. The connector will show all OU's available on the DHIS2 instance. The user will be able to either select in the connector the national level, which includes by default the sub-national levels in the hierarchy or specific sub-national levels for data analysis.



After all of the data dimensions are selected, click import to initiate the data import to the Tableau Desktop. This will save the data and its dimensions on the user's desktop and will be accessible from Tableau Desktop.

Tableau Desktop - Data Analysis

Once the import is complete, the user is prompted to the Data Source page of the Tableau Desktop. The first step is to update the data that has been transferred via the connector by clicking Update Now, as shown below.



All fields will now be available in the Tableau Desktop. To start producing visualizations with this data you will need to create a New Worksheet.

BAO Connector (2)

Connection: Live, Extract, Edit, Refresh. Extract Required.

Table: DHIS2 Analytics

Sort fields: Data source order. Show aliases, Show hidden fields. 827 rows.

ABC DHIS2 Analytics Data name	ABC DHIS2 Analytics Organisation unit ...	ABC DHIS2 Analytics Data	ABC DHIS2 Analytics Period	ABC DHIS2 Analytics Organisation unit	# DHIS2 Analyt... Value
Anaemia follow-up	Bumpe Ngao	jmWyJfTE7Af	2019	BGmAwX33dj	43.00
Anaemia follow-up	Peje Bongre	jmWyJfTE7Af	2019	DxAPqXvwLy	23.00
Anaemia new	Wandor	HLPuaFB7Frw	2019	X7dWcGerQIm	78.00
Anaemia follow-up	Makari Gbanti	jmWyJfTE7Af	2019	IY93YpCxJqf	83.00
Albendazole given at ...	Mano Sakrim	hCVSHjcmI9g	2019	nlt6j60tCHF	398.00
Anaemia follow-up	Yawei	jmWyJfTE7Af	2019	byp7w6Xd9Df	51.00
Anaemia follow-up	Rotaimbana MCHP	jmWyJfTE7Af	2019	GMOI74xzmAE	11.00
Anaemia follow-up	Galliness Perri	jmWyJfTE7Af	2019	eNtRuQrrZeo	5.00
Albendazole given at ...	Makpele	hCVSHjcmI9g	2019	BD9gU0Gklr2	803.00

Data Source | Sheet 1 | **Add** |

After the query runs all data into the sheet, the user can now add dimensions and measures to the columns, rows, and filter fields, as applicable for the required analysis.

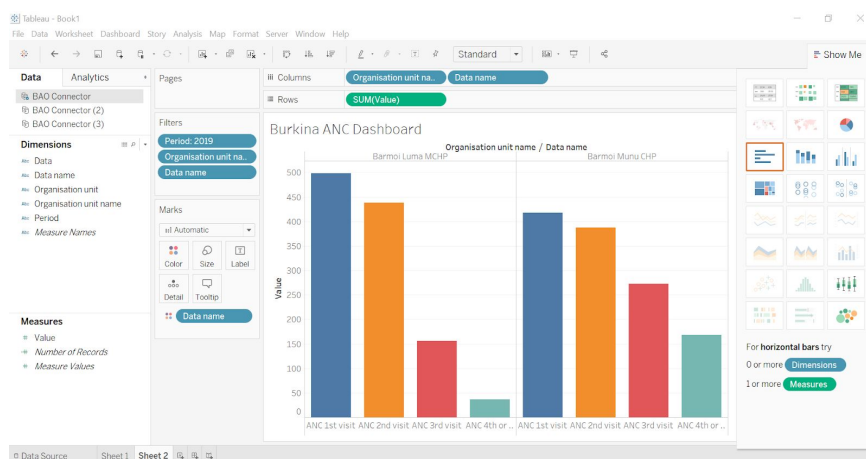
The dimensions listed in the left-hand sidebar represent:

Data = data elements UID

Data name =
data elements name

Organisation unit =
Orgunit UID

Organisation unit name =
Organisation unit name



For a deep dive into the data source (with ID details) that are imported from DHIS2, click the View Data button, on the data dimensions panel. This data can be also exported to a .CSV format.

The screenshot shows the Tableau Desktop interface. On the left, the 'Dimensions' panel is visible with a red circle around the 'View Data' button. A red arrow points from this button to a 'View Data: BAO Connector (2)' dialog box. The dialog box contains a table with the following data:

Data	Data name	Organisation unit	Organisation unit name	Period
jmWylFtE7Af	Anaemia follow-up	BGGmAwX33dj	Bumpe Ngao	2019
jmWylFtE7Af	Anaemia follow-up	DxAPPqXvwLy	Peje Bongre	2019
HLPuaF87Frw	Anaemia new	X7dWcGerQIm	Wandor	2019
jmWylFtE7Af	Anaemia follow-up	IY93YpCxJqf	Makari Gbanti	2019
hCVSHjcm19g	Albendazole given at ANC (2nd trimester)	nlt6j60tCHF	Mano Sakrim	2019
jmWylFtE7Af	Anaemia follow-up	byp7w6Xd9Df	Yawei	2019
jmWylFtE7Af	Anaemia follow-up	GMOI74xzmAE	Rotaimbana MCHP	2019
jmWylFtE7Af	Anaemia follow-up	eNtRuQrrZeo	Galliness Perri	2019
hCVSHjcm19g	Albendazole given at ANC (2nd trimester)	BD9gU0GKlr2	Makpele	2019
yqBkn9CWKih	Anaemia referrals	iGHlidSFdpu	Soa	2019
HLPuaF87Frw	Anaemia new	xGMChJA3y6j	Mambolo	2019
hCVSHjcm19g	Albendazole given at ANC (2nd trimester)	ggQ49DH9a0v	Nimiyama	2019
jmWylFtE7Af	Anaemia follow-up	HV8RTZgcFH3	Kwamabai Krim	2019
HLPuaF87Frw	Anaemia new	rxk497GUdDt	Banka Makuloh MCHP	2019
jmWylFtE7Af	Anaemia follow-up	TQkG0sX9nca	Gbense	2019
yqBkn9CWKih	Anaemia referrals	vEvs2ckGNQj	Kasonko	2019
HLPuaF87Frw	Anaemia new	GTWlxJO9pRo	Gorama Kono	2019
imWylFtE7Af	Anaemia follow-up	Vth0fhnFrsD	Kono	2019

The dialog box also has a 'Copy' button and an 'Export All' button (highlighted with a red circle). Below the table, there is a bar chart showing the distribution of data across categories: Albendaz., Anaemia follow-up, Anaemia new, and Anaemia referrals.

The Data can be represented graphically in multiple ways. The Show Me function in the Tableau Desktop allows the user to produce multiple graphical representations based on the selected data. Below, the chart selection there is guidance to let the user know how many measures or dimensions are necessary to build a graph.

For more details on how to use the Tableau Desktop, consult the [Tableau Desktop Guide](#) available on the Tableau website.

The screenshot shows the 'Show Me' panel in Tableau Desktop. It features a grid of chart icons. Below the grid, there is a guidance section for horizontal bars:

For horizontal bars try
 0 or more **Dimensions**
 1 or more **Measures**

Troubleshooting

Common issues that might occur when the BAO Tableau Connector is attempting to establish a connection with DHIS2 server, include:

- Unsuccessful connection. Always check to ensure you are adding the correct DHIS2 URL.

Tableau Connector

← → ↻ 🏠 <http://tableau.interoperabilityhub.org/>



Connect to a DHIS2 instance
DHIS2 URL


Username

Password [Forgot?](#)

[Recheck url](#)

- Incorrect credentials. Always check that you are using the correct username and password, for the given DHIS2 URL that you are using for this interface.

← → ↻ 🏠 <http://tableau.interoperabilityhub.org/>



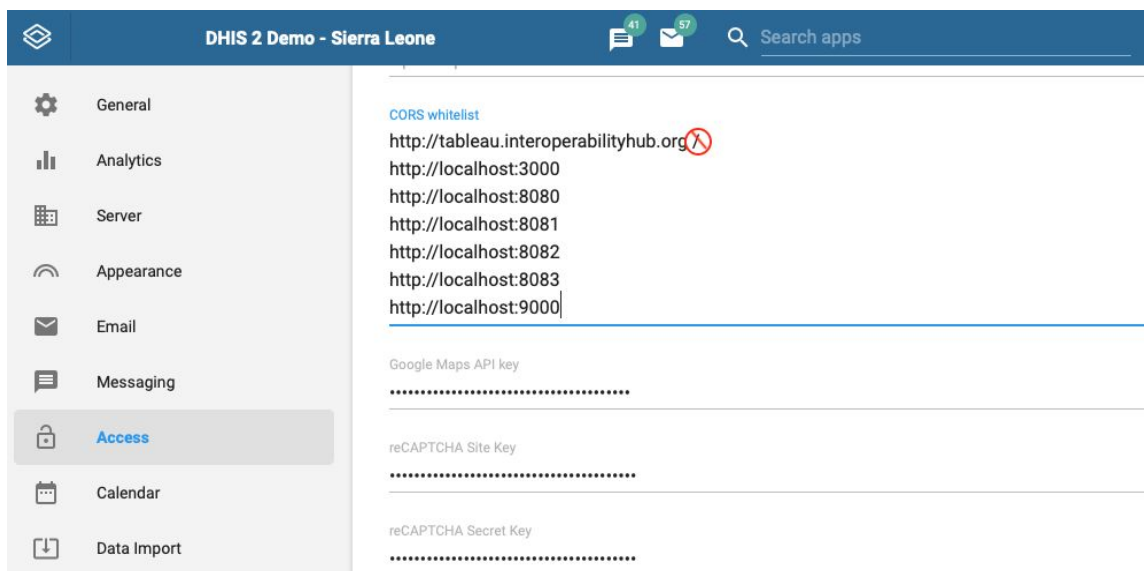
Connect to a DHIS2 instance
DHIS2 URL

Username

Password [Forgot?](#)

[Recheck username and password](#)

- On the DHIS2 server, items in the CORS whitelist cannot include “/” or spaces after the server url. If they are included, the connector will not work. Refer to [Chapter 1.2](#).



Roadmap

As with other software, there is often the case for continuing to build out new features and functionality. In each release, we will introduce innovative features to the Tableau Connector. This is what we currently have on our roadmap:

- Add more dimensions to the interface
- Apply a filter to the Data elements group to select specific categories or attributes

