

# Trainer's Guide to Organisation Unit Groups and Group Sets

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## What is this guide?

This guide is a support document for DHIS2 Academy trainers for the session "Organisation Unit Groups and Group Sets." This session follows the standard Academy training approach with

1. a live demo session where the trainer demonstrate and explain the features, and
2. a hands-on session with exercises where participants get to practice the same features.

This guide will help the trainer prepare for the live demo session. The "Live Demo step by step" section has a detailed walkthrough of all the steps to demonstrate with explanations and screenshots that should be easy to follow. Use that when preparing for the live demo session.

There is also a Quick Guide which lists the steps very briefly and this is meant as a lookup guide or "cheatsheet" WHILE doing the demo, to help the trainer remember all the steps and the flow of the demo.

## Learning objectives for this session

1. Review the concept of organisation units
2. Describe what organisation unit groups are
3. Describe what organisation unit group sets are
4. Use organisation unit groups in analysis apps
5. Use organisation unit group sets in analysis apps
6. Describe the limitations of creating organisation unit groups in maintenance
7. Retrieve organisation units via the API
8. Add organisation units to organisation unit groups via import/export
9. Configure organisation unit group sets in maintenance

## Time Requirements

- Live Demo:
- Hands-on Exercises:
- Assignment:

## Background

## Preparations

## Best Practices

Before starting the demonstration, please keep in mind that the most important thing is that the audience is following, so make sure to ask questions to the audience to verify that they are following. If something is unclear, go back and go through it slowly. If you don't have time for all the steps, it is better to cut some steps, than to go fast while nobody understands.

There are two potential ways to conduct the session:

1. Break where it says stop and allow the participants to work through identified exercises
2. Allow the participants to follow along with you at the same time. In this scenario, it is ideal if there are other trainers moving around the room to support participants as it will be difficult for the trainer leading the session to answer many individual questions during the demonstrations.

## Quick Guide

1. Review the presentation on organisation unit groups
2. Review how organisation unit groups and group sets can be used to visualize data
  1. Review and create the chart "EPI - BCG Doses Given < 1 Results, Last 12 months"

### STOP - Perform Exercise 1

1. Show how to manage OU Groups and OU Group Sets in Maintenance
2. Review the process of creating OU Groups and Group Sets via the API
3. Retrieve the list of org units via the API

### STOP - Perform Exercise 2

1. Create org unit groups via maintenance
2. Review the format of the orgunit group import file
3. Populate the orgunit group import file

### STOP - Perform Exercise 3

1. Import the org unit groups into DHIS2 via the Import/Export app

### STOP - Perform Exercise 4

1. Create the OU group set via maintenance

### STOP - Perform Exercise 5

1. Explain the connection of data dimensions to analytics and use the created groups in visualizer

### STOP - Perform Exercise 6

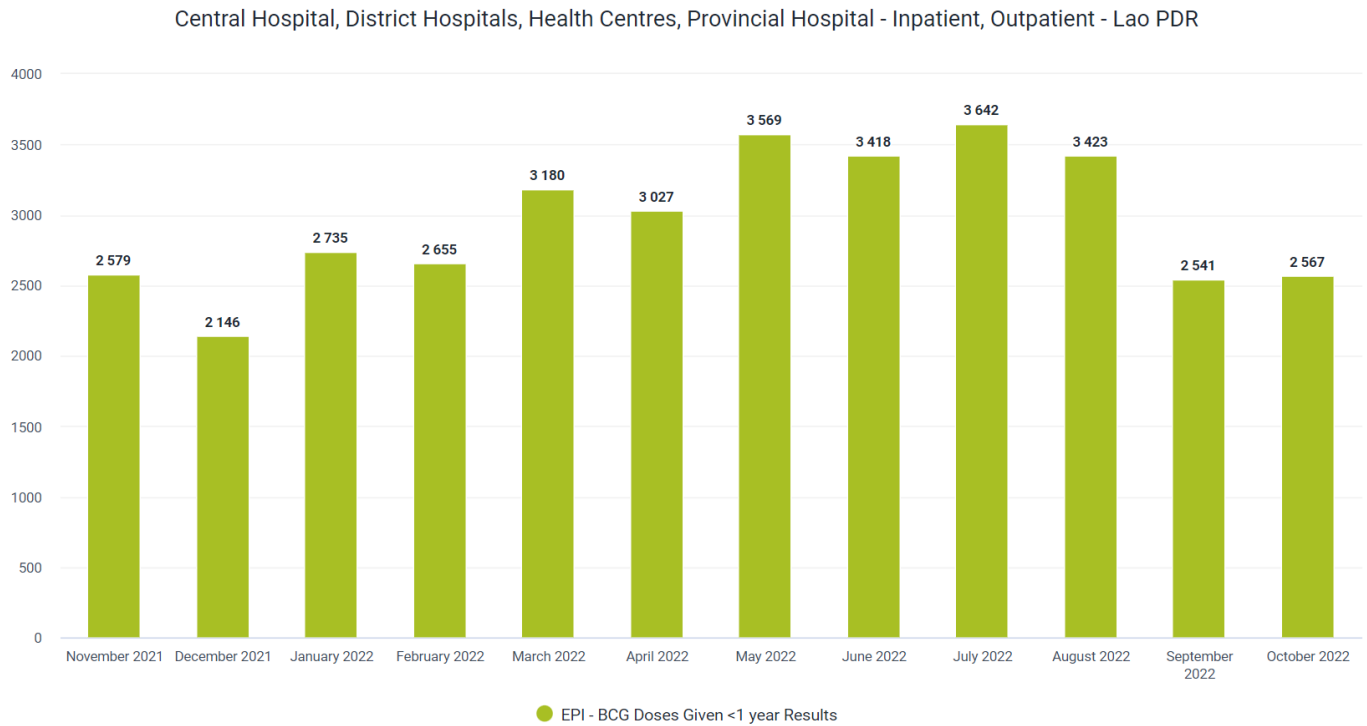
## Live Demo step by step

Review the presentation on organisation unit groups

Review how organisation unit groups and group sets can be used to visualize data

**Review and create the chart "EPI - BCG Doses Given < 1 Results, Last 12 months"**

You will start the session by recreating the following chart.

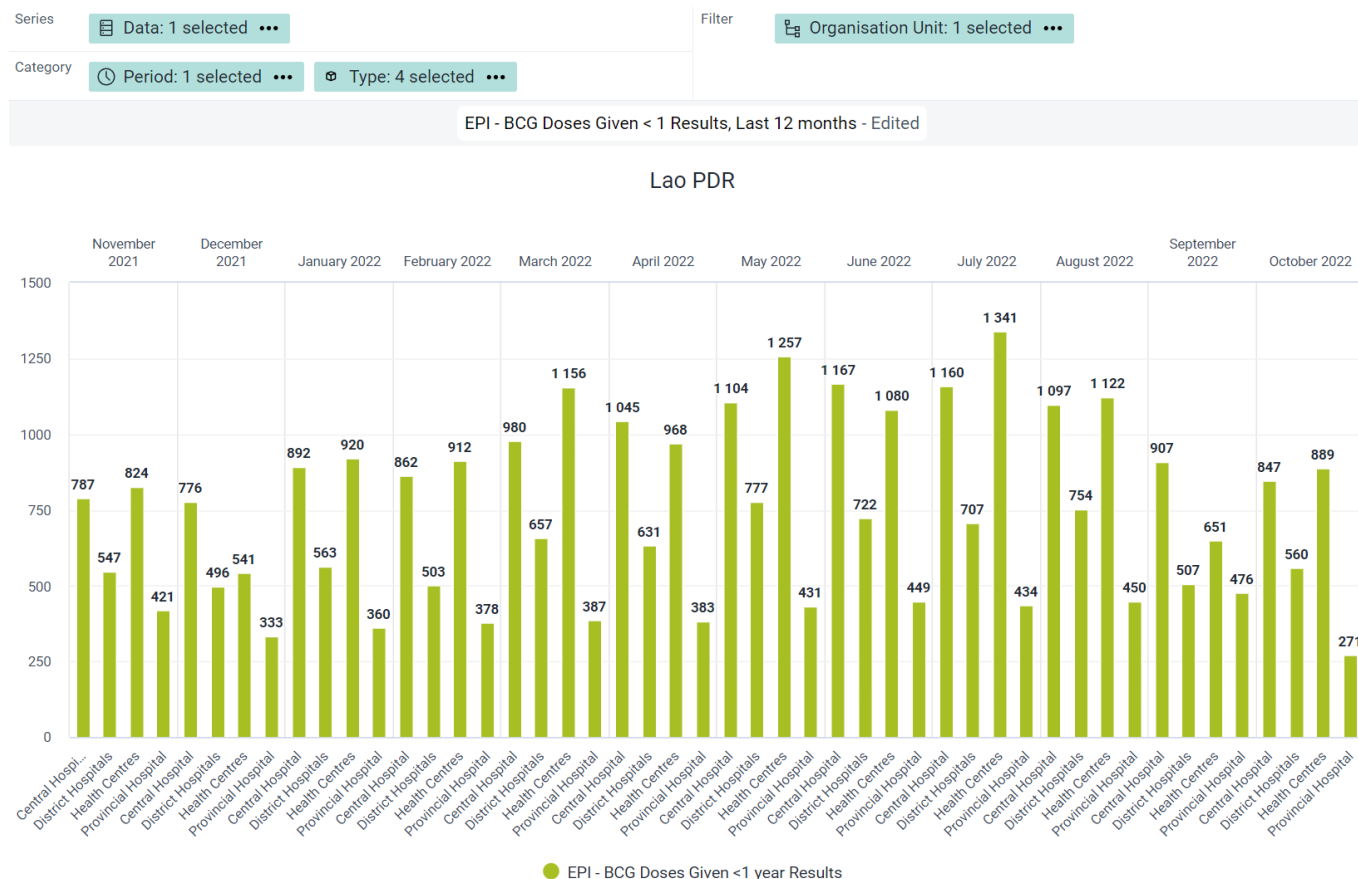


You can open this chart by navigating to data visualizer and opening the chart "EPI - BCG Doses Given < 1 Results, Last 12 months"

This chart has two organisation unit group sets that are being applied to it, located in the filter of the chart. In analysis, we can apply as many combination of data dimensions as required to create our intended input and organisation unit groups/group sets can help with this.

They can also support the disaggregation of our data.

Move the org unit group set "Type" from the filter to the category and update the chart.



We can now see the chart is disaggregated by the org unit groups within the group set "Type"

## Create a new chart

To create a new chart select File - > New

Here are the inputs for the chart:

### Chart Type

- Column

### Data

- Data Type : Indicator
- Indicator group: Immunization
- Indicator name: EPI - BCG Doses Given < 1 Results

Data

Search by data item name

Data Type

Indicators

Indicator group

Immunization

√<sup>8</sup>/<sub>8</sub> EPI - < 1 year monthly target population

√<sup>8</sup>/<sub>8</sub> EPI - AEFI suspected - non-serious

√<sup>8</sup>/<sub>8</sub> EPI - AEFI suspected - serious

√<sup>8</sup>/<sub>8</sub> EPI - BCG Doses Given <1 year Target

➡

→

⬅

Selected Items

√<sup>8</sup>/<sub>8</sub> EPI - BCG Doses Given <1 year Results

Period

- Last 12 months

Organisation unit

When opening the org unit pane, explain that org unit groups can also be used to select relevant organisation units to include in your analysis. Using this option, we can not use the compound filtering options we observed in the first chart we were shown; however if you just want to quickly select a group of organisation units to use in analysis, this can be done. This is another reason why it is very useful to group your organisation units. Note that you can select multiple org unit groups in this selector.

Organisation Unit

■

User organisation unit

■

User sub-units

■

User sub-x2-units

▼

✓

📁

Lao PDR (1)

▶

📁

01 Vientiane Capital

▶

📁

09 Xiangkhouang

▶

📁

10 Vientiane

▶

📁

11 Bolikhamxai

▶

📁

18 Xaisomboun

Level

Select a level

▼

0

■

■

■

November 2021

December 2021

January 2022

Central Hospital

District Hospitals

Health Centres

Inpatient

Lao Districts

Lao Provinces

Outpatient

Provincial Hospital

Public

Public/Private Mix

Hide

Update

■

■

■

May 2022

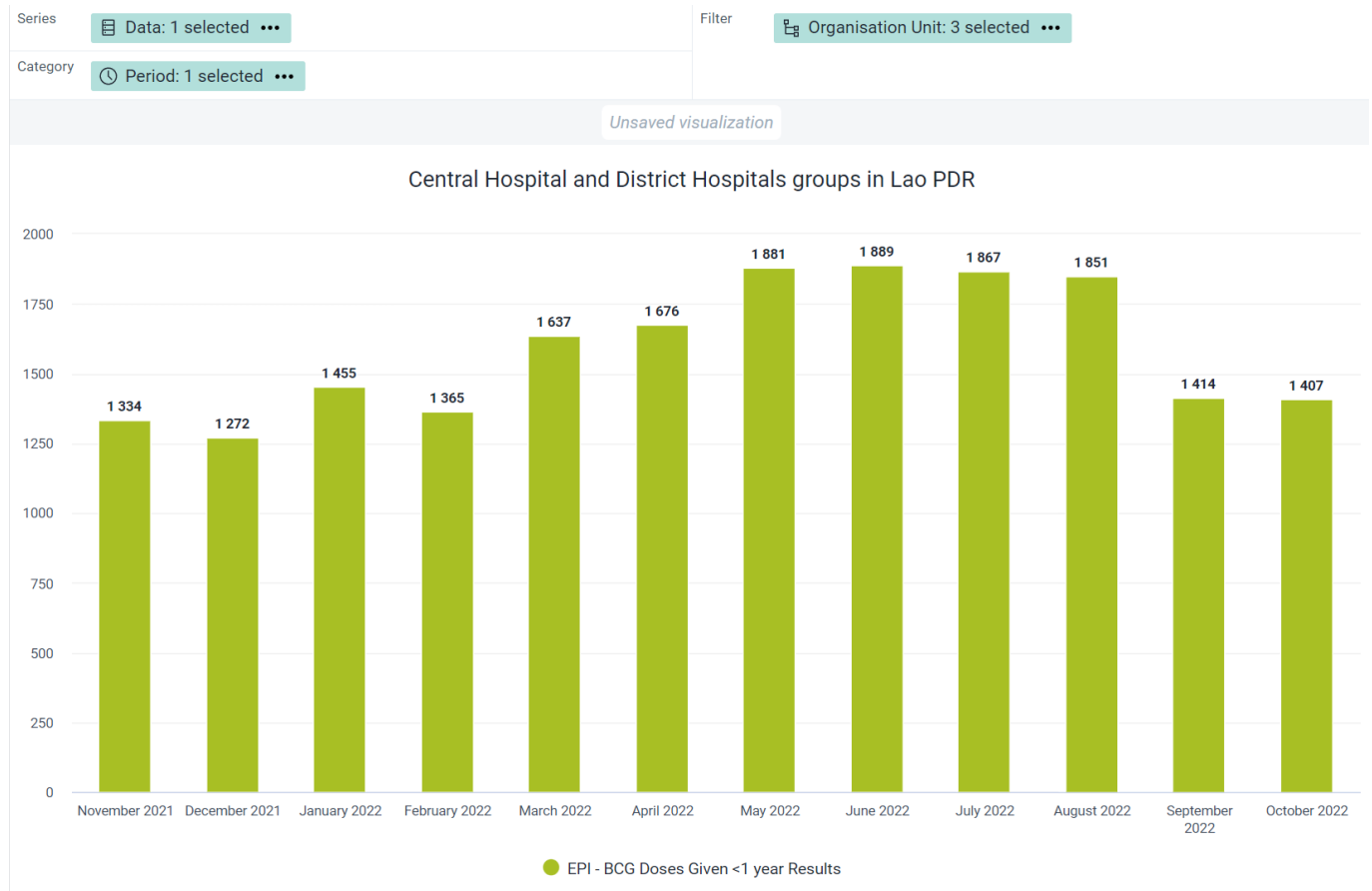
June 2022

July 2022

ven <1 year Results

As an example, you can select Central Hospital and District Hospitals as the org unit groups and update the chart.

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Have a close look at the chart. ***The org unit groups are not added as data dimensions in this scenario*** so we can't disaggregate the data any further; however a filter is being applied to only show data from the org unit groups being shown.

Clear the selection of any org unit groups selected here and just ensure Lao is selected as the org unit

Organisation Unit

☐ User organisation unit

☐ User sub-units

☐ User sub-x2-units

▼

✓

📁

Lao PDR (1)

▶

☐

📁

01 Vientiane Capital

▶

☐

📁

09 Xiangkhouang

▶

☐

📁

10 Vientiane

▶

☐

📁

11 Bolikhamxai

▶

☐

📁

18 Xaisomboun

1 selected - [Deselect all](#)

Level

Group

Select a level ▼

Select a group ▼

Hide

Update

Add in the org unit groups Central Hospital, District Hospitals, Health Centres and Provincial Hospital options from the type org unit group set data dimension

Type

☐ Automatically include all items  
Select all Type items. With this option, new items added in the future will be automatically included.

☒ Manually select items...

Search

☐ Public/Private Mix

➡

Selected Items

☐ Central Hospital

☐ District Hospitals

☐ Health Centres

☐ Provincial Hospital

Alter the chart layout to look like the following

Series

📄 Data: 1 selected ...

Category

🕒 Period: 1 selected ...

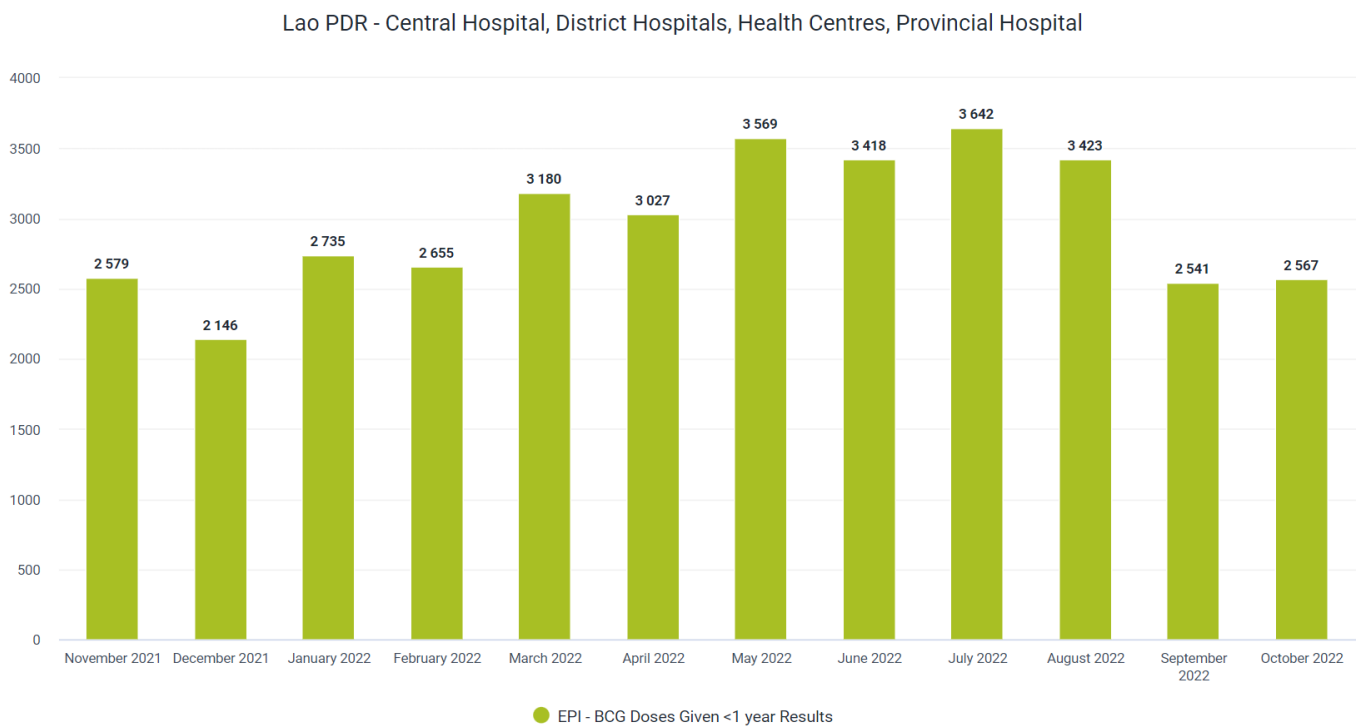
Filter

📄 Organisation Unit: 1 selected ...

📄 Type: 4 selected ...



Then update the chart



Using the org unit group sets we have added, we can filter the chart further. As an example, we can remove some of the org unit types from the filter.

Type

- ☐ Automatically include all items  
Select all Type items. With this option, new items added in the future will be automatically included.
- ☒ Manually select items...

Search

□ District Hospitals

□ Provincial Hospital

□ Public/Private Mix

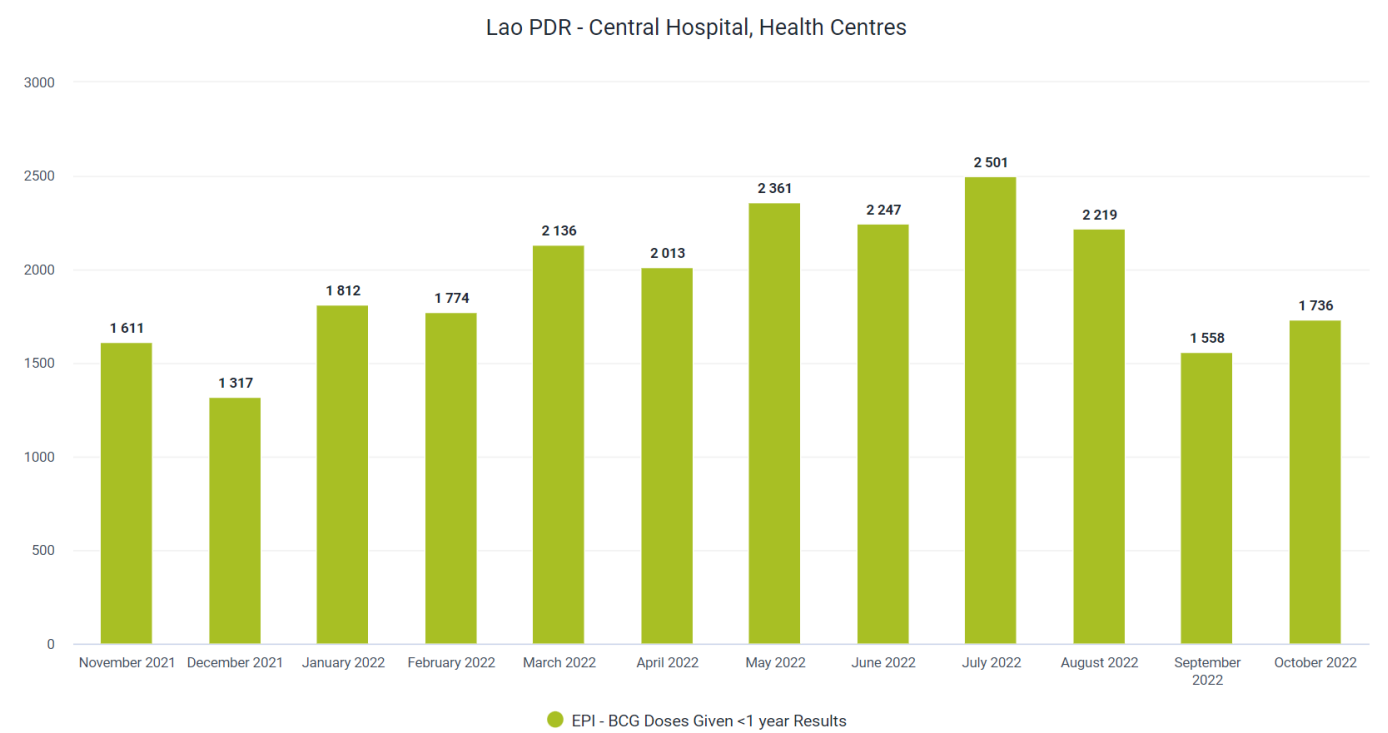
➔

Selected Items

□ Central Hospital

□ Health Centres

Update the chart and you will see the data is refined further



We can also use these dimensions to disaggregate our date in visualizations. Update the layout to the following

Series

Data: 1 selected

Filter

Organisation Unit: 1 selected

Category

Type: 2 selected

Period: 1 selected

And update the visualization



From these examples, we can see there is a lot of flexibility introduced by using org unit groups and group sets in data analysis; and having them configured correctly will prove very useful.

## STOP - Perform Exercise 1


### Show how to manage OU Groups and OU Group Sets in Maintenance

In order to create org unit groups and group sets in DHIS2, we can use the maintenance app. This should be a review for most participants.

The new aspect we will cover is the limitations. We can only manage up to 100 org units at a time when creating an org unit group. In most systems, this is not going to allow us to create the org unit groups that we would like to.

Navigate to maintenance -> organisation unit and create a new organisation unit group.

Try to create a group for all health centres using your initials as a prefix.

 This object will be created with public edit and view rights

Name (\*)

SND\_Health Centre

Short name

SND\_Health Centre

Code

Description

Color

SELECT COLOR

Symbol

Select

Filtering organisation units by name

HC

0 Organisation units selected

- ☐ HC Aoxai
- ☐ HC Banboh
- ☐ HC Banboua
- ☐ HC Banchiang
- ☐ HC Bandoh
- ☐ HC Bandon (Pakngum)
- ☐ HC Bandong (Thaviang)
- ☐ HC Banmai (Keo-oudom)
- ☐ HC Bannong (Phaxai)
- ☐ HC Bantha
- ☐ HC Banthat (Phonhong)
- ☐ HC Banthouay
- ☐ HC Banvang
- ☐ HC Banxai
- ☐ HC Banxoh (Bankouay)
- ☐ HC Bo-o
- ☐ HC Bokoh (Banpho)
- ☐ HC Boungkouang
- ☐ HC Boungphao
- ☐ HC Bounthin (Phiangdang)
- ☐ HC Chansavang (Sikhottabong)

For organisation units within **Lao PDR**

Organisation unit level

SELECT

DESELECT

Organisation unit group

SELECT

DESELECT

SELECT ALL

DESELECT ALL

SAVE

CANCEL

When you go to filter organisation units by name type in "HC." This will filter out health centres. You do not need to count manually, but the problem is **it will only filter out 100 org units**. This may not give us the

result that we want, as we are not able to include all of the health centres we would want to in our org unit group.

At this stage, maintenance is too limited to support us in the operation that we would like to perform unfortunately.

## Review the process of creating OU Groups and Group Sets via the API

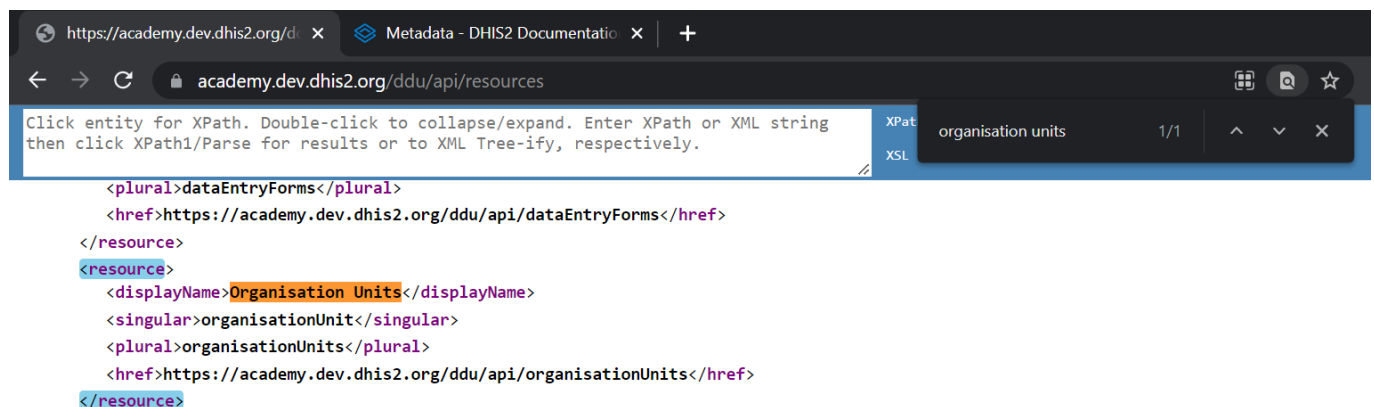
Instead of creating the org unit group via maintenance, we are going to have to create the org unit group by importing it into DHIS2. In order to do this we will have to perform a couple of extra steps

1. We need to retrieve the org unit IDs of the org units we want to add to the org unit group. We will do this via the API.
2. We need to create a CSV file that shows the relationship between org units and the group we want to add them to
3. We can then import this into the DHIS2 instance

## Retrieve the list of org units via the API

Let us review with the group how to access the API very slowly. They should have watched two videos before attending the course, but there is always a chance they didn't!

Navigate to `/api/resources` and find the resource "Organisation Units" by searching for it



From here, we can see where the organisation units are located within the API

```
<resource>
  <displayName>Organisation Units</displayName>
  <singular>organisationUnit</singular>
  <plural>organisationUnits</plural>
  <href>https://academy.dev.dhis2.org/ddu/api/organisationUnits</href>
</resource>
```

Copy this link and open it in your browser (the link may not be exactly the same; it will depend on where the instance URL is located during the academy)

Click entity for XPath. Double-click to collapse/expand. Enter XPath or XML string then click XPath1/Parse for results or to XML Tree-ify, respectively.

XPath1/Parse  
XSL 1.0

```
<metadata xmlns="http://dhis2.org/schema/dxf/2.0">
  <pager>
    <page>1</page>
    <pageCount>59</pageCount>
    <total>2936</total>
    <pageSize>50</pageSize>
    <nextPage>https://academy.dev.dhis2.org/ddu/api/organisationUnits?page=2</nextPage>
  </pager>
  <organisationUnits>
    <organisationUnit id="FV43JisquSm">
      <displayName>0001 CH Mahosot</displayName>
    </organisationUnit>
    <organisationUnit id="zZJMzjivp7q">
      <displayName>0002 CH Mittaphap</displayName>
    </organisationUnit>
    <organisationUnit id="qJzrmj5CTmC">
      <displayName>0003 CH Setthathirath</displayName>
    </organisationUnit>
    <organisationUnit id="OMXmdJKi7m6">
      <displayName>0004 CH Children</displayName>
    </organisationUnit>
    <organisationUnit id="qpS6qE71yKR">
      <displayName>0005 CH Mother & Child</displayName>
    </organisationUnit>
    <organisationUnit id="J41dVMJoZF7">
      <displayName>0101 Chanthabouli</displayName>
    </organisationUnit>
  </organisationUnits>
</metadata>
```

Doing so will list all of the organisation units in the instance, separated by a page break.

Lets add a filter to get the organisation units that start with the prefix "HC" - short for health centre. We can do this by adding the following to the end our DHIS2 link:

```
/api/organisationUnits?filter=name:like:HC
```

This lists all the organisation units but it is still separated by page. Let us turn the paging off

```
/api/organisationUnits?filter=name:like:HC&paging=false
```

We now have our list of org units showing the id and name. This is enough for our purposes as it is all we need for now.

You could explicitly define which properties you want to display as well, for example

```
/api/organisationUnits?filter=name:like:HC&fields=name,id,code&paging=false
```

This is optional for this demonstration.

Now what? We want to use these IDs to create an org unit group, so lets download the list. Some metadata can be downloaded as csv, which can be easier to work with in some cases. As we are constructing a csv file to import the org unit groups, this will come in very handy.

Download the list as a csv by using

```
/api/organisationUnits.csv?filter=name:like:HC&paging=false
```

This will give us a csv file on our own computer with the id and name of the organisation units we have filtered via the API

organisationUnits (1).csv - LibreOffice Calc

File Edit View Insert Format Styles Sheet Data Tools Window Help		
Liberation Sans 10 pt B I U A		
C8 fx Σ =		
	A	B
1	id	displayName
2	dcxBXealizJ	HC Aoxai
3	FetTXbIFgdY	HC Banboh
4	HytsvNGpvJ	HC Banboua
5	Ts895CIpTT	HC Banchiang
6	zog68JusYjC	HC Bandoh
7	GZBgYYxIXP	HC Bandong (Thaviang)
8	kVN1WJX1ID	HC Bandon (Pakngum)

## STOP - Perform Exercise 2

Create org unit groups via maintenance

Before we create the CSV file for import, lets create our org unit group. We are going to do this because, while we can import the org unit group seperately, it is a bit easier to have created the org unit group already

before importing org units to it. Sometimes, a combination of using the maintenance app plus advanced operations can be helpful, as is the case here.

Navigate to maintenance -> organisation unit and create a new organisation unit group.

This time, create a group for all health centres using your initials as a prefix; however do not select any org units for the group yet. Save this group when you are done.

← Organisation unit group ⓘ

This object will be created with public edit and view rights

Name (\*)

SND\_Health Centres

Short name

SND\_HC

Code

Description

Color

SELECT COLOR

Symbol

Select

Filtering organisation units by name

0 Organisation units selected

☐ Lao PDR

- ☐ 01 Vientiane Capital
- ☐ 09 Xiangkhouang
- ☐ 10 Vientiane
- ☐ 11 Bolikhamxai
- ☐ 18 Xaisomboun

For organisation units within

Lao PDR

Organisation unit level

SELECT

DESELECT

Organisation unit group

SELECT

DESELECT

SELECT ALL

DESELECT ALL

SAVE

CANCEL

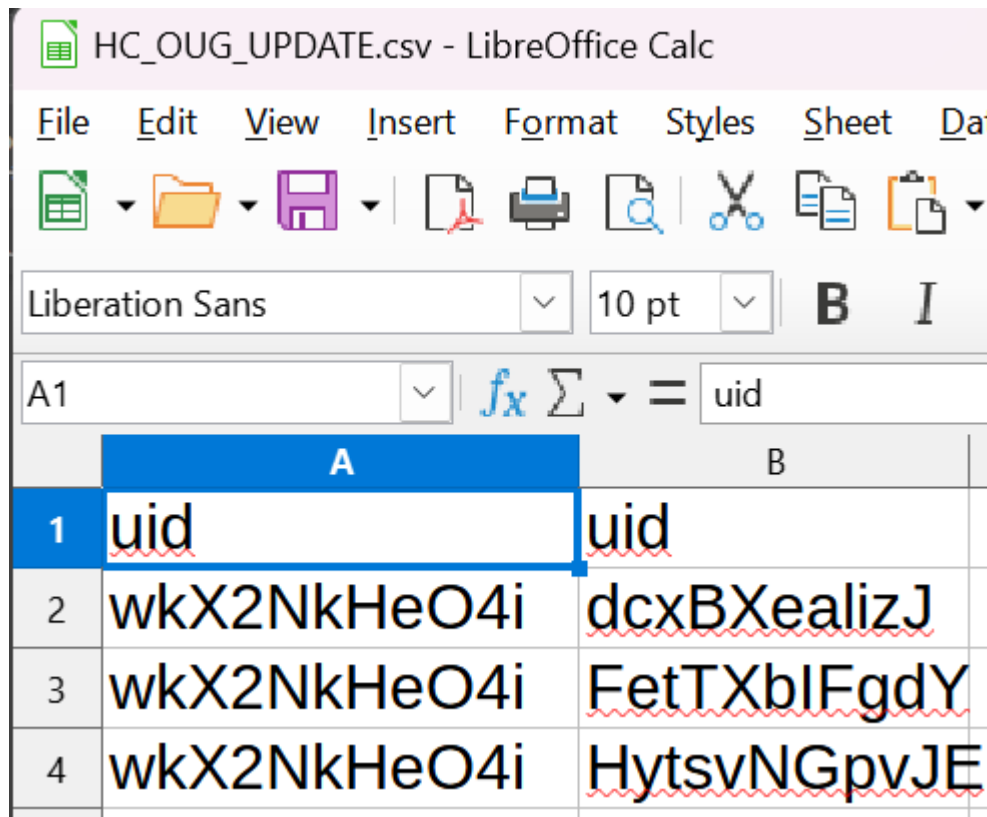
## Review the format of the orgunit group import file

Adding org units to an org unit group via a csv file is very simple. We just need a csv file with two columns:

- Column 1 : The ID of the org unit group you are importing to
- Column 2 : The ID of the org unit you are adding to the org unit group

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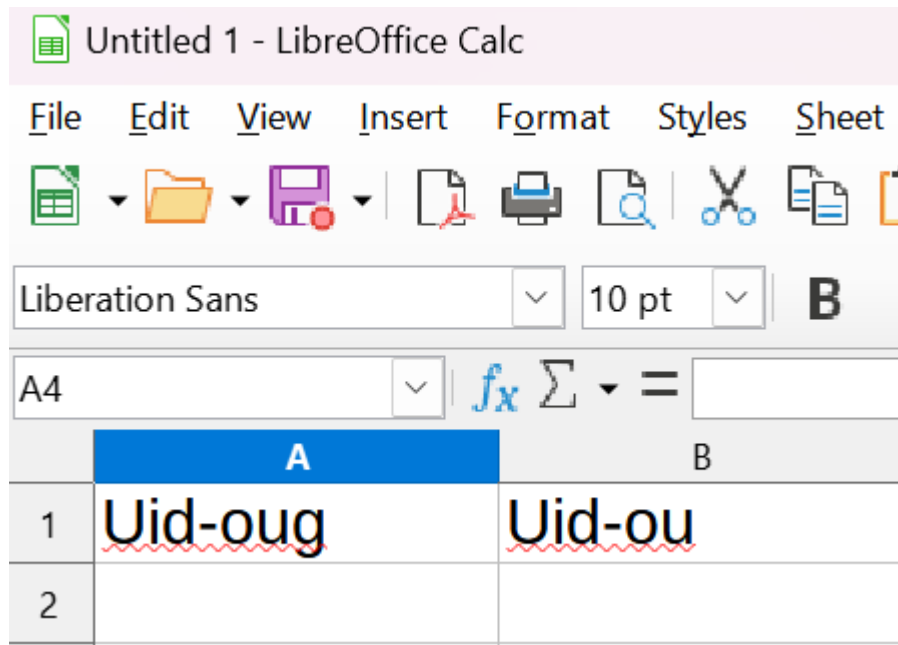
Thats it! It will look something like this (you can retrieve examples files via the google drive for this academy)



	A	B
1	uid	uid
2	wkX2NkHeO4i	dcxBXealizJ
3	wkX2NkHeO4i	FetTXbIFgdY
4	wkX2NkHeO4i	HytsvNGpvJE

See how the ID in the first column is repeated? That is because all the org units in column 2 are being imported to the same org unit group.

Open up Excel/Libreoffice/etc. to start creating the import file. It can look like this to start



	A	B
1	Uid-oug	Uid-ou
2		

Go to the csv file of the HC org units you downloaded via the API and copy all of the IDs you have retrieved into the second column. Paste this into the csv file you have created for importing the org unit groups.



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Liberation Sans 10 pt **B** *I*

A11 =

	A	B
1	Uid-oug	Uid-ou
2		dcxBXealizJ
3		FetTXbIFgdY
4		HytsvNGpvJE

Retrieve the ID of the org unit group by selecting the org unit group you made in maintenance and selecting show details.

SND\_Health Centres

Public view/edit November 10, 2023

Show details

Translate

A small box will appear where you can see the ID of the org unit group you have selected.

**Short name**

SND\_HC

**Created**

Sat Nov 19 2022 05:01:11 GMT-0500  
(Eastern Standard Time)

**Last updated**

Sat Nov 19 2022 05:01:11 GMT-0500  
(Eastern Standard Time)

**Id**

Edu7MSpT8wt

**Api URL**

<https://academy.dev.dhis2.org/ddu/api/29/organisationUnitGroups/Edu7MSpT8wt>

Copy this ID and place it into the first column of your spreadsheet and fill in the remaining cells within the column.

Untitled 1 - LibreOffice Calc

File Edit View Insert Format Styles Sheet Da

Liberation Sans 10 pt **B** *I*

D5

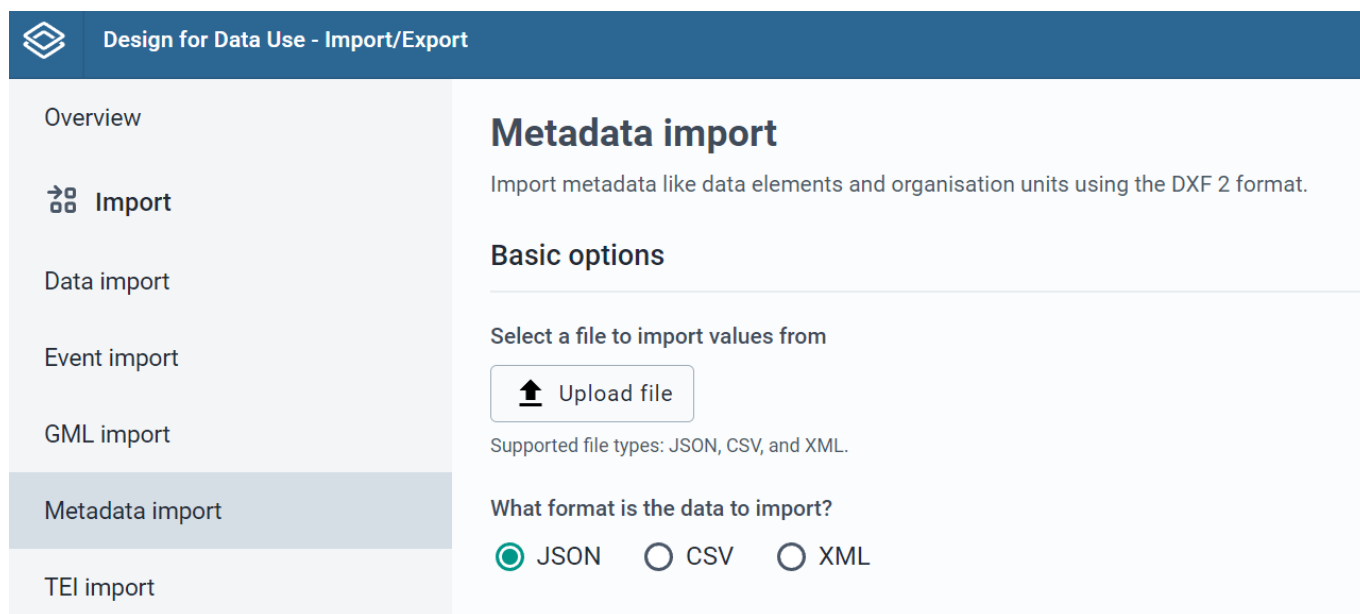
	A	B
1	Uid-oug	Uid-ou
2	Edu7MSpT8wt	dcxBXealizJ
3	Edu7MSpT8wt	FetTXblFgdY
4	Edu7MSpT8wt	HytsvNGpvJE
5	Edu7MSpT8wt	Ts895CIpTTn

Make sure you save the file as a csv using the UTF-8 format.

### STOP - Perform Exercise 3



Import the org unit groups into DHIS2 via the Import/Export app

We can now import this file into DHIS2. Navigate to the import-export app then select metadata import from the side menu




The screenshot shows the 'Design for Data Use - Import/Export' interface. On the left is a sidebar menu with options: Overview, Import (highlighted with a plus icon), Data import, Event import, GML import, Metadata import (highlighted with a blue bar), and TEI import. The main content area is titled 'Metadata import' and includes the subtitle 'Import metadata like data elements and organisation units using the DXF 2 format.' Below this is a section 'Basic options' with the heading 'Select a file to import values from'. It features an 'Upload file' button with an upward arrow icon. A note states 'Supported file types: JSON, CSV, and XML.' Further down, it asks 'What format is the data to import?' with three radio button options: JSON (selected), CSV, and XML.

Upload the file you have made by selecting "Upload file" and finding the file you have made. Then make the following changes

 Design for Data Use - Import/Export 

Overview

 Import


Data import

Event import

GML import

**Metadata import**

TEI import

 Export

Data export

Event export

Metadata dependency export

Metadata export

TEI export


Job overview


## Metadata import

Import metadata like data elements and organisation units using the DXF 2 format.

### Basic options

Select a file to import values from

 Upload file

 SND\_HC.csv [Remove](#)  
Supported file types: JSON, CSV, and XML.


What format is the data to import?

☐ JSON ☒ CSV ☐ XML

Is the first row a header row?

☒ First row is header  
A header row will be ignored during import

Class key

ORGANISATION\_UNIT\_GROUP\_MEMBERSHIP 

Identifier

☒ UID ☐ Code  
Identifier scheme to use for reference matching

Import report mode

☒ **Errors** Only include reports for objects that have errors

☐ **Full** Reports for all objects imported

☐ **Debug** Reports for all objects imported along with their names (if available)

Controls what should be reported after the import is done

Import strategy

☒ **Merge** Import new values and update existing

☐ **Append** Import new values only

☐ **Update** Only update existing values, ignore new values

☐ **Delete** Remove values included in uploaded file

Atomic mode

☒ Do not import ☐ Import  
Whether to import objects even if some references do not exist

Merge mode

☒ **Merge** Only overwrite the old property if the new property value is not-null

☐ **Replace** Overwrite regardless of whether the new property value is null

Strategy to take when merging two objects

Make sure to provide a brief explanation as you select these options.

Perform a dry run and make sure everything looks ok.

If it does, import the file by selecting "start import." It should look like this if its all ok

Job summary

SND\_HC.csv - 2022-11-19 00:23:36

Completed

Summary				
Created	Deleted	Ignored	Updated	Total
0	0	0	1	1

Details by type					
Type	Created	Deleted	Ignored	Updated	Total
OrganisationUnitGroup	0	0	0	1	1

Log		
Time	Message	ID
2022-11-19 05:23:36	Initiated metadataImport	init
2022-11-19 05:23:36	(health_admin) Import:Start	dqnpd10WUqN
2022-11-19 05:23:36	(health_admin) Updating 1 object(s) of type OrganisationUnitGroup	dqnpd10WUqN
2022-11-19 05:23:36	(health_admin) Import:Done took 0.113301 sec.	dqnpd10WUqN

Navigate to your org unit group set in maintenance and open it up. You should see that the org units have been assigned to the group


**STOP - Perform Exercise 4**

To finalize this process, you would normally have to create at least one more org unit group; however the steps you follow are the same as what we have shown now. Instead, we will use the org unit group you just made plus existing groups in order to create an **org unit group set**. Within the group set, exclusivity is a key principle. This means an org unit should not belong to more than one org unit group within an org unit group set. Also, each of the org units in the entire system should be within one of the org unit groups belonging to

the group set as well. This is so when we perform analysis with these org unit groups and group sets, we are not excluding org units from our totals.

Navigate to org unit group set and create a new one within maintenance (maintenance -> organisation unit -> add new org unit group set).

Add in the following groups, using the health centre group you created rather than the existing one.

 This object will be created with public edit and view rights

Name (\*)  
SND\_Type

Short name (\*)  
SND\_Type

Code

Description

☐ Compulsory

☒ Data dimension

☐ Include subhierarchy in analytics

Organisation unit groups ⊕ ↺

Search available/selected items

Available Items	Actions	Selected Items
Health Centres	<div>→</div> <div>←</div>	SND_Health Centres
Inpatient		Central Hospital
Lao Districts		District Hospitals
Lao Provinces		Provincial Hospital
Outpatient		Public/Private Mix
Public		

**ASSIGN ALL 6 →** **← REMOVE ALL 5**

**SAVE** **CANCEL**

Explain the fields as you create this org unit group. Save it when you are finished.

## STOP - Perform Exercise 5

Explain the connection of data dimensions to analytics and use the created groups in visualizer

Note that in order to use this org unit group set in analysis, analytics will need to be run and "data dimension" should be ticked within the org unit group set. If this is not done, it can not be used as a dimension in analysis. Some caution should also be exercised not to have an overwhelming amount of dimensions for the user, as that will make it very hard for them to find what they need.

Make sure everyone created their org unit group before running analytics. Run analytics, then you can have them use the org unit groups and group sets to make a chart like our first example.

### Chart type

- Stacked column

### Data

- Data Type : Indicator
- Indicator group: Immunization
- Indicator name: EPI - BCG Doses Given < 1 Results

### Period

- Last 12 months

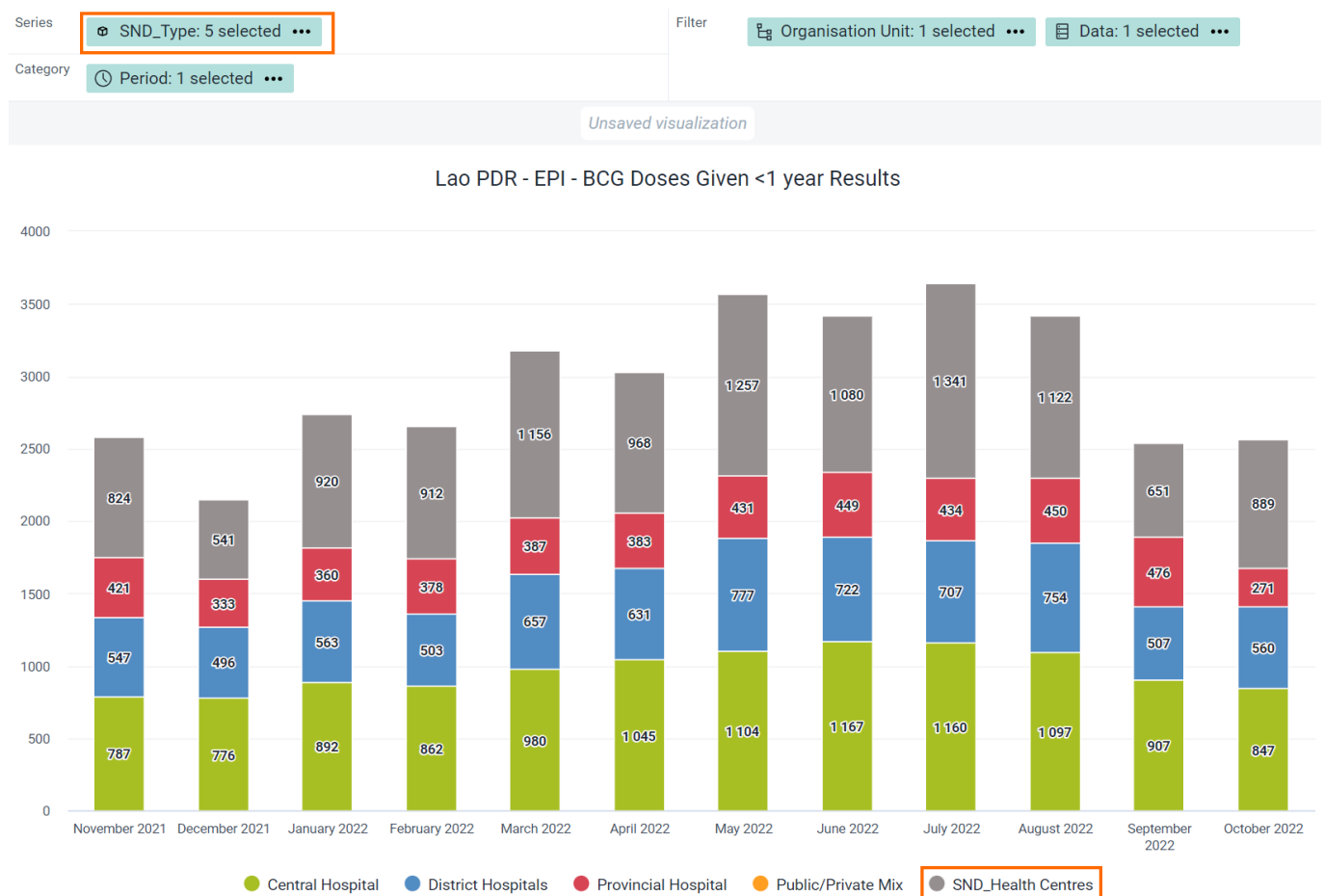
### Organisation unit

- Lao PDR

### Organisation unit group set

- the one you just made

You can now use your groups for selecting org units and your group sets as dimensions to disaggregate your data!





**STOP - Perform Exercise 6**