

# Trainer's Guide to Legends

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## What is this guide?

This guide is a support document for DHIS2 Academy trainers for the session "Legends" 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. Describe what legends are
2. Use legends in analysis apps
3. Configure legends in maintenance
4. Associate legends with indicators and data elements

## Time Requirements

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

## Background

## Preparations

## Best Practices

## Quick Guide

1. Review the legends presentation
2. Show how to use legends in data visualizer
  1. Open the chart HIV - Test positivity and PLHIV virologically suppressed
    1. Review the legend options
    2. Apply a single legend to the entire visualization
  2. Convert the chart to a pivot table
    1. Review the legend options for the table
    2. Discuss the difference between using legends for background vs. text colour

3. Discuss when certain legend options may not be suitable (ie. very light colours for the text colour)
3. Review which visualizations can not use legends

#### STOP - Perform Exercise 1

1. Show how to use legends in maps
  1. From the EMIS - Primary school dashboard, open the map "Gross Enrolment in LBS, this year"
  2. Discuss the legend
  3. Edit the thematic layer and go to the style panel
  4. Discuss the legend options available in this panel
  5. Apply an automatic colour scheme to the map
  6. Discuss the limitations of the automatically generated legend compared to a purpose-built legend
  7. Reset the map and compare this with the map using the automatically generated legend

#### STOP - Perform Exercise 2

1. Show how to create legends
2. Create the legend for gross enrollment. As you are creating the legend, make sure to discuss that legend values must be overlapping along with how DHIS2 treats the start and end values when classifying data
  1. 0-40 (color : red #FA0000)
  2. 40-80 (color : yellow or #FAC027)
  3. 80-120 (color : green or #058304)
  4. 120-1000 (color : gray or #D1CBC1)
3. Review how to add a legend to a data element or indicator in maintenance
4. Use the legend to produce a chart or map
  - Visualization : Bar Chart/pivot table/thematic map
  - Data Type : Indicator
  - Indicator group : EMIS - Enrolment
  - Indicator : EMIS - Enrolment in primary
  - Period : This Year
  - Org unit : The Gambia Districts
  - Legend : Predefined legend - yourinitials\_Gross Enrolment

#### STOP - Perform Exercise 3

## Live Demo step by step

Review the presentation on legends

![[Link]]

Show how to use legends in data visualizer

Navigate to data visualizer and open the chart "HIV - Test positivity and PLHIV virologically suppressed"



This chart has a couple interesting properties. We can see there are two data items selected, and that each of these data items has a legend applied to it. This is actually possible only when the data items themselves are associated with a legend directly. We will discuss how to configure this shortly.

We also see that there is a legend panel to the right of the chart. This allows us to more quickly interpret what the colours on the chart are identifying.

Navigate to options -> legend in order to review the legends panel

## Options

Data

Legend

Axes

Series

Style

Limit values

☒ Use legend for chart colors

Legend type

☒ Use pre-defined legend per data item

☐ Select a single legend for the entire visualization

☒ Show legend key

Hide

Update

Here we can see the options for the legends that are being applied. While we can select legends to apply to the chart, the chart right now is using legends that are automatically applied to the two indicators that have been selected.

We can change this so we actually select the legend we apply to the chart, but note this will restrict us to applying a single legend to the entire chart.

Options

DataLegendAxesSeriesStyleLimit values

☒ Use legend for chart colors

Legend type

☐ Use pre-defined legend per data item

☒ Select a single legend for the entire visualization

Legend

HIV 2

▼

☒ Show legend key

Hide

Update

If we update the chart, we will see the following

Lao PDR

Month	HIV - HIV test positivity rate (%)	HIV - PLHIV tested that are virologically suppressed (%)
November 2021	55.8	89.5
December 2021	59.3	88.7
January 2022	61	89.3
February 2022	62.2	90.1
March 2022	63.7	93.6
April 2022	61.5	95.2
May 2022	63.6	98.1
June 2022	65.3	98.9
July 2022	64.7	98.1
August 2022	61	98.7
September 2022	65.9	99.4
October 2022	63	98.6

Legend:

- Below 60% 0-<60
- 60% to 75% 60-<75
- 75% to 89% 75-<90
- 90 to 100% 90-<100
- Greater then 100% 100-<150

Legend key:

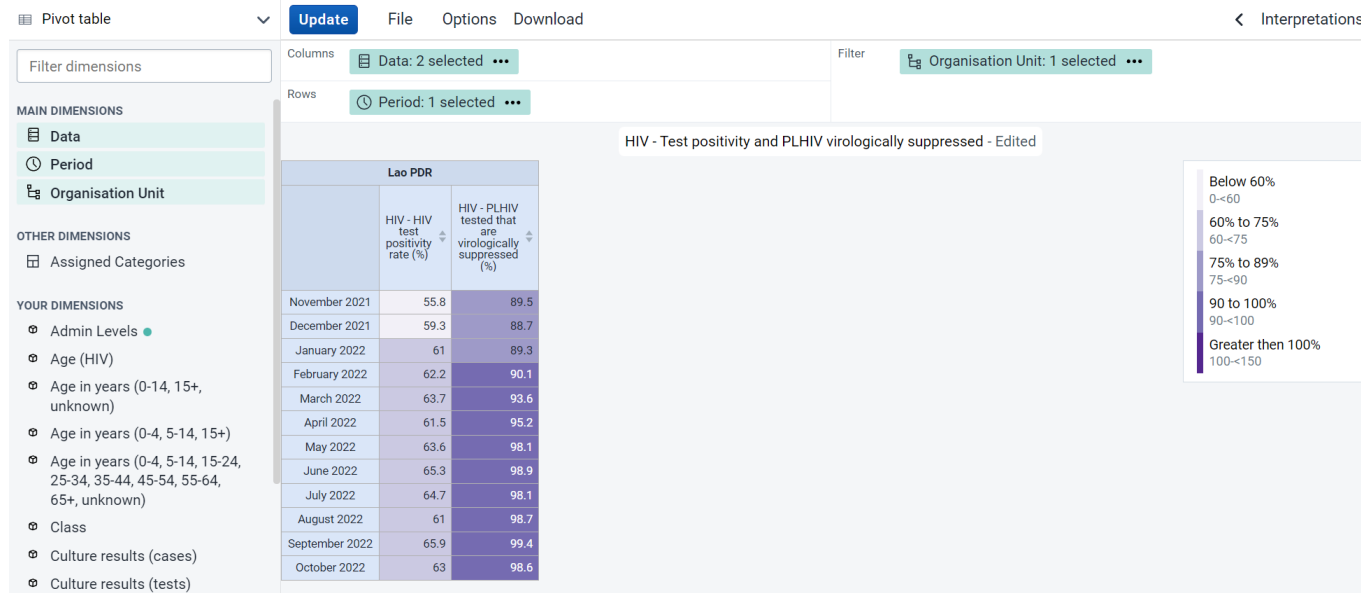
- HIV - HIV test positivity rate (%)
- HIV - PLHIV tested that are virologically suppressed (%)

Now both data items are using the same legend; it not nearly as distinct as the other version of the chart was but may be preferable depending on the situation.

The nice thing about these legends is that they can be used in both charts, as well as pivot table.

We could alter the chart to a pivot table and update the visualization.

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The properties of the legends that we have applied carry over and colour the background cells of our table.

Navigate to options -> legend in order to review the legends with the table open

## Options

Data
Legend
Series
Style
Limit values
Parameters

☒ Use legend for chart colors

**Legend style**

☒ Legend changes background color
☐ Legend changes text color

**Legend type**

☐ Use pre-defined legend per data item
☒ Select a single legend for the entire visualization

Legend

HIV 2

☒ Show legend key

Hide
Update

We will notice that there is a couple of extra options here located under the heading "Legend style." In tables, we can use legends to colour either the background or the text/values themselves.

We can modify some of the legend options

- Change style to text color
- Change type to pre-defined

Options

Data

Legend

Series

Style

Limit values

Parameters

☒ Use legend for chart colors

Legend style

☐ Legend changes background color

☒ Legend changes text color

Legend type

☒ Use pre-defined legend per data item

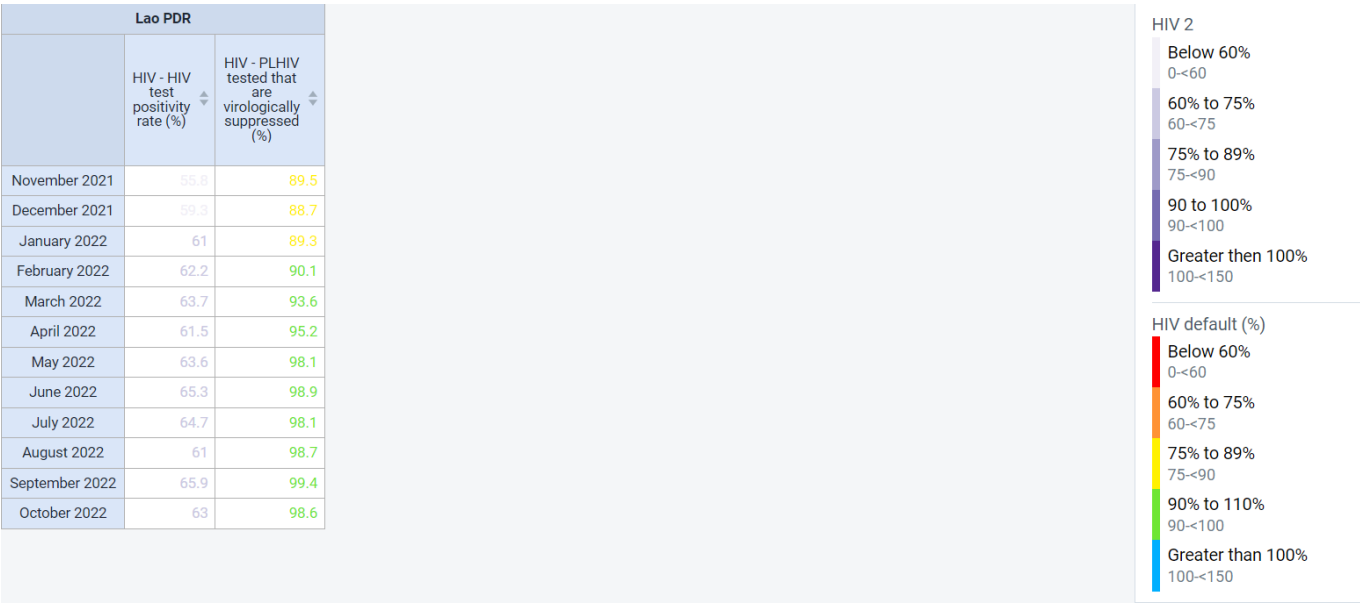
☐ Select a single legend for the entire visualization

☒ Show legend key

Hide

Update

If we update some of the options then update our table; we can see this doesn't exactly have the intended affect as the values become quite difficult to read against the white background of the table.



When using this feature, we do need to be a bit careful how we present our values or else it will become difficult to read.

Modify the options again and update the table (change the style to background color)

Options

Data

Legend

Series

Style

Limit values

Parameters

☒ Use legend for chart colors

Legend style

☒ Legend changes background color

☐ Legend changes text color

Legend type

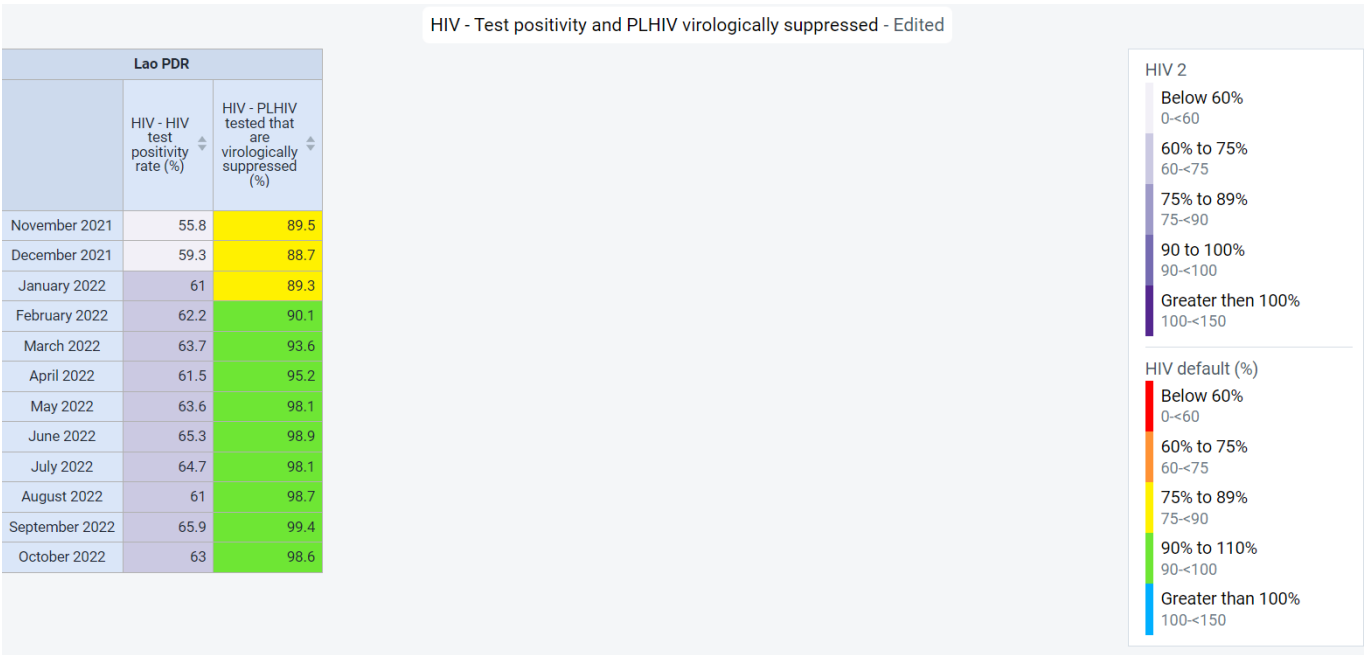
☒ Use pre-defined legend per data item

☐ Select a single legend for the entire visualization

☒ Show legend key

Hide

Update



We can see this is a lot more clear and seperates our data more easily.

Note that there are some limitations to using legends in data visualizer, as not all output types support them.

Visualizations that CAN use legends include:

- pivot table
- column
- gauge
- single value

Visualizations that CAN NOT use legends include:

- stacked column

- stacked bar
- line
- area
- stacked area
- pie
- radar
- year-over-year (line and column)
- scatter

Your best option to modify the colouring of these items is to use the color set tab in the options panel of data visualizer

## Options

Data
Axes
Series
Style
Limit values

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☒ Auto generated
☐ None
☐ Custom

Size Regular
Position Center
● B I

Chart subtitle
☒ Auto generated
☐ None
☐ Custom

Size Small
Position Center
● B I

---

Color set
☒ Default
☐ Basic
☐ Extended
☐ Bright
☐ Dark
☐ Gray
☐ Color blind
☐ Patterns

Hide

Update

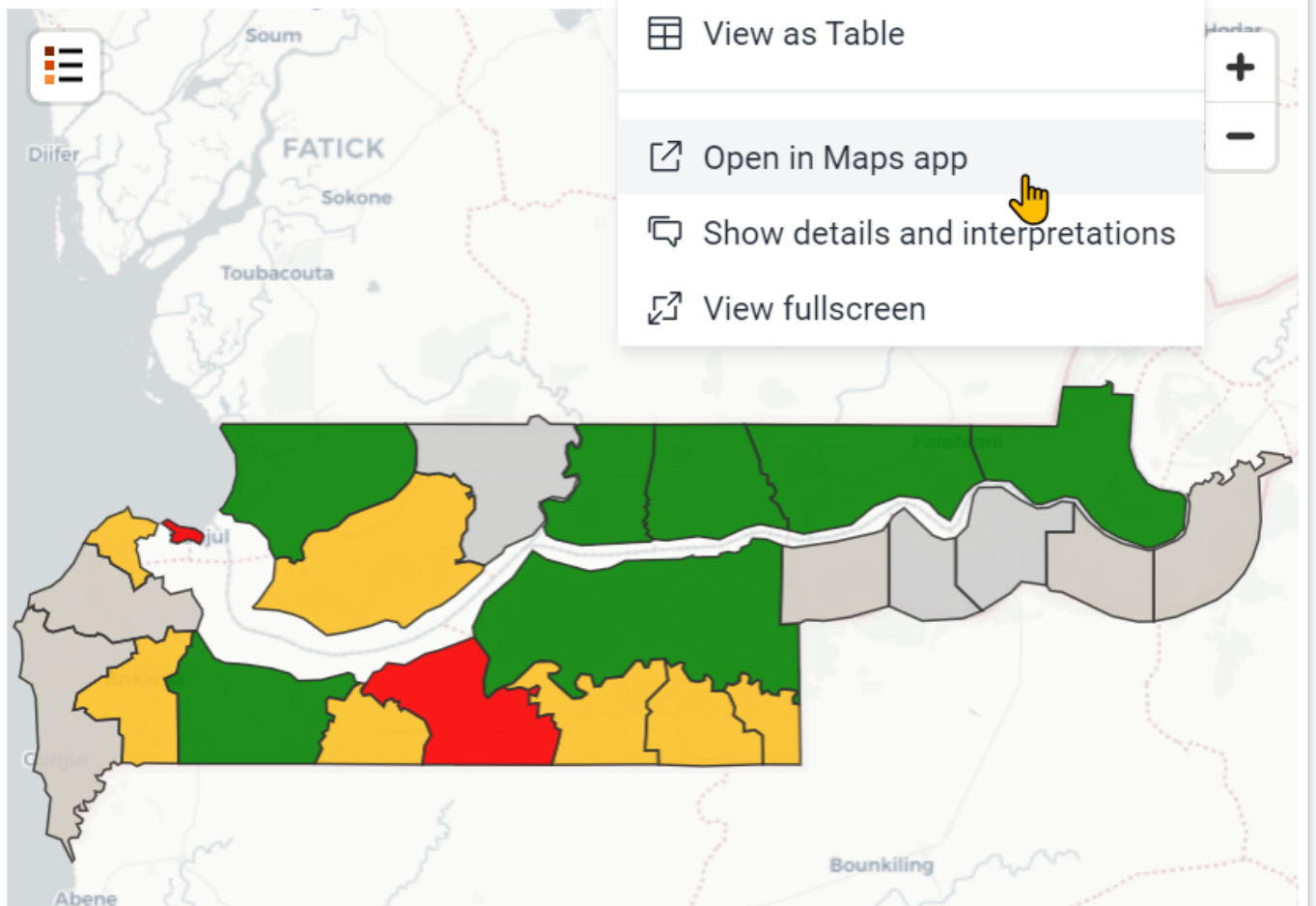
## STOP - Perform Exercise 1

Show to to use legends in maps

From the EMIS - Primary school dashboard, open the map "Gross Enrolment in LBS, this year"



## Gross Enrolment in LBS, this year



While all thematic maps have a legend applied to it, in this case a custom legend has been used to display the indicator data on this map.

Edit the thematic layer and navigate to the style panel

## Edit thematic layer

Data

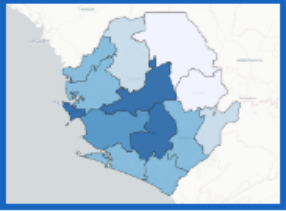
Period

Org Units

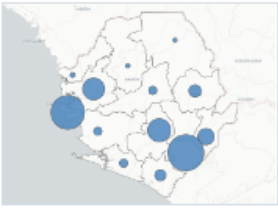
Filter

Style

Choropleth



Bubble map



☐ Automatic color legend

☒ Predefined color legend

Legend set

EMIS - Gross Enrolment

☒ Show no data

Color

Low radius

5

High radius

30

☐ Labels

Cancel

Update layer

Here we can see the option for "pre-defined color legend" has been selected, along with the legend "EMIS - Gross Enrolment."

In maps, we can also use automatic colour legends if we want to, which will produce a legend based on the parameters we set. Select this option to review it.

## Edit thematic layer

Data

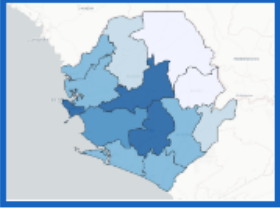
Period

Org Units

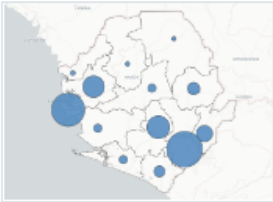
Filter

Style

Choropleth



Bubble map



Low radius

5

High radius

30

☐ Labels

☒ Automatic color legend


☐ Predefined color legend

Classification

Equal intervals

Classes

5



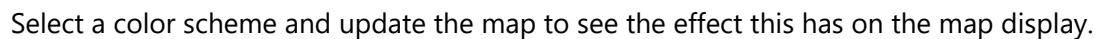
☒ Show no data

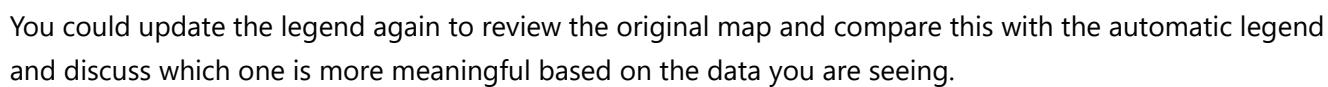
Color

Cancel

Update layer

In this case, we can define the number of legend classifications (classes) that we want and select a colour scheme that will be automatically applied to our data.





## Edit thematic layer

Data

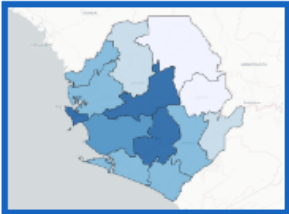
Period

Org Units

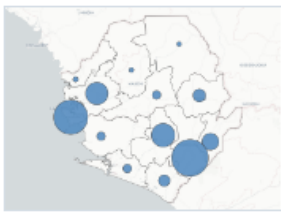
Filter

Style

Choropleth



Bubble map



☐ Automatic color legend

☒ Predefined color legend

Legend set

EMIS - Gross Enrolment

☒ Show no data

Color

☐ Labels

Low radius

High radius

5

30

Cancel

Update layer

### STOP - Perform Exercise 2

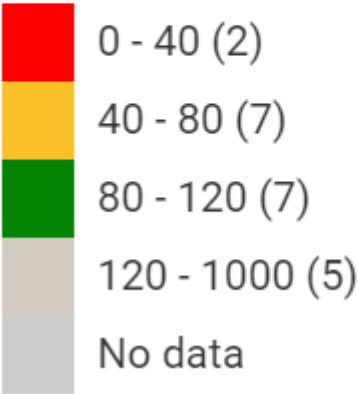
Show how to create legends

In order to create a legend navigate to maintenance - > other -> legend

This will display the list of all of the available legends in the system that are shared with your user. Let us recreate the legend for EMIS - Gross Enrolment. As a reminder, this is the legend

# EMIS - Gross Enrolment in primary

This year



Explain the fields that are available in the Legend configuration screen. Note that continuous legends are supposed to end and start on the same value, for example 0-50 and 50-80. The GIS/Maps app automatically takes care of this. Do not try to do this yourself by setting legends to for example 0-50 and 51-80. This will cause a usually unwanted gap in your legend set.

This is the screen to create a new legend

← Legend ?

This object will be created with public edit and view rights

Name (\*)

Code

Start value

End value

Number of legend items

0

100

5

CREATE LEGEND ITEMS

Name

Start value

End value

Color

SAVE

CANCEL

Give the legend a name and code

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This object will be created with public edit and view rights

Name (\*)

SND\_Gross Enrolment

Code

SND\_GE

The start and end value is theoretically 0 - 100; but we already saw that this data has some values over 100%

We have 4 categories divided our legend as follows

- 0-40
- 40-80
- 80-120
- 120-1000

We can see that our legends are overlapping. This must be the case. It is not very intuitive, but DHIS2 will interpret these overlaps as such

- 0-39.9
- 40-70.9
- 80-119.9
- 120-999.9

You can either use the pre-defined color schemes available to generate your legend, select your own colors, or modify a pre-defined color scheme as is necessary.

Let us generate the items to see its effect then alter the legend to our liking.

Enter a start value, end value and number of legend items

Start value	End value	Number of legend items	
0	1000	4	
<input type="button" value="CREATE LEGEND ITEMS"/>			
Name	Start value	End value	Color

If we search the color palette, we won't see the exact same colour scheme that was there in the other legend; but let us just select one for now.

After those inputs are completed, select "create legend items" to generate the legend.



Start value

0

End value

1000

Number of legend items

4

CREATE LEGEND ITEMS

It will generate a legend, but this won't be quite what we want

Name	Start value	End value	Color	
0 - 250	0	250	#edf8fb	⋮
250 - 500	250	500	#b3cde3	⋮
500 - 750	500	750	#8c96c6	⋮
750 - 1000	750	1000	#88419d	⋮

We can edit each legend item by selection the action button followed by edit

Name	Start value	End value	Color	
0 - 250	0	250	#edf8fb	⋮
250 - 500	250	500	#b3cde3	⋮
				⋮

Edit

Delete

Edit the 1st item to follow the cateorisation we defined

# Edit legend item

Name

0-40

Start value

0

End value

40

#edf8fb

Click on the colour in order to edit the colour. The colour uses what is called a hex code. There are many resources to look up hex colours and their complements (ie. <http://www.color-hex.com/> ; <https://colorbrewer2.org/>) which can be helpful when constructing your own legends.

We can either select the color red or enter the hex code #FA0000 to get the red colour.

## Edit legend item

Name

0-40

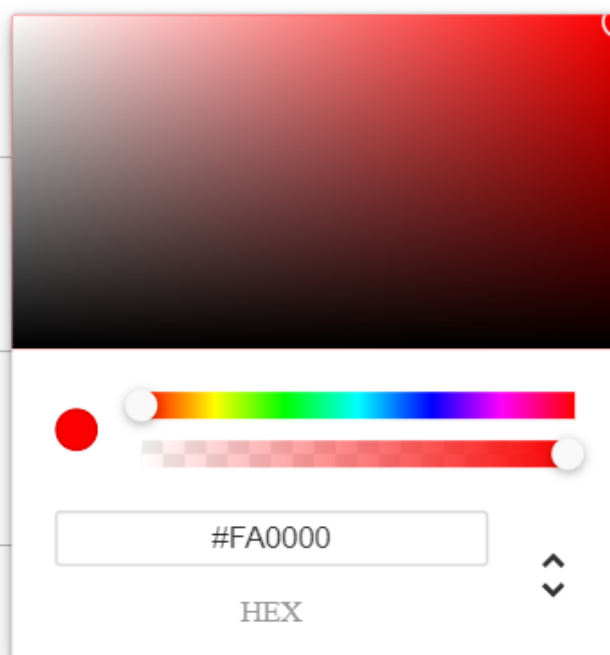
Start value

0

End value

40

#FA0000



When done hit OK. You may see a message "Gaps in the legends are not allowed!" This is just a warning that you should not have gaps in the numbers within the legend you create. This should resolve itself once we complete the legend.

Repeat these steps for the items

- 40-80 (color : yellow or #FAC027)
- 80-120 (color : green or #058304)
- 120-1000 (color : gray or #D1CBC1)

Once you have finished it should like like this

Name (\*)

SND\_EMIS - Gross Enrolment

Code

SND\_GE

Start value

0

End value

100

Number of legend items

4

CREATE LEGEND ITEMS

Name	Start value	End value	Color	
0 - 40	0	40	#FA0000	⋮
40 - 80	40	80	#FAC027	⋮
80 - 120	80	120	#058304	⋮
120 - 1000	120	1000	#D1CBC1	⋮

SAVE

CANCEL

Select save to save your legend.

Show how to have pre-defined legends associated with data elements and indicators

Now that we have created a legend, we are able to associate it with data elements and indicators as well as using it analysis. Navigate to maintenance -> indicator and find the indicator "EMIS - Gross Enrolment in primary." If you open it up you will see a legends box where you can add your legend to the indicator. If you do this, the indicator will maintain an association with that legend and automatically be used in analysis when legends are enabled unless other options are selected for it. This process is identical for both data elements and indicators.

Legends

⊕

↺

Search available/selected items

Average stockout days

Completeness and timeliness of reporting

Consistency between variables (>=)

Consistency between variables (>)

EMIS - PTR

EPI coverage

EPI dropout rates

HIV 2

HIV default (%)

Immunization dropout

Immunization performance

→

←

EMIS - Gross Enrolment

↑

↓

ASSIGN ALL 32 →

← REMOVE ALL 1

Use your legend in analysis

You should now be able to apply this legend in maps or visualizer. Select the app of your choice, and apply the legend you have made using the inputs via either data visualizer options or the style tab on a thematic

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map.

- Visualization : Bar Chart/pivot table/thematic map
- Data Type : Indicator
- Indicator group : EMIS - Enrolment
- Indicator : EMIS - Enrolment in primary
- Period : This Year
- Org unit : The Gambia Districts
- Legend : Predefined legend - yourinitials\_Gross Enrolment

### **STOP - Perform Exercise 3**