

# Learner's Guide to Program Indicator Analysis

## What is this guide?

This guide contains all exercises and detailed steps to perform them related to program indicator analysis session for the academy. Please perform each of the exercises when prompted to by your instructors.

## Learning objectives for this session

- 1. Describe what a program indicator is
- 2. Describe how program indicators are derived
- 3. Describe the difference between event and enrollment program indicators
- 4. Understand how program indicators can fill tracker data analysis gaps present in other visualization tools
- 5. Create visualizations using program indicators derived from tracker data




## Exercise 1

Create a pivot table in data visualizer using a program indicator from the Malaria case notification, investigation and response program

Create a simple pivot table using a single program indicator in data visualizer. It will have the following inputs:

- Visualization Type : Pivot Table
- Data
  - Data Type : Program Indicator
  - Program : Malaria case notification, investigation and response
  - Program Indicator : MAL- CS - Cases detected through PCD
- Period : Last 6 months
- Org Unit : User sub-units

The layout can look like this

|         |   |        |
|---------|---|--------|
| Columns | <div><div> Data: 1 selected ...</div><div> Period: 1 selected ...</div></div> | Filter |
| Rows    | <div><div> Organisation Unit: 1 selected ...</div></div>   |        |

The table should look like this (the months shown may differ as its relative to the current date)

|                      | MAL-CS- Cases detected through PCD |              |               |            |            |          |
|----------------------|------------------------------------|--------------|---------------|------------|------------|----------|
|                      | December 2023                      | January 2024 | February 2024 | March 2024 | April 2024 | May 2024 |
| 01 Vientiane Capital |                                    | 1            |               | 3          |            | 1        |
| 02 Phongsali         | 2                                  | 2            | 1             | 1          | 3          |          |
| 03 Louangnamtha      |                                    |              |               | 1          |            |          |
| 04 Oudomxai          | 3                                  | 1            |               | 1          |            |          |
| 05 Bokeo             |                                    | 2            |               |            | 1          |          |
| 06 Louangphabang     |                                    | 1            |               | 4          |            |          |
| 07 Houaphan          | 2                                  | 1            | 2             |            | 2          |          |
| 08 Xainyabouli       | 1                                  | 3            | 1             |            | 2          | 2        |
| 09 Xiangkhouang      |                                    |              |               | 1          |            | 2        |
| 10 Vientiane         | 3                                  |              | 3             |            | 1          |          |
| 11 Bolikhamxai       | 1                                  |              | 2             | 1          |            | 2        |
| 12 Khammouan         | 2                                  | 2            | 3             | 1          |            | 2        |
| 13 Savannakhet       | 4                                  | 4            | 4             | 1          |            | 2        |
| 14 Salavan           | 1                                  | 2            | 1             | 2          | 2          | 2        |
| 15 Xekong            |                                    |              |               |            |            | 1        |
| 16 Champasak         | 2                                  | 1            | 4             | 1          |            |          |
| 17 Attapu            |                                    |              |               | 1          |            | 4        |
| 18 Xaisomboun        |                                    | 4            |               |            | 1          |          |

This is a program indicator that is pulling its information from the data element "Detection setting." This data element consist of an option set. This program indicator is therefore aggregating the events which meet the criteria for PCD.

Create a chart using event indicators from different program stages from the Malaria Case notification program

Create a line chart with the following inputs:

- Visualization Type : Line Chart
- Data
  - Data Type : Program Indicators
  - Program : Malaria case notification program
  - Program Indicators :
    - MAL-CS- Confirmed malaria cases
    - MAL-CS- Indigenous (Local)
- Period : This Year

- Org Unit : User sub-units

In order to create this chart, ensure your layout looks like this:

Series

Data: 2 selected ...

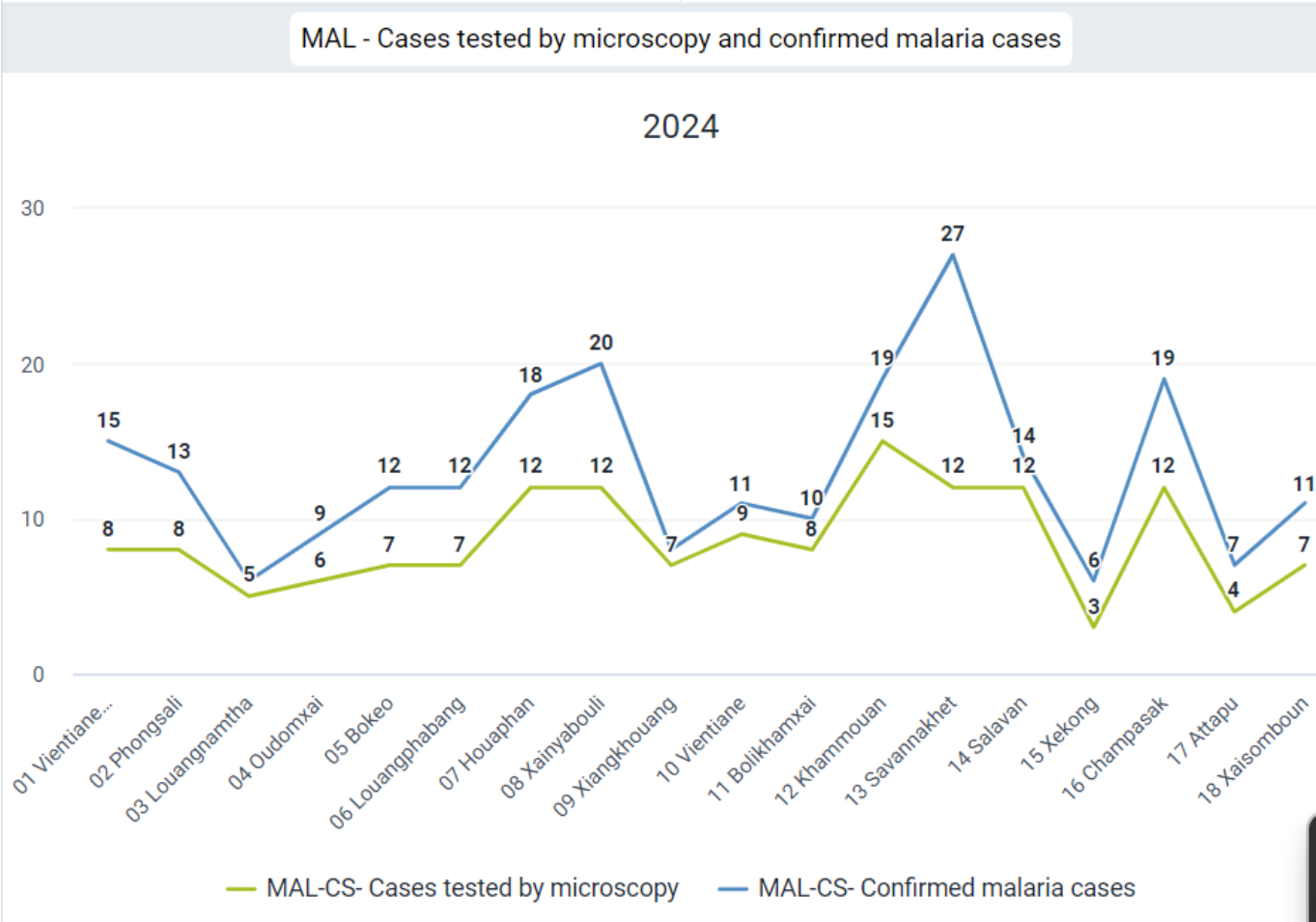
Filter

Period: 1 selected ...

Category

Organisation unit: 1 selected ...

The chart should look like this



This chart uses event type indicators, including combining data from Stage 1 (Diagnostic and Treatment), where it gets the data on whether or not a confirmed Malaria case, and Stage 4(Case outcome), where it gets the information on whether the case is Indigenous (local).

It is not possible to create this type of output using event visualizer (you can not pull data from multiple stages using event visualizer).

You can convert this chart to a pivot table so they can see that you can also create a pivot table using data from multiple stages, an option not possible in event visualizer/reports.

| 2024                 |                                |                           |
|----------------------|--------------------------------|---------------------------|
|                      | MAL-CS-Confirmed malaria cases | MAL-CS-Indigenous (Local) |
| 01 Vientiane Capital | 15                             | 6                         |
| 02 Phongsali         | 13                             | 5                         |
| 03 Louangnamtha      | 6                              | 4                         |
| 04 Oudomxai          | 9                              | 1                         |
| 05 Bokeo             | 12                             | 7                         |
| 06 Louangphabang     | 12                             | 2                         |
| 07 Houaphan          | 18                             | 8                         |
| 08 Xainyabouli       | 20                             | 5                         |
| 09 Xiangkhouang      | 8                              | 3                         |
| 10 Vientiane         | 11                             | 3                         |
| 11 Bolikhamxai       | 10                             | 7                         |
| 12 Khammouan         | 19                             | 7                         |
| 13 Savannakhet       | 27                             | 8                         |
| 14 Salavan           | 14                             | 8                         |
| 15 Xekong            | 6                              | 1                         |
| 16 Champasak         | 19                             | 5                         |
| 17 Attapu            | 7                              | 2                         |
| 18 Xaisomboun        | 11                             | 4                         |

Lastly, you can open this table as a map to show you can now use the thematic layer. The thematic layer opens up a number of additional options when working with your data (we will go over an example where we create a map from scratch using a program indicator in the thematic layer during the next part of this session).

Do this by selecting "Open as Map" from the visualization selection.

Pivot table

Update

File

Options

Download

Pivot table

View data and indicators in a manipulatable table.

Column

Compare sizes of related elements vertically. Recommend period as filter.

Stacked column

Compare parts of a whole against related elements vertically. Recommend data or org. unit as series.

Bar

Compare sizes of related elements horizontally. Recommend period as filter.

Stacked bar

Compare parts of a whole against related elements horizontally. Recommend data or org. unit as series.

Line

Track or compare changes over time. Recommend period as category.

Area

Track or compare changes over time. Recommend period as category.

Stacked area

Track or compare parts of a whole over time. Recommend data as series and period as category.

Pie

Compare parts of a whole at a single point in time. Recommend period as filter.

Radar

Compare several items against multiple variables.

Gauge

Compare a percentage indicator against a 100% scale. Recommend period as filter.

Year over year (line)

Compare changes over time between multiple time periods.

Year over year (column)

Compare changes over time between multiple time periods.

Single value

Display a single value. Recommend relative period to show latest data.

Scatter

View the relationship between two data items at a place or time. Recommended for finding outliers.

Open as Map

Visually plot data on a world map. Data elements use separate map layers. 🖱️

When you open this as a map, you will have to select one of the data items used in the chart/table as your primary layer (you can select all but since they are all displaying data at the same OU level, you will in effect only see data from the top layer). Select one of the event indicators (MAL-CS-Confirmed malaria cases) using data from multiple stages to demonstrate that this type of data can be mapped.

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# Open as map

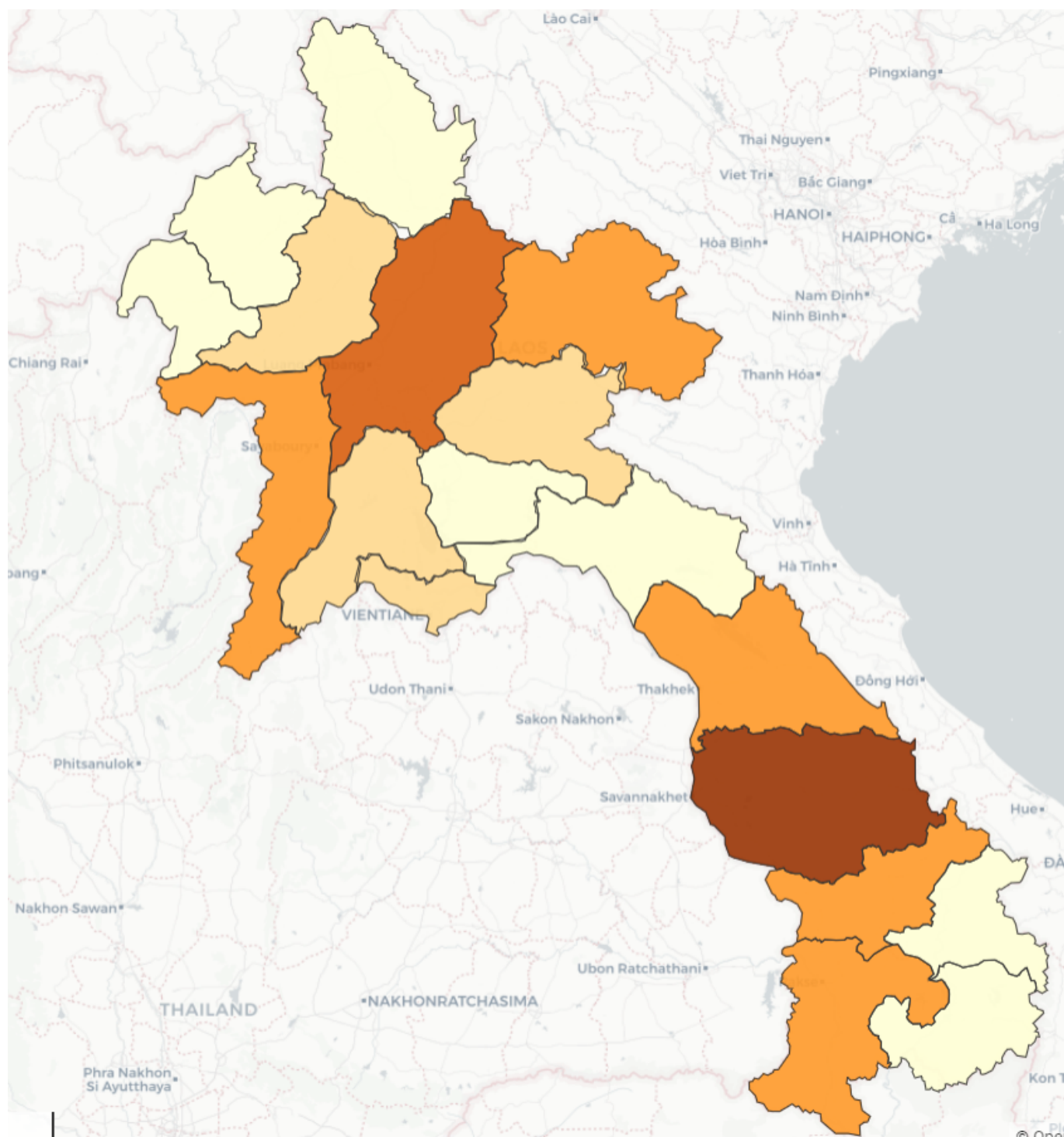
This chart/table contains 2 data items. Choose which items you want to import from the list below. Each data item will be created as a map layer.

## Data items

MAL-CS- Confirmed mal... X

☒ MAL-CS- Confirmed malaria cases

☐ MAL-CS- Indigenous (Local)



## Exercise 2

Create a map using a program indicator from the Case-Based Surveillance program

Create a map using the thematic layer with the following inputs:

- Layer Type : Thematic
- Data:
  - Item Type : Program Indicators
  - Program : Malaris case notification program
  - Program Indicator : MAL-CS-Female
  - Leave the aggregation type as default
- Period:

- Period Type : Relative
  - Period : Last 6 months
  - Display Periods : Timeline
- Org Units : User sub-units
- Filter : None
- Style : Bubble Map, Single Color Legend

Data Tab

Edit thematic layer

DataPeriodOrg UnitsFilterStyle

Item type

Program indicators

Program

Malaria Case notification, investigation and response

Program indicator

MAL-CS- Female

Aggregation type

By data element

☐ Only show completed events

Cancel

Update layer

Period Tab



# Edit thematic layer

- Data

Period

Org Units

Filter

Style

Period type

Relative

▼

Period

Last 6 months

▼

Display periods

- ☐ Single (aggregate)
- ☒ Timeline
- ☐ Split map views

Cancel

Update layer

## Org Units Tab











### Edit thematic layer

**Data**      **Period**      **Org Units**      **Filter**      **Style**


---


☐ User organisation unit    
 ☐ User sub-units    
 ☐ User sub-x2-units

- ▼ ☒  Lao PDR
  - ▶ ☐  01 Vientiane Capital
  - ▶ ☐  02 Phongsali
  - ▶ ☐  03 Louangnamtha
  - ▶ ☐  04 Oudomxai
  - ▶ ☐  05 Bokeo
  - ▶ ☐  06 Louangphabang
  - ▶ ☐  07 Houaphan
  - ▶ ☐  08 Xainyabouli
  - ▶ ☐  09 Viengkhouang

Province 

Select a group 

Selected: 1 org unit and 1 level    Deselect all

## Style Tab

## Edit thematic layer

Data

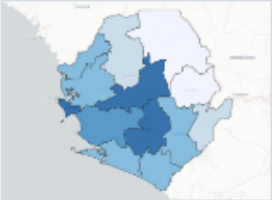
Period

Org Units

Filter

Style

Choropleth

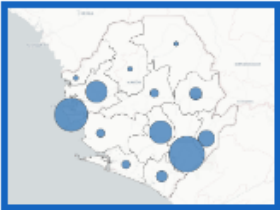


Low radius

5

☐ Labels

Bubble map



High radius

30

☐ Automatic color legend

☐ Predefined color legend

☒ Single color legend

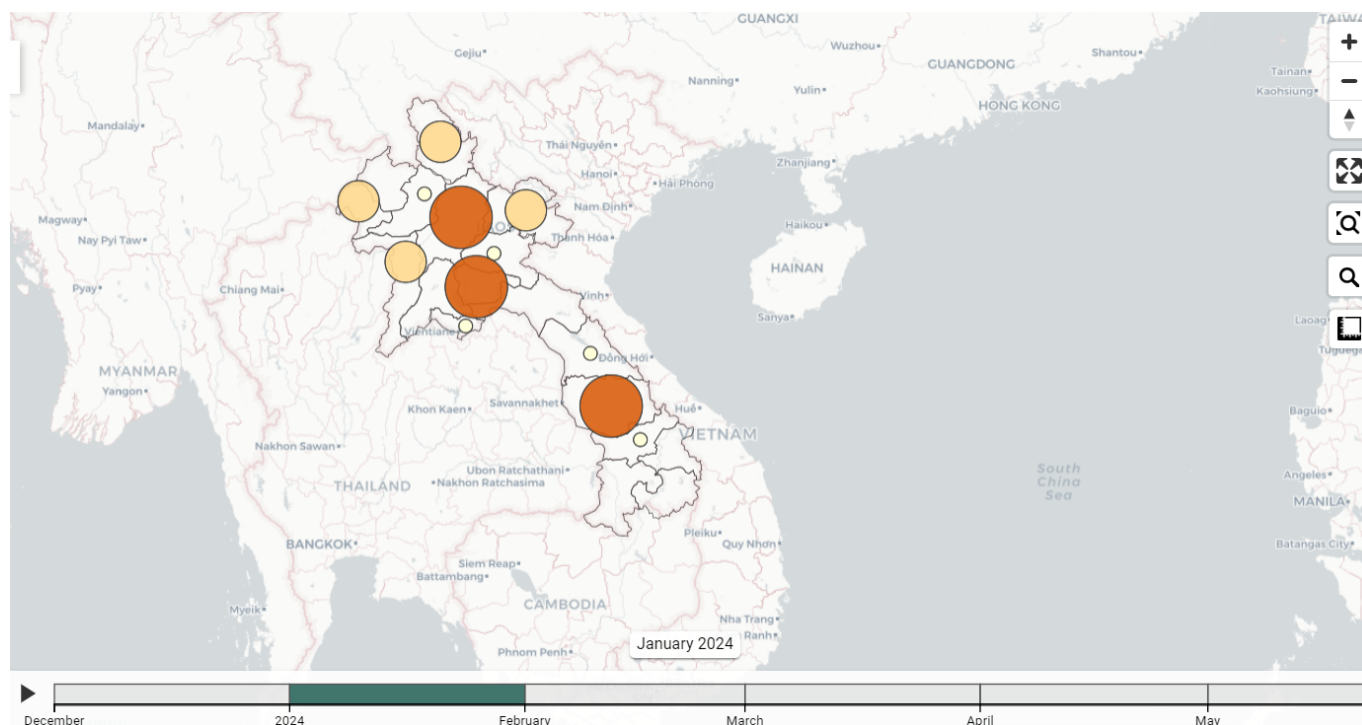
Color

☐ Show no data

Cancel

Update layer

The map should look like this (note that the months displayed may be different as the period is relative to the current date)



You can play back the timeline map. You will see over time the monthly values are increasing or decreasing (the map is showing the total number per month, not the cumulative number; cumulative can be shown however the indicator needs to be configured differently).

## Exercise 3

In the line listing app, create a line list, enrollment report showing the number of relationships by TEI from the Case-based Surveillance Program

Program indicators can be used in event reports, line listing and event visualizer as well as within data visualizer and maps, depending on how they are defined. This is because one program indicator can work on two levels:

1. Through creating a summary output for a single TEI
2. Through creating a summary output for all TEIs within a period/org unit

We will use these principles using two program indicators that use "Average" as the aggregation type.

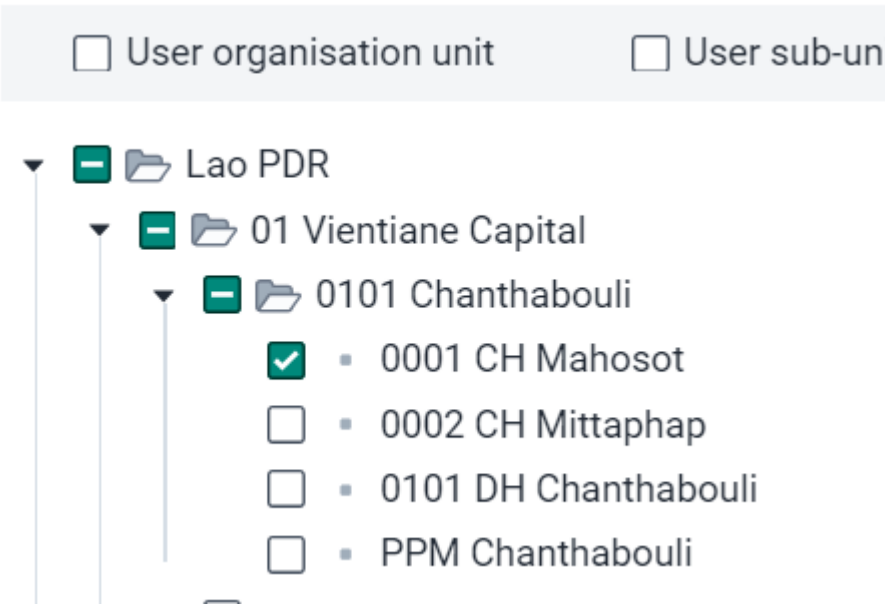
1. Contact tracing program
  1. Summarizes the total number of contacts a single TEI has through the relationships that have been created in tracker capture
  2. Summarizes the average number of contacts for all TEIs based on their enrollment date and the specified period and organisation unit
2. Case based surveillance - days between onset and consultation
  1. Summarizes the total number of days between onset of symptoms and their initial consultation date for single TEI
  2. Summarizes the average number of days between onset of symptoms and initial consultation date for all TEIs based on their enrollment date and the specified period and organisation unit

Create a line list table with the following inputs:

- Input Type : Enrollment

- Program Dimesions
  - Program : Case-based Surveillance
  - Program Dimensions
    - Org Unit : 0001 CH Mahosot
    - Time Dimension : Date of notification (this year)
    - Attributes : Given name, Family name
    - Data Element: Other Sign/Symptoms
    - Program Indicator: Contacts

Note : here is the location of the org unit in case you are unfamiliar with this hierarchy (01 Vientiane Capital -> 0101 Chanthabouli -> 0001 CH Mahosot)



The table should look like this

| Organisation unit name | GEN - Given name | GEN - Family name | CBS - Other signs/symptoms | Contacts | Date of notification | CBS - Days between onset and consultation |
|------------------------|------------------|-------------------|----------------------------|----------|----------------------|---|
| 0001 CH Mahosot        | ALbert           | kouassi           | No                         | 3        | 2024-05-23           | 3   |
| 0001 CH Mahosot        | James            | Dawson            | Yes                        | 2        | 2024-04-24           | 4   |
| 0001 CH Mahosot        | Mnemonic         | Jonny             | Yes                        | 2        | 2024-04-12           | 4   |
| 0001 CH Mahosot        | Temple           | Shirley           | No                         | 2        | 2024-05-13           | 4   |
| 0001 CH Mahosot        |                  |                   | Not answered               | 2        | 2024-05-03           | 0   |

Sort the table by the "Contacts" column. This is showing the number of contacts each person has had as defined through adding relationships via tracker capture.

**Add the program indicator "CBS - Days between onset and consultation" to your report and update your line list**

From the program dimesions tab, add the PI "CBS - Days between onset and consultation"

↻ Update

File

View

Options

Download

PROGRAM DIMENSIONS

🔍 Organisation unit

📌 Program status

📅 Date of notification

PROGRAM DATA DIMENSIONS

CBS - Days between onset and c...

Type All types

🔍 CBS - Days between onset and consultation

Columns

🔍 Organisation unit 1 ...

🔍 GEN - Given name all ...

🔍 GEN - Family name all ...

🔍 Contacts all ...

🔍 CBS - Days between onset and consultation all ...

🔍

Organisation unit name

GEN - Given name

GEN - Family name

0001 CH Mahosot

ALbert

kouassi

0001 CH Mahosot

James

Dawson

0001 CH Mahosot

Mnemonic

Jonny

0001 CH Mahosot

Temple

Shirley

0001 CH Mahosot

Set the Condition : Days between onset and consultation >= 0

To set the condition select the "Days between onset and consultation" program indicator. From here, you can define the condition.

CBS - Days between onset and consultation

Show items that meet the following conditions for this data item:

greater than or equal to (≥) 0 Remove

Add another condition

Hide

Update

Update your table.

| Organisation unit name | GEN - Given name | GEN - Family name | CBS - Other signs/symptoms | Contacts | Date of notification | CBS - Days between onset and consultation |
|------------------------|------------------|-------------------|----------------------------|----------|----------------------|---|
| 0001 CH Mahosot        | ALbert           | kouassi           | No                         | 3        | 2024-05-23           | 3   |
| 0001 CH Mahosot        | James            | Dawson            | Yes                        | 2        | 2024-04-24           | 4   |
| 0001 CH Mahosot        | Mnemonic         | Jonny             | Yes                        | 2        | 2024-04-12           | 4   |
| 0001 CH Mahosot        | Temple           | Shirley           | No                         | 2        | 2024-05-13           | 4   |
| 0001 CH Mahosot        |                  |                   | Not answered               | 2        | 2024-05-03           | 0   |

We now have an additional program indicator which is showing the number of days between each person's onset of symptoms and their initial consultation.

Create a bar chart showing the average days between onset and consultation across all level 3 OUs in VC

In data visualizer, create a chart with the following inputs:

- Visualization Type : Bar Chart

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- Data
  - Data Type : Program Indicator
  - Program : Case-based Surveillance Program
  - Program Indicator : CBS - Days between onset and consultation
- Period : This Year
- Org Unit : Level 3 (District) OUs within Vientiane Capital

Note : here is the location of the org unit in case you are unfamiliar with this hierarchy

# Organisation unit

☐ User organisation unit

☐ User sub-units

- Lao PDR

▶

☒

01 Vientiane Capital

▶

☐

02 Phongsali

▶

☐

03 Louangnamtha

▶

☐

04 Oudomxai

▶

☐

05 Bokeo

▶

☐

06 Louangphabang

▶

☐

07 Houaphan

▶

☐

08 Xainyabouli

▶

☐

09 Xiangkhouang

▶

☐

10 Vientiane

▶

☐

11 Bolikhamxai

▶

☐

12 Khammouan

▶

☐

13 Savannakhet

▶

☐

14 Salavan

▶

☐

15 Xekong

District ✕




Selected: 1 org unit and 1 level

Deselect all

And here is the layout that should be used for the chart




Series

 Data: 1 selected

...

Category

 Organisation Unit: 2 selected

...

Filter

 Period: 1 selected

...

You can remove the empty categories to clean up the chart.

Go to options -> data -> hide empty categories -> all

# Options

Data

Legend

Axes

Series

Style

Limit values

## Display

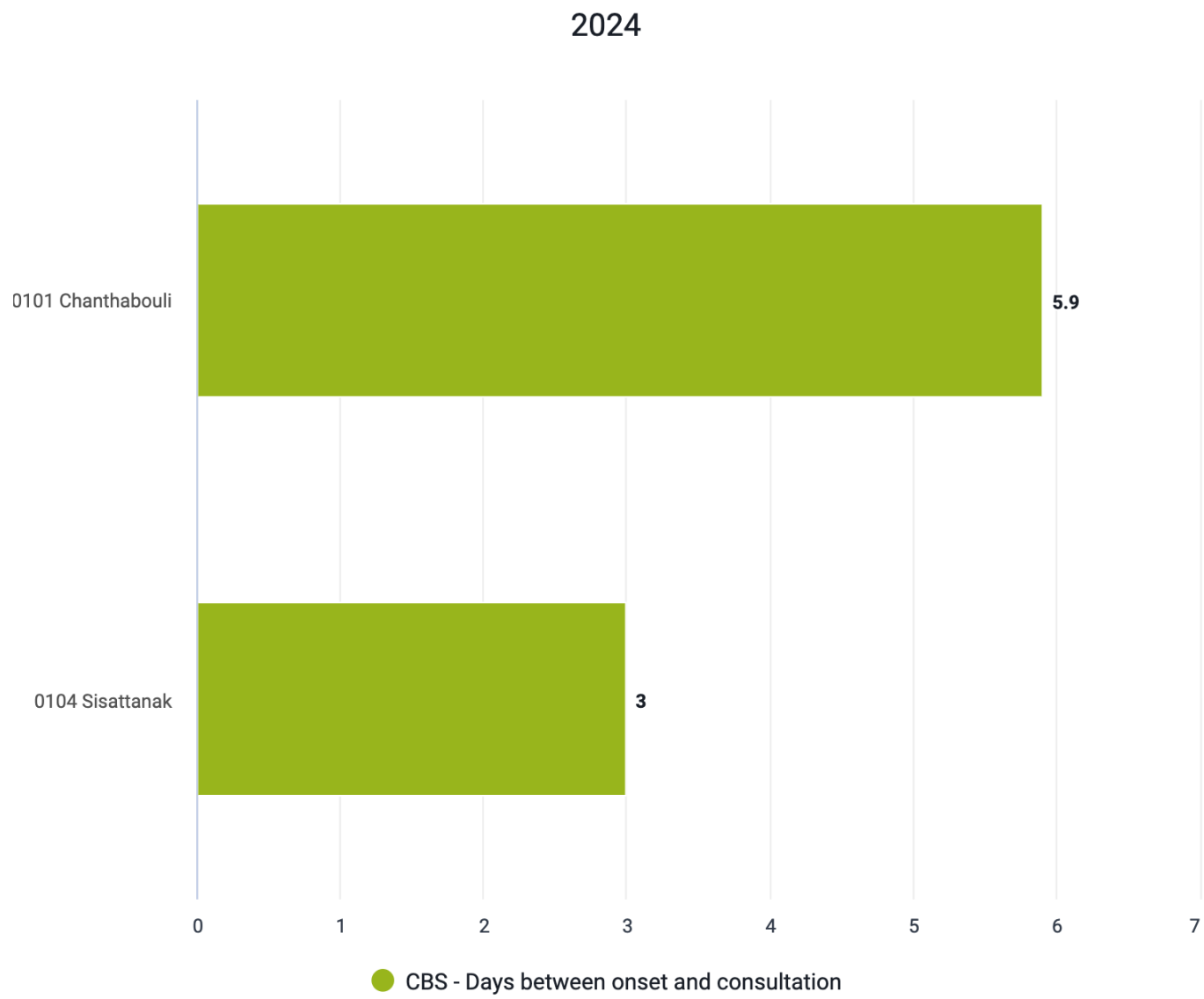
☐ Cumulative values

☒ Hide empty categories

All

▼

The chart should look like this after you update it.



When we review this chart, we no longer see values that are representative of one individual person, but using the same indicator we are able to take an average for all individuals within the organisation units and period that we have selected.

**Summary on these two indicators**

From these two program indicator examples, we can see that program indicators can have multiple functions at both the individual and aggregate level. These various functions can be quite useful depending on what information you are looking to review within your system. There are many other advanced possibilities that are available when using these types of indicators. The best source of this information will be the documentation.