What: Data Elements and Indicators

Introduction to DHIS2

My notes

Narration

Introduction

Data elements

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In this video, we will discuss the second DHIS2 building block: the data elements.

Introduction

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By now, you know that the data elements define 'what' is being represented by a particular data value of the DHIS2 system.

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Let's go back to our example Positive Malaria Cases recorded in Namchala Health Center in October 2020. The data element details what is being counted, in this case Positive Malaria Cases. We can conceptualize Data Elements as labels or variables that describe what a particular data value represents.

Examples of data elements

Examples

Total population

Individuals immunized

Available hospital beds
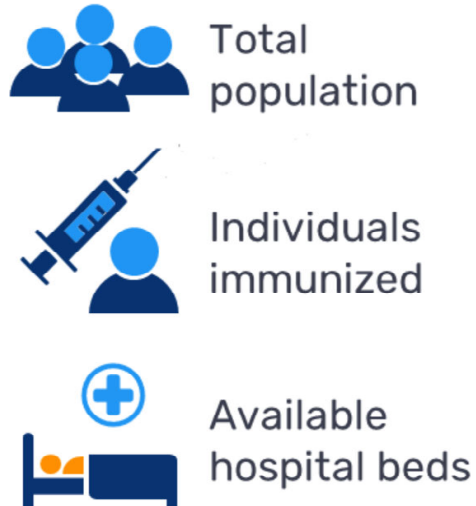
Value type

- Number

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Data Elements often represent a count. For instance "total population" "individuals immunized with measles vaccine" and "available hospital beds" are all examples of data elements that contain numerical values.

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Data elements value types

Value Type

- Number
- Text
- Yes/No
- Other

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Note that data elements are able to store other value types too such as text, yes/no values and others.

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Features of data elements

Can be **aggregated**...

1 2 3 4

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An important feature of Data Elements is that they can be aggregated in various ways. The data elements captured in DHIS2 representing numerical values

Features of data elements

Can be **summed** over time…

1   2   3   4   =   10

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can be summed over time,

Features of data elements

... **averaged** over time...

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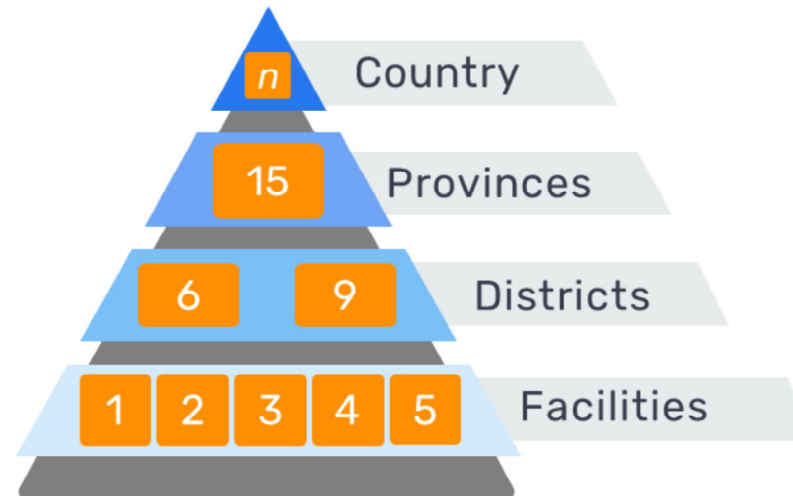
averaged over time (such as from monthly to quarterly values)

Features of data elements

... and **counted up**...

Country — n

Provinces — 15

Districts — 6 9

Facilities — 1 2 3 4 5

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and counted (or aggregated) up the organisational hierarchy (such as from facility to district values).

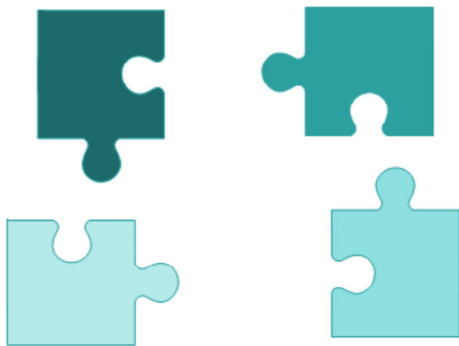## Features of data elements

Can be **disaggregated**...

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Data elements can also be disaggregated.

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While aggregation means adding things together, to disaggregate something means to separate it into its component parts.
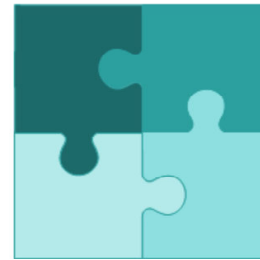
Examples of dissagregation

Dissagregate

- < 1
- 1 – 4
- > 5

- Male
- Female

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Age and sex are common examples of disaggregations applied to data elements.

Example of data dissagregation by sex

Dissagregate

Lao PDR

Data	Malaria Cases RDT positive	
Period/Sex	Male	Female
2017	26 868	4 981
2018	11 358	2 788
2019	5 800	2 523
2020	5 655	2 163

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Here, we disaggregated the data element "Malaria cases RDT positive" by sex, so that we can see the number of Male and Female cases as separate values. This type of data disaggregation is very useful for data analysis because it can reveal if there are any differences between sex or age groups.

Indicators vs data elements

Data elements   **Indicators**

- "Raw" values

- Collected

- Ex: Number of immunized individuals

?

- Calculated

- Ex: Immunization coverage rate

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Now let's talk about indicators, which are used in DHIS2 data analysis. What are indicators and how do they differ from data elements? While data elements are "raw" values that are collected, indicators are values that are calculated. To illustrate the difference, an example of a Data Element would be a number of Immunised Individuals, while indicator would be Immunisation Coverage Rate that is calculated based on a defined formula.

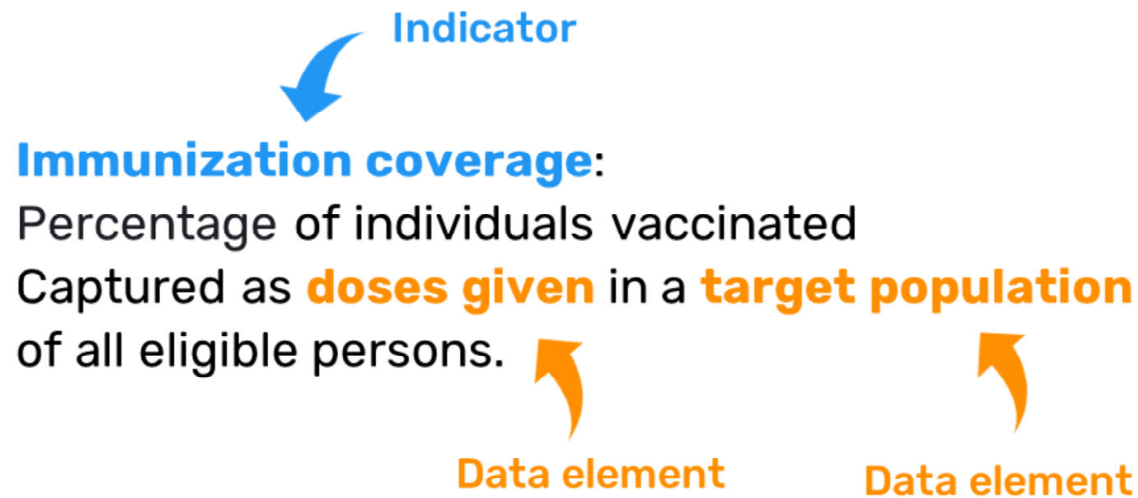## Example of an indicator: immunization coverage
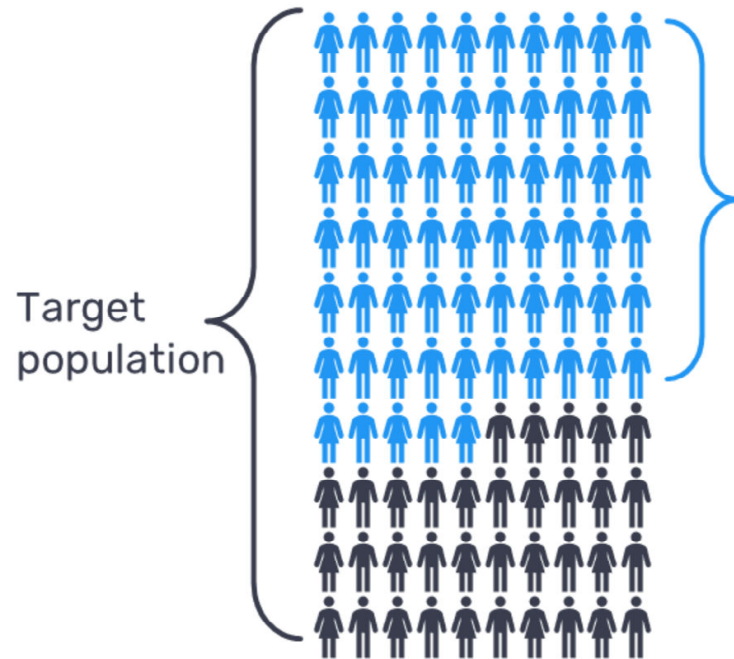
64%

Target population

Immunization coverage:
Percentage of individuals vaccinated
Captured as **doses given** in a **target population** of all eligible persons.

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The immunization coverage represents a percentage of individuals vaccinated captured as doses given in a target population of all eligible persons.

Example of an indicator: immunization coverage

Indicator

Immunization coverage:
Percentage of individuals vaccinated
Captured as **doses given** in a **target population**
of all eligible persons.

Data element   Data element

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Here, the indicator is Immunisation coverage, while doses given and target population are both data elements in DHIS2. Now, let's put all these elements together in a mathematical formula.

Example of an indicator: common formula

$$\text{Immunization coverage} = \frac{\text{doses given}}{\text{target population}} \times 100$$

Numerator → doses given

Denominator → target population

Factor → × 100

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Here in this formula, we can see that immunization coverage is calculated by dividing doses given--the numerator--by the target population--the denominator--and multiplied by a factor of 100 to get a percentage.

Example of an indicator: common formula

Data element

$$\text{Indicator} = \frac{\text{Numerator}}{\text{Denominator}} \times \text{Factor}$$

Data element

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Similar formulas can be used for calculating many other indicators in DHIS2. In typical cases, these formulas consist of a numerator, denominator and factor of some kind.

Example of an indicator: Confirmed malaria cases

Indicator

Confirmed cases of malaria = RDT* Microscopy

Data element

Data element

RDT* = *Rapid Diagnostic Testing*

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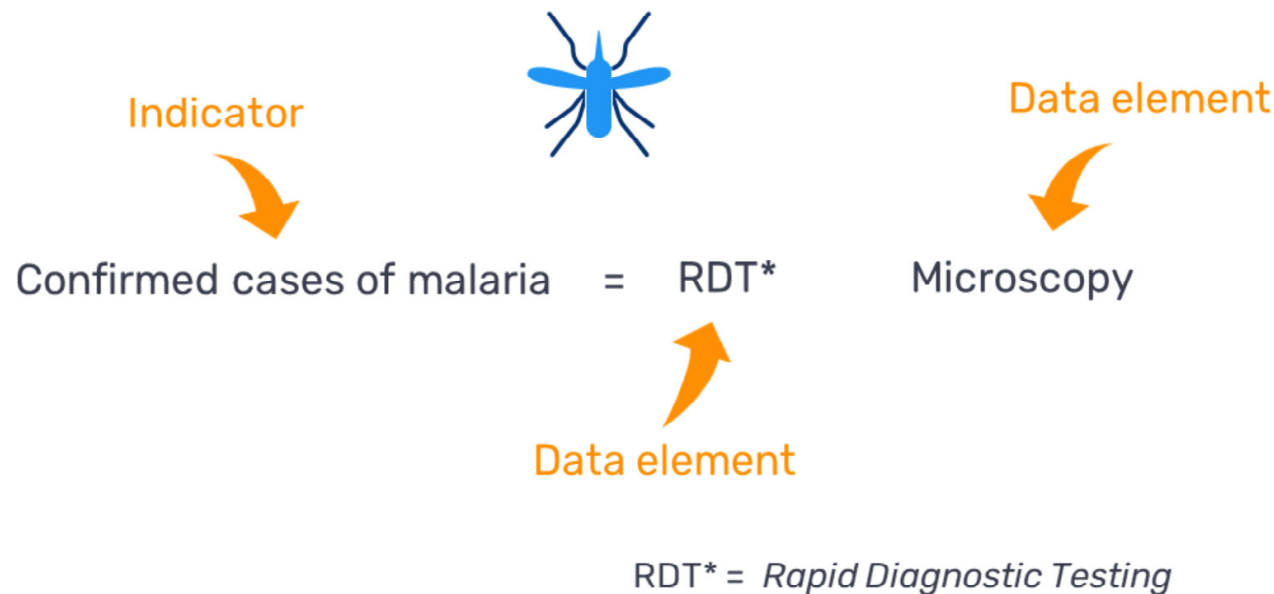
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Indicator calculations can also give totals, such as the indicator of number of Confirmed cases of Malaria is calculated as a sum of cases diagnosed by various methods (such as RDT or rapid diagnostic testing and Microscopy).

Advantages of using indicators

Enables comparison of health performance:

- Across geographical areas
- With different population sizes

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Using indicators that are calculated using population data enables comparison of health performance across geographical areas with different population sizes, which is often more useful then comparing raw data.

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In this table, we see both the data element values 1(Doses Given) and 2population and indicator values 3(Coverage) for two districts with different population size. Comparing the two districts, we can see that District A has a higher number of doses given than District B. But if we look at the coverage rate instead, which takes the target population's size into account, a different picture emerges. District B has a coverage of 50 %, while District A has only 30 % coverage. It means that District B has a better record in immunizing their target population despite having the lowest absolute number of doses given.

Summary

"What"

Data Elements   VS.   **Indicators**

Collected data

- **Cases** of a disease
- **Population** data
- **Number** of hospital beds

Calculated values

- Using two or more data elements
- Immunization **coverage**
- Maternal mortality **rate**
- **Total** of data elements

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Let's quickly review the main features of Data Elements and Indicators and the differences between them. Both Data Elements and Indicators represent "what" is being measured. Data elements often represent collected data, usually a raw count , such as confirmed cases of a disease, population data, or a number of hospital beds. On the other hand, indicators refer to values that are not entered directly, but instead are calculated using two or more data elements. Typically, the calculation includes a numerator, denominator and a factor such as in the calculation immunization coverage or maternal mortality rate. They can also be a total of multiple data elements added together, like we saw when we discussed the number of confirmed malaria cases.

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