Operationalizing CD4.0 in the Philippines: Capacity development to strengthen subnational gender statistics for community-based SDGs monitoring

Module 2: Data visualization using infographics – engaging the public

24-26 November 2020
Objectives of the Training Seminar

• To discuss the data visualization in enhancing communicating the Community Based Monitoring System (CBMS) of local government for subnational gender statistics.

• To enhance the technical capacity of operational staff in doing data visualization of CBMS database for gender reports and studies.
By the end of the training module, participants will be able to:

• Define data visualization including its comparison with infographics.
• Discuss the key principles in data visualization.
• Identify important tips in data visualization.
• List different charts for data visualization and their purposes.
• Construct charts in Excel.
• Construct charts in Canva.
Outline

Section 1. Data Visualization Key Principles
Section 2. Tips and tricks for more impact
Section 3. Data visualisation with MS Excel
Section 4. Data Visualisation with Canva
Section 5. Final Workshop – Packaging Gender Issues using gender statistics – tables, summary statistics, data visualization
SECTION 1. DATA VISUALIZATION KEY PRINCIPLES

- DATA VISUALISATION DEFINITION AND TERMINOLOGY
- KEY CHART DRAWING PRINCIPLES
- WHY IS DATA VISUALISATION USEFUL?
- COLOUR AND STYLING
- UNDERSTANDING HUMAN PERCEPTION
- KEEPING ORDERING LOGICAL AND L.A.T.C.H.
What is ‘data visualization’?

Data visualisation is the field and practice of the visual representation and presentation of data to effectively communicate it and aid in its understanding.
Data Visualization Using Infographics – Engaging the Public

TERMINOLOGY

DATAVIZ/DATAVIS: Is the shorthand term for “data visualisation”.

INFORMATION VISUALISATION: Often used interchangeably with data visualisation, however information visualisation (infoviz) tends to be more focused on the visualisation of abstract data structures such as trees and networks as well as other qualitative data. So infoviz is more about displaying relationships rather than numbers.

CHART: Is used to refer to individual pieces of data visualisation. This includes graphs, plots, diagrams, maps, tables, and is sometimes used to describe infographics.
TERMINOLOGY

**GRAPH:**
in this course this refers to both “graphs” and “plots” interchangeably. This is any chart that uses a coordinates system to plot the data on.

**DATASET:**
the entire collection (table) of data values that a visualisation is based on.

**DATA POINT:**
a single value in the dataset.

**DATA SERIES:**
a row or column of related data values in a table.
WHY DATA VISUALIZATION?
No. of Unemployed Workers in the Philippines: 2010-2018

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Unemployed Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>4,432,341</td>
</tr>
<tr>
<td>2011</td>
<td>4,332,740</td>
</tr>
<tr>
<td>2012</td>
<td>4,408,950</td>
</tr>
<tr>
<td>2013</td>
<td>4,404,672</td>
</tr>
<tr>
<td>2014</td>
<td>4,228,852</td>
</tr>
<tr>
<td>2015</td>
<td>4,091,157</td>
</tr>
<tr>
<td>2016</td>
<td>3,746,875</td>
</tr>
<tr>
<td>2017</td>
<td>3,987,933</td>
</tr>
<tr>
<td>2018</td>
<td>3,777,995</td>
</tr>
</tbody>
</table>

Number of Unemployed Persons in the Philippines: 2010-2018

Data Visualization Using Infographics – Engaging the Public
EFFECTIVE COMMUNICATION IS:

1. Engaging
2. Clear, clean and easily understood
3. Accessible
4. Relaxes and comforts
5. Tells a story
6. Understands the emotions and intentions behind the information

Data Visualization Using Infographics – Engaging the Public
Data visualisation makes the data more easy to digest
Data visualisation makes data easier to communicate to an audience.
Data visualisation can be used as a tool to persuade
WHAT STORY CAN YOUR DATA TELL?

Humans are drawn to stories, as they help our minds put things together in a broader context. Stories also reduce stress and helps focus attention on the details.

Will you be the one to narrate the data’s story or will you allow your audience to make up their own story?
DATA VISUALISATION ≠ INFOGRAPHIC
Employment Status, by Sex: July 2020

- Labor Force Participation Rate
  - Male: 75.3%
  - Female: 48.5%

- Employment Rate
  - Male: 90.0%
  - Female: 90.0%

- Unemployment Rate
  - Male: 10.0%
  - Female: 10.0%

- Underemployment Rate
  - Male: 19.0%
  - Female: 14.5%
Percentage of Employed by Sex in the Philippines
July 2019 and July 2020

Source: Labor Force Surveys July 2019 and July 2020, PSA
UNDERSTANDING HUMAN PERCEPTION
CLOSURE
CONTINUITY

Curves are perceived...  ...as this  ...and not this
Data Visualization Using Infographics – Engaging the Public

Shape | Size | Colour | Saturation | Markings

Rotation | Position | Depth | Sharpness | Line Width

Enclosure | Length | Curvature | Density | Closure
Data Visualization Using Infographics – Engaging the Public

Accurate analysis

Position | Length | Direction | Angle | Area | Volume | Shading

Generalised analysis
Let us have an exercise!
1. Poverty map of the Philippines

Data Visualization Using Infographics – Engaging the Public
Upward Trajectory of the Philippines’ GDP

PHILIPPINES GDP ANNUAL GROWTH RATE

Source: lamundi.ph

2. Line chart of GDP Annual Growth Rate

DataViz

Infographic

Data Visualization Using Infographics – Engaging the Public
3. Poverty among basic sectors in the PH

DataViz

Infographic

Source: Philippine Statistics Authority
4. NDHS 2017 Key Indicators

DataViz

Infographic

Source: Philippine Statistics Authority, Central Visayas
5. Age-Sex Pyramid of the Philippines

Source: Philippine Statistics Authority
COLOUR MODELS

RGB  CMYK  HEX
COLOUR MODELS: RGB

RGB stands for red, green and blue. It’s the colour model used to produce colours on digital screens and is generated by blending 3 different coloured lights together.

So any visualisations you intend to display digitally on devices such as computers, mobiles, projectors, TVs will use the RGB colour model.

RGB values range from 0 to 255. Here’s an example of a RGB colour:

rgb(255, 0, 255)
COLOUR MODELS: CMYK

CMYK stands for **cyan**, **magenta**, **yellow** and **key (black)**. It’s the colour model used typically for printing and produces colours by mixing these 4 different inks together.

Therefore, CMYK should be used on visualisations that will be printed (books, magazines, etc.)

CMYK values range from 0% to 100% as this indicates the amount of ink to be used for each colour. Here’s an example of a CMYK colour:

<table>
<thead>
<tr>
<th>C</th>
<th>M</th>
<th>Y</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>78</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
COLOUR MODELS: HEX

**HEX** is short for “hexadecimal” and is based on the “hex triplet” colour code. HEX is an extension of the RGB model and used as a way to standardise colours that are safe for the web.

If you’re producing visualisations that are to be displayed on a website, you might need to use a HEX code to assign the colours.

Here’s an example of a HEX colour code:

#E823F0
LIMIT THE COLOURS YOU USE, USE COLOUR PALETTES
In order to create a pleasing colour scheme, we have to understand the relationship between the colours on the colour wheel.
Selecting the right colour combinations can help you create harmony in your visualisation’s design.
Monochromatic
Complementary
Split
Complementary
Analogous
Achromatic
Colour is typically used in data visualisation to either:

- Distinguish groups of data from each other
- Represent data values

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category A</td>
<td>100%</td>
</tr>
<tr>
<td>Category B</td>
<td>50%</td>
</tr>
<tr>
<td>Category C</td>
<td>0%</td>
</tr>
</tbody>
</table>
USE COLOUR CONVENTIONS AND METAPHORS

Negative

Positive

Cold

Warm

Low value

High value
AVOID RAINBOW PALETTES!
AVOID 3D!
There are 5 ways to organise all information:

L. A. T. C. H.
In summary, Data Visualisation is the field and practice of the visual representation and presentation of data to effectively communicate it and aid in its understanding.
Always consider who your audience is, so you know who you’re communicating to.
Make sure to use good colouring and styling, and keep the ordering of the data logical by using LATCH.
Let us have a 15-minute break