

# Session 1\_1. What is Data Visualization

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## Questions

- What is data visualization?
- Why data visualization?
- What is dashboard?

## Learning Objectives

- Know advantages and disadvantages of data visualization
- Understand the importance of data visualization
- Familiarize with the examples of data visualization
- Understand what main characteristics of dashboards

## What is data visualization?

Data visualization is the graphical representation of information and data.

## Advantage and disadvantages of data visualization

### Advantages

- Can identify information that's hard to see in table, such as trends and outliers
- Easily share information
- Interactively explore data
- Easy to understand patterns and relationships in data

### Disadvantages

- Visualization with many different data points can lead an inaccurate assumption.
- Wrong design of visualization can be biased or confusing
- Display biased or inaccurate information
- Correlation doesn't always mean causation
- Core message can get lost in translation

### Major types of visualizations

There are a lot of visualization methods and below are three widely used options.

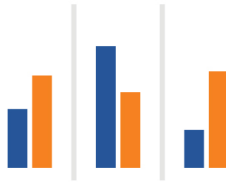


Figure 1: Charts/Graphs

Charts display data in graphs, plots, and diagrams, organized along two axes. The horizontal line is the x-axis, and the y-axis is the vertical line.



Figure 2: Geospatial

Geospatial visualizations display data in map form, using colors, shapes, and other visual elements to show the relationship between location and data.

■	1234	678
■	368	8034
■	2620	2559
■	971	322

Figure 3: Tables

Tables display data in rows and columns as you’ve likely encountered in a spreadsheet. They represent exact numbers and categories.

### What is Dashboard?

Dashboard is a collection of visualizations and data displayed in one place to help with analyzing and presenting data.

Even though infographic, a combination of visuals and words that represent data, is not a focus of this course, I put the table comparing those two to help you understand what dashboard is.

	Data Visualization	Infographics
Complexity	Vary greatly in complexity, from simple bar charts to highly complex scientific visualizations	Generally quite simple, targeting a layman audience
Includes narrative or storytelling	No (this is external to the visualization)	Usually
Design and aesthetics	Often automatically generated - if published or used in presentations, more attention is paid to the design.	Often a lot of work goes into the design and making it aesthetically pleasing
Includes meta data (e.g. units, source, definitions)	Generally considered to be external to the data visualization (and often excluded)	Sometimes
Interactive	Increasingly so in web-based data visualizations	Rarely, infographics are normally static images

## **Examples**

### **Public Health Dashboards**

- <https://www.cdc.gov/nssp/using-dashboards-to-present-nssp-data.html>
- <https://dsripdashboards.health.ny.gov/>

### **Public Health Infographics**

- <https://www.apha.org/news-and-media/multimedia/infographics>
- <https://www.cdc.gov/globalhealth/infographics/default.html>

## **Summary**

Data visualization is an efficient way to deliver information and there are many methods and tools available. You should understand advantages and disadvantages of data visualization to use it appropriately.

### Reference

- <https://www.tableau.com/learn/articles/data-visualization#tools-software>
- <https://www.tableau.com/data-insights/reference-library/visual-analytics>