

# Introduction to Data Visualization Terminology

Jan 4, 2023

# Lesson Objectives

- By the end of this lesson students should be able to:
  - utilize a common vocabulary for discussing data visualizations

# What is data visualization?

Data visualization  
is the graphical  
representation of  
data

## Here's When We Expect Omicron to Peak

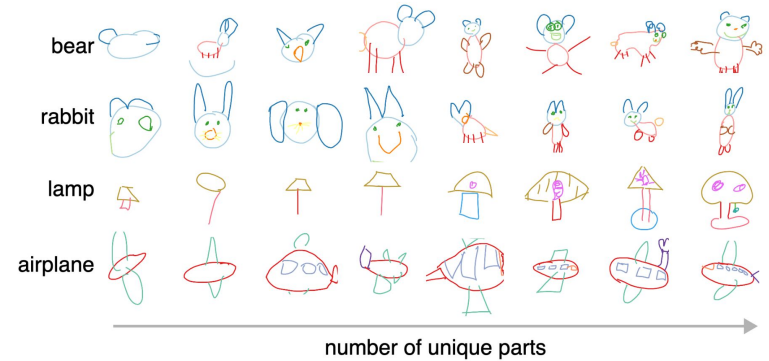
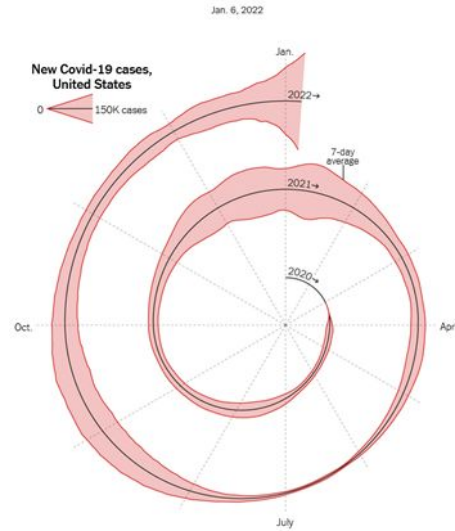


Figure 1: Example drawings across children from four object categories, increasing in the number of drawn unique parts. Colors added for illustrative purpose to show each part annotation attributed to drawings.

# What are the goals of data visualizations?

## Exploratory

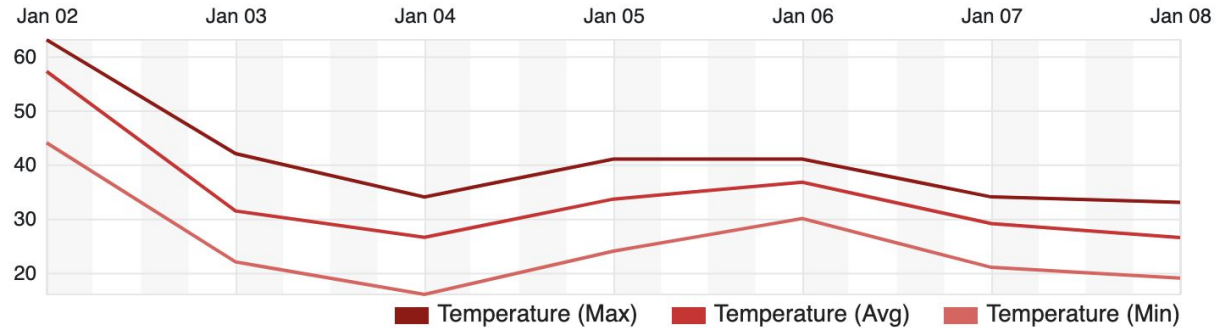
- help identify patterns and trends in the data to help people perceive certain information faster or more easily
- help you to understand the data and to find the story

## Explanatory

- help explain findings to a wider audience
- might simplify your charts by excluding irrelevant data and you might use styling features to highlight the key message

# Example of Exploratory Visualization

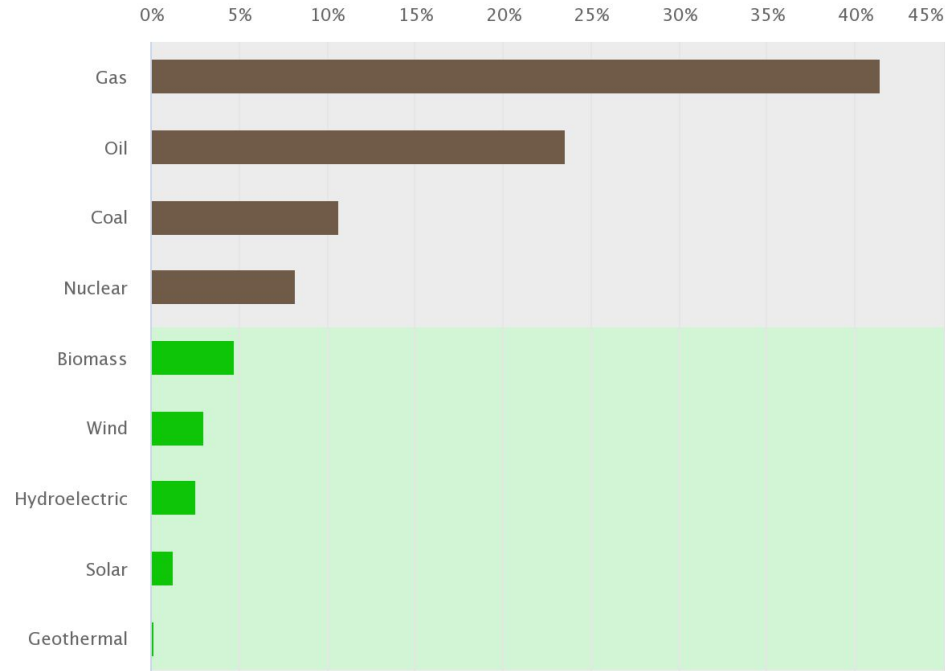
Time	Temperature (°F)		
Jan	Max	Avg	Min
2	63	57.2	44
3	42	31.4	22
4	34	26.5	16
5	41	33.6	24
6	41	36.7	30
7	34	29.1	21
8	33	26.5	19



# Example of Explanatory Visualization

The USA is still heavily reliant on fossil fuels in 2020

Only 11.7% of energy was produced from renewable sources



Source: U.S Energy Information Administration

# How can we design visualization to have salience?

Salience (in data visualization) is how the viewer's eye is drawn to what is important in the data visualization. A good data visualization enhances saliency e.g. improves viewer understanding of the data.

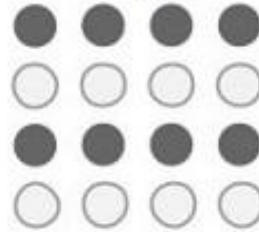
## Gestalt Principles

Gestalt Principles are laws of human perception that describe how humans group similar elements, recognize patterns and simplify complex images when we perceive objects.

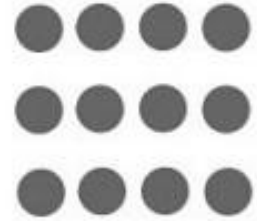
# Four Gestalt Principles applicable to data visualization

- **Similarity:** Items alike in their properties (size, shape, color, and so on) tend to be perceived as being a related group.
- **Proximity:** Items are near each other tend to be perceived as being a related group.
- **Enclosure:** Items surrounded by something such as a line or an object tend to be perceived as being a group.
- **Continuity:** Elements tend to be perceived as smooth groups or continuous lines rather than sharp broken lines.

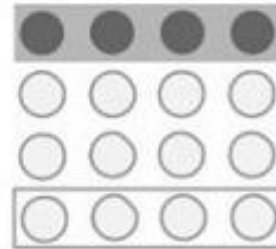
Similarity



Proximity



Enclosure



Continuity

