Data types sources

* Data (<https://www.geeksforgeeks.org/data-visualization-and-its-importance/> )
* Structured vs Unstructured (<https://www.geeksforgeeks.org/difference-between-structured-semi-structured-and-unstructured-data/> )
* Special type of data 1. Temporal

2. Geographic

3. Doc,Img,video,audio,3D

4. Raw data

* Qualitative(categorical) V/s Quantitative(Numerical)
* Quantitative 1. Discrete 2. Continuous
* 4 levels of data measurement ([https://careerfoundry.com/en/blog/data-analytics/data-levels-of measurement/#:~:text=There%20are%20four%20types%20of,adds%20another%20level%20of%20precision](https://careerfoundry.com/en/blog/data-analytics/data-levels-of%20measurement/#:~:text=There%20are%20four%20types%20of,adds%20another%20level%20of%20precision). )

1.Nominal

2. Ordinal

3. Interval

4. Ratio

* NOIR Stanley Stevens
* Data Sources 1. Files

2. Database

3. Internet

4. Open data

* Crawlers or spiders ○ Scraping data from semi-structured sources

■ Parse HTML

■ Match Patterns to extract data

■ Identify links (repeat)

* URL ○ Files and databases on the web ○ Many libraries and apps will accept either a local path or url

06 Data Visualisation

*Communication*

Communication : Analyzing and Presenting

Graphic Communication: Sender, medium , message, receiver

Graphic Communication: Stages of Understanding

* Sensing → your brain seeing colours and shapes
* Perceiving → what does it show? big, small, bright, red,
* Interpreting → what does it mean? increasing, smaller, good, bad
* Comprehending → what does it mean **to me**? relevance, consequences

Graphic Communication Goals

* Information
* Persuasion
* Education
* Entertainment

Graphic communication, particularly through **data visualization and management**, aims to present complex information effectively by leveraging these core goals:

**1. Information**

* **Purpose:** Deliver clear, accurate, and concise data to the audience.
* **Use in Visualization:** Charts, graphs, and dashboards help reveal trends, relationships, and comparisons at a glance.
* **Example:** Real-time sales dashboards for tracking key performance indicators (KPIs).

**2. Persuasion**

* **Purpose:** Influence decisions or opinions using data-backed arguments.
* **Use in Visualization:** Infographics and comparative visuals emphasize critical points to support a message.
* **Example:** A graph showing environmental benefits of renewable energy over fossil fuels to advocate for policy changes.

**3. Education**

* **Purpose:** Enhance understanding of concepts or processes through accessible, structured content.
* **Use in Visualization:** Interactive tools, flowcharts, and annotated diagrams simplify learning.
* **Example:** Tutorials using step-by-step flowcharts for process improvement in business.

**4. Entertainment**

* **Purpose:** Engage audiences with visually appealing and fun representations of data.
* **Use in Visualization:** Creative visuals, animations, or gamified charts make data more relatable.
* **Example:** Interactive maps showing world populations in an engaging, user-driven way.

Data visualization combines these goals to make information intuitive, actionable, and meaningful, driving better management and decision-making.

Data Visualisation: Good Things to Know

* Why visualise data? To explore and analyse , To communicate

• Good things to know

• Pie charts

Only for parts of a whole (ie, 100% divided into categories) • No more than 5 slices • Label carefully and clockwise, decreasing in size • Minimise user effort and never 3D effect

• 3D

• Area

• Axes

• Clutter

• Good Visualisation?

Data visualization II

Chart types (<https://www.atlassian.com/data/charts/essential-chart-types-for-data-visualization> )  
**C**ategorical: comparing categories and distributions of quantitative values

**H**ierarchical: Charting part-to-whole relationships and hierarchies

**R**elational: Graphing relationships to explore correlations and connections

**T**emporal: Showing trends and activities over time

**S**patial: Mapping spatial patterns through overlays and distortions