Introduction to Data Visualisation

To understand what data visualization is and learn the different types of charts used to present data clearly.

What is Data Visualization?

Data visualization is the process of turning numbers and raw data into pictures, like graphs or charts.

Why do we use it? Our brains process images much faster than text. A chart makes it easy to see patterns, trends, and outliers instantly.
The Goal: To tell a story with data so anyone can understand it quickly.

Comparing Amounts

Column and Bar Charts

These are the most common charts used to compare different groups or categories.

- **Column Chart:** Vertical bars. Use this when you want to compare values side-by-side (e.g., Marks of different students).
- **Bar Chart:** Horizontal bars. Use this when you have long labels or many categories (e.g., Population of different countries).
- **Key Rule:** The height or length of the bar represents the value.

Trends and Proportions

Line Charts (Trends)

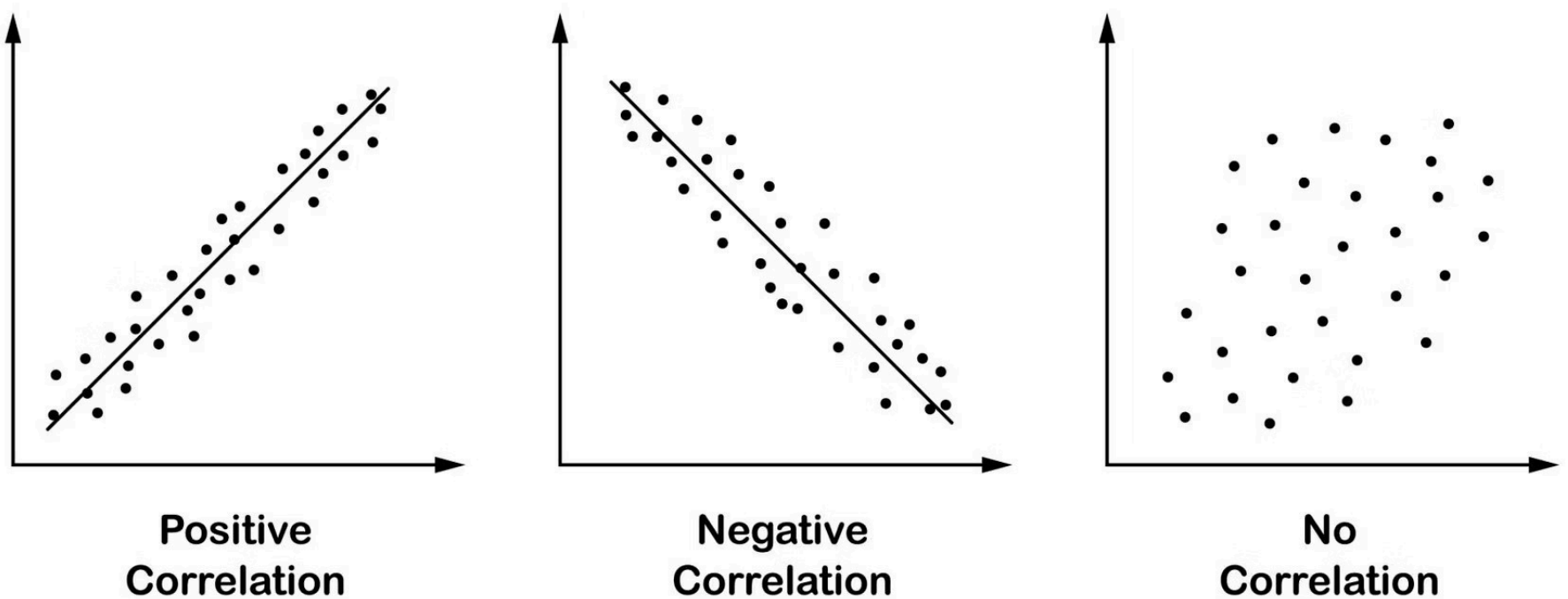
A line chart connects data points with a line.

- **Best For:** Showing changes over time.
- **Example:** Tracking temperature changes over a week, or stock market prices over a year.
- **Key Feature:** It helps you see if something is increasing (going up) or decreasing (going down).

Pie Charts (Proportions)

A circular chart divided into slices.

- **Best For:** Showing parts of a whole (percentages).
- **Example:** A budget breakdown (Rent, Food, Savings) or browser market share.
- **Key Rule:** The total of all slices must always equal 100%.



Relationships and Distribution

Scatter Plots (Relationships)

Achart that usesdots torepresent valuesfortwodifferent variables.

- **Best For:** Finding relationships or correlations.
- **Example:** Isthere a relationship betweenStudy Hours andExam Score? (Usually, as one goes up, the other goes up).

Histograms (Distribution)

Itlooks like a column chart, but thebarstouch each other.

- **Best For:** Showing how data is distributed within ranges.
- **Example:** Grouping people by age ranges (0-10, 11-20, 21-30) to see which age group is the most common.

Choosing the Right Chart

How to Select the Right Chart?

To pick the correct chart, ask yourself "What question am I answering?"

"How do things compare?" Use a Column or Bar Chart.

"How does it change over time?" Use a Line Chart.

"How is the total split up?" Use a Pie Chart.

"Is there a connection between X and Y?" Use a Scatter Plot.

Conclusion and Review

Conclusion

Charts are powerful tools that help us see the meaning behind the numbers. Choosing the right chart—whether it's a Line Chart for trends or a Pie Chart for percentages—ensures that your data is easy to read and understand.

Review Questions

1.Which chart is best for showing changes over time?

A Line Chart is best for showing trends over time (like temperature or sales history).

2. When should you use a Pie Chart?

Use a Pie Chart when you want to show parts of a whole or percentages that add up to 100%.

3. What is the main difference between a Bar Chart and a Histogram?

A Bar Chart compares different categories (with gaps between bars), while a Histogram shows the distribution of data ranges (with no gaps between bars).