Data & Graphs Reference

A quick guide to common data representations. Know which graph to use and how to read each one.

Bar Graphs

Purpose: Compare quantities across categories
Axes: Categories on one axis, values on the other
Key feature: Bar height/length shows value
Best for: Discrete categories (colors, cities, types)

Histograms

Purpose: Show frequency distribution of continuous data
Key feature: Bars touch (no gaps between intervals)
Axes: Intervals on x-axis, frequency on y-axis
Best for: Ages, scores, measurements in ranges

Line Graphs

Purpose: Show trends and changes over time
Axes: Time on x-axis, values on y-axis
Key feature: Slope shows rate of change
Best for: Continuous data (temperature, stock prices)

Scatter Plots

Purpose: Show relationship between two variables
Positive: Points trend upward (both increase)
Negative: Points trend downward (one increases, other decreases)
None: No clear pattern in the points
Best for: Correlation analysis (height vs weight)

Pie Charts

Purpose: Show parts of a whole (percentages)
Key feature: Slice size shows proportion
Rule: All slices must total 100%
Best for: Showing composition (budget, survey results)

Stem-and-Leaf Plots

Purpose: Display individual data values in order
Stem: Leading digit(s)
Leaf: Last digit
Best for: Small data sets where you need exact values

Reading Any Graph

1. Title: What is the graph about?
2. Axes: What do the x-axis and y-axis represent?
3. Scale: What are the units and intervals?
4. Labels: Are categories or data points labeled?
5. Trends: What patterns, outliers, or comparisons stand out?

Before choosing a graph type, ask: Am I comparing categories (bar), showing change over time (line), showing parts of a whole (pie), or showing a relationship (scatter)?