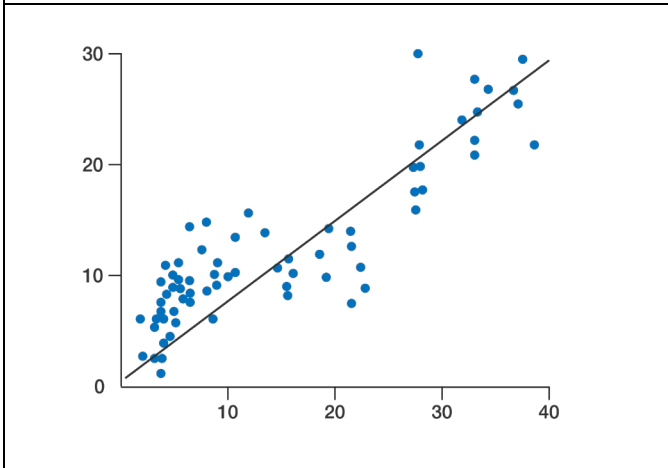


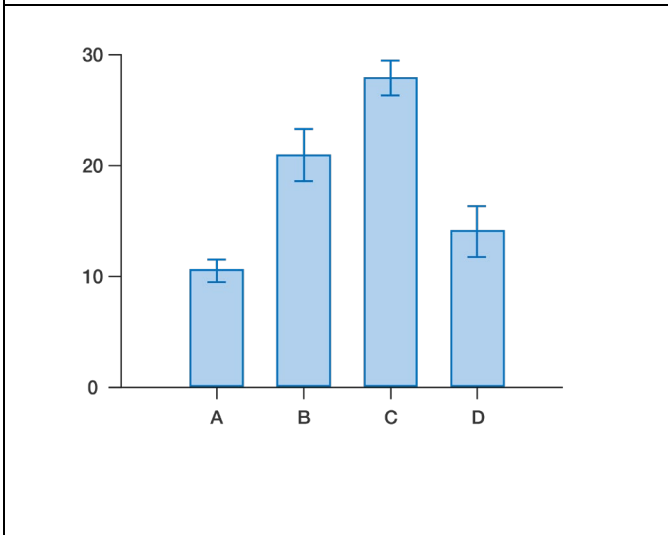
Histogram

- **What it uses:** One numerical variable.
- **What it shows:** The distribution of the variable. Splits observations of the variable into “bins” of equal size and uses bars to represent counts in each bin.
- **Examples:** Distribution of test scores in a class. Distribution of ages in a population.



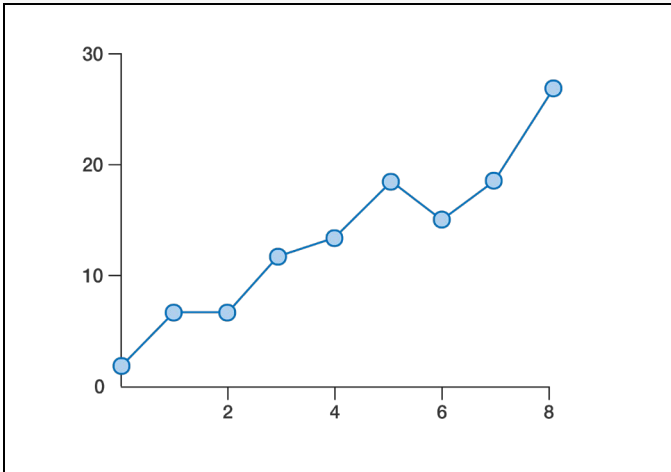
Scatterplot

- **What it uses:** Two numerical variables.
- **What it shows:** The relationship between the variables. Uses dots to represent pairs of observations.
- **Additions:** If the relationship between the variables seems linear, you can add a regression line to model the relationship.
- **Examples:** Relationship between the size and cost of a product. Relationship between pollution levels and death rate.



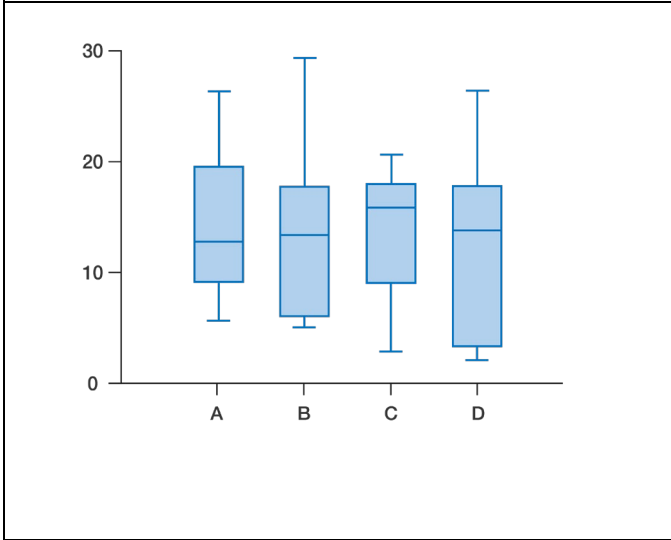
Bar graph

- **What it uses:** One numerical variable and one categorical variable.
- **What it shows:** Compares data in different categories. Uses a bar to represent a value (mean or count) for each category.
- **Additions:** For bar graphs of the mean, you can add error bars to show reliability or variation. Error bars could represent the 95% confidence interval, standard error of the mean, or standard deviation.
- **Examples:** Comparison of the *mean* lifespans for different animals. Comparison of the *numbers (counts)* of disease cases in different countries.



Line graph

- **What it uses:** Two numerical variables.
- **What it shows:** The relationship between the variables. Similar to a scatterplot, but connects consecutive data points with a line to illustrate estimated changes.
- **Examples:** Change in temperature over time. Change in the number of species with distance from the equator.



Box plot

- **What it uses:** One numerical variable and one categorical variable.
- **What it shows:** Compares the distribution of data in different categories. Shows each distribution using a box (represents the 25th to 75th percentile), a horizontal line in the box (represents the median), and “whiskers” around the box (represent the minimum and maximum; may exclude outliers).
- **Examples:** Comparison of the *distributions* of income for different genders. Comparison of the *distributions* of mutation rates in different cell types

Before you choose a plot type, identify the variables you are interested in visualizing. Choose a plot type based on your variables and your purpose. For example:

- **Relationship/correlation**
 - Scatterplot
- **Comparison**
 - Bar graph
 - Box plot
- **Distribution**
 - Histogram
 - Scatterplot
 - Box plot
- **Change over time**
 - Line graph
 - Bar graph