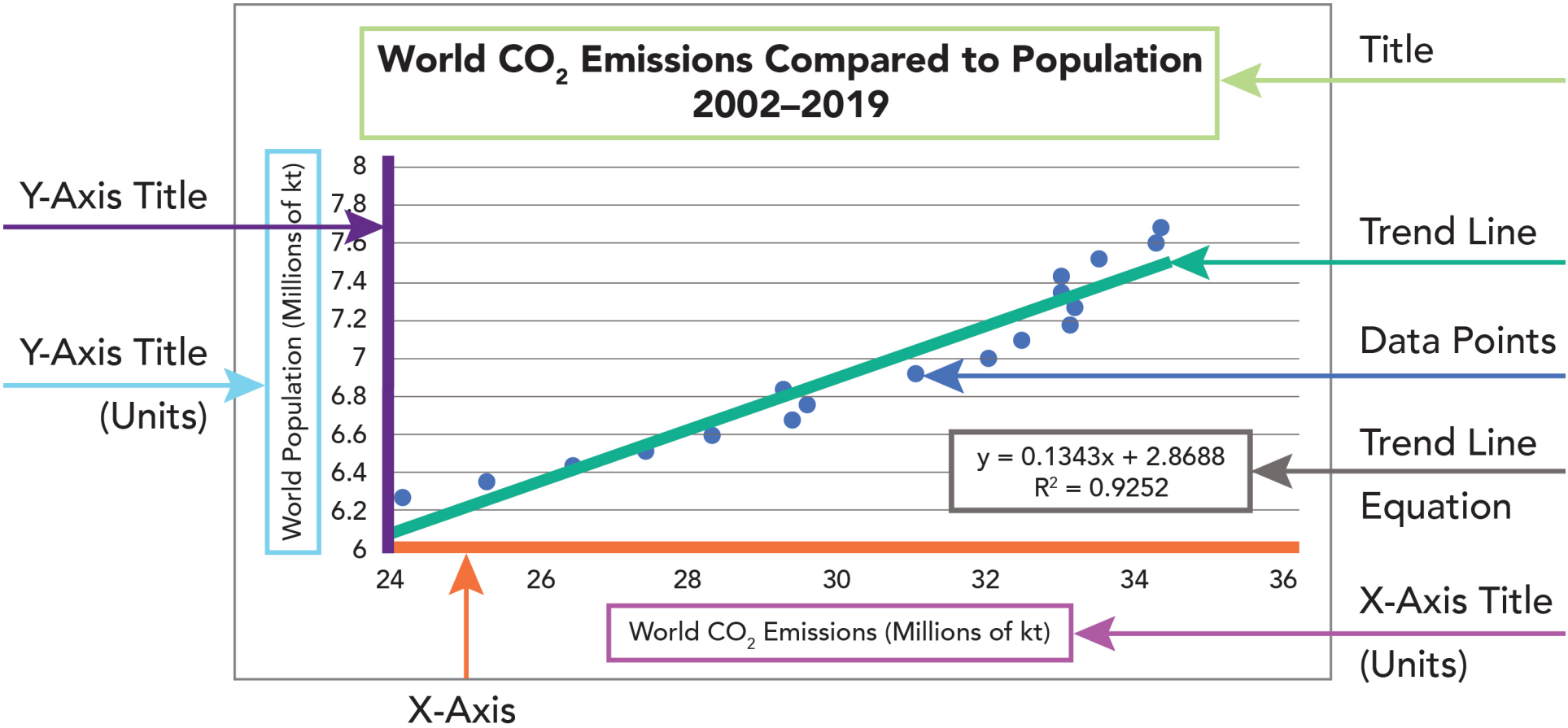


Graphs

A graph is a way of visually representing the relationship between 2 or more variables.

Anatomy of a Graph



Always Needed

Title—A brief explanation of what is displayed on the graph. The independent and dependent variables should be included.

Axes—An x- and y-axis should be present. The independent (manipulated) variable is on the x-axis; the dependent (responding) variable is on the y-axis.

Scaling—Axes should be scaled evenly based on the range of the data. Choose a scale that makes the data easy to read while taking up most of the graph.

Axis Labels—Each axis should be labeled with what is being measured. When applicable, units must be listed.

Data—What was measured during the experiment. Displaying the data is the whole reason for the graph.

Sometimes Needed

Legend (Key)—Identifies the variables when multiple variables are on the same graph.

Error Bars—Shows the range of error in the graphed data.

Trendline—A line that shows the trend (if any) that exists in the data.

Equation of Trendline—Provides the algebraic formula for the trend line.

R² Value—Shows the strength of the correlation of the 2 variables.

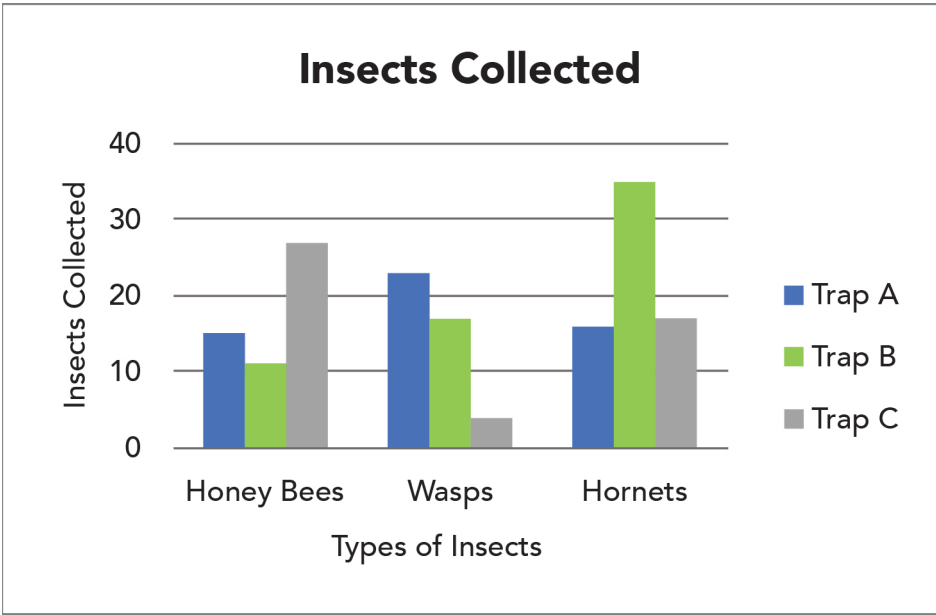
Data in the graph from: The World Bank: CO₂ emission (kt): Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute.

The World Bank: Population, total: (1) United Nations Population Division. World Population Prospects: 2022 Revision. (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.

Types of Graphs

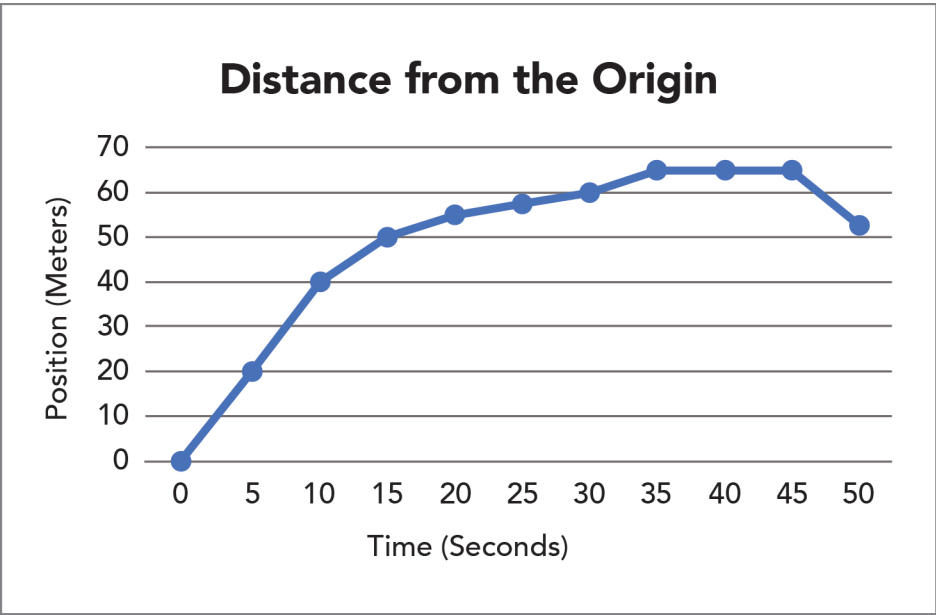
Bar Graph

Used for categorical data; good for comparing groups



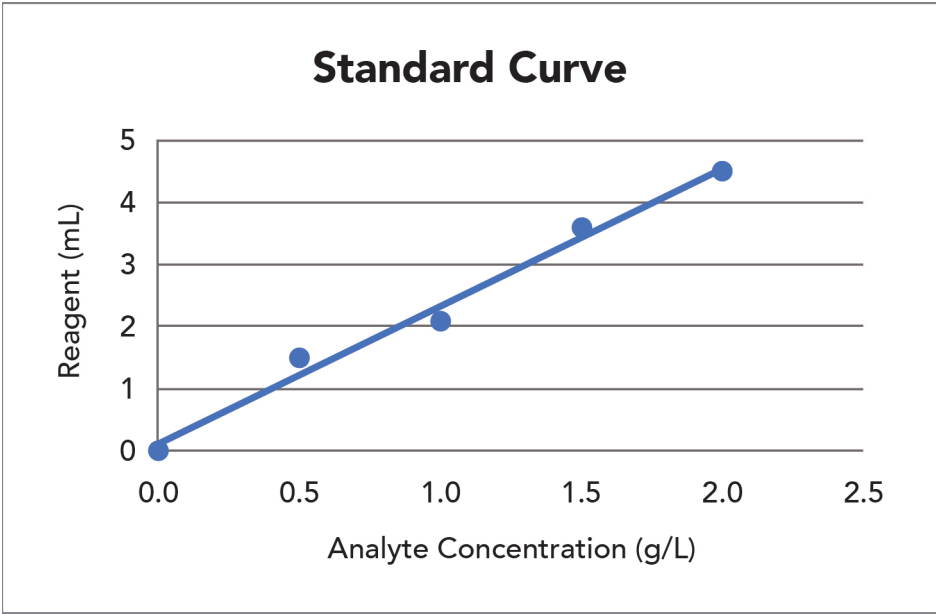
Line Graph

Used for continuous data; good for looking at data over time



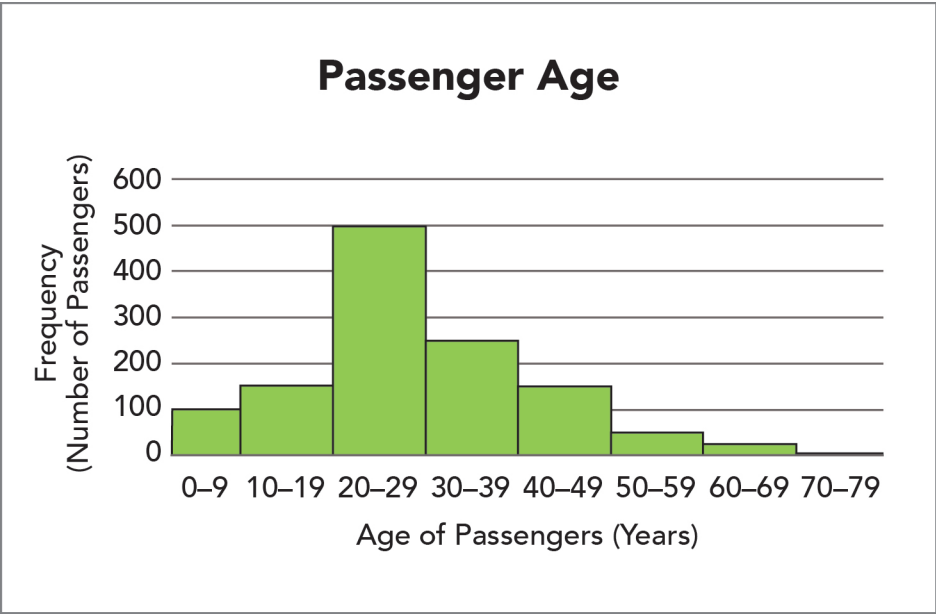
Scatterplot (XY Graph)

Used to show relationships between 2 variables



Histogram

Shows frequency data, how often a given variable occurs



Pie Chart

Used to compare parts of a whole; does not have axes like graphs

