

Types of Graphs and Their Uses

[Silvia Valcheva](#)



<http://intellspot.com/types-graphs-charts>

Every graph is a visual representation of data. This article describes five common types of statistical graphs widely used in any science.

1. Line Graph

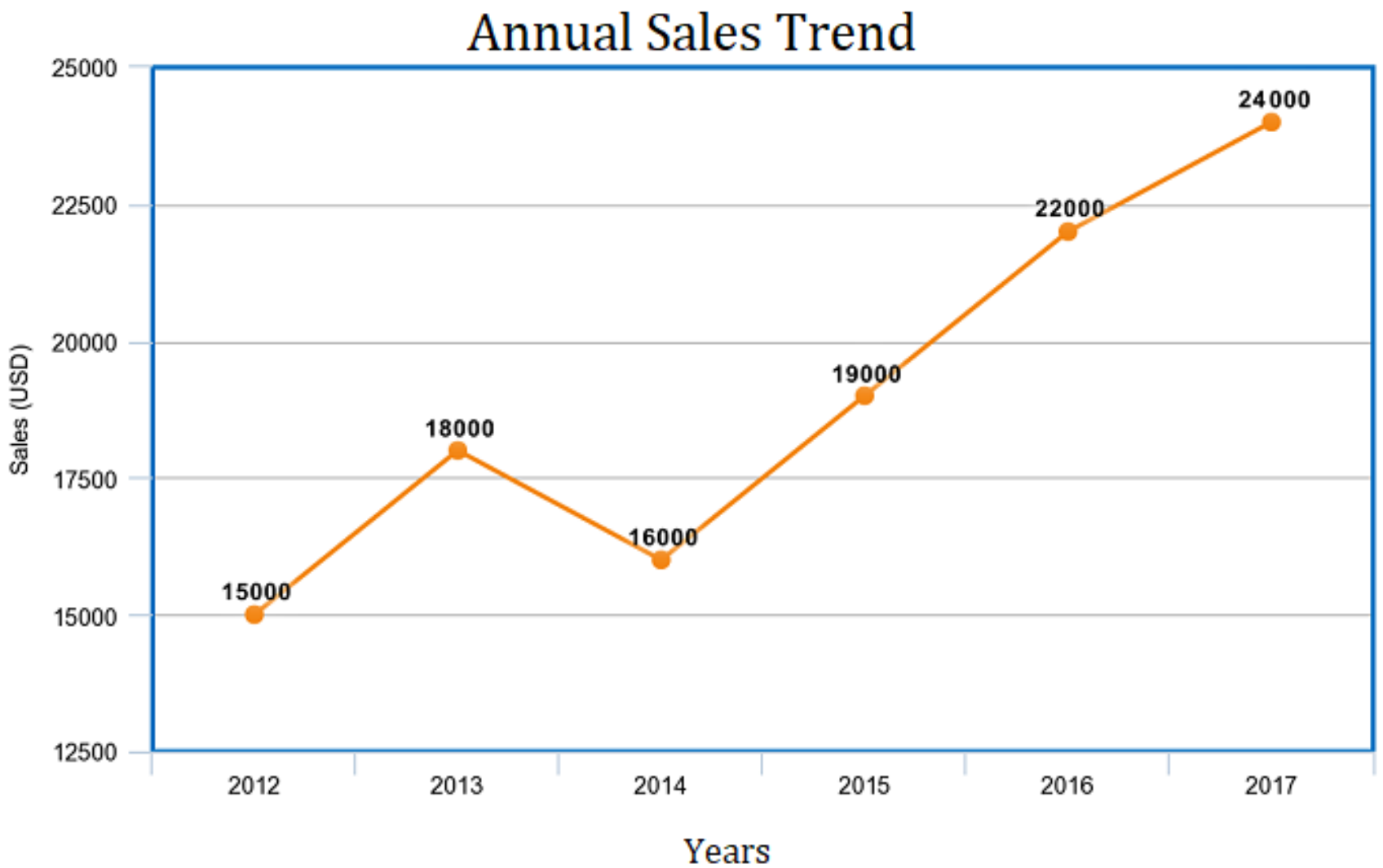
A Line Graph displays data that change. Every Line Graph consists of data points that are connected. The purpose of connecting their lines is to help illustrate a trend, for example, a change or other pattern.

Uses of Line Graphs:

- When you want to show trends over time, for example, how house prices have increased over time
- When you want to show cumulative growth or increase

The following Line Graph shows annual sales of a particular business company for the period of six consecutive years:

NOTE: This article has been modified.



The above Line Graph contains only one line. However, Line Graphs can illustrate more than one set of data, and therefore can contain more than one line.

2. Bar Graph

A Bar Graph represents discrete data with rectangular columns (or bars). Bar Graphs are among the most popular types of graphs in economics,

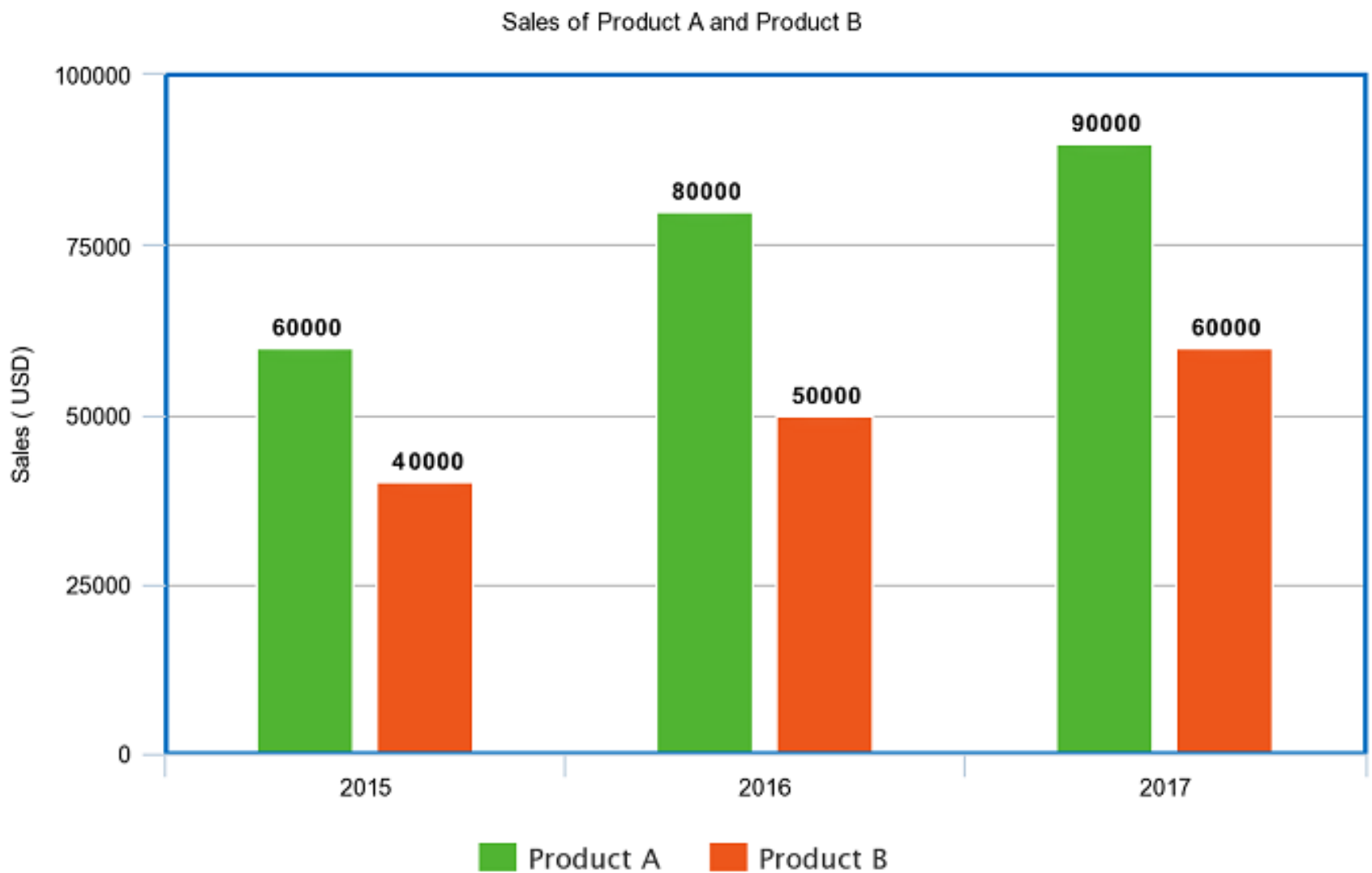
statistics, and marketing. They are commonly used to illustrate categories of data.

Each rectangular bar in a Bar Graph has a height corresponding to the values that they represent. The x-axis of a Bar Graph presents the discrete categories, and the y-axis shows a measured value.

Uses of Bar Graphs:

- When you want to display data that are grouped into **discrete categories**
- When you want to compare differences among categories

Example: The Bar Graph below illustrates the total sum of Sales of Product A and Product B for each of three years (three categories).



meta-chart.com

The bars in Bar Graphs can be vertical or horizontal. The above Bar Graph has vertical bars.

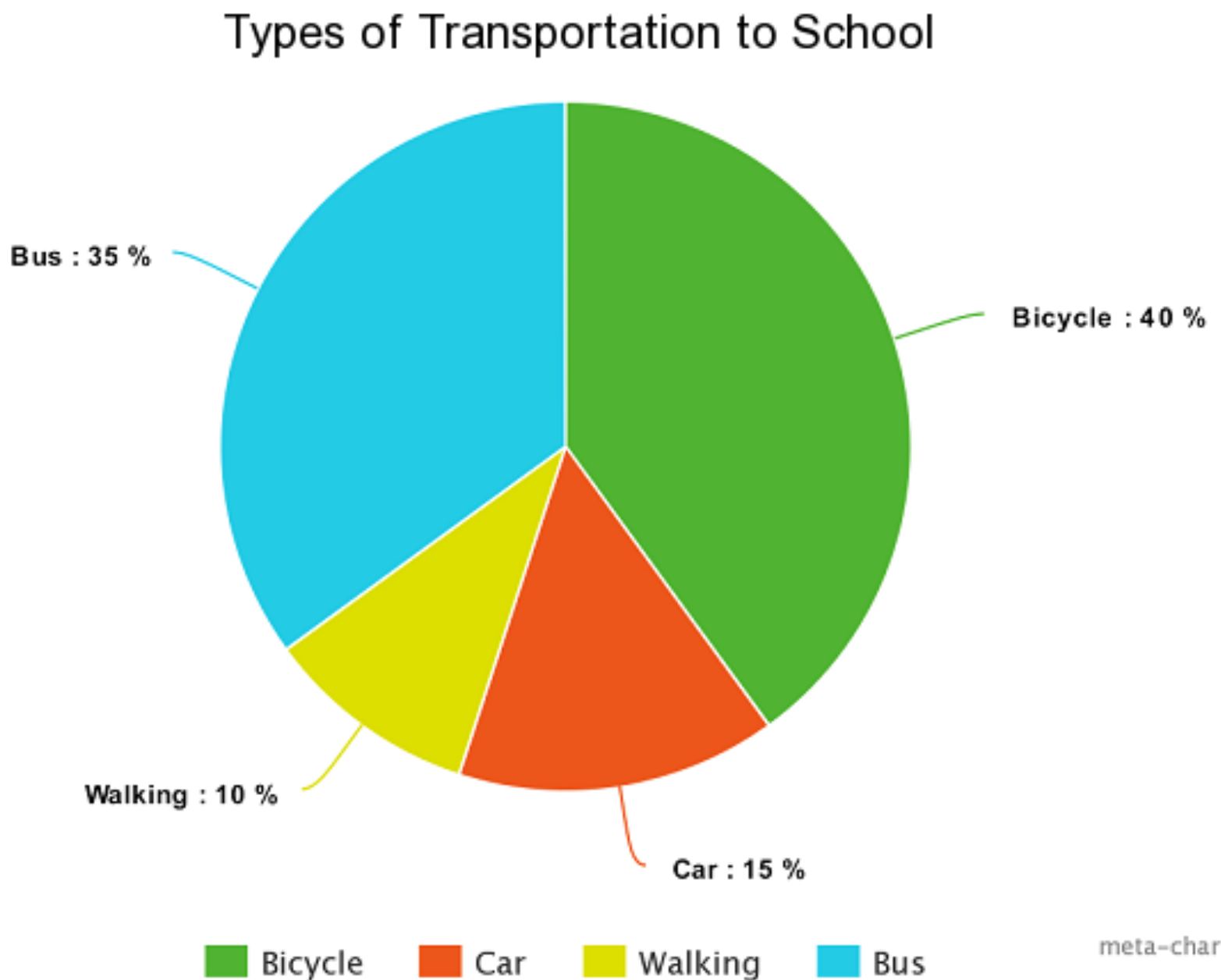
3. Pie Chart

A Pie Chart displays data in a 'pie-slice' format and illustrate proportion. Each pie slice represents the size of one category relative to the size of other categories -- and in proportion to all the categories together (the whole pie). Therefore, a Pie Chart illustrates part-whole relationships, and -- for every Pie Chart -- **the whole pie should always add up to 100%**.

- When you want to create and represent the composition of something
- When you want to show percentages or proportional data

A Pie Chart works best for displaying data from four to seven categories.

Example: The pie chart below represents the proportion of types of transportation used by 1000 students to go to their school.



4. Histogram

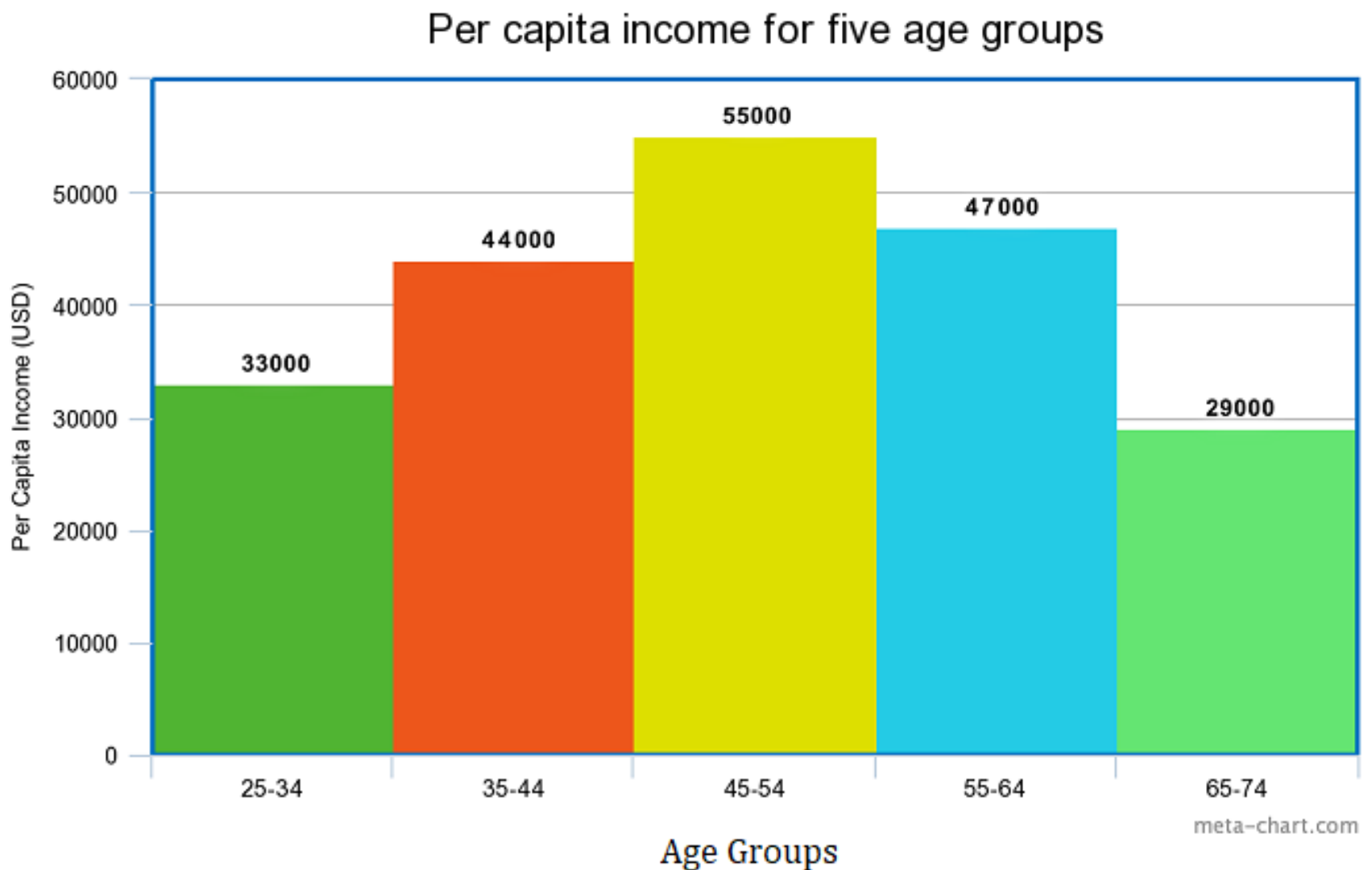
A Histogram shows continuous data in ordered rectangular columns. Usually, there are no gaps between the columns in a Histogram.

A Histogram displays a frequency distribution (shape) of a data set. At first glance, histograms look like bar graphs. However, there is a key difference between them. Bar Graphs represents categorical data and Histograms represent continuous data.

Uses of Histograms:

- When **the data are continuous**.
- When you want to represent the shape of the data's distribution.

Example: The Histogram below illustrates per capita income for each of five age groups (bins or ranges).



Histograms are widely used in statistics, psychology, business, and economics.

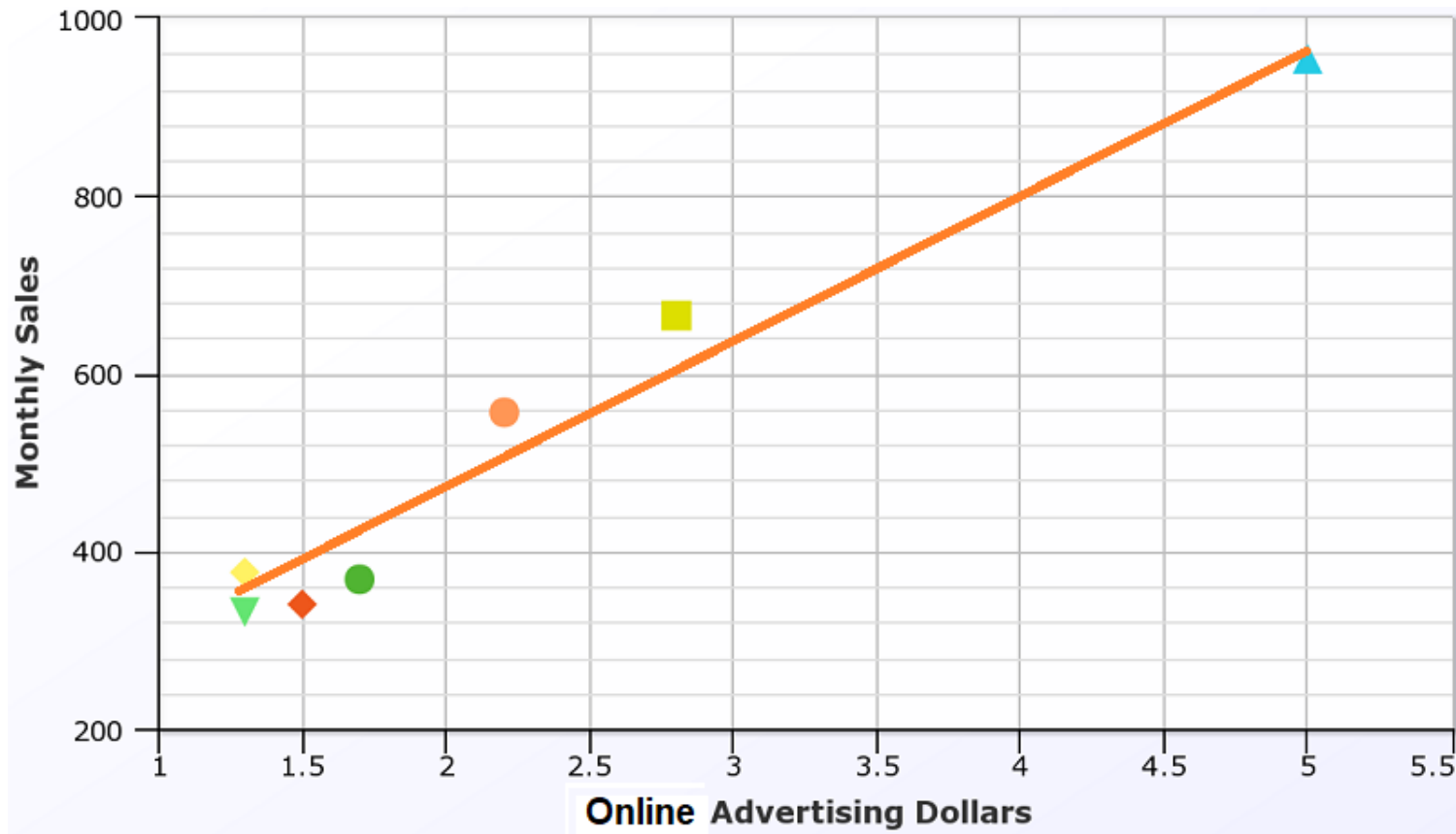
5. Scatter Plot

A Scatter Plot is an x-y diagram that shows a relationship between two variables. It is used to plot data points on both the horizontal x-axis and the vertical y-axis.

The purpose of a Scatter Plot is to **show the relationship between two variables**.

Sometimes, but not always, when there is a relationship between two variables, the first variable is called the independent variable, and the second variable is called the dependent because its values depend on the first variable. In these cases, a Scatter Plot allows you to visualize how one variable (the dependent variable) depends on the other variable (the independent).

Example: The Scatter Plot below represents the relationship between the monthly sales achieved by each of seven stores and the online advertising dollars spent by each of the same seven stores.



The orange line in the above Scatter Plot is called a “line of best fit” or a “trend line.”

Scatter Plots are used widely in data science, statistics, and psychology.