

## CHAPTER IV INTERPRETING GRAPH

### A. Description

The topic are able to discuss how to interpreting graph, and learn about the function and explain the information of graph.

### B. Learning Objective

⇒ Able to understand the function of graphics as a source of information

⇒ Able to explain the information contained in the graph in English

### C. Teaching Method

Case Based Learning

Here, you will study relate graph. Types of graph

There are some types of graph. Please, choose one of them and try to explain.

Make a graph relate some individual information.

### D. Material:

Graphs are a powerful means of representing and conveying information visually. They are used to make data more accessible, understandable, and actionable, whether for decision-making, analysis, or communication purposes. Choosing the appropriate type of graph depends on the nature of the data and the message you want to convey.

A graph is a visual representation of data or information designed to make understanding easier. Graphs can take various forms, such as bar graphs, pie graphs, line graphs, and more, depending on the type of data you want to present.

#### **1. Definition of Graph**

Graph and chart are the most efficient methods for displaying information in a simple manner. Using this form of representation helps its viewer to understand and interpret the information more easily and efficiently, which otherwise could be a very difficult and tedious process. It was supposed by Valcheva (nd), she told that graph was a visual representation of data. Graphs enable us to “see” relationships that are difficult to describe with numbers alone.

#### **2. Types and Use of Graph**

Here some types of graph:

##### **a. Line Graph**

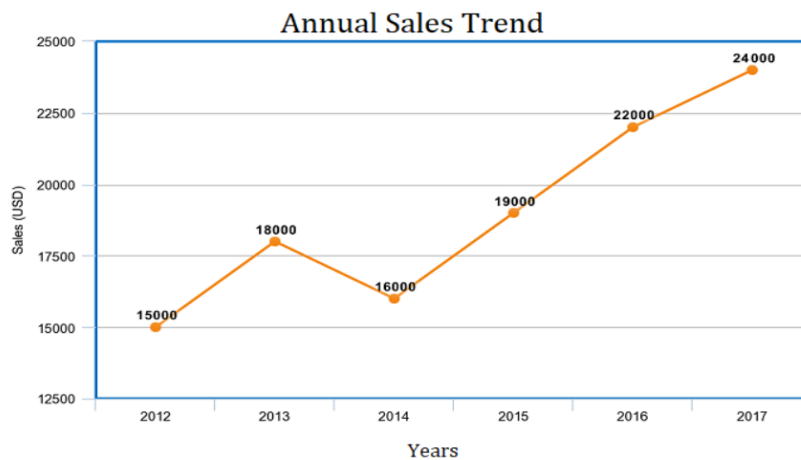
A Line Graph displays data that change. Every Line Graph consists of data points that are connected. The purpose of connecting their lines is to help illustrate a trend, for example, a change or other pattern.

### 1) 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:



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.

### 1. 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.

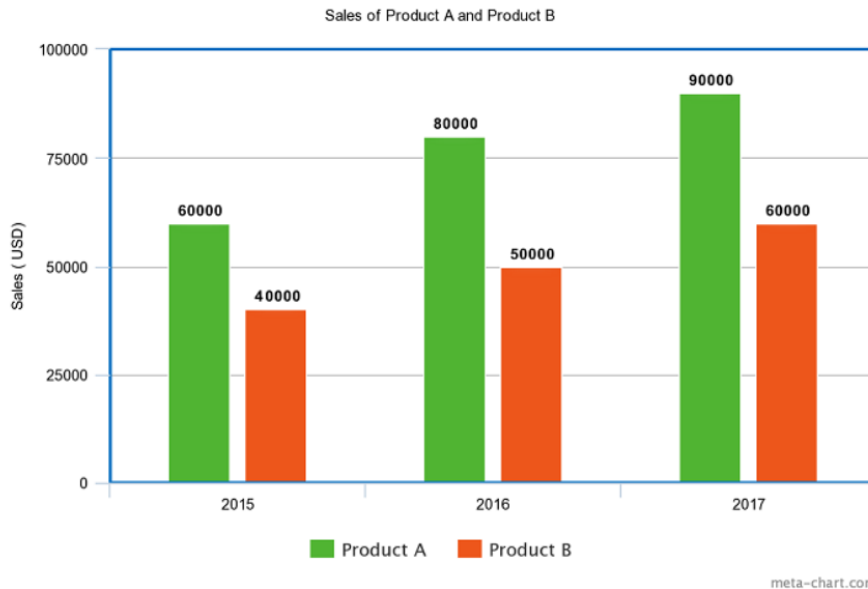
A bar chart is evenly spaced bar extending horizontally or vertically. It can present the relationship of numbers in two or three dimensions.

### 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).



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

## 2. Pie Chart

A **pie chart** is a type of graph that represents the data in the circular graph. The slices of pie show the relative size of the data, and it is a type of pictorial representation of data. A pie chart requires a list of categorical variables and numerical variables. Here, the term “pie” represents the whole, and the “slices” represent the parts of the whole. The “**pie chart**” is also known as a “circle chart”, dividing the circular statistical graphic into sectors or sections to illustrate the numerical problems. Each sector denotes a proportionate part of the whole. To find out the composition of something, Pie-chart works the best at that time. In most cases, pie charts replace other graphs like the bar graph, line plots, histograms, etc.

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

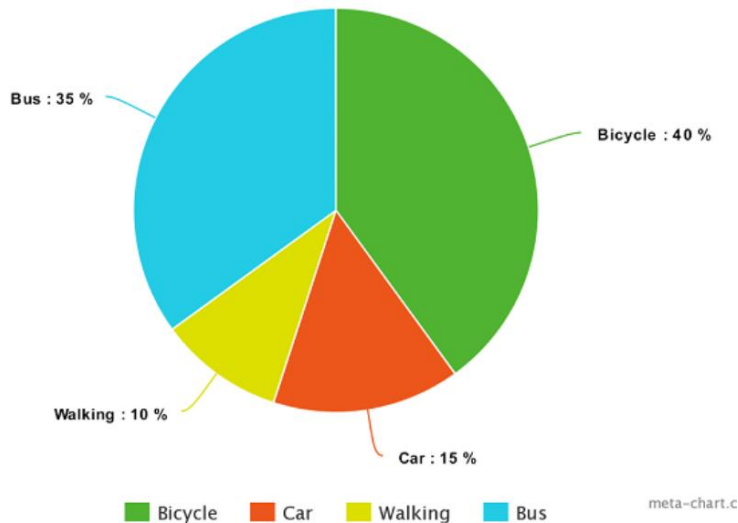
### Uses of pie chart:

- ⇒ When you want to create and represent the composition of something
- ⇒ When you want to show percentages or proportional data
- ⇒ It is very useful for displaying **nominal or ordinal** categories of data.
- ⇒ To **show percentage** or proportional data.
- ⇒ When **comparing areas of growth** within a business such as profit.

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 College.

Type of transportation to college



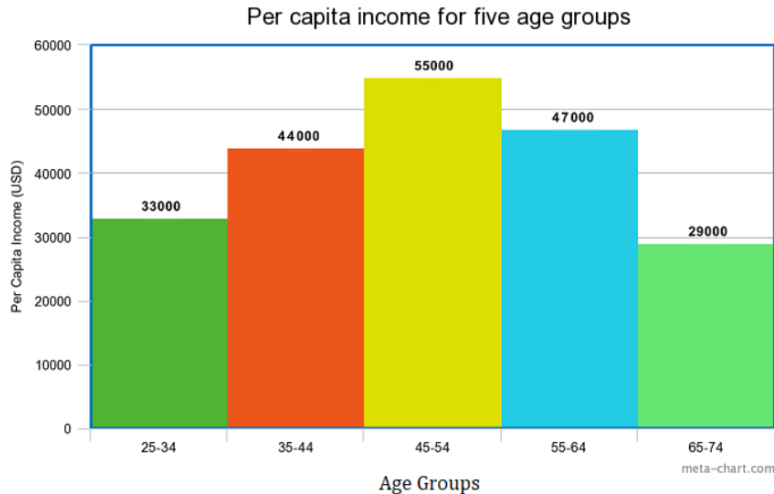
### 3. Histogram

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.
- ⇒ To summarize **large data sets** graphically.
- ⇒ To communicate the data distribution quickly to others.

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.

#### 4. 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.

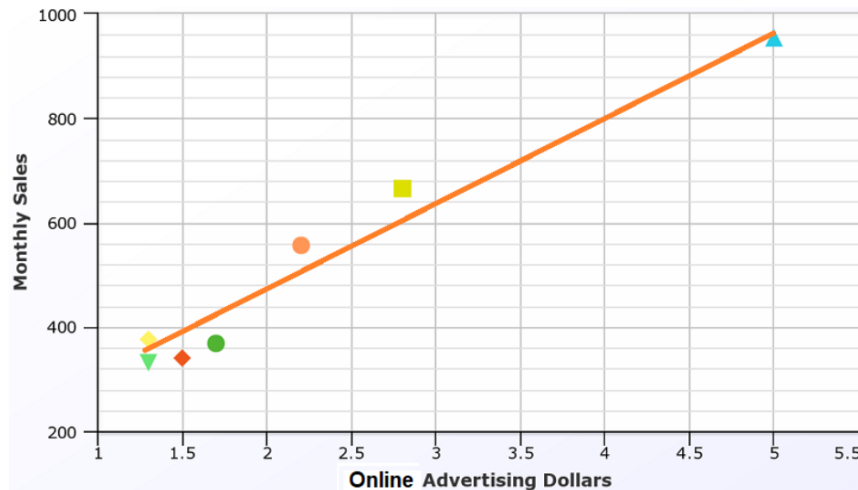
The purpose of a Scatter Plot is to **show the relationship between two variables**.

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).

##### Scatter plot uses:

- When trying to find out whether there is a **relationship between 2 variables**.
- **To predict** the behavior of dependent variable based on the measure of the independent variable.
- When having paired numerical data.
- When working with root cause analysis tools to identify the potential for problems.
- When you just want to visualize the correlation between 2 large datasets **without regard to time**.

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.” The orange line you see in the plot is called “line of best fit” or a “trend line”. This line is used to help us make predictions that are based on past data.

The Scatter plots are used widely in data science and statistics. They are a great tool for visualizing linear regression models.

More examples and explanation for scatter plots you can see in our post what does a scatter plot show and simple linear regression examples.

## 6. Area Charts

Area charts show the change in one or several quantities over time. They are very similar to the line chart. However, the area between axis and line are usually filled with colors.

Despite line and area charts support the same type of analysis, they cannot be always used interchangeably. Line charts are often used to represent multiple data sets. Area charts cannot show multiple data sets clearly because area charts show a filled area below the line.

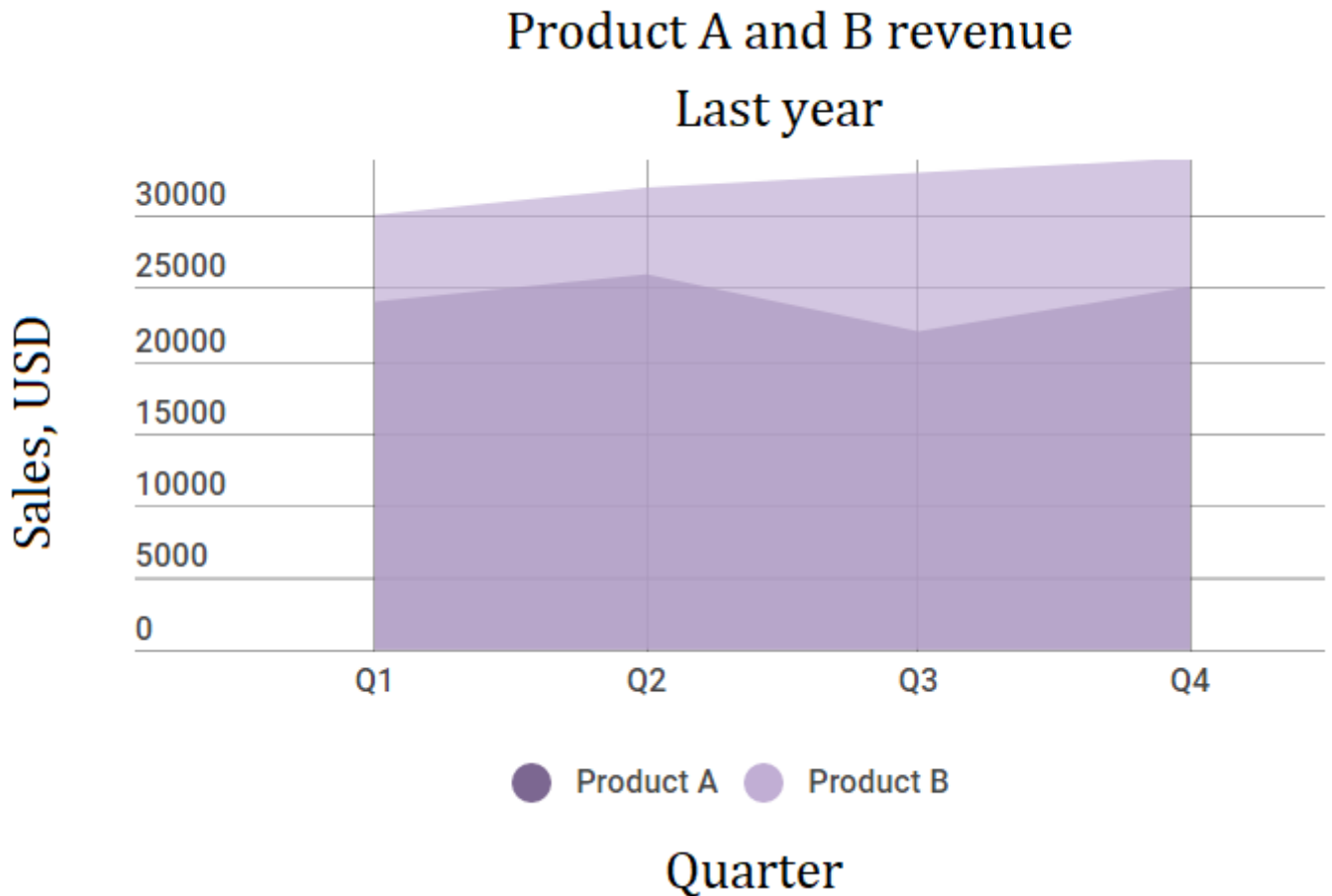
Area Chart Uses:

- When you want **to show trends**, rather than express specific values.
- To show **a simple comparison** of the trend of data sets over the period of time.
- To display **the magnitude** of a change.
- To compare a small number of categories.

The area chart has 2 variants: a variant with data plots overlapping each other and a variant with data plots stacked on top of each other (known as **stacked area chart** – as the shown in the following example).

Example:

The area chart below shows quarterly sales for product categories A and B for the last year.



This area chart shows you a quick comparison of the trend in the quarterly sales of Product A and Product B over the period of the last year.

E. Conclusion

F. References Learning target here, the students are:

**Material:**

References

Shinta, Qurinta. *English for Business A guide to speaking and written communication in Business English*. Semarang: Yayasan Prima Agus Teknik

Valcheva, Silvia. Nd. *Types of Graphs and Their Uses*. <http://intellspot.com/types-graphs-charts>

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