

## Graphical Presentation of Data

The purpose of preparing a frequency distribution is to provide a systematic way of “looking at” and understanding data. To extend this understanding, the information contained in a frequency distribution often is displayed in a graphic and/or diagrammatic forms. In graphical presentation of frequency distribution, frequencies are plotted on a pictorial platform formed of horizontal and vertical lines known as graph.

The graphs are also known as polygon, chart or diagram.

**A graph** is created on two mutually perpendicular lines called the X and Y–axes on which appropriate scales are indicated.

The horizontal line is called the abscissa and vertical the ordinate. Like different kinds of frequency distributions there are many kinds of graph too, which enhance the scientific understanding of the reader. The commonly used among these are bar graphs, line graphs, pie, pictographs, etc. Here we will discuss some of the important types of graphical patterns used in statistics.

**Histogram:** It is one of the most popular method for presenting continuous frequency distribution in a form of graph. In this type of distribution the upper limit of a class is the lower limit of the following class. The histogram consists of series of rectangles, with its width equal to the class interval of the variable on horizontal axis and the corresponding frequency on the vertical axis as its heights.

**Frequency polygon:** Prepare an abscissa originating from ‘O’ and ending to ‘X’. Again construct the ordinate starting from ‘O’ and ending at ‘Y’.

Now label the class-intervals on abscissa stating the exact limits or midpoints of the class-intervals. You can also add one extra limit keeping zero frequency on both side of the class-interval range.

The size of measurement of small squares on graph paper depends upon the number of classes to be plotted.

Next step is to plot the frequencies on ordinate using the most comfortable measurement of small squares depending on the range of whole distribution.

To obtain an impressive visual figure it is recommended to use the 3:4 ratio of ordinate and abscissa though there is no tough rules in this regard.

To plot a frequency polygon you have to mark each frequency against its concerned class on the height of its respective ordinate.

After putting all frequency marks a draw a line joining the points. This is the polygon. A polygon is a multi-sided figure and various considerations are to be maintained to get a smooth polygon in case of smaller N or random frequency distribution.

**Frequency Curve :** A frequency curve is a smooth free hand curve drawn through frequency polygon. The objective of smoothing of the frequency polygon is to eliminate as far as possible the random or erratic fluctuations that is present in the data.

### **Cumulative Frequency Curve or Ogive**

The graph of a cumulative frequency distribution is known as cumulative frequency curve or ogive. Since there are two types of cumulative frequency distribution e.g., “ less than” and “ more than” cumulative frequencies. We can have two types of ogives.

i) **‘Less than’ Ogive:** In ‘less than’ ogive , the less than cumulative frequencies are plotted against the upper class boundaries of the respective classes. It is an increasing curve having slopes upwards from left to right.

ii) **‘More than’ Ogive:** In more than ogive , the more than cumulative frequencies are plotted against the lower class boundaries of the respective classes. It is decreasing curve and slopes downwards from left to right.