Analysis of data: Coding, editing and tabulation of data

*(same as topic 'Data processing')

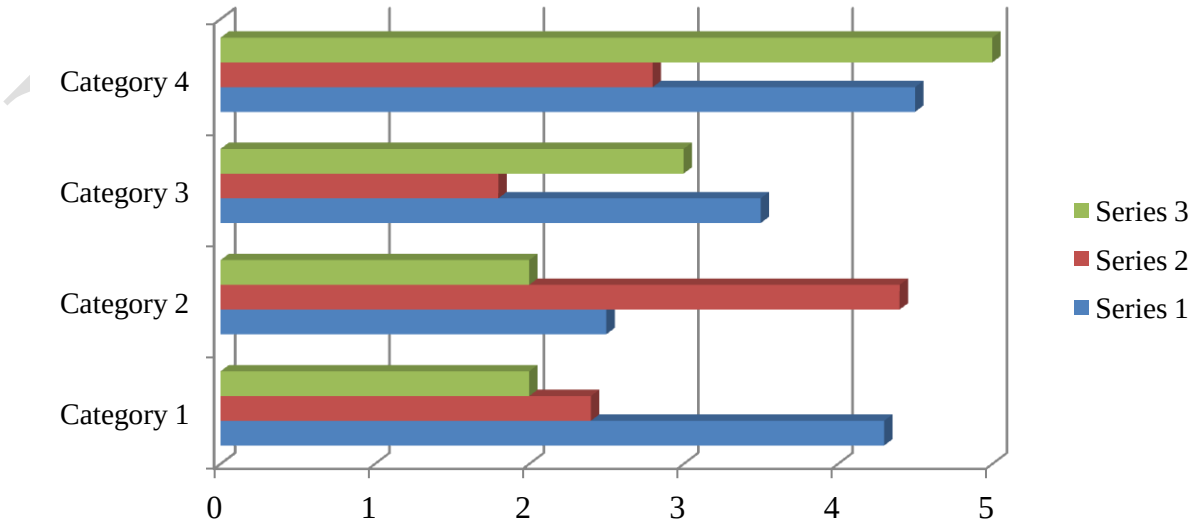
Charts and Diagrams

Statistical data, when written in the tabular form, are not easily understood by common men. For them, diagrammatic and graphical presentations are more effective. Hence, diagrams and graphs are needed for presentation of data to common men. Graphs are of use to statisticians for understanding theorems and results in statistics.

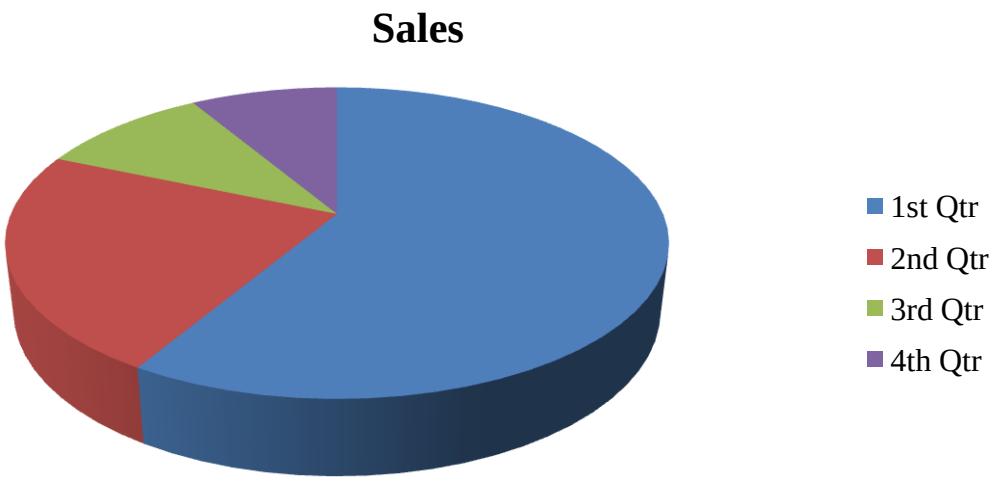
Besides, presenting the data in the form of tables, data can also be presented in the form of diagrams and graphs. Such visual presentation of data allows relation between numbers to be exhibited clearly and attractively, makes quick comparison between two or more data sets easier, brings out hidden facts and the nature of relationship, saves time and effort, facilitates the determination of various statistical measures such as Mean, Mode, Median, Quartiles, Standard deviation, etc. and establishes trends of past performance. Hence, with the help of the diagrams and graphs, the researcher can effectively communicate to readers the information contained in a large mass of numerical data.

Each of these is discussed in details below:

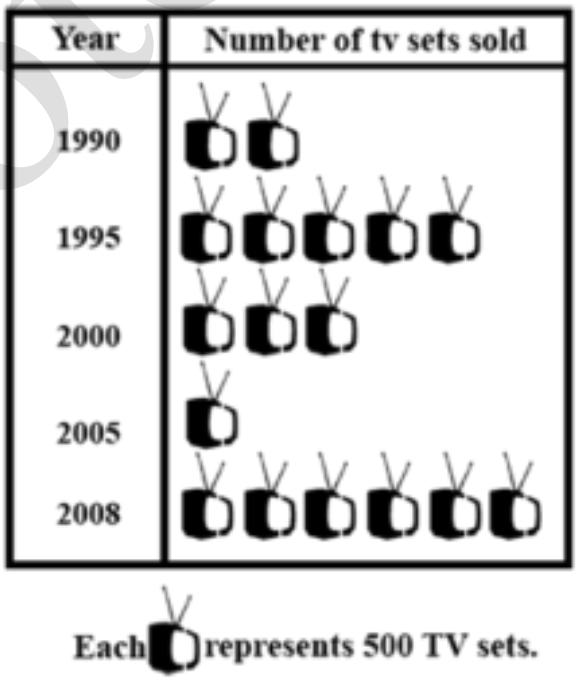
1. **Bar Diagrams:** The bar diagram uses bars whose length is used to represent the data. The width of each bar is supposed to be uniform. The bars can be represented vertically or horizontally. A good bar diagram is accompanied by the figures against each bar in order to make it more clear and represent able. A bar diagram can have a single bar or can have multiple bars.



2. **Pie Diagram:** The pie graph is a circle. Within each circle is a section that represents a percentage of a whole number. These sections are displayed like sections of a pie, which is where the graph's name originates. The pie graph can have as many pieces as necessary to represent the data.



3. **Pictograph:** A pictograph uses picture symbols to convey the meaning of statistical information. It is the representation of data using images. Pictographs represent the frequency of data while using symbols or images that are relevant to the data. This is one of the simplest ways to represent statistical data. And reading a pictograph is made extremely easy as well.



4. **Structure Diagrams:** A Data Structure Diagram (DSD) is a data model used to describe conceptual data models by providing graphical notations which document entities and their relationships and the constraints that binds them. The basic graphic elements of DSDs are boxes, representing entities, and arrows, representing relationships. Data structure diagrams are most useful for documenting complex data entities. Under these types of diagrams, there are two different diagrams, i.e.

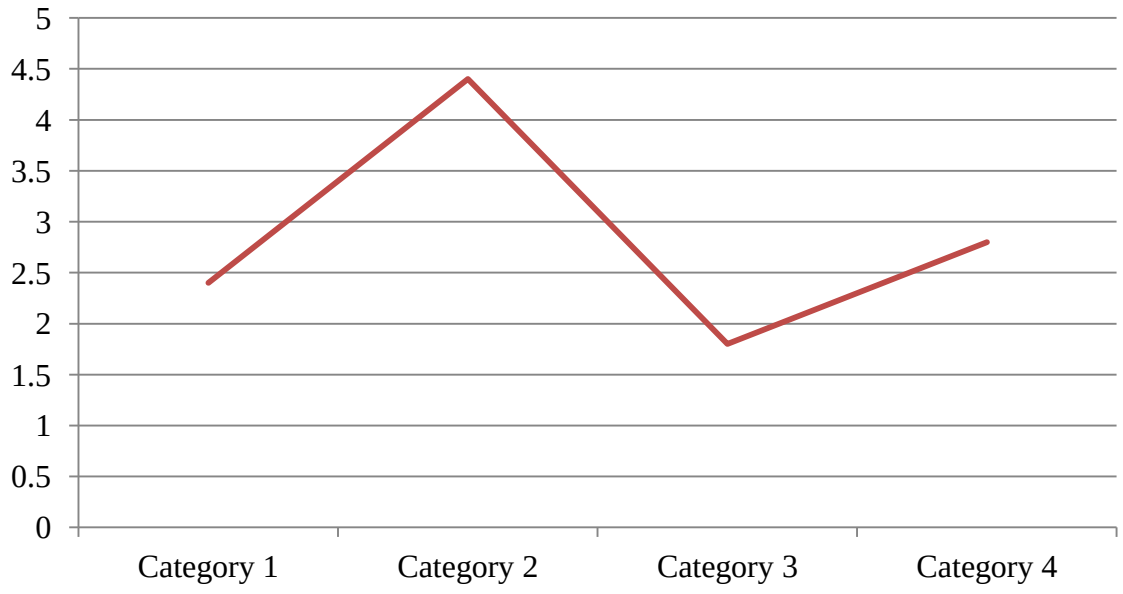
    - **Organizational Chart** is a diagram that shows the structure of an organization and the relation between its various parts and positions.

    - **Flowchart** represents an algorithm of process showing the steps as boxes of various kinds, and their order by connecting with arrows.

Graphical Representation of Data

Graphical Representation is another way of analyzing numerical data. It exhibits the relation between data, ideas, information and concepts in a diagram. It is easy to understand and it is one of the most important learning strategies. It always depends on the type of information in a particular domain. There are different types of graphical representation. Some of them are as follows:

1. **Line Graphs:** A line graph (also known as a line plot or line chart) is a graph which uses lines to connect individual data points that display quantitative values over a specified time interval. Line graphs use data point "markers" that are connected by straight lines to aid in visualization. Used across many fields, this type of graph can be quite helpful in depicting the changes in values over time.



2. **Histogram:** Histogram is a non-cumulative frequency graph, it is drawn on a natural scale in which the representative frequencies of the different class of values are represented through vertical rectangles drawn closed to each other. Measure of central tendency, mode can be easily determined with the help of this graph.

3. **Frequency Polygon:** The frequency polygon is a frequency graph which is drawn by joining the coordinating points of the mid-values of the class intervals and their corresponding frequencies.