

TOPIC- DEFINITION OF TABULATION PART-3

TYPES OF FIGURE

Several types of figures can be used to present data to the reader. Some-times the choice of which type to use will be obvious, but at other times it will not.

Graphs are good at quickly conveying relationships like comparison and distribution. The most common forms of graphs are scatter plots, line graphs, bar graphs, pictorial graphs, and pie graphs. Graph shows relations - comparison and distribution – in a set of data and may show, for example, absolute values, percentages, or index numbers.

Scatter plots are composed of individual dots that represent the value of a specific event on the scale established by the two variables plotted on the x- and y-axes. When the dots cluster together, a correlation is implied. On the other hand, when the dots are scattered randomly, no correlation is seen. For example, a cluster of dots along a diagonal implies a linear relationship, and if all the dots fall on a diagonal line, the coefficient of correlation is 1.00.

- Line graphs depict the relationship between quantitative variables. Customarily, the independent variable is plotted along the x-axis (horizontally) and the dependent variable is plotted along the y-axis (vertically).
- **Bar graphs come in three main types:** (1) solid vertical or horizontal bars, (2) multiple bar graphs, and (3) sliding bars. In solid bar graphs, the independent variable is categorical, and each bar represents one kind of datum, e. g. a bar graph of monthly expenditures. A multiple bar graph can show more complex information than a simple bar graph, e. g. monthly expenditures divided into categories (housing, food, transportation, etc.). In sliding bar graphs, the bars are divided by a horizontal line which serves as the baseline, enabling the representation of data above and below a specific reference point, e. g. high and low temperatures v. average temperature.
- Pictorial graphs can be used to show quantitative differences between groups. Pictorial graphs can be very deceptive: if the height of an image is doubled, its area is quadrupled. Therefore, great care should be taken that images representing the same values must be the same size.
- Circle (or pie) graphs, or 100% graphs are used to represent percentages and proportions. For the sake of readability, no more than five variables should be compared in a single pie graph. The segments should be ordered very strictly: beginning at twelve o'clock, order them from the largest to the smallest, and

shade the segments from dark to light (i.e., the largest segment should be the darkest). Lines and dots can be used for shading in black and white documents.

- Charts can describe the relations between parts of a group or object or the sequence of operations in a process; charts are usually boxes connected with lines. For example, organizational charts show the hierarchy in a group, flowcharts show the sequence of steps in a process, and schematics show components in a system.
- Dot maps can show population density, and shaded maps can show averages or percentages. In these cases, plotted data are superimposed on a map. Maps should always be prepared by a professional artist, who should clearly indicate the compass orientation (e.g., north-south) of the map, fully identify the map's location, and provide the scale to which the map is drawn. Use arrows to help readers focus on reference points.
- Drawings and photographs can be used to communicate very specific information about a subject. Thanks to software, both are now highly manipulable. For the sake of readability and simplicity, line drawings should be used, and photographs should have the highest possible contrast between the background and focal point. Cropping, cutting out extraneous detail, can be very beneficial for a photograph. Use software like GraphicConverter or Photoshop to convert color photographs to black and white before printing on a laser printer. Otherwise most printers will produce an image with poor contrast.

PREPARATION OF FIGURE

In preparing figures, communication and readability must be the ultimate criteria. Avoid the temptation to use the special effects available in most advanced software packages. While three-dimensional effects, shading, and layered text may look interesting to the author, overuse, inconsistent use, and misuse may distort the data, and distract or even annoy readers. Design properly done is inconspicuous, almost invisible, because it supports communication. Design improperly, or amateurishly, done draws the reader's attention from the data, and makes him or her question the author's credibility. The APA has determined specifications for the size of figures and the fonts used in them. Figures of one column must be between 2 and 3.25 inches wide (5 to 8.45 cm). Two-column figures must be between 4.25 and 6.875 inches wide (10.6 to 17.5 cm). The height of figures should not exceed the top and bottom margins. The text in a figure should be in a sans serif font (such as Helvetica, Arial, or Futura). The font size must be between eight and fourteen point. Use circles and squares to distinguish curves on a line graph (at the same font size as the other labels).

CREATING GRAPH

Following these guidelines in creating a graph mechanically or with a computer. Computer software that generates graphs will often handle most of these steps automatically.

- Use bright white paper.
- Use medium lines for the vertical and horizontal axes. The best aspect ratio of the graph may depend on the data.
- Choose the appropriate grid scale. Consider the range and scale separation to be used on both axes and the overall dimensions of the figure so that plotted curves span the entire illustration.
- In line graphs, a change in the proportionate sizes of the x units to the y units changes the slant of the line.
- Indicate units of measurement by placing tick marks on each axis at the appropriate intervals. Use equal increments of space between tick marks on linear scales.
- If the units of measurement on the axes do not begin at zero, break the axes with a double slash.
- Clearly label each axis with both the quantity measured and the units in which the quantity is measured. Carry numerical labels for axis intervals to the same number of decimal places.
- Position the axis label parallel to its axis. Do not stack letters so that the label reads vertically; do not place a label perpendicular to the vertical (y) axis unless it is very short (i.e., two words or a maximum of 10 characters). The numbering and lettering of grid points should be horizontal on both axes.
- Use legibility as a guide in determining the number of curves to place on a figure – usually no more than four curves per graph. Allow adequate space between and within curves, remembering that the figure may need to be reduced.
- Use distinct, simple geometric forms for plot points; good choices are open and solid circles and triangles. Combinations of squares and circles or squares and diamonds are not recommended because they can be difficult to differentiate if the art is reduced as can open symbols with dots inside.