



Review Article

AN OBSERVATIONAL STUDY ON GRAPHICAL PRESENTATION OF DATA - A REVIEW

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ABSTRACT

The most effective means of disseminating scientific knowledge, influencing choices on the acceptance or rejection of a paper, and drawing the attention of the scientific community to study findings are figures and charts. Second, a low ink-to-data ratio (the avoidance of unnecessary shading, three dimensionality, gridlines, and what is commonly referred to as "chartjunk"), and third, clear and unambiguous axes labelling, are also important criteria. Histograms, bar charts (always with measurements of error), box-and-whiskers plots, scatter plots, and forest plots should all be included in the researcher's indispensable graphic toolkit. **Methodology:** The material of graphical presentation of data has been collected from different, articles, authentic literatures, manuscripts, and authentic net sources, like NCBI, PubMed etc. **Conclusion:** discovered the significance, practicality, and benefits of graphs. Finally, using examples, we covered the various graph kinds. The answer to the more difficult first question will be determined by your data. Do not let the sort of visual that will be utilized be determined by programme restrictions. If your programme is unable to create the sort of visual you want, alter the software, not the graphic.

INTRODUCTION


The study of statistics focuses on gathering, organizing, summarizing, and analyzing data inputted; statisticians aim to understand the data and outcomes in relation to one another. Statistics that deal with data analysis from biological science and medicine is referred to as "biostatistics".^[1] Small amounts of data are presented using straightforward methods, such as simple tables, but since populations and large numbers of samples make up most of the data, we try to make our tables and graphs as simple to read and understand as possible. This is known as graphical presentation of data.^[2]

Analyzing the data from a biological experiment using the scientific approach of "try graphics first" is fundamental to science. A graph provides a preliminary assessment of the impact size,

the center and distribution of values, and outliers before moving further with formal statistical analysis. Surgeons are visual individuals who frequently find it easier to understand the key points of a clinical research when presented visually rather than numerically.^[3] Graphs, on the other hand, are the most often used tools for manipulating information and purposefully mislead readers and the scientific community astray, along with the alteration of photographic pictures. As a result, knowing how to read and understand data correctly has become crucial for evidence based practice.^[4]

A detailed and understandable figure that summarizes a study's important findings is more than just a required addition to the manuscript; it might play a crucial role in whether the research is accepted or rejected during peer review. It also demonstrates scientific integrity and professionalism. It is justified that exceptional care was used in selecting the graph format and its design.^[5]

High circulation journal author guidelines still frequently lack specific instructions on how to create figures. For instance, the author's directions for Injury's figures print eleven lines, mostly on technical

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matters rather than the recommended sorts of graphs, axis labelling, or appropriate graphical elements.^[6] The single most crucial piece of advice is this: "Figures should be confined to those considered vital." Researchers should carefully consider how to divide their findings into text, figures, and tables. A first-order graph, such as a bar chart, box plot, or scatter plot, for instance, can elegantly convey data relevant to the main hypothesis along with the proper metrics of error and distribution.^[7]

Methodology

The material of graphical presentation of data has been collected from different, articles, authentic literatures, Manuscripts, and authentic net sources, like NCBI, PubMed etc.

Graphical Representation

Analyzing numerical data may be done via graphical representation. It uses a graphic to show the relationship between the facts, ideas, information, and concepts. One of the most crucial learning techniques, it is also simple to grasp. The kind of information in a certain area is always a factor. Many kinds of graphical representation exist^[7]. These are a few of them.

Line Graphs

The line graph, also known as the linear graph, is a valuable tool for anticipating future occurrences across time and is used to depict continuous data.

Bar Graphs

A bar graph compares data by using solid bars to indicate numbers and is used to depict a category of data.

Histograms are graphs that employ bars to show how frequently interval organized numerical data occurs. All of the bars have the same width since all of the intervals are equal and continuous.

Line Plot

It displays the data's frequency on a certain number line. Every time such data appears again, a "x" is added above a number line.

The Frequency

Table displays the number of data points that fall inside the specified range.

The Circle Graphs

Sometimes referred to as the pie chart, depicts the connections between the constituent components of the total. The circle is taken into account as 100%, and the categories that are occupied are represented by that particular proportion, such as 15%, 56%, etc.

Stem and Leaf Plot

Data are arranged using a stem and leaf plot, from the lowest value to the highest value. The stems

are formed by the digits with the next place value and the least place values from the leaves.

Box and Whisker Plot

By splitting the data into four pieces, the plot diagram summarizes the information. The data's range (spread) and median (center) are displayed using a box and whisker plot.

Types of Graphical Presentation of Data

There are several ways to show data graphically; the best one to use will depend on the type and quantity of variables being used, as well as the intended audience.^[8]

Arithmetic Scale Line Graph

The trend, which is the evolution through time of one or more sets of data, should be shown. The slope of the line represents the pace of growth or decline.

Histogram

Data is shown using bars of varying heights in this way. How much data falls inside the range is shown by the height. It is used to one set of data with a single quantitative continuous variable. X and Y axes are used to disperse the data. The size of the bars in a histogram is significant since it represents details.^[9]

Bar Chart

It is used to show discrete or qualitative categorical variables. It has cones that are equally spaced along the x-axis. The width of the bar chart and the space underneath it is meaningless in a bar chart. Start the vertical axis at zero.

Pie Chart

Starting at 12 o'clock and arranged in a clockwise fashion, it is a wedge-shaped piece of a circle that shows the percentage of qualitative data. To illustrate the angle, we multiply the relative frequency of each division by 360°.

Map Chart

It serves as a visual representation of how one or more types of data are distributed geographically.

Scatter Diagram

When examining the relationship between two quantitative variables using a scattered pointed graph, it is used to display a pair of measurements as a single point on the graph with one value plotted on the x-axis and the other value plotted on the y-axis. This relationship can be either positive, negative, or have no relation.^[10]

Graphical Presentation's Benefits

- This is a list of some benefits of utilizing graphs:
- Even when we have no prior knowledge of the facts or information, the graph nevertheless aids in our understanding.
- Time is saved.

- It makes it simpler for us to compare data from various types or time periods.
- It is mostly used in statistics to calculate the mean, median, and mode for various sets of data as well as for extrapolation and interpolation.

Use of Graphical Presentations

The major goal of displaying scientific data in the form of graphs is to effectively convey information while avoiding misunderstanding or deceit. This is crucial for conveying to others our conclusions as well as our comprehension and data analysis. Understanding and spotting trends and patterns in the ever growing data flow requires graphic data visualization. A rapid study of big amounts is facilitated by graphical representation, which also supports formulating predictions and defensible conclusions.^[11]

CONCLUSION

We have looked at the specifics of data visualization in this essay. We discovered the significance, practicality, and benefits of graphs. Finally, using examples, we covered the various graph kinds. To assist students better comprehend the idea, we have solved instances. After reading through so many examples, you're undoubtedly wondering which image to choose and, more importantly, how to utilize it as we draw to a close. The answer to the more difficult first question will be determined by your data. Think on the sort of visual you want and what it needs to portray while taking into account your data, and then start considering how to make it. Do not let the sort of visual that will be utilized be determined by programme restrictions. If your programme is unable to create the sort of visual you want, alter the software, not the graphic.

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