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Analysis of the Uses and Abuses of Statistics

Abstract

Statistics play a critical role in providing organizations, institutions and individuals with information that will allow them to make decisions based on facts. Therefore, when the statistical data and representation are abused, it can lead to many problems to decisions making process as well as present misleading information to receivers. With the increase in data, more statistical analysis needs to be done, therefore, with more uses of it individuals need to understand how they can recognize how statistics are abused. The purpose of this paper is to focus on the analysis of the uses and abuses of statistics. Abuse of statistics can happen from the initial stages of data collection to the last process of presentation.

Introduction with Findings

Statistics is used in different fields because it helps in making decisions based on facts. Therefore, it plays an important role in ensuring organizations, institutions and governments understand how their operations are going on as well as businesses to check their market. Different fields where statistics can be utilized include socio-economic learning, business, education and finance. Statistics is defined as a method of mathematical examination that utilizes quantified models, depiction and outlines for a certain set of investigational data. Therefore, it

involves a combination of collecting, evaluating, analyzing and developing conclusions from the obtained data (Amrhein et al. 263). With the aid of statistics, individuals can use the drawn conclusions to make more operative choices as well as manage their work more proficiently.

Moreover, before conclusions are made several steps are used during the statistics process. For example, one of the initial stages comprises collecting data from the field which is being examined. Therefore, collecting data from study participants will require the use of data collecting tools such as questionnaires or interviews. Questionnaires involve a sequence of questions that are developed for the drive of the collection of data from participants (Amrhein et al. 270). Consequently, they can be performed in different ways such as through face to face or the use of computer and telephone. On the other hand, the interview involves one individual who asks questions and the other one replying with answers. Therefore, it involves a conversation between the interviewer and the interviewee.

The next step in conducting statistics is unifying and presenting data. Organization of data in statistics is essential as it ensures collected data is thoroughly arranged for easy understanding and makes it more appropriate for additional statistical treatment. Moreover, the presentation of statistical data is done through frequency distribution tables, bar charts and pie charts. Another step is to analyze and interpret data. This is the crucial step as it is aimed at providing conclusions. Moreover, to examine and interpret data, researchers may use a measure of central tendency or measure of dispersion. However, data to be used in statistics is divided into two groups, including qualitative and quantitative data. Qualitative data is that which can be disconnected into several groups and can be differentiated by non-numerical features. On the other hand, quantitative data is that which comprises of numbers that denote counts or measures.

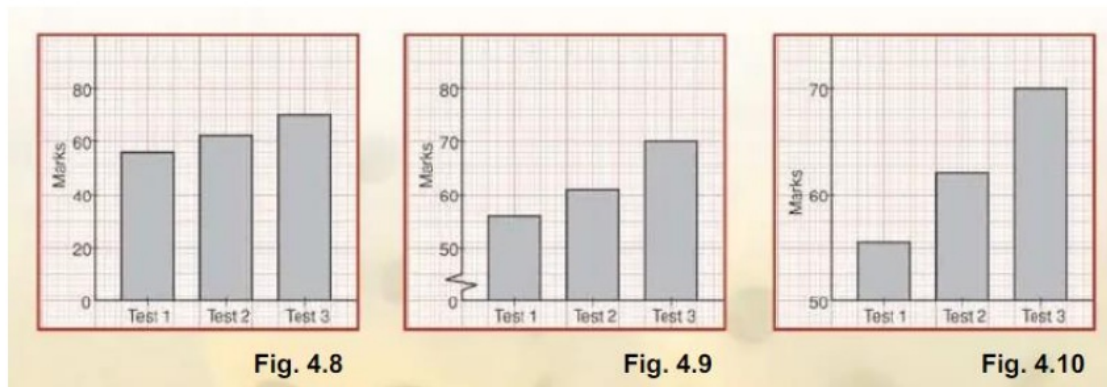
Statistics can be utilized in real life in different ways. For example, companies may use statistics to deliver good products at an affordable price through the use of control charts. Similarly, when healthcare organizations and government institutions need to control diseases, they may utilize analysis of statistical data that will enable them to predict epidemics. According to Dinnah, poll outcomes are utilized to recognize digital shows as well as the products sold to individuals. Nevertheless, the uses of statistics in real life are immense and lead to significant changes in an individual's life and the world in general, for instance, endangered species can result in changes in future generations' lives and ecological conditions. Therefore, through statistical approximations of varying populations, protective regulations and laws are developed to ensure the species under study are considered.

Moreover, despite statistics having more uses and providing a significant impact on society, it can also be abused and made to deliver misleading information to people. This involves using statistics in a way that it was not intended to. Providing ambiguous information to the receiver may make organizations and institutions to draw wrong decisions as they will have the wrong picture of the data. According to Bregar et al. (240), the current digital world has increased data and thus it is essential to know the foundations of misleading statistics and oversight. Nevertheless, not all statistical abuses are intentional because some are not. One of the abuses is bad samples. Statistics can be abused immediately from the first stage of data collection, therefore, unsuitable methods such as having a self-selected survey, will provide biased results. The self-selected survey comprises of voluntary response sample and thus includes individuals involved in the study decide themselves be included. This will make individuals with solid views and ideas to be more prospective in the engagement hence the received answer will not be illustrative of the whole population.

Another way statistics can be abused is through misrepresentation of statistical data to the graph. Data can be presented in different graphs and charts; therefore, this can lead to delivering different impressions to the receivers. Although sometimes it is considered as not done consciously but is a situation where individuals do not realize how the data is utilized in the graph. Therefore, the different ways in which graphs are misleading, one of the ways is having a vertical scale that is big and/or very small or does not start at zero. Another way is when a graph is not labeled properly and finally is when several data is not included in the graph.

Figure 1

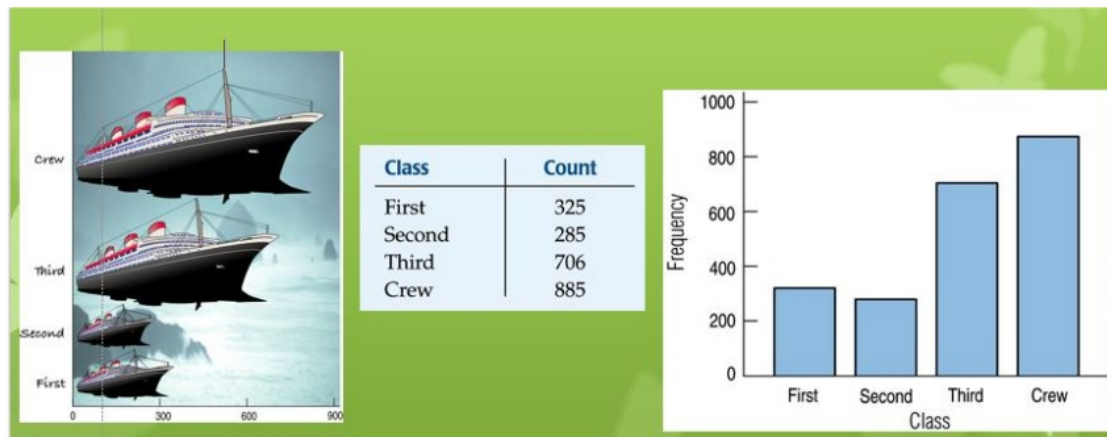
Chapter 17 Uses and Abuses of Statistics



Based on the charts above, the data represented in the graph are the same however, the graph used has utilized different scales. This will provide different impressions to the receivers as they do not indicate the same level hence misleading readers (Scribd.com). Moreover, receivers need to be cautious when reading charts because most of them do overstress or hide the correct denotation of data. For example one of the ways to create misleading graphs is through not ensuring to the area principle.

Figure 2

Uses and Abuses of Statistics



As indicated in the chart above, pictographs utilize the picture symbols to take the connotation of the statistical information. However, pictographs can be misleading as they can easily misrepresent the data. Therefore, they need to accurately visualize the data. Based on the diagram above the pictographs used do not indicate the number of counts it represents. Moreover, since there are no guidelines on the way pictographs should be developed to match the statistical data, individuals involved in the creation of the graphs are required to select groupings on X-axis and the scale at the same time starting and ending points on Y-axis (slideplayer.com). Similarly, considering that there is part of an individual selection does not indicate that every choice is suitable hence making the majority of them being misleading.

Percentages are very critical in statistics because they represent part of the whole population. However, when they are not represented well, they can result in distortion of the outcomes hence misleading individuals. For example, an organization asked ten of their customers if they are satisfied with the products and nine of ten claimed they are satisfied, hence the organization claimed that more than ninety percent of their customers are satisfied with their

products. Another way that statistics can be abused is through the use of precise numbers since they are not always equal. For example, it is not important to say that there are 2000 cars in New York City, but it would be good to say there are almost two thousand cars in New York City because it is an estimate.

Conclusion/Summary

Statistics plays a critical role in helping individuals and organizations to make rational decisions based on facts. Therefore, it is a process that requires clear and accurate data to avoid drawing misleading results. The process of statistical analysis begins with the collection of data using different data collection tools. Statistics has several uses in daily life, for instance, to manage diseases, statistical analysis must be performed to identify the expectation of the epidemic. Also, endangered species are protected using guidelines and rules that are generated based on the statistics developed indicating the variations in population size. However, since the statistical data needs to be gathered, organized, presented, analyzed and interpreted, they also can be abused. Statistics can be abused intentionally or by mistake. Nevertheless, abuse of statistics can begin immediately during the collection of data especially when bad samples are used this includes a self-selected survey that may alter the statistical results. Another way is the misrepresentation of the graph. Some scales may have the same content but uses different scales hence leading to misleading interpretation. Pictographs can also result in abuse of statistics as they do not have rules to be selected hence will be based on an individual's selection. Finally, percentages may lead to misleading representation as small samples can be used to provide a percentage that will denote the whole population.

Works Cited

Amrhein, David Trafimow, Valentin & Sander Greenland. "Inferential statistics as descriptive statistics: There is no replication crisis if we don't expect replication." *The American Statistician* 73.sup1 (2019): 262-270.

Bregar, Lea, Irena Ograjenšek, and Mojca Bavdaž. "Teaching economic statistics in a digital environment." *New approaches in applied statistics* (2000): 237-249.

Dinnah, Harrel. Uses and Abuses of Statistics. <https://slideplayer.com/slide/4451451/>. Accessed 12 November 2020.

Scribd.com, Uses and Abuses of Statistics. www.scribd.com/doc/6655024/Chapter-17-Uses-and-Abuses-of-Statistics. Accessed 12 November 2020.

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