

Descriptive statistics essay

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Descriptive Statistics

Mean and standard deviation

Mean = Summation / Sample size

$$\text{Summation} = 3 + 5 + 6 + 6 + 8 + 8 + 9 + 9 + 9 + 10 + 11 + 45 = 129$$

$$\text{Sample size} = 129/12 = 10.75$$

$$\text{Standard deviation} = \sqrt{\sum(x - \mu)^2 / N - 1}$$

Where;

X represents each score

μ is the mean

N is the sample size

$$\begin{aligned} \sum(x - \mu)^2 &= (3 - 10.75)^2 + (5 - 10.75)^2 + (6 - 10.75)^2 + (6 - 10.75)^2 + (8 - 10.75)^2 \\ &+ (8 - 10.75)^2 + (9 - 10.75)^2 + (9 - 10.75)^2 + (9 - 10.75)^2 \\ &+ (10 - 10.75)^2 + (11 - 10.75)^2 + (45 - 10.75)^2 = 1336.25 \end{aligned}$$

Therefore;

$$\text{Standard deviation} = \sqrt{\{1336.25 / (12 - 1)\}} = 11.02$$

Comparison of the two treatments

The mean number of months that the new treatment delays significant disability and complications of the disease is 10.75 with a standard deviation of 11.02. On the other hand, the mean and standard deviation of the old treatment are 9.6 and 3.2 respectively. The mean number of months that the new treatment delays the onset of severe complications of the disease is higher by 1.15 months.

However, the standard deviation of the new treatment is high compared to the old treatment. This implies that data on the new treatment method is widely spread apart. Therefore, using the mean as a measure of central tendency may not be reliable. For example, the last value of the new treatment has a very large range with the other values. If it is eliminated the mean will vary greatly. Therefore, the mean may not be the most appropriate measure of central tendency to use when comparing the number of months that the two treatments delay significant disability and complications of the disease. This is because of the huge difference in the standard deviation between the two groups. Other measures of central tendency could be used to compare the two groups such as median or mode. Alternatively, data of the old treatment method and the new treatment method could be converted to a normal distribution using z-score to facilitate comparison.

Factors I would consider when making the decision about funding the research.

There are several factors that I would consider when making the decision about funding the research. The first one is the objectivity of the findings. The findings should be free from the researcher's bias. This is because the researcher could have altered the findings to make them look impressive. The second one is the accuracy and reliability of the findings. The measuring methods used to obtain data should be accurate and free from error. Similarly, the data should be from reliable sources so that it paints a true picture of the research. The cost of the research is also a determining factor in the decision making process. The American Heart Association has financial

limitations just like any other organization and it can only fund a research whose costs are within its ability. It would also be prudent to compare the costs versus the benefits. The research will only be viable if the anticipated benefits outweigh the costs. Therefore, I would only fund a research whose costs are lower than the expected benefits.

Recommendations to the board

I would tell the board that this study does not show any promise. First, the sample used is too small to draw a meaningful conclusion from it. Secondly, the standard deviation of 11.02 is very large compared to that of the old treatment which means the data is widely spread. This implies that the individual values are not consistent. The new treatment's last value of 45 is an extreme value explains why the mean of the new treatment is higher. If the value is eliminated, the mean falls to 7.6 which is lower than the mean of the old treatment. Based on this, it is not worth to grant more funds to continue with the study.

References

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