

Data calculation and presentation research paper examples

[Business](#), [Customers](#)



Data calculation and presentation

SECTION A

1. Mean = $1065/300 = 3.55$

2. Mode is the satisfaction score with the highest frequency which is a score of 5

3. Median is the satisfaction score where the middle customer lies. Since the number of customers is even, the middle customers will be $n/2$ and the $(n+1)/2$ customers.

Middle customers will be $300/2 = 150$ and $(300+2)/2 = 151$

The 150th and 151st customers have a satisfaction score of 4

Therefore the median is 4.

4. Standard deviation = $\sqrt{11.5125/3.55} = 1.80$

5. The statistical results that would matter most are the mode and the standard deviation. The mode will be important to know the satisfaction score of most of the customers and the distribution of the level of satisfaction among customers.

6. If the sample was normally distributed, the most important test result would be the mean. The standard deviation would not be important because the satisfaction score would already have a predetermined distribution among sampled customers.

SECTION B

$$1. H_0: \mu \leq 3.8$$

$H_0: \mu$ is not ≤ 3.8

$$\text{Calculated t-score} = (\bar{x} - \mu) / s_{\bar{x}}$$

$$s_{\bar{x}} = \text{Calculated t-score} / (\bar{x} - \mu)$$

Where;

$$\text{Calculated t-score} = t\text{-critical} = 2.086$$

\bar{x} is 3.55

$$\mu \text{ is } 3.55 + 0.25 = 3.80$$

Therefore

$$2.086 = (3.8 - 3.55) / s_{\bar{x}}$$

$$2.086 s_{\bar{x}} = 0.25$$

$$s_{\bar{x}} = 0.25 / 2.086 = 0.1198$$

$$s_{\bar{x}} = \delta / \sqrt{n}$$

$$\sqrt{n} = \delta / s_{\bar{x}} = 1.8 / 0.1198 = 15$$

Therefore; $n = 225$

2. A small sample size increases the standard error. This is the like hood that the parameters obtained from the sample may not reflect the population parameters.

SECTION C

1. Correlation coefficient

$$\text{Correlation coefficient} = 15740000 / (40.49691346 * 553948.5536) = 0.$$

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2. There is a strong positive correlation between household incomes and their satisfaction score.
3. As the correlation coefficient is 0.702, we can conclude that there is a reasonable relationship between household income and their satisfaction score.
4. As the vice president of marketing, I would seek to know seek to find out why households with low incomes have low satisfaction scores as indicated by the correlation coefficient.

SECTION D

1. $H_0: \mu \geq 4.0$
2. $H_0: \mu$ is not ≥ 4.0
3. Calculated t-score = $(\bar{x} - \mu) / s_{\bar{x}}$

Where; μ is the expected target market average score which is 4.0

\bar{x} is the sample average score which is 3.55

$s_{\bar{x}}$ is the standard error for the sample which is given by standard deviation of the tested sample which is 1.80 divided by the square root of the sample size.

$$s_{\bar{x}} = 1.80 / \sqrt{20} = 0.402$$

Therefore;

$$\text{Calculated t-score} = (3.55 - 4.0) / 0.402 = 1.118034$$

At 95% level of confidence for a one tailed test, the t-critical from the t-table

is 2. 086

4. The null hypothesis is accepted. At 95% level of confidence, t-calculated is less than t-critical. That is $1.118 < 2.086$.

SECTION E

1. Statistical process control can be defined as the use of statistical techniques used for quality improvement by monitoring a given process. It ensures that the processes operate at their full capacity in producing a conforming product.

2. Most of the sampled items have a measurement lower than the sample mean, UCL and USL. There is no measurement that falls below the LSL.

References

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