Statistics Notation

a b n p q r s t x y z α β χ μ σ E F H P

Notation is an important part of communication in mathematics. Using the correct notation for statistical concepts is essential. BE CAREFUL! In statistics, unlike algebra, you are NOT free to substitute another letter in place of standard notation. Each of the above letters has a specific meaning in statistics. Also remember that "hats" and "bars" change those meanings. For example, y, $\hat{y}$, and $\bar{y}$ each have a very different meaning. Also, capitalizing a letter can change its meaning.

First Semester Concepts:

1. Identify the letter used for the mean of a population.

2. Identify the letter used for the mean of a sample.

3. Identify the letter used for the standard deviation of a population.

4. Identify the letter used for the standard deviation of a sample.

5. Explain the difference between x_2 and x_i .

6. Identify the letter that represents the standard normal variable.

7. Which letter represents the slope of the least-squares regression line?

8. Which letter represents the y-intercept of the least-squares regression line?

9. Explain the difference between y, $\hat{y}$, and $\bar{y}$.

10. Explain the difference between y_2 and $\hat{y}_2$.

11. Identify the letter used for correlation.

12. Which letters are most commonly used for random variables?

13. Explain the difference between the variables x and X.

14. Identify the letter that represents the number of observations in a sample.

15. Identify the letter used for the probability of an event.

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First Semester Concepts:

1. Identify the letter used for the mean of a population. μ

2. Identify the letter used for the mean of a sample. $\bar{x}$

3. Identify the letter used for the standard deviation of a population. σ

4. Identify the letter used for the standard deviation of a sample. s

5. Explain the difference between x_2 and x_i.

    x_2 represents the second observed x-value, while x_i represents all possible x-values.

6. Identify the letter that represents the standard normal variable. z

7. Which letter represents the slope of the least-squares regression line? b

8. Which letter represents the y-intercept of the least-squares regression line? a

9. Explain the difference between y, $\hat{y}$, and $\bar{y}$.

    y represents the observed y-values, $\hat{y}$ represents the predicted y-values, and $\bar{y}$ represents the average y-value

10. Explain the difference between y_2 and $\hat{y}_2$.

    y_2 represents the second observed y-value, $\hat{y}_2$ represents the second predicted y-value

11. Identify the letter used for correlation. r

12. Which letters are most commonly used for random variables? X and Y

13. Explain the difference between the variables x and X.

    X is a random variable and x is not

14. Identify the letter that represents the number of observations in a sample. n

15. Identify the letter used for the probability of an event. P

Explain what each of the following represent, and when they would be used.

1. $\hat{p}$

2. p

3. p_0

4. $p-value$

5. z

6. $z*$

7. $-z*$

8. H_0

9. H_A

10. n

11. N

12. $n\hat{p}$

13. $n\hat{q}$

14. np_0

15. nq_0

16. $\sqrt{\dfrac{\hat{p}\hat{q}}{n}}$

17. $\sqrt{\dfrac{p_0 q_0}{n}}$

18. $z*\sqrt{\dfrac{\hat{p}\hat{q}}{n}}$

19. $\hat{p} \pm z*\sqrt{\dfrac{\hat{p}\hat{q}}{n}}$

20. $\dfrac{\hat{p} - p_0}{\sqrt{\dfrac{p_0 q_0}{n}}}$

1. _____ $n\hat{q}$

2. _____ $\hat{p}$

3. _____ $z^*\sqrt{\dfrac{\hat{p}\hat{q}}{n}}$

4. _____ H_A

5. _____ p

6. _____ $p-value$

7. _____ N

8. _____ z

9. _____ np_0

10. _____ z^*

11. _____ $\hat{p}\pm z^*\sqrt{\dfrac{\hat{p}\hat{q}}{n}}$

12. _____ nq_0

13. _____ $-z^*$

14. _____ H_0

15. _____ $\sqrt{\dfrac{\hat{p}\hat{q}}{n}}$

16. _____ n

17. _____ $\dfrac{\hat{p}-p_0}{\sqrt{\dfrac{p_0q_0}{n}}}$

18. _____ p_0

19. _____ $n\hat{p}$

20. _____ $\sqrt{\dfrac{p_0q_0}{n}}$

A. Null hypothesis

B. Alternative hypothesis

C. Population parameter

D. Probability of obtaining a sample value at least as extreme as the one observed, assuming that the null hypothesis is true

E. Upper-p critical value

F. Lower-p critical value

G. Parameter used in the null hypothesis

H. Sample statistic

I. Standard Normal value

J. Sample size

K. Population size

L. One-proportion z-intereval

M. Number of successes observed in the sample

N. Number of failures observed in the sample

O. Expected number of successes in the sample

P. Expected number of failures in the sample

Q. Standard error of the sample proportion

R. Standard deviation of the parameter in a one-proportion z-test

S. Margin of error

T. Z-value in a one-proportion z-test