Name: _____
Score: _____ / _____

Assignment_8

Part 1:

(0) Suppose we have randomly drawn n iid tuples of sample data (y, x1, x2, x3, x4)_1, (y, x1, x2, x3, x4)_2, ..., (y, x1, x2, x3, x4)_n, from the population space X and Y. Suppose assumption 1-5 holds. Use the following dataset to answer the following questions. No need to answer this question. This question sets up the parameter of the following questions and serves as a separator. (Round your answer in 3 decimal Places as always).

Attachments
A8_Q1.csv

Accepted characters: numbers, decimal point markers (period or comma), sign indicators (-), spaces (e.g., as thousands separator, 5 000), "E" or "e" (used in scientific notation). **NOTE:** For scientific notation, a period MUST be used as the decimal point marker.

(1) Suppose we want to test H_0: \beta1 + 2\beta_2 = 1 and \beta3 = 2 We want to know whether we could reject the null H_0 in favor of the alternative H_1 at 10% significant level. Reformulate the Null hypothesis into the matrix format A \beta = a. What is the dimension of matrix A?

number of rows of A = ____

number of columns of A = ____

(2) Which of the following test statistics do you want to use to test the above Null Hypothesis H_0?

- A. t-statistics
- B. Wald-statistics
- C. z-statistics
- D. F-statistics

(3) What is the associated distribution of the correct test statistics follows?

- A. t-distribution
- B. \chi ^2 distribution
- C. Standard Normal
- D. F distribution

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(4) What is the numerical value for the correct test statistics under the above H_0 = ____

Accepted characters: numbers, decimal point markers (period or comma), sign indicators (-), spaces (e.g., as thousands separator, 5 000), "E" or "e" (used in scientific notation). NOTE: For scientific notation, a period MUST be used as the decimal point marker.

(5) What is the first degree of freedom of the correct underlying distribution = (Please answer -1 if the distribution does not have the degree of freedom argument) ____

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(6) What is the critical value (Threshold value) for reject the underlying H_0 and H_1 at 10% significant level = ____

(7) Can you reject the Null H_0?

- True
- False

Accepted characters: numbers, decimal point markers (period or comma), sign indicators (-), spaces (e.g., as thousands separator, 5 000), "E" or "e" (used in scientific notation). NOTE: For scientific notation, a period MUST be used as the decimal point marker.

(8) What is the P-Value under H_0 and H_1? ____

Suppose we have randomly drawn n iid tuples of sample data (y, x1, x2, x3, x4)_1, (y, x1, x2, x3, x4)_2, ..., (y, x1, x2, x3, x4)_n, from the population space X and Y. Suppose assumption 1-5 hold. Use the following dataset to answer the following questions. No need to answer this question. This question sets up the parameter of the following questions and serves as a separator. (Round your answer in 3 decimal Places as always).

Attachments
A8_Q2.csv

Accepted characters: numbers, decimal point markers (period or comma), sign indicators (-), spaces (e.g., as thousands separator, 5 000), "E" or "e" (used in scientific notation). NOTE: For scientific notation, a period MUST be used as the decimal point marker.

(1) Suppose we want to test H_0: \beta1 + \beta_2 = 0 and \beta3 = -1 We want to know whether we could reject the null H_0 in favor of the alternative H_1 at 5% significant level. Reformulate the Null hypothesis into the matrix format A \beta = a. What is the dimension of matrix A? number of rows of A = ____ number of columns of A = ____

(2) Which of the following test statistics do you want to use to test the above Null Hypothesis H_0?

- A. z-statistics
- B. t-statistics
- C. Wald-statistics
- D. F-statistics

(3) What is the associated distribution of the correct test statistics follows?

- A. \chi ^2 distribution
- B. t-distribution
- C. Standard Normal
- D. F distribution

Accepted characters: numbers, decimal point markers (period or comma), sign indicators (-), spaces (e.g., as thousands separator, 5 000), "E" or "e" (used in scientific notation). NOTE: For scientific notation, a period MUST be used as the decimal point marker.

(4) What is the numerical value for the correct test statistics under the above H_0 = ____

Accepted characters: numbers, decimal point markers (period or comma), sign indicators (-), spaces (e.g., as thousands separator, 5 000), "E" or "e" (used in scientific notation). NOTE: For scientific notation, a period MUST be used as the decimal point marker.

(5) What is the second degree of freedom of the correct underlying distribution = (Please answer -1 if there is no second degree of freedom) ____

Accepted characters: numbers, decimal point markers (period or comma), sign indicators (-), spaces (e.g., as thousands separator, 5 000), "E" or "e" (used in scientific notation). NOTE: For scientific notation, a period MUST be used as the decimal point marker.

(6) What is the critical value (Threshold value) for rejecting the underlying H_0 and H_1 at 5% significant level = ____

(7) Can you reject the Null H_0?

- True
- False

Accepted characters: numbers, decimal point markers (period or comma), sign indicators (-), spaces (e.g., as thousands separator, 5 000), "E" or "e" (used in scientific notation). NOTE: For scientific notation, a period MUST be used as the decimal point marker.

(8) What is the P-Value under H_0 and H_1? ____