Started on	Saturday, June 6, 2020, 3:59 PM
State	Finished
Completed on	Saturday, June 6, 2020, 4:24 PM
Time taken	25 mins 29 secs
Grade	**85.00** out of 100.00

Question 1

Correct

15.00 points out of 15.00

I do hereby certify that all work contained within is my work and my work alone. I never gave nor received help from any other individual.

Select one:

- True ✔
- False

The correct answer is 'True'.

Question 2

Correct

5.00 points out of 5.00

Although an over-specified multiple regression model provides coefficient estimates that have higher variance, the estimates are still unbiased.

Select one:

- True ✔
- False

The correct answer is 'True'.

Question 3

Correct

5.00 points out of 5.00

Which of the following are signs and problems that are caused by multicollinearity?

Select one:

- a. The signs of the coefficients change after a new variable is added to the model.
- b. Standard errors have extreme shifts in value when a new variable is added to the model.
- c. There are changes in significance of variables when other variables are added or deleted from the model.
- d. All of the above. ✔

The correct answer is: All of the above.

Question 4

Incorrect

0.00 points out of 5.00

You and a partner are afraid that you have underspecified a multiple regression model by only estimating a simple linear regression model. Your partner tells you that you don't have to worry about biased estimates of the coefficients. Is your partner correct?

Select one:

- a. No, coefficients in the simple linear regression model would be potentially biased if there is an underspecified model.
- b. Yes, underspecified models do not have biased estimates of coefficients in the model.
- c. There is always bias in simple linear regression model coefficients.
- d. Both a and c, but not b. ✖

The correct answer is: No, coefficients in the simple linear regression model would be potentially biased if there is an underspecified model.

Question 5

Correct

5.00 points out of 5.00

The Durbin-Watson test is used to test for which of the following assumptions?

Select one:

- a. Normailty of errors
- b. Linearity of the mean
- c. Independence of errors ✔
- d. Equal Variance of errors

The correct answer is: Independence of errors

Question 6

Correct

5.00 points out of 5.00

An observation cannot be both an outlier and an influential observation.

Select one:

- True
- False ✔

The correct answer is 'False'.

Question 7

Correct

5.00 points out of 5.00

Which of the following statistics is used for detecting outliers?

Select one:

- a. Standardized residuals. ✔
- b. DFBeta
- c. Leverage
- d. Cook's D

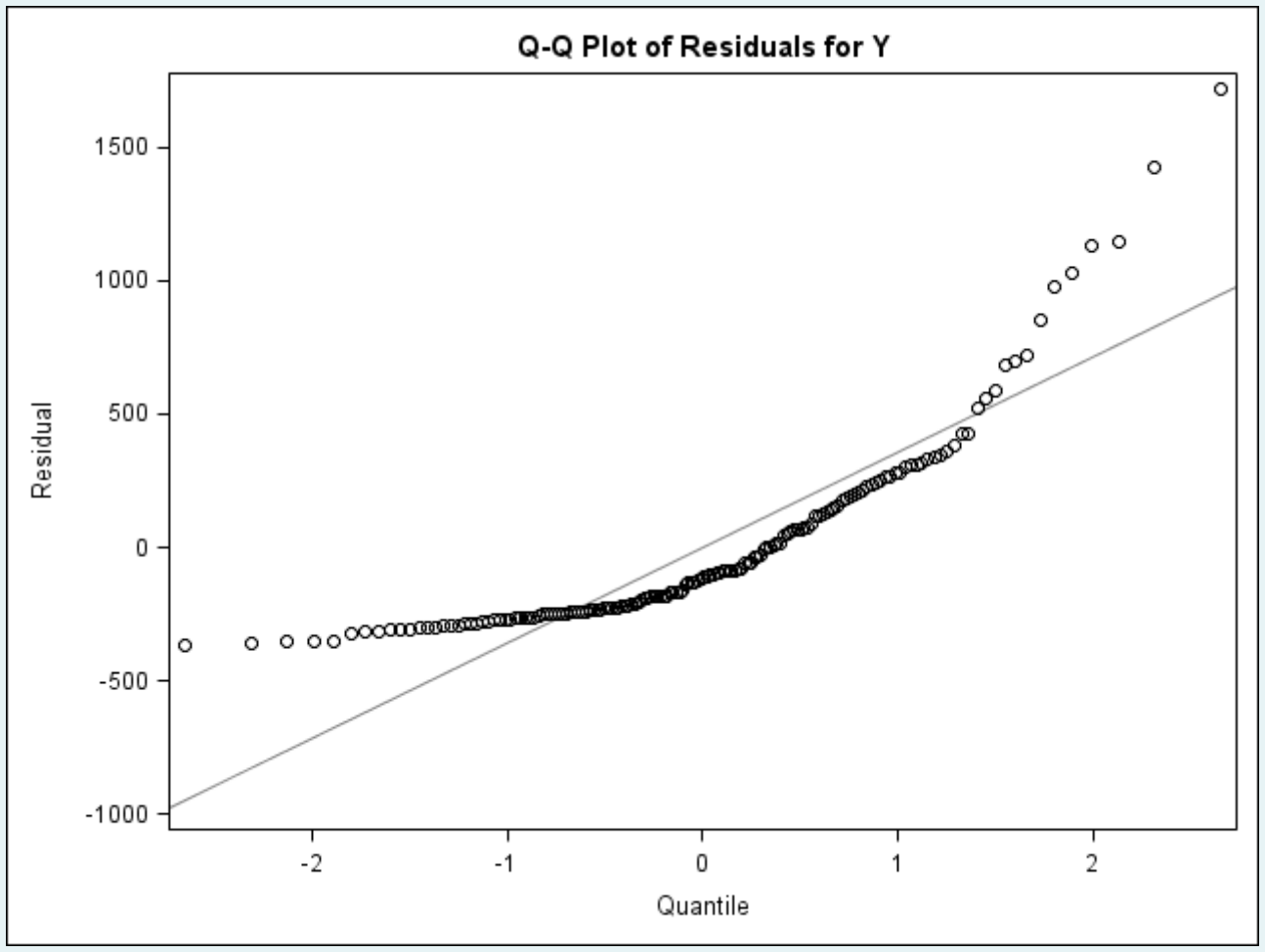
The correct answer is: Standardized residuals.

Question 8

Correct

5.00 points out of 5.00

Based on the following plot, what conclusions do you have about the model assumptions this data came from?



Select one:

- a. Meets the Normality assumption.
- b. Breaks the Normality assumption due to skewness. ✔
- c. Breaks the Normality assumption due to kurtosis.
- d. Breaks the heteroscedasticity assumption.

The correct answer is: Breaks the Normality assumption due to skewness.

Question 9

Correct

5.00 points out of 5.00

You are trying to test if the average GPA of males in your statistics class is larger than the average GPA of females in your statistics class. You sample 27 males and 27 females that are paired by class and degree major and take the difference in their GPA's. What distribution must be approximately Normal for inference from this test to be possible?

Select one:

- a. Either one of the male or female distributions of GPA.
- b. The distribution of both male and female GPA. ✔
- c. The distribution of the difference in GPA for males and females.
- d. None of these because we talked to 54 students which is a large enough sample size to not need distributional assumptions.

The correct answers are: The distribution of both male and female GPA., The distribution of the difference in GPA for males and females.

Question 10

Correct

5.00 points out of 5.00

Tests of Normality, such as the Anderson-Darling test, have the following **null** hypothesis:

Select one:

- a. Non-Normality
- b. Normality ✔

The correct answer is: Normality

Question 11

Complete

10.00 points out of 10.00

You have a model trying to predict y using the variables x_1 and x_2. Use the following information to calculate the VIF for the variable x_1 and tell if there is a problem with multicollinearity.

y-hat = 10 + $15x_1$ - $20x_2$, SSR = 1000, TSS = 1500
x_1-hat = 100 + $57x_2$, SSR = 940, TSS = 980

VIF of x1 = 24.5

There is definitely a problem with multicollinearity since 24.5 > 10.

Comment:

Question 12

Complete

10.00 points out of 10.00

You have the following model to try and predict income (y) of an employee based only on years that employee has worked at the company (x).

y-hat = 30,000 + 3,500x

The standard deviation of the residuals from this model was 4,000.

You know that a specific employee who has worked at the company for 10 years makes $85,000. Calculate the standardized residual for this employee. Based on your calculation, is there any problem with this observation? Explain.

Standardized residual = 5

Since the calculation is 5 which is greater than 3, that means that this observation can be considered an outlier.

Comment:

Information

You are working for a major car manufacturer. You are interested in whether there is any difference in how males and females tend to spend money on vehicles that your company sells. You randomly sample 131 males and 145 females. The males average $23,200 on a vehicle with a standard deviation of $6,700. The females average $26,800 on a vehicle with a standard deviation of $5,800. Use this information to answer the next two problems.

Question 13

Incorrect

0.00 points out of 10.00

Calculate the test statistic for the test of equal variances for the problem above.

Answer: 4.7836 ✖

The correct answer is: 1.33

Question 14

Correct

10.00 points out of 10.00

Regardless of what you got from the previous test statistic for variances, assume that you have unequal variances. Calculate the test statistic for the unequal variance test for means.

Answer: 4.7489 ✔

The correct answer is: 4.75

Information

A researcher is conducting a study at a large university on the east cost. The researcher is trying to determine whether income bracket of parents of incoming freshman (separated into 4 group: lower class, middle class, upper-middle class, upper class) helps determine the overall GPA at the end of freshman year. The researcher samples 10 people from each income group to collect a total sample of 40. Assume all of the needed assumptions are met. Use the following information to answer following question.

Question 15

Complete

Not graded

Write the null hypothesis and alternative hypothesis for the ANOVA testing the differences between income brackets.

H0: lower mean GPA = middle mean GPA = upper middle mean GPA = upper GPA

HA: lower mean GPA does not = middle mean GPA does not = upper middle mean GPA does not = upper GPA

◄ Slide Deck 8 - Practice Problems - Part 1

Jump to...

Weekly Assessment 4 - Calculation Answers ►