Self Assessment 1

Due Sep 11 at 8:59pm **Points** 30 **Questions** 12
Available Sep 3 at 10:50am - Sep 16 at 8:59pm 13 days **Time Limit** None **Allowed Attempts** Unlimited

Instructions

Self Assessment 1 covers the topics in **Weeks 1, 2 and 3** and is worth **1% of your overall grade**. You may work on the homework for as long as you like within the given window. Please note that your answers will automatically save as you key them and you are allowed three attempts. Again, please note, **you should only click "submit" when you are completely finished with the assignment and ready to submit it for grading**.

Also, please remember that you are to complete this assignment on your own. Any help given or received constitutes cheating. If you have any general questions about the assignment, please post to the Piazza board. **If your question involves specific references to the answer to a question or questions, please be sure to mark your post as private**.

Good luck!

Take the Quiz Again

Attempt History

	Attempt	Time	Score
KEPT	Attempt 10	2 minutes	30 out of 30
LATEST	Attempt 10	2 minutes	30 out of 30
	Attempt 9	4 minutes	5 out of 30
	Attempt 8	less than 1 minute	0 out of 30

Attempt	Time	Score
Attempt 7	2 minutes	0 out of 30
Attempt 6	40 minutes	22.5 out of 30
Attempt 5	less than 1 minute	5 out of 30
Attempt 4	1 minute	17.5 out of 30
Attempt 3	1 minute	17.5 out of 30
Attempt 2	66 minutes	17.5 out of 30
Attempt 1	23 minutes	7.5 out of 30

ⓘ Correct answers are hidden.

Score for this attempt: **30** out of 30
Submitted Sep 4 at 6:54am
This attempt took 2 minutes.

Self Assessment 1 (Total 30 points)

- **For Questions 1-8**: Install and load the dataset named Carseats (in the ISLR package) into R.

  R code:

  install.packages(“ISLR”)

  library(“ISLR”)

  data("Carseats")

- **For Questions 1-4:** Create a linear regression model (using the lm function) with Sales as the dependent variable and Price as the independent variable.

- For **Questions 5-8**, create a linear regression model (using the lm function) with Sales as the dependent variable and Price, Bad_Shelf, and Good_Shelf as independent variables.

  Create two indicator (dummy) variables:

  Bad_Shelf = 1 if ShelveLoc = “Bad”, 0 otherwise

  Good_Shelf = 1 if ShelveLoc = “Good”, 0 otherwise

- **For questions 9-12**, use the file PriceDemand.csv. Download it from here: **https://gatech.box.com/s/isz3xvwewegeocwbdyfod3vycxgsg2j7 (https://gatech.box.com/s/isz3xvwewegeocwbdyfod3vycxgsg2j7)**

Background information: A consumer packaged goods firm is studying the sales of its flagship brand of laundry detergent, CleanPill. We have weekly data over a 50-week period on units sold and retail price (in dollars) in a dataset called **PriceDemand.**

Code to load the data set: PriceDemand = read.csv("PriceDemand.csv", header = TRUE)

Fit a linear regression model with Qty as the response variable and Price as the explanatory variable.

Question 1

2.5 / 2.5 pts

For **Questions 1-4**, please estimate a linear regression model (using the lm function) with Sales as the dependent variable and Price as the independent variable.

What is this model's adjusted R-squared value?

- 0.198
- 0.196
- 0.100
- 0.050

Question 2

2.5 / 2.5 pts

Based on the model in Question 1, what is the estimated Coefficient of Price?

- -0.053073
- 13.641915
- 0.632812

- 0.005354

Question 3

2.5 / 2.5 pts

Based on the model in Question 1, what is the t-value of the Coefficient of Price?

- -0.053073
- 0.632812
- 21.558
- (selected) -9.912

Question 4

2.5 / 2.5 pts

Based on the model in Question 1, is the estimated Coefficient statistically speaking different from 0 (at a confidence level of 95%)?

- (selected) Yes, because the p-value is less than 0.05.
- No, the p-value is greater than 0.05.

- No, the coefficient is too close to zero (negligible).
- There is not enough information to answer this question.

Question 5

2.5 / 2.5 pts

For **Questions 5-8**, please estimate a linear regression model (using the lm function) with Sales as the dependent variable and Price, Bad_Shelf, and Good_Shelf as independent variables.

What is this model's coefficient for "Bad_Shelf"?

- -0.053073
- (selected) -1.862022
- -0.056698
- 3.033825

Question 6

2.5 / 2.5 pts

Using the fitted model in Question 5, what is the estimated value of Sales for an observation with Price =0 and ShelveLoc = “Medium?"

- 3.033825
- 16.8976
- 12.0018
- (selected) 13.86382

Question 7

2.5 / 2.5 pts

Using the fitted model in Question 5, what is the estimated value of Sales for an observation with Price =0 and ShelveLoc = “Bad”?

- 3.033825
- 16.8976
- (selected) 12.0018
- 13.86382

Question 8

2.5 / 2.5 pts

For the model in Question 5, what is the meaning of the coefficient of Good_Shelf?

- The coefficient of Good_Shelf captures the total sales of carseats in the base case shelf location.
- The coefficient of Good_Shelf captures the difference in sales of carseats if they are located in the Good shelf location compared to that of carseats located in the Bad shelf location.
- **The coefficient of Good_Shelf captures the difference in sales of carseats if they are located in the Good shelf location compared to that of carseats located in the Medium shelf location.**
- The coefficient of Good_Shelf captures the price of carseats if they are located in the Good shelf location.

Question 9

2.5 / 2.5 pts

For questions 9-12, use the file PriceDemand.csv. Download it from here:
https://gatech.box.com/s/isz3xvwewegeocwbdyfod3vycxgsg2j7
(https://gatech.box.com/s/isz3xvwewegeocwbdyfod3vycxgsg2j7)

Background information: A consumer packaged goods firm is studying the sales of its flagship brand of laundry detergent, CleanPill. We have weekly data over a 50-week period on units sold and retail price (in dollars) in a dataset called **PriceDemand.**

Code to load the data set: PriceDemand = read.csv("PriceDemand.csv", header = TRUE)

Fit a linear regression model with Qty as the response variable and Price as the explanatory variable.

What is the interpretation for the coefficient of price?

- (●) One dollar increase in price decreases demand by 394 units
- ( ) One dollar increase in price increases demand by 394 units
- ( ) One dollar decrease in price decreases demand by 394 units
- ( ) One dollar increase in price decreases demand by 3501 units

Question 10

2.5 / 2.5 pts

Fit a linear-log model by transforming Price into a new variable, Price_ln, to get the regression model: Qty= b0 + b1*ln(Price). What is the interpretation for the coefficient b1?

- (●) When price increases by 1%, quantity decreases by 19.94 units

- When price increases by 1%, quantity decreases by 1994 units
- When price decreases by log(1), quantity increases by 1994 units
- When price decreases by log(1), quantity increases by 19.94 units

Question 11

2.5 / 2.5 pts

Fit a log-linear model for the dataset: ln(Qty)= b0+ b1*Price. What is the interpretation for the coefficient b1?

- (•) When price increases by $0.1, quantity decreases (on average) by 2.35%
- When price increases by $1, quantity decreases (on average) by 23.5 units
- When price increases by $1, quantity decreases (on average) by 0.235 units
- When price increases by 1%, quantity decreases (on average) by 23.5 units

Question 12

2.5 / 2.5 pts

Fit a log-log model: ln(Qty) = b0+ b1*ln(Price). What is the interpretation for the coefficient b1?

- (●) When price increases by 1%, quantity decreases (on average) by 1.18%
- ( ) When price increases by $1, quantity decreases (on average) by 18%
- ( ) When price increases by $1, quantity decreases (on average) by 1.18%
- ( ) When price increases by log(1), quantity decreases (on average) by 18%

Quiz Score: **30** out of 30