Results

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82.5%

33
Out of 40 points

22:34
Time for this attempt

Your Answers:

1 3 / 3 points

Given a complete deck of cards, the probability of drawing the Ace of Diamonds is 1/52. Based on this probability, what are the odds for this event?

- ✓ (●) 1/51
- ( ) 1/52
- ( ) 51/1
- ( ) 52/1

2 3 / 3 points

Which one of the following is a reason why linear regression is not suitable for modeling binary responses?

- ( ) With a linear regression model, all predicted outcomes will fall between zero and one.
- ✓ (●) With a linear regression model, some of the predicted outcomes may be less than zero or greater than one.
- ( ) Linear regression is not capable of modeling a response based on more than one variable at a time.
- ( )

Linear regression is not capable of modeling categorical variables.

3 0 / 3 points

If we decrease the cutoff value of a logistic regression model then considering that number of True positives, True negatives, False positive and False negatives changes, which of the following is true? (Assume that there are no changes in the dataset used)

✗ False positive rate decreases

Correct Answer: **Sensitivity increases**

Sensitivity increases

Specificity increases

None of the above

4 3 / 3 points

After running a logistic linear regression model in R where logit(p) = b0 + b1*student, you find that your coefficient estimate for your 'non-students' (intercept) is equal to −4.732 and your coefficient estimate for 'student' is equal to 1.748. Calculate the odds for non-students and students.

✓ $e^{(-4.732)}$, $e^{(-4.732+1.748)}$

-4.732, -4.732+1.748

-4.732, 1.748

log(-4.732), log(1.748)

5 3 / 3 points

Which of the following is NOT needed to establish causation?

Hypothesized cause must precede its anticipated effect

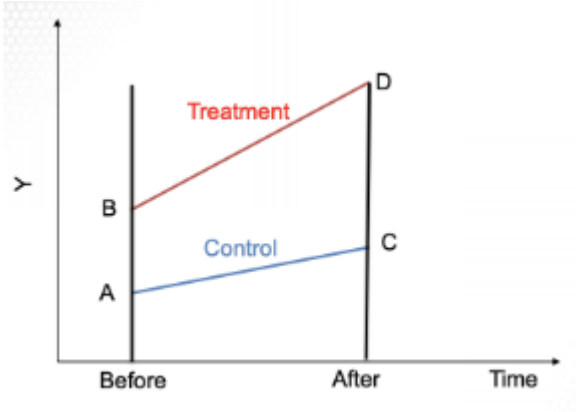
Other possible explanations that can cause the effect must be ruled out

Change in cause must lead to a change in effect

✓ The effect must always have a reverse impact on the cause

6 3 / 3 points

Observe the graph of dependent variable for 2 groups below:



The difference in difference calculation would be:

- ✓ (D-B) - (C-A)
- (D-A) - (B-A)
- (D-C) - (B-C)
- (D-A)

7 3 / 3 points

Choose if the following statement is true or false: Correlation is sensitive to the scale of the data; however, covariance is not sensitive to the scale of the data.

- True
- ✓ False

Feedback

Based on answering correctly

Correlation is NOT sensitive to the scale and covariance is scale sensitive à If we scale each random variable (say X and Y) by the same factor (say 2), the relative position of data won't change, but the covariance between X and Y becomes 4 times which can be confirmed by the formula. However, in case of correlation – it has normalizing standard deviation terms in denominator which makes it immune to the scale of data.

8 3 / 3 points

Which of the following is NOT an example of selection bias?

- A voter survey to predict vote distribution for the presidential election in the US which is based on a sample of low-income household voters in the US.
- Taking surveys of people to participate in the study over email.
- Survey filled by audiences who have come to see radio/tv shows that are on controversial topics (abortion, affirmative action, gun control, etc.)
- ✓ **Dividing states into subgroups based on important characteristics and randomly selecting houses to be surveyed.**

Feedback

Based on your answer

Ans. (D) is the only part where there is no selection bias for a statewide survey. A is an example of Under-coverage Bias, B is an example of Nonresponse Bias and C is an example of Voluntary Response Bias.

Based on answering correctly

Ans. (D) is the only part where there is no selection bias for a statewide survey. A is an example of Under-coverage Bias, B is an example of Nonresponse Bias and C is an example of Voluntary Response Bias.

9 4 / 4 points

Given the price history below, suppose you bought 1 share of Amazon and Microsoft stocks on 1/3/2017 and sold one year later on 1/3/2018. Assuming both stocks do not pay dividends and have no stock splits, what are the simple returns of each stock and which had a higher return for the year?

Date	Amazon	Microsoft
1/3/2017	753.67	62.58
1/3/2018	1204.2	86.35

- Amazon -37.41%, Microsoft 37.98%. Microsoft had higher return for the year
- Amazon 37.41%, Microsoft 27.53%. Amazon had higher return for the year
- ✓ **Amazon 59.78%, Microsoft 37.98%. Amazon had higher return for the year**
- Amazon -37.41%, Microsoft -27.53%. Microsoft had higher return for the year

Feedback

Based on your answer

Amazon 59.78%, Microsoft 37.98%. Amazon had higher return for the year

Amazon: ($1204.2 – $753.67)/$753.67 = 59.78%

Microsoft: ($86.35-$62.58)/$62.58 = 37.98%

Amazon had a higher return between the period of 1/3/2017 – 1/3/2018 compared to Microsoft.

Based on answering correctly

Amazon 59.78%, Microsoft 37.98%. Amazon had higher return for the year

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10 4 / 4 points

Suppose you invested in a fund for 1 year. The fund return was 10% and risk-free rate was 2%. The fund's standard deviation over this period was 5% and beta was 1.3. What was the fund's Sharpe ratio? Hint: Because the risk-free rate is constant, the standard deviation of the fund's return is equal to the standard deviation of the fund's excess return.

- 0.06
- ✓ 1.6
- 4
- 6.15

Feedback

Based on your answer

Sharpe Ratio = (0.10 – 0.02)/0.05 = 1.6

Based on answering correctly

Sharpe Ratio = (0.10 – 0.02)/0.05 = 1.6

11 4 / 4 points

Given beta (β) of the following stocks, which stock would have the most increase if the market has a 10% increase?
Stock A beta = 1, Stock B beta = 1.8, Stock C beta = 0.1, Stock D beta = -1.5

- ○ Stock A
- ✓ ◉ Stock B
- ○ Stock C
- ○ Stock D

Feedback

Based on your answer

Stock B Beta measures sensitivity and how the stock co-moves with changes in the market.

If beta = 1, then stock price moves up 1% in each 1% increase in market

If beta = 0, then stock price stays unchanged with each 1% increase in market

If beta > 1, then stock price moves greater than the 1% increase in market

In this question, Stock B has the highest positive beta. A 10% increase in market would result in 18% (10% * 1.8) increase to the stock price.

Based on answering correctly

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In this question, Stock B has the highest positive beta. A 10% increase in market would result in 18% (10% * 1.8) increase to the stock price.

12 0 / 4 points

Consider 2 stocks A and B. Over a period of time, the Jensen's alpha for stock A was 0.5 and the Jensen's alpha for stock B was -0.7. Over the same period of time, it was found that the beta (from the Jensen's alpha regression equation) for stock A was 1.2 and for stock B was 1.5. Considering that the return on the index which was used in calculating Jensen's alpha and beta for these stocks over this time period was exactly the same as the risk-free rate, which stock had better returns over this period of time? (Consider that the error terms from the regression output of the Jensen's alpha equation are all zero)

- ○ Stock A
- ○ Stock B
- ✗ ◉

Can’t say as more information is required to make this decision

Correct Answer: **Stock A**