socrative

DM-Spring-2020-Q2-Grade

17 Questions

1. Select the intercept-only models, if any:

1/12 **A** y=b0+b1*x

0/12 **B** y=b0+b1*x1+b2*x2

10/12 **C** ln(y)=b0

0/12 **D** y=e^(b1*x)

1/12 **E** I do not know

2. The interpretation of adjusted R^2 for multiple linear regression is the same as the interpretation of R^2 for simple linear regression.

5/12 **A** True

7/12 **B** False

0/12 **C** I do not know

3. Which one is observable ("visible")?

10/12 **A** e (residuals)

1/12 **B** ε (regression error)

0/12 **C** neither

1/12 **D** I do not know

4. The estimation of β is distributed as:

0/12 **A** $b \sim N(0, \sigma^2)$

2/12 **B** $b \sim N(\beta, \sigma^2)$

7/12 **C** $b \sim N(\beta, \sigma^2(X^TX)^{-1})$

1/12 **D** It does not have distribution

2/12 **E** I do not know

5. How many parameters are estimated by OLS in the case of simple linear regression?

3/12 **A** 1

7/12 **B** 2

2/12 **C** 3

0/12 **D** I do not know

6. Estimation of e (residuals) is distributed as:

6/12 **A** $e \sim N(0, \sigma^2)$

5/12 **B** $e \sim N(0, \sigma^2 M)$ (M is a matrix)

1/12 **C** It does not have distibution

0/12 **D** I do not know

7. b parameters can be computed using only

9/12 **A** OLS

0/12 **B** ML

3/12 **C** Neither

0/12 **D** I do not know

8. In the case of multiple linear regression

3/12 **A** adj R^2 < 1 (always)

9/12 **B** adj R^2 <= 1 (always)

0/12 **C** I do not know

9. b=

10/12 **A** $(X'X)^{-1}X'Y$

2/12 **B** $(X'X)^{-1}Y'X$

0/12 **C** $(Y'X)^{-1}Y'X$

0/12 **D** I do not know

10. The total sum of squares equals

12/12 **A** Sum((y-mean(y))^2)

0/12 **B** Sum((y_hat-mean(y))^2)

0/12 **C** Sum((y-y_hat)^2)

0/12 **D** I do not know

11. The regression sum of squares equals

1/12 **A** Sum((y-mean(y))^2)

7/12 **B** Sum((y_hat-mean(y))^2)

4/12 **C** Sum((y-y_hat)^2)

0/12 **D** I do not know

12. If RSS is the regression sum of squares and ESS is the error sum of squares then

7/12 **A** $R2$ = 1 – ESS/TSS

4/12 **B** $R2$ = ESS/TSS

1/12 **C** $R2$ = ESS/RSS

0/12 **D** I do not know

13. Multicollinearity occurs when

10/12 **A** rank(X)<m (m is the number of explanatory variables)

0/12 **B** var(ε)=σ²I

0/12 **C** E(ε)=0

1/12 **D** cov(εi,εj)=const

1/12 **E** I do not know

14. In simple linear regression model response variable (y) can be

0/12 **A** binary

0/12 **B** categorical

12/12 **C** numeric

0/12 **D** ordinal

0/12 **E** I do not know

15. In a simple linear regression model, explanatory variables can be

0/12 **A** binary

0/12 **B** categorical

7/12 **C** numeric

0/12 **D** ordinal

0/12 **E** I do not know

5/12 **F** all answers are correct

0/12 **G** Neither

16. If A is a matrix, X is the vector of random variables, then var(AX)=

5/12 **A** A'var(X)A

4/12 **B** A^2var(X)

1/12 **C** var(x)

0/12 **D** Can not be calculated

2/12 **E** I do not know

17. Which of the answers can be used to conclude about the significance of variables (if any)?

8/12 **A** t values

0/12 **B** Estimated coefficients (only)

4/12 **C** SE of estimated coefficients (only)

0/12 **D** I do not know