AA501 Review

Institute for Advanced Analytics
MSA Class of 2024

Boxplots illustrate the relationship between what types of variables?

A. Categorical versus Categorical
B. Quantitative versus Quantitative
C. Categorical versus Quantitative
D. None of these

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When we say we estimate parameters, we …

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Which of the following is *not* used to describe a variable's distribution?

A. Spread (Variance)
B. Center/Location
C. Kurtosis
D. Heteroscedasticity
E. Skewness
F. Outliers

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B. Skewed
C. Bell shaped
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Which plots can help you visualize if your residuals are normally distributed?

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B. Box Plots
C. QQ-Plots
D. Residual scatter plots
E. A and C
F. All of the above
G. Nothing helps me with this task.

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A 95% confidence interval for the mean represents an interval …

A. …in which the probability of the true mean being inside the interval is 95%.

B. …in which of 100 intervals created using the same technique, we would expect approximately 95 of them to contain the true mean.

C. Both A and B

D. Neither A nor B

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To satisfy the assumption that the sample means are normally distributed…

A. Verify that the population distribution is approximately normal
B. Apply the central theorem by verifying that the sample size is ”large enough” (n=50 sufficient for α=0.05)
C. The sample means are always normally distributed
D. EITHER A or B
E. BOTH A and B
F. check the ‘almost totally normal’ button

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α = P(Type I Error). A Type I error occurs when…

A. You reject a null hypothesis that is true.
B. You accept a null hypothesis that is false.
C. You fail to reject a null hypothesis that is false.
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A. Your p-value increases
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C. Your p-value is unaffected
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When testing for a difference between two sample means from *normally distributed* populations, we find that the variances of the two populations are different…

A. We cannot use the t-test and instead have to use ANOVA
B. We can use the unequal variances t-test procedure
C. We cannot test for a difference in this situation because a difference would not have any meaning
D. I was told there would be snacks at this review.

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I have a categorical variable with 3 levels. If I built a One-Way ANOVA model with this variable, how many unique predictions would I have?

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B. 3
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The overall F-test in ANOVA tests…

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B. If all of the levels of the categorical variables are different from each other
C. If any level of a categorical variable is different from the others
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A. reference coding
B. effects coding
C. effective coding
D. -1 and 1 coding
E. python

	X_A	X_B
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Why might we adjust our p-values or α levels when we perform hypothesis tests?

A. If we don't like the result of a hypothesis test, we can always lower the confidence level, α
B. Because the assumption of normality was violated so a different p-value chart must be used.
C. To control the experimentwise error rate when performing many hypothesis tests at once
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The methods of Tukey and Dunnett covered in class were used to…

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B. Test a hypothesis about means with unequal variances
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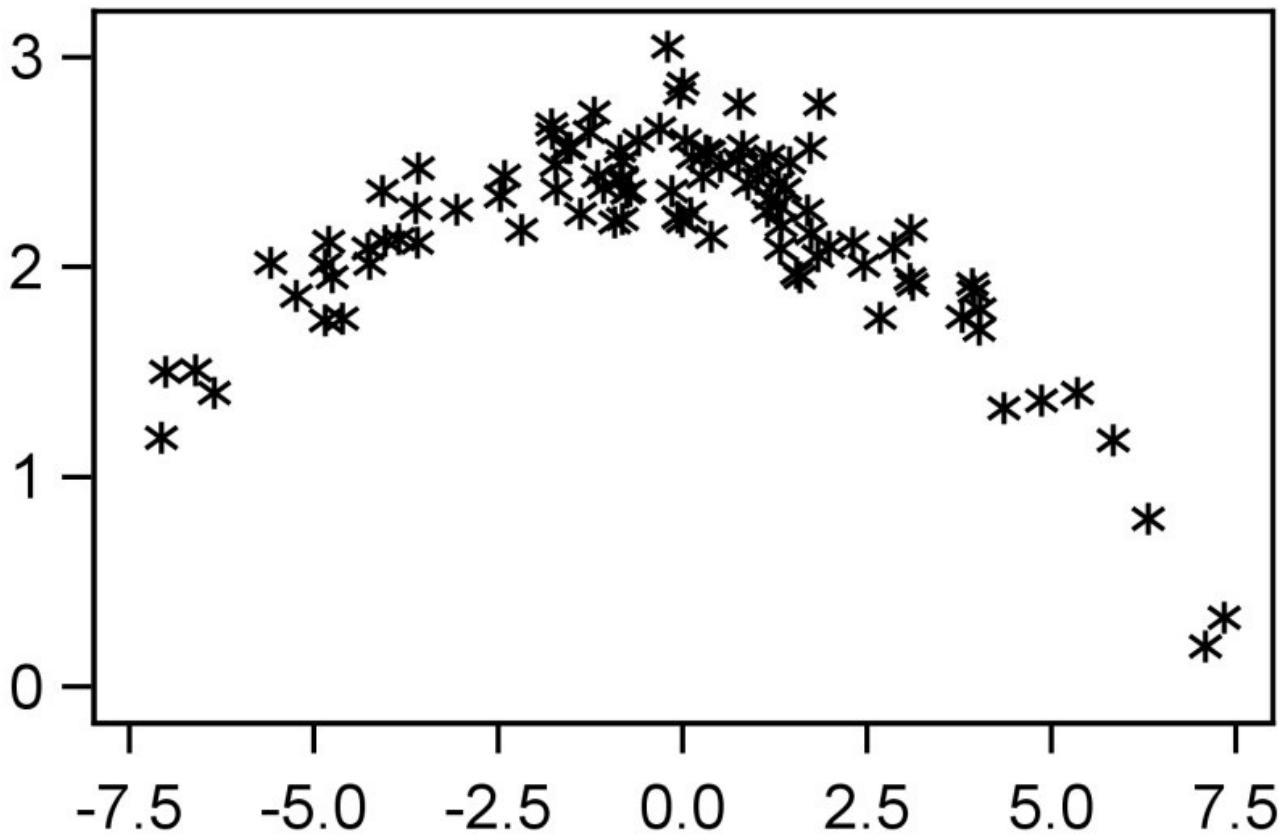
For the scatter plot below, what is a reasonable value for Pearson's correlation?

A. -0.8
B. -1
C. 1
D. -0.1
E. ruh rho



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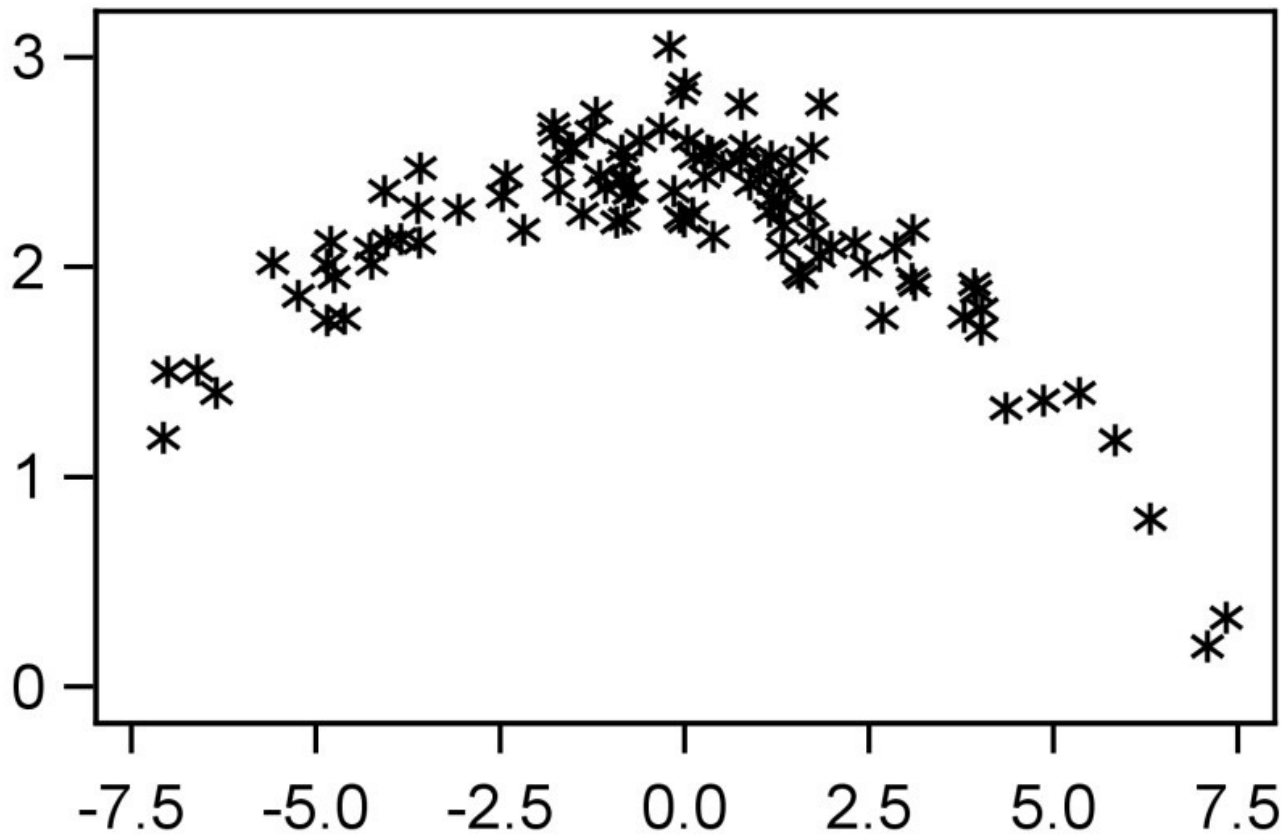

Multiple linear regression can be used for the following tasks:

A. To predict values of a response variable when data is collected on the input variables
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Why is adjusted-R^2 adjusted?

A. To account for collinearity of the predictor variables
B. To account for the number of variables in the model
C. To account for the number of observations in the training data
D. To more accurately reflect the variance of the response variable
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For the information criterion metrics (AIC, BIC) a more desirable model has…

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Which of the following violations of linear regression assumptions will affect the parameter estimates?

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Which of the following violations of linear regression assumptions can you NOT use residual *scatter plots* to diagnose?

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Which of the following metrics is NOT used to diagnose multicollinearity

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Which Chi-square test is specifically designed to test the association between two ordinal variables?

A. Pearson Chi-square
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D. My Chi-square
E. Insert historical name here Chi-square.

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If group A has 2 times the odds of group B to have an event, then …

A. Group B has 50% the odds of group A to have the event.
B. Group A has 50% the odds of group B to NOT have the event.
C. Group A has 2 times the odds of NOT having the event compared to group B.
D. Both A and B
E. Stop it. Just stop it.

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If a logistic model predicts the probability that you fail this course, which of the following is an example of a concordant pair?

A. A passing student with predicted value 0.9 and a failing student with predicted value 0.5
B. A passing student with predicted value 0.1 and a failing student with predicted value 0.5
C. A passing student with predicted value 0.9 and a failing student with predicted value 0.9
D. A passing student with predicted value 0.9 and a
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E. Logarithm.

If a logistic model predicts the probability that a student fails a test, which of the following is an example of a concordant pair?

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What is the default coding of categorical variables in R?

A. GLM in R doesn't allow for categorical variables
B. Effects Coding
C. Reference Coding
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Which of the following is true about the logits $(\log\left(\frac{p}{1-p}\right))$?

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Which of the following statements is true?

A. It is impossible to consider an odds ratio for continuous predictor variables
B. The coefficients in logistic regression have no interpretation in the context of the problem.
C. Logistic regression cannot be used for explanation, only for prediction of probabilities.
D. Logistic regression can predict response variables that are binary, ordinal, or nominal.
E. This statement is false.

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