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Quiz: More Complex Models

Your Score: 100%

Congratulations! Your score of 100% indicates that you've mastered the topics in this lesson. If you'd like, you can review the feedback.

When you're finished, exit the lesson.

1. If you want to compare the average monthly spending for teenagers, adults, and senior citizens, which statistical method should you choose?

   a. one-sample *t* test
   b. one-way ANOVA
   c. two-way ANOVA

   Your answer: b
   Correct answer: b

   You use a one-way ANOVA because you're comparing more than two samples, the three age groups. You would use a two-way ANOVA when you have more than one predictor variable.

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2. If you're trying to understand the relationship between age, weight, and running time, what is your goal?

   a. explanatory analysis
   b. prediction

   Your answer: a
   Correct answer: a

   Trying to understand relationships between variables is part of inferential or explanatory analysis.

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3. When you perform a two-way ANOVA in SAS, which of the following statements correctly defines the model that includes the interaction between the two main effect variables?

   a. `class Drug*Disease;`
   b. `class Drug=Disease;`

c. `model Drug*Disease;`

d. `model Health=Drug Disease Drug*Disease;`

Your answer: d
Correct answer: d

To define a model, you start with the keyword MODEL, followed by the dependent variable, an equal sign, and the main effect variables. Then you specify the interaction term by listing the main effect variables, separated with an asterisk.

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4. Which of the following is not an assumption in a two-way ANOVA?

a. The sample is large.
b. The observations are independent.
c. The data is normally distributed.
d. The population variances are equal for each treatment combination.

Your answer: a
Correct answer: a

As with a one-way ANOVA, there are three assumptions.
1. The observations are independent.
2. The data is normally distributed.
3. The population variances are equal for each treatment combination.

5. Consider a table of individual effects. Which statistic adjusts for all other effects in the table?

a. Type I sum of squares
b. Type III sum of squares

Your answer: b
Correct answer: b

In the Type III table, all listed effects are adjusted for all other effects in the table, so order is not important. The Type III sum of squares for a variable, also called the partial sum of squares, is the increase in the model sum of squares due to adding that variable to a model that already contains all the other variables.

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6. You know you'll need to do postprocessing analysis, so you use the statement below to create an item store. Later, you can start a new SAS session and perform additional analysis on the item store, **proj1results**.

```
STORE OUT=proj1results;
```

a. true
b. false

Your answer: b
Correct answer: b

If you specify a one-level name for an item store, then the item store is created in the Work library and it is deleted at the end of the session.

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7. A multiple regression analysis shows that at least one slope in the regression of the population is not 0, and at least one predictor variable explains a significant amount of variablility in the response variable. What should you do?

a. Reject the null hypothesis.
b. Fail to reject the null hypothesis.
c. There isn't enough information to make a decision.

Your answer: a
Correct answer: a

If the estimated linear regression model fits the data significantly better than the baseline model, you reject the null hypothesis. In other words, you have enough evidence to say that at least one slope of the regression in the population is not 0 and that at least one predictor variable explains a significant amount of variability in the response variable.

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8. The adjusted R-square increases for every term that is added to the model.

a. true
b. false

Your answer: b
Correct answer: b

The adjusted R-square increases only if the additional terms improve the model enough to justify increasing its complexity.

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9. A best practice in atwo-way ANOVA is to plot the data to identify possible interactions between the variables. Which statement is true when you consider an interaction plot?

a. An interaction occurs when the difference between group means of one variable changes at different levels of another variable. This causes non-parallel lines in the interaction plot.
b. An interaction occurs when the difference between group means is consistent

at different levels of another variable. This causes parallel lines in the interaction plot.

Your answer: a
Correct answer: a

When the difference between a group means of one variable changes at different levels of another variable, a possible interaction exists between the variables. This interaction is displayed as nonparallel lines in an interaction plot.

10. You want to use PROC PLM to analyze the item store named **mystore** which was created in the **stat1** library. Which of the following statements uses the correct syntax?

a. `PROC PLM DATA=stat1.mystore;`
b. `PROC PLM RESTORE=stat1.mystore;`
c. `PROC PLM STORE=stat1.mystore;`
d. `PROC PLM LIB=stat1 STORE=mystore;`

Your answer: b
Correct answer: b

The RESTORE= option in the PROC PLM statement loads the saved model so that it can be used for post-model-fitting analyses.

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