Feedback — Quiz: Week Six

Help Center

You submitted this quiz on **Tue 28 Apr 2015 11:29 AM PDT**. You got a score of **6.00** out of **6.00**.

Question 1

Which of the following would best be categorized as a dummy variable?

Your Answer		Score	Explanation
○ Dose of medication (measured in mg)			
◉ Smoking habits (non-smoker, occasional smoker, frequent smoker)	✔	1.00	Great job! We know that dummy variables are used to indicate categories of nominal scaled variables, which is the case for smoking habits.
○ Birth weight (measured in ounces)			
○ Systolic blood pressure (measured as mmHg)			
Total		1.00 / 1.00	

Question 2

Which of the following is the correct linear regression equation for a model with the predictors **gender** (male/female) and **treatment** (Drug A, Drug B, No Drug), given that all predictors are recoded as dummy variables?

Your Answer		Score	Explanation
○ $E(Y) = \beta_0 + \beta_1(male) + \beta_2(No\ Drug) + \beta_3(Drug\ A) + \beta_4(Drug\ B)$			
◉ $E(Y) = \beta_0 + \beta_1(male) + \beta_2(Drug\ A) + \beta_3(Drug\ B)$	✔	1.00	Nice work!

We know that if a variable contains K categories, then we must define exactly $(k-1)$ dummy variables to index these categories.

In this situation, only $(2-1)=1$ dummy variable is needed to indicate gender, and $(3-1)=2$ dummy variables are needed to indicate treatment.

$E(Y) = \beta_0 + \beta_1(female) + \beta_2(male) + \beta_3(No\ Drug) + \beta_4(Drug\ A)$.

Total	1.00 / 1.00

Question 3

If k dummy variables is fit for a nominal variable with k categories in a model containing a constant term, then all the coefficients cannot be uniquely estimated due to collinearity.

(please answer True or False below)

Your Answer		Score	Explanation
True	✔	1.00	Yes, you answered correctly!

			The model will not be able to fit due to collinearity between the dummy variables.
○ False			
Total		1.00 / 1.00	

Question 4

In a model with dependent variable Y and predictors X & Z, we can assume that there is no interaction if the relationship between X & Z is independent of Y.

(please answer True or False below)

Your Answer		Score	Explanation
○ True			
◉ False	✔	1.00	Great job! We can, however, assume there is no interaction if the relationship between X **&** Y is independent of Z
Total		1.00 / 1.00	

Question 5

For this question, consider the following regression which is used to compare two separate straight line regressions using the single regression model method:

$$\mu_{y|xz} = \beta_0 + \beta_1 X + \beta_2 Z + \beta_3 XZ$$

With regard to the above regression, assuming that β_3 significantly contributes to the model, we can interpret β_2 as the unit change in Y given one unit increase in Z.

(please answer True or False below)

Your Answer		Score	Explanation
○ True			
◉ False	✔	1.00	Great job! This is false because the β_3 will also contribute to the change in Y when interaction is present.
Total		1.00 / 1.00	

Question 6

For this question, consider the following regression which is used to compare two separate straight line regressions using the single regression model method:

$$\mu_{y|xz} = \beta_0 + \beta_1 X + \beta_2 Z + \beta_3 XZ$$

Suppose $\beta_3 = 0$. Which of the following must ***always*** be true:

Select all that apply

Your Answer		Score	Explanation
☐ The two lines are conincident	✔	0.25	The intercept of the the two regression lines are generally **not equal** and hence are generally **not coincident**.
☑ The regression lines will be parallel	✔	0.25	$\beta_3 = 0$ means that the interaction term is not significant and so the two regression lines **will be parallel**.
☐ The intercept is equal for X & Y	✔	0.25	The intercept of the the two regression lines are generally **not equal** and hence are generally **not coincident**.
☑ The slopes will be equal for X & Y	✔	0.25	Because the two regression lines are parallel, then their slopes **are equal**.
Total		1.00 / 1.00	