

Quiz 3

Econ 526 - Introduction to Econometrics

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Name:

SECTION A - MULTIPLE CHOICE

1. Nonexperimental data is also known as:
 - A. cross-sectional data
 - B. observational data
 - C. time series data
 - D. panel data

2. If a change in variable x explains a change in a variable y . Then, the variable x is called:
 - A. dependent variable
 - B. explained variable
 - C. explanatory variable
 - D. response variable

3. Consider the following simple linear regression model: $y = \beta_0 + \beta_1x + u$. What is the estimator for β_0 ?
 - A. $\bar{y} - \hat{\beta}_1\bar{x}$
 - B. $\bar{y} - \beta_1\bar{x}$
 - C. $\frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^n x_i^2}$
 - D. $\sum_{i=1}^n x_i y_i$

SECTION B - TRUE OR FALSE

1. If a researcher collects a random sample of the number of crimes per city only for the year of 2017, then this is an example of time series data.

True False

SECTION C - SHORT ANSWER

1. Suppose you want to study the effects of the number of students per classroom in algebra courses and students' performance in algebra courses for high schools in Kansas. You collected a random sample and now you have data for the above two variables. You called them as *number_students* (which refers

to the number of students per classroom in algebra courses), and *students_performance* (which refers to the students' performance in algebra courses - measured as their final grade in a scale from 0 to 4). Therefore, you want to know how *number_students* explains *students_performance*.

- (a) What's the independent variable? [1 line answer maximum - don't exceed it]
- (b) What's the dependent variable? [1 line answer - don't exceed it]
- (c) Using the variables names, write the simple linear regression model. [1 line answer - don't exceed it]
- (d) Knowing that the OLS estimate for the intercept is 3.8, and for the slope is -0.04 , write the estimated OLS regression line (or SRF) using the variables names. [1 line answer - don't exceed it]
- (e) What is the predicted value for whichever is your dependent variable for a classroom with 20 students? [1 line answer - don't exceed it]
- (f) What is the predicted effect on your dependent variable for each additional increment (i.e, when you increase one unit) of your independent variable? [up to 2 lines answer - do n't exceed it]