# Policy Evaluation – PMAP 8131

## Quiz: Causality

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1. (1 point) Starting in 2001, the GRE was phased out as a mean of fulfilling Mensa's entry requirements because of the loose correlation between GRE test scores and IQ. What is Mensa worried about?
    A. Differential mortality
    B. General equilibrium effects
    C. Instrumentation
    D. Causality

2. (1 point) Many graduate programs are ditching the GRE for admissions. This is because GRE test scores seem to predict coursework outcomes (i.e., GPA, time-to-completion, comprehensive exams, etc.), but not broader academic and job market outcomes (i.e., conference participation, publications, placement, etc.). What is the issue here?
    A. Differential mortality
    B. General equilibrium effects
    C. Instrumentation
    D. Causality

3. (1 point) One concern of COVID-19 research is that individuals with the most risk of experiencing severe patient outcomes were also the most likely to be affected by all other diseases during that same time frame. What is the potential threat to the validity of COVID-19 fatality rate calculations?
    A. Self-selection
    B. Regression to the mean
    C. History effects
    D. Maturation effects

4. (1 point) Motivation, which is not observed, positively affects and grades positively affect individual earnings. A model estimating the relationship between grades and earnings is likely to do what?
    A. Underestimate the relationship between grades and earnings
    B. Overestimate the relationship between grades and earnings
    C. Return patterned error terms
    D. Both A) and C)

5. (1 point) A researcher is comparing across two different models. Model B returns a much higher $R^2$ than model A's. However, none of the predictors added to model B and that was not already present in model A is significant.
    A. The researcher should keep all of the predictors
    B. The researcher should keep none of the predictors

C. The researcher should keep one predictor at random

D. Not enough information provided

6. (1 point) Calculate the sample covariance between SAT test score and math GPA.

| stud_id | math | SAT |
|---|---|---|
| 001 | 2.7 | 1,250 |
| 002 | 3.9 | 1,400 |
| 003 | 3.2 | 950 |
| 004 | 3.5 | 1,500 |

A. 0.46

B. 0.69

C. 7.47

D. 55.83

7. (1 point) The Duhem-Quine thesis _____Popper's falsification principle while arguing that _____individual observation is sufficient to make an inference invalid.

A. [accepts, no]

B. [accepts, any]

C. [rejects, no]

D. [rejects, any]

8. (1 point) A researcher is interested in the relationship between education and earnings conditional on individual demographics (e.g., age, gender, etc.) stored in a vector $X$. She is testing a theory that predicts no independent effect of education on earnings. She runs the model $wage_i = \alpha + \beta education_i + \delta X_i$ and VIF analysis reveals multicollinearity in the control variables.

A. Multicollinearity of the control variables is never an issue

B. Multicollinearity of the control variables is always an issue

C. Multicollinearity of the control variables is not an issue when doing causal inference, and therefore is not an issue here

D. Multicollinearity of the control variables is not an issue when doing prediction, and therefore is not an issue here

9. (1 point) The policy analysis team took a stance against running any program evaluations during the COVID-19 pandemic. They worry that _____validity might suffer due to the inability to tease out the effects of programs from pandemic-induced outcomes. The team is concerned with _____.

A. [internal, reaction to measuring]

B. [external, reaction to measuring]

C. [internal, multiple treatments]

D. [external, multiple treatments]

10. (1 point) A researcher specifies individual earnings as a function of ethnicity ($\beta_1$), education ($\beta_2$), and experience ($\beta_3$). She hypothesizes that ethnicity has no independent effect on earnings which is not mediated by either education or experience. For her hypothesis not to test false, what has to happen when she runs the regressions below?

$$wage_i = \beta_0 + \beta_1 ethnicity_i \quad (1)$$

$$wage_i = \beta_0 + \beta_1 ethnicity_i + \beta_2 education_i + \beta_3 experience_i + \epsilon_i \quad (2)$$

A. $\beta_1$ is not statistically significant in either model 1) or model 2)

B. $\beta_1$ is statistically significant in both model 1) and model 2)

C. $\beta_1$ is not statistically significant in model 1) and significant in model 2)

D. $\beta_1$ is significant in model 1) and not statistically significant in model 2)