Applied Research Methods II – PMAP 8131

Quiz: Quasi-Experimental Designs

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1. (1 point) Calculate the ATT estimate for the effect of the preparatory class on SAT test scores.

student_id	time	prep_class	SAT
001	0	0	1,100
002	1	1	1,350
003	0	0	1,400
004	1	0	1,450

   A. 50

   B. 100

   C. 150

   D. 200

2. (1 point) You observe data on classrooms nested within schools. Your data structure is most similar to a _____.

   A. cross-section

   B. pooled cross-section

   C. time series

   D. panel data

3. (1 point) Calculate the DD treatment estimate from the experiment. The file **dd-housing.csv** records housing prices coding treated units as 1 and control units as 0 (*Group* column). The *Post_Treatment* column indexes the before and after treatment periods.

   A. $68,527

   B. $35,231

   C. $34,066

   D. $33,494

4. (1 point) Calculate the RDD treatment estimate from the **rdd-elections.csv** dataset with data from senate elections in the US. The *margin* column records the democratic margin of victory while the *vote* column reports results in the next election six years later. What is the effect of close-margin democratic victories on democratic vote at the next electoral cycle? Within the scope of the analysis, a close-margin election is one won by a margin of 2 points or less. Please use the dataset as a pooled cross-section.

   A. 10.17

   B. 5.28

    C. -5.28

    D. -10.17

5. (1 point) You run a Two-Way Fixed Effect (TWFE) model on a dataset recording college students (an excerpt is provided below). The model specifies year fixed effects λ_t and individual fixed effects γ_i. What would happen if you run the regression:

$$GPA_{it} = \beta_0 + \beta_1 SAT_i + \gamma_i + \lambda_t + \epsilon_{it}$$

student_id	year	SAT	GPA
001	0	1,100	3.2
001	1	1,100	3.1
002	0	1,300	3.5
002	1	1,300	3.6
003	0	1,450	3.5
003	1	1,450	3.8

    A. The regression would not return any estimate on β_1

    B. The regression would return the SAT treatment effect estimate on β_1

    C. The regression would return the SAT treatment effect estimate on γ_i

    D. The regression would return the SAT treatment effect estimate on λ_t

6. (1 point) A synthetic control proxies for a _____outcome (i.e., an outcome that is not _____or missing) via a weighted average of _____which are observed.

    A. [observed, counterfactual, characteristics]

    B. [observed, counterfactual, outcomes]

    C. [counterfactual, observed, outcomes]

    D. [counterfactual, observed, characteristics]

7. (1 point) Please calculate the ratio of RMSPE post to RMSPE pre for the synthetic control application in the table below.

year	treatment	Observed Y ($)	Synthetic Y ($)
0	0	60,000	59,000
1	0	63,000	60,000
2	0	67,000	62,000
3	1	68,000	65,000
4	0	76,000	68,000
5	0	79,000	70,000

    A. 0.15

    B. 0.94

    C. 2.57

    D. 4.40

8. (1 point) Which one of the following estimators is less likely to generalize?

    A. Fixed Effects

      B. Difference-in-Differences

      C. Synthetic Control

      D. Regression Discontinuity Design

9. (1 point) You want to estimate the effect of the Atlanta 1996's Olympic Games on wellbeing of residents of Atlanta and other cities in Georgia. Which one of the following estimators would you implement?

      A. Fixed Effects

      B. Difference-in-Differences

      C. Synthetic Control

      D. Regression Discontinuity Design

10. (1 point) According to Goodman-Bacon(2021), when are Two-Way Fixed Effects estimates potentially problematic?

      A. When there are multiple time-periods in the sample

      B. When treatment and control units come from different time-periods

      C. When there are multiple time-periods and one single treatment period

      D. When treatment units are treated at different time-periods