

Political Science 202
Introduction to Political Analysis
Spring 2023: Problem Set #9

Due in Turnitin (Blackboard) on Friday, April 21 at 9:30 AM. 5 points in total. Late submissions are penalized with 1 point per 24 hours. MAKE SURE THAT YOU RECEIVE AN UPLOAD CONFIRMATION and SAVE THE CONFIRMATION (submission date and confirmation number). If you have trouble uploading to Blackboard, email as an attachment to your TA before the deadline. If you don't get a reply confirming that you handed it in, send it again.

1. There are two types of electoral systems: Proportional representation (PR), where the share of seats of each party in the legislature is proportional to its vote share; and majoritarian systems, where the country is divided into electoral districts and the candidates who receive the most votes in their district are elected. Prof. Katharine hypothesizes that electoral systems affect turnout: In a comparison of countries, countries with PR systems will have higher turnouts than will countries with majoritarian systems. Level of economic development is an important control variable, because development, measured as gross domestic product (GDP) per capita, is known to be an alternative cause of voter participation. Therefore, she evaluates the electoral system–turnout relationship, controlling for per capita GDP.

Among countries with low per capita GDP, the mean levels of turnout are as follows: majoritarian countries, 56.1 percent; PR countries, 69.8 percent. Among countries with high GDP per capita: majoritarian countries, 66.0 percent; PR countries, 68.5 percent.

- a) Construct a mean comparison control table from the information provided.
 - b) Decide which pattern—spuriousness, additive, or interaction—best describes the set of relationships. Write a complete sentence explaining your answer.
2. Professor Aysenur is a consultant for an NBA team. She is preparing for the upcoming draft, in which his team can choose a player from a list of college basketball players. The team's general manager (GM) wants to draft a player for the center position who can score many points. The GM asks Prof. Aysenur which center the team should draft. She decides to find out what factors explain how good a college basketball player later is once he plays in the NBA. She collects data on all players that were drafted in the last 10 years and conducts a multiple regression analysis. Her dependent variable is the average number of points per game that a player scored in his first NBA season. The independent variables are:
 - Points/game in college: The number of points per game that a player scored in college
 - Height (in inches)
 - Age
 - ACC: 1 if he played for a team in the ACC, 0 if not

The regression equation and the table of regression coefficients are presented below:

$$\text{Points/game in NBA} = a + b_1 \cdot \text{Points/game in college} + b_2 \cdot \text{Height} + b_3 \cdot \text{Age} + b_4 \cdot \text{ACC}$$

| Variable | Coefficient | Standard Error |
|----------------------|-------------|----------------|
| Points/game, college | 0.3 | 0.1 |
| Height | 0.1 | 0.08 |
| Age | -1 | 3 |
| ACC | 3 | 1 |
| Intercept | 19 | 3 |

- Interpret the substantive meaning of the coefficient of point/game in college. Can we reject the null hypothesis? To answer the second question, you have to compute the t-value. We talked about how to do this when we discussed bivariate regressions.
- Interpret the substantive meaning of the coefficient of ACC. Can we reject the null hypothesis?
- The GM has identified two players he particularly likes. Player A is 19 years old, plays for an ACC team, where he scores on average 10 points per game. However, he is only 6'2" (74 inches) tall. Player B is 7'4" (88 inches) and 21 years old. He scores on average 9 points per game for a non-ACC team. How many points per game is each expected to score in their first NBA season?