

Name: _____

Student ID: _____

ECON 0150 | MiniExam 10 | Spring 2025

This MiniExam will take 8 minutes with a quick break to follow. This cumulative exam covers the entire economic data analysis pipeline. Answer clearly, completely, and concisely.

Academic Conduct Code

The following academic conduct code is designed to protect the integrity of your work. Print your name/initials beside the three academic honesty agreements. I pledge to my fellow students, the university, and the instructor, that:

- ____ I will complete this MiniExam solely using my own work.
- ____ I will not use any digital resources unless explicitly allowed by the instructor.
- ____ I will not communicate directly or indirectly with others during the MiniExam.

Q1. You are analyzing international trade for a policy institute. Rewrite the following vague question into a specific, actionable economic research question: "How do tariffs affect the economy?" (*many correct answers here*)

Q2. You have a dataset of quarterly carbon emissions (metric tons) for 40 countries over 12 years. Which transformation would be most appropriate for each analytical goal:

a) To identify seasonal patterns in emissions while controlling for long-term trends:

- A) Calculate year-over-year percentage changes for each quarter
- B) Subtract the annual average from each quarterly value
- C) Apply first differencing to remove long-term trends
- D) Divide each quarter's value by the annual total to get relative proportions

b) For a study specifically focused on the carbon intensity of economic activity across countries of different sizes:

- A) Rank countries by total emissions and analyze only the top 10 emitters
- B) Divide emissions by each country's GDP to get emissions per dollar of economic output
- C) Divide emissions by each country's population to get per capita emissions
- D) Apply a seasonal adjustment to remove quarterly variations

Q3. You have data on government spending (% of GDP) for 50 countries over the past 20 years. Which visualization would best show how spending patterns have changed over time across different geographic regions?

- A) Line chart with separate lines for each region's average spending
- B) Bar chart comparing regional averages for three selected years (2003, 2013, 2023)
- C) Stacked area chart showing spending composition by region over time
- D) Histogram showing the distribution of spending levels in the most recent year

Q4. You measure wait times at a government office and find they follow a uniform distribution with mean $\mu = 24$ minutes and standard deviation $\sigma = 6$ minutes. If you take 100 random samples each containing 36 people, which statement about the sampling distribution of means is correct?

- A) It will follow a uniform distribution with mean 24 minutes and standard deviation 6 minutes
- B) It will follow a normal distribution with mean 24 minutes and standard deviation 1 minute
- C) It will follow a normal distribution with mean 24 minutes and standard deviation 6 minutes
- D) It will follow a normal distribution with mean 24 minutes and standard deviation 36 minutes

Q5. A political economist runs a regression to study factors affecting voter turnout (%) in 150 counties with `polling_dist` in miles:

OLS Regression Results						
	coef	std err	t	P> t	[0.025	0.975]
Intercept	41.206	2.735	15.067	0.000	35.826	46.586
median_age	0.284	0.061	4.656	0.000	0.164	0.404
polling_dist	-2.153	0.527	-4.085	0.002	-3.191	-1.115

a) Based on the regression results, what change in voter turnout is associated with each additional mile of distance to the nearest polling place?

- A) 2.153% increase
- B) 2.153% decrease
- C) 0.2153% increase
- D) 0.2153% decrease

b) If the true effect of `polling_dist` on voter turnout were zero, what would be the probability of observing an effect at least as extreme as the one in this regression?

- A) The probability would be less than 0.1%
- B) The p-value of 0.000 means there is zero chance that `polling_dist` has an effect
- C) The probability would be exactly 0.0%
- D) The probability would be approximately 5%