

INSTRUCTIONS:

1. Answer ONLY the specified number of questions from the options provided in each section. Do not answer more than the required number of questions. Each section takes one hour.
2. Your answers must be on the paper provided. No more than one answer per page. Do not answer two questions on the same sheet of paper.
3. If you use more than one sheet of paper for a question, write "Page 1 of 2" and "Page 2 of 2."
4. Write ONLY on one side of each sheet. Use only pen. Answers in pencil will be disqualified.
5. Write ----- **END** ----- at the end of each answer.
6. Write your exam identification number in the upper right-hand corner of each sheet of paper.
7. Write the question number in the upper right-hand corner of each sheet of paper.

Section 3: Econometrics—Answer One Question.

3A. (Econ 203A) Following are the results from several OLS models analyzing the determinants of student test scores:

Variable Name	Definition
testscr	Test score
str	Student teacher ratio
El_pct	Percentage of students where English is a second language
Meal_pct	Percentage of students that qualify for free meals
Calw_pct	Percentage of students that qualify for CalWORKS

Regression Results

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                                Dependent variable:
                                -----
                                testscr
                                -----
(1)          (2)          (3)          (4)          (5)
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str          -2.280***   -1.101**   -0.998***   -1.308***   -1.014***
            (0.519)     (0.433)     (0.270)     (0.339)     (0.269)

el_pct      -0.650***   -0.122***   -0.488***   -0.130***
            (0.031)     (0.033)     (0.030)     (0.036)

meal_pct    -0.547***
            (0.024)

calw_pct    -0.790***   -0.048
            (0.068)     (0.059)

Constant    698.933***   686.032***   700.150***   697.999***   700.392***
            (10.364)   (8.728)     (5.568)     (6.920)     (5.537)

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Observations 420          420          420          420          420
R2           0.051          0.426          0.775          0.629          0.775
Adjusted R2  0.049          0.424          0.773          0.626          0.773
Residual Std. Error 18.581      14.464          9.080          11.654          9.084
F Statistic  22.575***      155.014***     476.306***     234.638***     357.054***
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Note: *p<0.1; **p<0.05; ***p<0.01

- Under specific conditions, OLS is BLUE. What does the acronym BLUE stand for, and what does it tell us about OLS as an estimator?
- Using the results in column three, interpret the impact of a 1 unit increase in the percentage of students that qualify for free meals on test scores.
- How do we interpret the R^2 ? For example, the 0.775 in column three.
- What differentiates the R^2 from the Adjusted R^2 ? Why is the Adjusted preferred?
- The percentage of students eligible for free meals and CalWORK are statistically significant when included separately (i.e., columns three and four) but not when both are included (i.e., column five). What does this suggest about the information the percentage of students eligible for free meals and CalWORK provide in determining test scores?
- Related to the above question, suppose I wanted to test the following hypothesis: $meal_pct = calw_pct = 0$. Name the test I would use. How does this test compare to the test we use to determine the statistical significance of a single coefficient (i.e., test the hypothesis $calw_pct = 0$)?

(over)