

**DEPARTMENT OF POLITICAL SCIENCE
AND
INTERNATIONAL RELATIONS**

Posc/Uapp 816

Assignment 5
TWO VARIABLE REGRESSION

Name _____

(Printed)

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For Assignment 4 you found estimates of regression parameters. This time let's test them "for significance" and place confidence intervals around them.

1. Here are the mobility and divorce data again.

Region	Mobility rate	Divorce rate
New England	41	4.0
Middle Atlantic	37	3.4
East North Central	44	5.1
West North Central	46	4.6
South Atlantic	47	5.6
East South Central	44	6.0
West South Central	50	6.5
Mountain	57	7.6
Pacific	56	5.9

- A. What is the estimated regression coefficient of divorce on mobility? _____
- B. For this situation what are the degrees of freedom for testing the hypothesis that $\beta_{\text{divorce, mobility}} = 0$? _____
- C. What are the critical t values for the .05 _____ and .01 _____ levels?

- D. What is the observed t ? _____
 i. Use MINITAB.
- E. Do you accept or reject the null hypothesis? Why?

2. Here are the population change data again.

City	Percent change	Total crime	Murder
Los Angeles, CA	-1.1	7680.0	24.5
Dallas, TX	1.5	9464.1	26.5
Los Vegas, NV	27	7584.5	14.9
Baltimore, MD	-4.5	13318.4	45.6
Milwaukee, WS	-1.8	8462.9	22.2
El Paso, TX	12.4	7063.9	6.3
Washington, D.C.	-6.6	12166.4	65.2
Denver, Co	5.5	6873.5	16.0
Oklahoma City, OK	4.2	11501.8	48.7
Virginia Beach, VA	9.5	4651.8	3.7
St. Louis, MO	-7.2	16082.9	54.9
Colorado Springs, CO	.6	6765.2	5.5
Buffalo, NY	-4.6	9205.3	19.8
Louisville, KY	.3	7149.0	18.3
Jersey City, NJ	-1.1	7946.0	11.0

- A. What is the estimated regression of murder rate on percent change? _____
- B. What are 95 percent confidence limits for this estimate? Lower _____ Upper

- C. Do they include 0? What conclusion do you draw from this fact?

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