17.871
Spring 2007
Quiz

1. (3 points)

As reported by MSNBC, a recent study concluded that good-looking bosses were found to be more competent, collaborative, and better delegators than their less attractive counterparts. Based on a survey, they found that

- About 58% of female bosses who were rated as attractive got high marks for competence, compared with 41% of "average-looking" female bosses, and only 23% of unattractive supervisors.
- About 61% of male bosses who were rated as attractive got high marks for competence, compared with 41% for the average types, and 25% for those rated unattractive.

Do you believe the conclusion? Why or why not?

2. (2 points)

A recent study showed that framing an athletic task as diagnostic of negative racial stereotypes about Black or White athletes can impede their performance in sports. The study had Black and White athletes play mini golf. The athletes were divided into three groups, using random assignment. The groups played the same game but were given a different justification or "frame" for the activity. One group was told that it was diagnostic of "sports intelligence", one group that it was diagnostic of "natural athletic ability," and the final group was given no justification. Interestingly, Black participants performed significantly worse relative to the control group (and relative to just Blacks in the control group) when performance on the golf task was framed as diagnostic of "sports intelligence." In comparison, White participants performed worse relative to the control group (and relative to just Whites in the control group) when the golf task was framed as diagnostic of "natural athletic ability." The differences in performance were highly statistically significant.

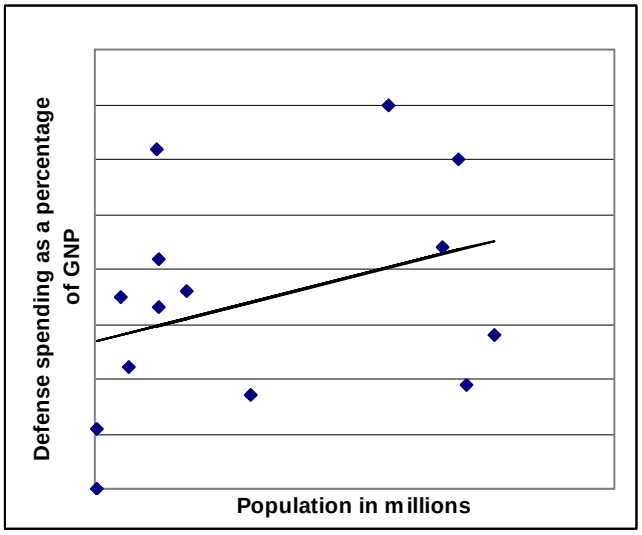
This experiment allegedly supports a growing body of evidence that people perform more poorly than they otherwise would when a negative stereotype about their performance is salient. Psychologists call this stereotype threat. If true, these studies have important implications for testing.

Do you find the mini-golf study compelling? Why or why not?

3. (12 points)

The following table and figure shows the population (in millions) and defense expenditures (as a percentage of GNP) for 14 NATO allies in 1981.

Country	Population (millions)	Defense Expenditures (% of GNP)
Iceland	0.2	0
Italy	57.2	1.9
W. Ger	61.4	2.8
Canada	23.9	1.7
Luxembourg	0.4	1.1
Denmark	5.1	2.2
France	53.5	4.4
Belgium	9.9	3.3
Netherlands	14.1	3.6
Norway	4.1	3.5
Portugal	9.9	4.2
UK	56	6
Turkey	45.2	7
Greece	9.5	6.2
Means	25.03	3.42
Variance	570.18	4.08
Covariance	16.92	



a. Which is the dependent variable and which is the explanatory variable? Why?
b. Calculate the correlation coefficient.
c. Calculate the least squares regression coefficient.
d. In his theory of collective action, Mancur Olson hypothesized that bigger partners in alliance situations will tend to bear more than their proportional share of total costs. What light, if any, do these data shed on his hypothesis?
e. Which of the 14 countries included in the table had higher defense expenditures than would have been expected given their populations? What factors might account for these anomalies?
f. In 1981, United States had a population of 230.1 million. What is the expected level of defense expenditures corresponding to that population, given the slope and intercept of the least squares regression line? (To answer this, you need to know the constant: 2.7). Is this a reasonable use of the regression model? Why or why not?
g. The standard error for the regression coefficient is 0.023. Calculate the t-statistic for the regression coefficient.
h. Calculate a 95% confidence interval for the repression coefficient.
i. The standard error of regression (called Root MSE by Stata) is 1.97. Interpret.

4. (8 points)

Truman's successful 1948 campaign for president against Dewey stunned the nation and has become one of the best-known, come-from-behind victories. A Time magazine poll of leading political experts just before the election found none who thought Truman could win. A popular explanation for Truman's victory is that he made support for New Deal issues, like support for trade unions, more salient. Truman was a Democrat, a party that had allegedly benefited from President Roosevelt's New Deal policies during the Great Depression in the 1930s. Because of World War II and the beginning of the Cold War, voters may have forgotten about the popular Democratic legacy. Truman may have won by reminding citizens of the importance of Democrats' redistributionist policies.

The following data are from a 1948 survey of citizens living in the generally Republican town of Elmira, Pennsylvania.

On the following page, you'll find summary statistics, the correlation matrix, and two regression models that use the following for variables:

- `Truman_vote` - Coded 1 for a Truman vote and 0 for a Dewey vote.
- `uns_sup` - A scale of support for trade unions from a question that asked about support for or opposition to trade unions. Coded 1 for strong support to 0 for strong opposition to trade unions.
- `union` - Union membership dummy. Coded 1 for union membership and 0 otherwise.
- `past_vote` - A scale of tendency to vote for a Democrat versus the Republican president. Coded 1 for voting Democratic in both the 1944 and 1940 presidential elections ... to 0 for voting Republican in both the 1944 and 1940 presidential.

Answer the following:

a. Were people who supported unions more likely to vote for Truman? Using the first regression model on the next page, interpret the `uns_sup` coefficient and p-value.
b. Using the first regression model, what is the probability that a citizen who strongly supported unions (`uns_sup` at 1) will vote for Truman?
c. The second regression model controls for union membership and past vote. Why might the researcher want to control for these variables when studying the relationship between Truman vote and support for unions?
d. Why does the coefficient on union support drop considerably from the first regression to the second?
e. Are you convinced that support for unions influenced Truman vote in the 1948 election? Why or why not?

```
. sum Truman vote  uns_sup union past_vote

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
 Truman_vote |       747    .3922356    .4110977          0          1
     uns_sup |       747    .5888889    .2432884          0          1
       union |       747    .4310576    .4955559          0          1
   past_vote |       747     .496988    .3721284          0          1

. corr Truman vote  uns_sup union past_vote
(obs=747)

             |Truman_vote uns_sup   union  past_vote
-------------+------------------------------------
 Truman_vote |   1.0000
     uns_sup |   0.2055   1.0000
       union |   0.2217   0.2365   1.000
   past_vote |   0.5192   0.1733   0.1833   1.0000


.  reg Truman vote  uns_sup

      Source |       SS       df       MS              Number of obs =     747
-------------+------------------------------           F(  1,   745) =   32.86
       Model |  5.32619882     1  5.32619882           Prob > F      =  0.0000
    Residual |  120.748768   745  .162078883           R-squared     =  0.0422
-------------+------------------------------           Adj R-squared =  0.0410
       Total |  126.074967   746  .169001296           Root MSE      =  .40259

------------------------------------------------------------------------------
Truman_vote  |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     uns_sup |   .3473105    .060586     5.73   0.000     .2283708    .4662501
       _cons |   .1877083   .0385995     4.86   0.000     .1119315    .2634851
------------------------------------------------------------------------------

.  reg Truman vote  uns_sup union past_vote

      Source |       SS       df       MS              Number of obs =     747
-------------+------------------------------           F(  3,   743) =  103.48
       Model |  37.1519826     3  12.3839942           Prob > F      =  0.0000
    Residual |   88.922984   743  .119681001           R-squared     =  0.2947
-------------+------------------------------           Adj R-squared =  0.2918
       Total |  126.074967   746  .169001296           Root MSE      =  .34595

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Truman_vote  |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     uns_sup |   .1618337   .0540846     2.99   0.003     .0556568    .2680106
       union |     .09181   .0266014     3.45   0.001     .0395872    .1440328
   past_vote |   .5328633   .0349487    15.25   0.000     .4642533    .6014733
       _cons |  -.0074685   .0352645    -0.21   0.832    -.0766984    .0617614
------------------------------------------------------------------------------
```