

17.871

Spring 2007

Problem Set #3

Work together, write up individually, and show your work.

Handed out: May 3, 2007

Due: May 10, 2007

1. (20 points) Does the incumbent president do better in New York State when the Yankees win more games?

### Variables

vote\_i: incumbent president's vote share in New York State counties  
pct: the Yankees winning percentage over the election-year season  
incterms: the number of terms the president has served in office  
gnp4: per capita GNP growth in the election-year  
year: year of the presidential election

(Each row in the data set is a New York state county year.)

```
. sum vote_i pct incterms gnp4 year
```

Variable	Obs	Mean	Std. Dev.	Min	Max
vote_i	1302	.4913937	.1586309	.16	.86
pct	1361	.5830786	.0585386	.41	.71
incterms	1302	2	1.069456	1	5
gnp4	1302	2.041905	4.912677	-14.96	11.57
year	1361	1960.025	24.17222	1920	2000

```
. regress vote_i pct incterms gnp4 year if year > 1919
```

Source	SS	df	MS	Number of obs = 1302		
Model	9.33695094	4	2.33423773	F( 4, 1297) =	129.37	
Residual	23.4011068	1297	.018042488	Prob > F =	0.0000	
				R-squared =	0.2852	
				Adj R-squared =	0.2830	
Total	32.7380578	1301	.025163765	Root MSE =	.13432	

  

vote_i	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
pct	.2090739	.0855564	<b>a.</b>	<b>b.</b>	.0412299	.376918
incterms	-.0758338	.0036583	-20.73	0.000	<b>e.</b>	<b>e.</b>
gnp4	.006453	.0008453	7.63	0.000	.0081113	.0047948
year	.0006841	.0001934	3.54	0.000	.0003047	.0010635
_cons	-.8065863	.4117455	-1.96	0.050	-1.614347	.0011739

- Calculate the missing statistic.
- Calculate the missing statistic.
- Interpret the coefficient for Yankee winning percentage (pct).
- Interpret the coefficient for incumbent terms (incterms).
- Calculate the missing confidence interval.
- Interpret the confidence interval in e.
- Calculate the 90% confidence interval in e.

- h. Pretend that the regression results above (coefficients and standard errors) were from a model with only 20 degrees of freedom. Calculate b. and e.
- i. Do you believe that citizens of New York State vote more for the incumbent president when the Yankees win more games? What additional graphs or analyses would you like to see?
- j. What does this model predict about the change in the incumbent president's winning percentage between 1920 and the year 3000? Believable?

2. (10 points) Understanding interactions.

```
. g postwar = year > 1945
. g pctXpostwar = pct * postwar

. regress vote_i pct incterm gnp4 year postwar pctXpostwar
```

Source	SS	df	MS	Number of obs = 1302		
Model	11.0111805	6	1.83519675	F( 6, 1295)	=	109.38
Residual	21.7268773	1295	.016777511	Prob > F	=	0.0000
-----				R-squared	=	0.3363
-----				Adj R-squared	=	0.3333
Total	32.7380578	1301	.025163765	Root MSE	=	.12953

  

vote_i	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
pct	.3116188	.1380185	2.26	0.024	.0408545	.582383
incterm	-.0855107	.0036936	-23.15	0.000	-.0927569	-.0782646
gnp4	-.0062222	.0008759	-7.10	0.000	-.0079406	-.0045038
year	-.0020971	.0003352	-6.26	0.000	-.0027547	-.0014395
postwar	.4466541	.0992433	4.50	0.000	.2519587	.6413494
pctXpostwar	-.5048986	.1591314	-3.17	0.002	-.8170821	-.1927151
_cons	4.497279	.6683988	6.73	0.000	3.186016	5.808542

- a. Interpret the coefficient on prewar Yankee winning percentage.
- b. What is the effect of Yankee winning percentage postwar. (Hint: You need to calculate this using the interactions.)
- c. From the model, predict the county vote share for the incumbent president for Erie County in 1936. Here's the relevant row:

name	vote_i	pct	incterm	gp4	year	postwar
ERIE	.52	.66	1	11.57	1936	0

- d. From the model, predict the average county vote share for the incumbent president for Erie County in 2000. Here's the relevant row:

name	vote_i	pct	incterm	gp4	year	postwar
ERIE	.47	.54	2	1.95	2000	1

- e. What does this model predict about the change in the incumbent president's winning percentage between 1920 and the year 3000? Why might the coefficient on year change from the model in question 1? (Hint: think about what changes between the models.)

3. (Infinite points) True or False: Yankees suck.