

Regression Analysis: 2002 Turnout versus 2000 Turnout, 1998 Turnout, ...

The regression equation is

$$\begin{aligned} 2002 \text{ Turnout} = & 0.184 + 0.356 \text{ 2000 Turnout} + 0.552 \text{ 1998 Turnout} \\ & + 0.0266 \text{ 2002 Senate Year} - 0.0446 \text{ Logged Per Capita Income} \end{aligned}$$

Predictor	Coef	SE Coef	T	P
Constant	0.1835	0.3818	0.48	0.633
2000 Turnout	0.3564	0.1139	3.13	0.003
1998 Turnout	0.55210	0.08881	6.22	0.000
2002 Senate Year	0.02659	0.01173	2.27	0.028
Logged Per Capita Inc	-0.04459	0.08793	-0.51	0.615

S = 0.0368227 R-Sq = 75.8% R-Sq(adj) = 73.7%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	4	0.195835	0.048959	36.11	0.000
Residual Error	46	0.062372	0.001356		
Total	50	0.258207			

Consider these results as being a “snapshot” of an ongoing election process.

- Is the overall regression relationship statistically significant here? Carefully state the hypotheses that you are testing and the test that you are using. Use $\alpha = .05$.
- Do any of the individual predictors provide significant predictive power for 2002 turnout given the others? Carefully state the hypotheses that you are testing and the test(s) that you are using. Use $\alpha = .05$.
- Give a precise interpretation for the coefficient for 2002 **Senate Year**.
- Give a rough 95% interval for the accuracy within which you could expect this model to predict 2002 turnout.

The following output comes from a regression model relating logged total U.S. domestic gross (log base 10) to logged cost (log base 10) and critical rating from the web site rottentomatoes.com for a sample of 2005 movies. Assume that assumptions have been checked, and appear to be satisfied.

Regression Analysis: Logged total versus Logged cost, Rotten Tomat

The regression equation is

Logged total gross = 0.418 + 0.669 Logged cost + 0.00558 Rotten Tomatoes Rating

Predictor	Coef	SE Coef	T	P
Constant	0.4177	0.3617	1.15	0.268
Logged cost	0.6685	0.1806	3.70	0.002
Rotten Tomatoes Rating	0.005583	0.002639	2.12	0.053

S = 0.299742 R-Sq = 53.6% R-Sq(adj) = 47.0%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	2	1.45206	0.72603	8.08	0.005
Residual Error	14	1.25783	0.08985		
Total	16	2.70990			

- (a) Interpret the slope coefficient for logged cost in terms of the relationship between cost and U.S. domestic gross.
- (b) Interpret the slope coefficient for Rotten Tomatoes rating in terms of the relationship between Rotten Tomatoes rating and U.S. domestic gross.