

Command	Explanation	Abbreviation
correlate y x	gives correlation of $x$ and $y$	corr
regression y x	regresses $y$ on $x$	reg
predict yhat	creates vector of predicted values $yhat$ after reg	
predict e, resid	creates vector of residuals $e$ after reg	
test x = c	tests $H_0 : x = c$ against $H_a : x \neq c$	

The following regresses the price of an automobile on its mileage-per-gallon using heteroskedasticity robust standard errors.

```
. sysuse auto
(1978 Automobile Data)

. regress price mpg, vce(robust)
```

		Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
price							
mpg		-238.8943	57.47701	-4.16	0.000	-353.4727	-124.316
_cons		11253.06	1376.393	8.18	0.000	8509.272	13996.85

You test the claim that one more mile per gallon is associated with a lower price by \$400. Specifically,  $H_0 : \beta_2 = -400$  against  $H_a : \beta_2 \neq -400$ .

```
. test mpg = -400

( 1)  mpg = -400

      F( 1,    72) =    7.86
      Prob > F =    0.0065
```

When there is only one regressor, then  $F(1,72) = t^2$ , so the  $t$ -statistic is  $\sqrt{7.86} = 2.803$ , which can be confirmed by manually calculating

$$t = \frac{-238.8943 - (-400)}{57.47701} = 2.803.$$

The  $p$ -value is 0.0065, so reject the null hypothesis at any conventional significance level. Note that the residual has mean zero, as it always will.

```
. predict e, resid

. sum e
```

Variable	Obs	Mean	Std. Dev.	Min	Max
e	74	-6.29e-06	2605.621	-3184.174	9669.721