Command	Explanation	Abbreviation
`scalar a = 5`	defines scalar $a = 5$	
`scalar list`	lists scalars	
`ttail(df,c)`	gives $\Pr(T > c)$ for $T \sim T(df)$	
`invttail(df,p)`	gives the value t^* such that $\Pr(T > t^*) = p$	
`display a`	displays value of scalar a or `ttail` or etc	`di`
`ttest x = c`	performs t-test for $H_0 : \mu = c$ with variable x	
`mean x`	estimates mean of x (confidence intervals)	

Summary Statistics and Scalars

`sum x, detail`	
`scalar xbar = r(mean)`	*xbar* equals mean of x
`scalar sd = r(sd)`	*sd* equals standard deviation of x
`scalar n = r(N)`	n equals number of observations for x
`scalar t = invttail(n-1,0.025)`	t equals 2-sided 5% critical value with $df = n - 1$

Calculating Confidence Intervals

```
scalar CI_lb = xbar - invttail(n-1,0.025)*sd/sqrt(n)
scalar CI_ub = xbar + invttail(n-1,0.025)*sd/sqrt(n)
di CI_lb, CI_ub
```

Or use `mean x`. You can change the level to, say, 90%, with command `mean x, level(90)`.

Hypothesis Testing

`di invttail(n-1,0.025)`	gives 5% critical value for two-sided test
`di 2*ttail(n-1,2.15)`	gives two-sided p-value for t-statistic 2.15 (or -2.15)

```
. ttest price = 230000

One-sample t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
   price |      29    253910.3    6943.281    37390.71    239687.7      268133
------------------------------------------------------------------------------
    mean = mean(price)                                            t =   3.4437
Ho: mean = 230000                                degrees of freedom =       28

   Ha: mean < 230000           Ha: mean != 230000           Ha: mean > 230000
 Pr(T < t) = 0.9991         Pr(|T| > |t|) = 0.0018          Pr(T > t) = 0.0009
```

Figure 1: The number $\Pr(|T| > |t|) = 0.0018$ is the two-sided p-value for null $H_0 : \mu_{price} = 230000$. We reject the null at 1%, 5% and 10% significance because 0.0018 is less than all of those significance levels.