	Population Mean	**Regression Slope Coefficient**
The true value you're interested in	µ	β1
What you say	Is the true mean of the variable Y really \mu,y0?	Does my independent variable have any effect on my dependent variable? Does my X variable have any effect on my Y variable? Does the slope coefficient on X have a value different than zero-- meaning no effect at all? Is β1 equal to zero?
The stated hypotheses	H_0 : E(Y) = µ_y,0 H_a: E(Y) ≠µ_y,0 (or H_1)	H_0 :β1=0 H_a: β1 ≠0 (or H_1)
How you'll estimate the true value: your estimator	Ybar = sum i=1 to n (Y_i) / n	β1hat = (sum (xi - xbar)* (yi- ybar)) / sum (xi- xbar)^2
Step 1	Compute standard error of your estimator. (A measure of the standard deviation of the sampling distribution of your *estimator*) SE(Ybar)= σhat_Ybar = s_y / sqrt(n) (sample std dev / sqrt sample size)	Compute the standard error of β1hat. It's this crazy thing: σhat_β1hat ^2 = 1/n * (1/(n-2)sum(xi=xbar)^2*ubari^2) / (1/n * sum(xi-xbar)^2) ^2. Alternatively….just let Stata do it for you.
Step 2	Compute the t-statistic. t = (Ybar - µ_y,0)/(SE(Ybar)). Ok, so Ybar is from data, SE(Ybar) is from data, where is µ from? From your hypothesis!	Compute the t-statistic. t = (β1hat - 0)/ SE(β1hat)
Step 3	Compute the p-value. The probability that you'd observe that Ybar in the distribution of the Ybar estimator. The probability left in the two tails given that t-value. Use the appendix tables, OR, if you just care if it's significant at the 5% level, just check if it's bigger than 1.96.	Compute the p-value. Same way you'd do it, except let's just let Stata do it. Reject if the t-value is greater than 1.96 for a 5% significance level. (95% confidence, 5% significance)
Optional Step 4	Compute a confidence interval for your true value by figuring out the range for your estimator. 1. The set of values that cannot be rejected using a two-sided hypothesis test with 5% sig. 2. Interval that has 95% probability of containing the true µ value. 95% CI for µY = {Ybar ± 1.96 SE(Ybar)}	Compute a confidence interval. 95% CI for β1= {β1hat ± 1.96 SE(β1hat)}. Because β1 is a slope, you can also create a CI for a change in X. Multiply the sides of the CI by the change in x. (β1hat+ 1.96 *SE(β1hat))* Δx