

Command	Explanation	Notes
cor()	calculates sample correlation	requires "stargazer"
cor.test()	performs correlation tests	
lm(y ~ x)	regresses $y$ on $x$	
stargazer()	shows nicely formatted output	
confint()	calculates confidence intervals	
plot()	creates scatterplot	
abline()	adds straight line through current plot	
summary()	shows notable statistics	

**Example Code.** In the following code, I plot some data and its regression line; I test  $H_0 : \rho_{xy} \leq 0$  against  $\rho_{xy} > 0$ ; and show regression results, fitted values, residuals, and the 99 percent confidence intervals for  $\beta_1$  and  $\beta_2$ .

```

1 #install.packages("stargazer")
2 library("stargazer")
3
4 ## Some random data
5 x = c(0,3,3,4,6)
6 y = c(2,3,4,5,7)
7
8 ## Scatter plot of the data
9 plot(x,y)
10
11 ## Show correlation, test if it's greater than zero.
12 cor(x,y)
13 cor.test(x, y, alternative = "greater")
14
15 ## Regress y on x
16 regyx = lm(y ~ x)
17
18 ## Plot the regression line through the scatter plot
19 abline(regyx)
20
21 ## Show regression results
22 stargazer(regyx, type = "text")
23
24 ## Show fitted values and residuals
25 regyx$fitted.values
26 regyx$residuals
27
28 ## Show 99 percent confidence interval
29 confint(regyx, level=0.99)
30
31 ## Show more detailed info about regression coefficients
32 summary(regyx)$coefficients

```

The  $p$ -value for the correlation test is 0.007222, so we reject the null and conclude  $\rho_{xy} > 0$  at 1 percent significance. The regression line has intercept coefficient  $b_1 = 1.511$ , which is significant at 10 percent; and slope coefficient  $b_2 = 0.840$ , which is significant at 5 percent. Neither are significant at 1 percent, which can be seen directly from the summary output or by noting that both 99 percent confidence intervals contain zero.