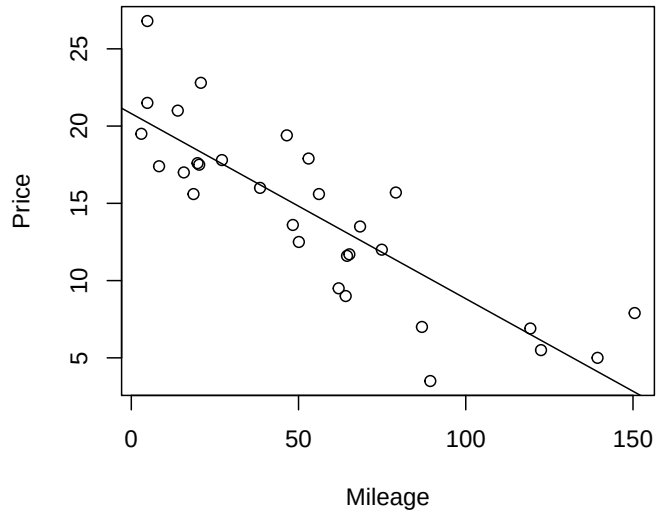
Lecture 12: Simple Linear Regression
Practice Problems
STAT 310, Spring 2021

The following scatterplot shows the association between price (in $1,000's) and mileage (number of miles driven in 1,000's) for a sample of 30 used Honda Accords in 2017. Also provided below is the output from fitting a simple linear regression model in R.

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Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  20.8096     0.9529   21.84  < 2e-16 ***
Mileage      -0.1198     0.0141   -8.50 3.06e-09 ***
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.085 on 28 degrees of freedom
Multiple R-squared:  0.7207,Adjusted R-squared:  0.7107
F-statistic: 72.25 on 1 and 28 DF,  p-value: 3.055e-09
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(a) Describe the association between price and mileage.

(b) What are the explanatory and response variables for the linear regression model?

(c) Write the equation for the least squares line.

(d) What is the predicted price for a used Honda Accord that has been driven 50 thousand miles?

(e) Interpret the slope.

(f) Interpret the intercept.

(g) Calculate the residual for a car, in this data set, that costs 3.5 thousand dollars, and has been driven 89.4 thousand miles.

(h) Interpret the R^2.