Report

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“‘{r setup, include=FALSE}

load(“~/pandoc-test/stat159/stat159-fall2016-hw02/data/regression.RData”) library(xtable)

“‘

Abstract

This is a result of the least squares regression fit of Sales on TV from the Advertising data set.

Data

This summary tables details out the estimated coefficients of the linear least squares line. Complete with a standard error of the estimates and t- and p-values. From this, we can conclude that $\hat{\beta}_0$ and $\hat{\beta}_1$ are not equal to 0.

	Coefficient	Std. Error	t-statistic	p-value
Intercept	7.03	0.46	15.36	0.00
TV	0.05	0.00	17.67	0.00

This marks the code of the actual summary output in R. These are the details of the regression line.

“‘{r, echo=FALSE}

summary

values <- c(summary*sigma*, *summary*r.squared, as.vector(summary$fstatistic[1])) rownames<- c(‘Residual standard error’,‘R^2’, ‘Fstatistic’) table <- as.table(matrix(c(rownames,round(values,3)), nrow=3,ncol=2, dimnames=list(NULL, c(‘Quantity’,‘Values’))))

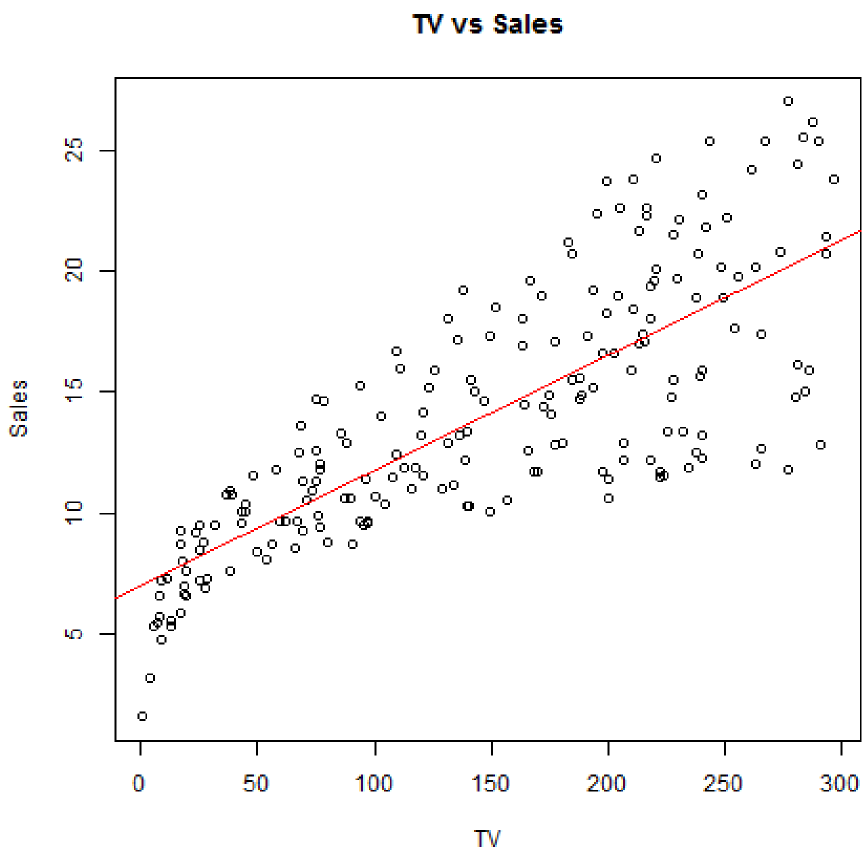

Figure 1:

“‘

The content in this table displays 3 things. First, the residual standard error, or RSE which is the estimated standard error of errors, ϵ, describing the so-called “lack of fit” of the model. The second term, R^2 explains how much of the variability was due to the regression. This is on a scale of 0 to 1. The last term is the F-statistic, is the test statistic of running an ANOVA hypothesis test to find if the means of the two categories are the same or not. In this case, our F-statistic corresponds to a p-value of <<0.000001, so therefore you can safely reject the null hypothesis, H_0.

	Quantity	Values
A	Residual standard error	3.259
B	R^2	0.612
C	F-statistic	312.145