

STA 205 CORRELATION AND REGRESSION EXAMPLE

This example refers to Exercise 2, page 484 of the text.

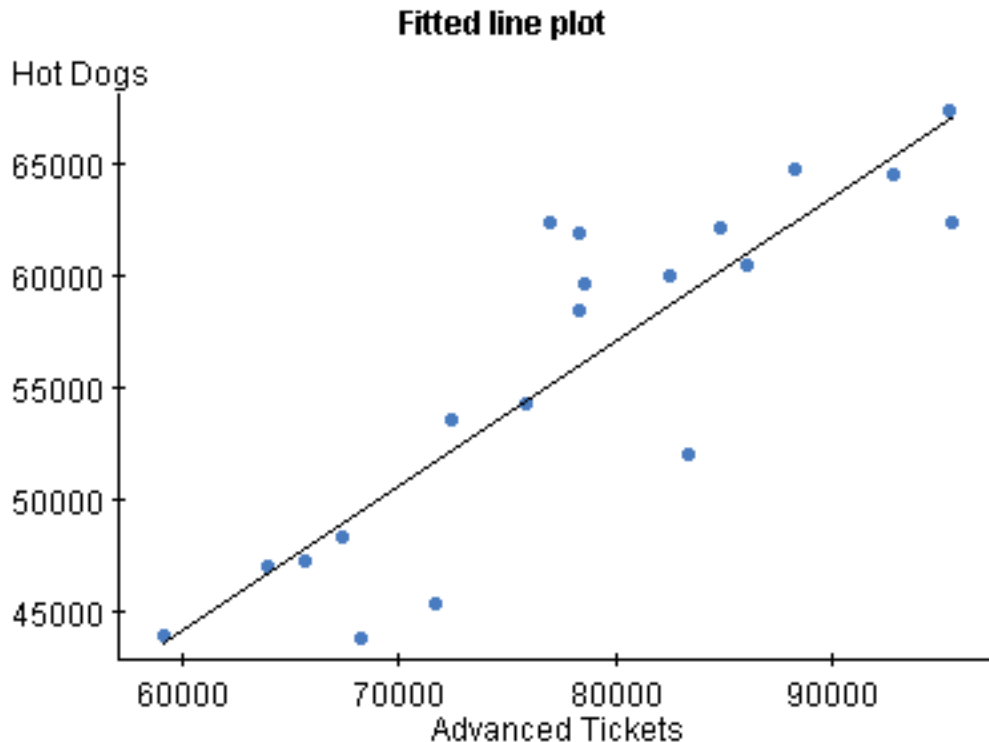
In this example, the number of hotdogs sold per week is the response variable, or the Y-variable. The number of advanced tickets sold is the predictor variable, or the X-variable. The following are used to obtain all of the calculations for Chapter 11. The entry of **Predict Y for X = 80137**, is included to obtain 95% prediction and confidence intervals.

Stat ▶ **Regression** ▶ **Simple Linear**
X-Variable: **Advanced Tickets**
Y-Variable: **Hot Dogs**
Next ▶ **Check:** **Predict Y for X = 80137**
Next ▶ **Check:** **Plot the fitted line**
Calculate

Stat ▶ **Summary Statistics** ▶ **Correlation**
Select Columns: **Advanced Ticket Sales**
Hot Dogs
Next ▶ **Check:** **Display two-sided p-value**
Calculate

Correlation between Advanced Tickets and Hot Dogs is:
0.87480444 (<0.0001)

The fitted scatterplot with the fitted line is below.



All of the remaining calculations follow. Appropriate parts of these calculations will be discussed and interpreted in class.

Simple linear regression results:

Dependent Variable: Hot Dogs

Independent Variable: Advanced Tickets

Hot Dogs = 5407.9683 + 0.6463775 Advanced Tickets

Sample size: 20

R (correlation coefficient) = 0.8748

R-sq = 0.7652828

Estimate of error standard deviation: 3855.5344

Parameter estimates:

Parameter	Estimate	Std. Err.	DF	T-Stat	P-Value
Intercept	5407.9683	6659.0107	18	0.8121278	0.4273
Slope	0.6463775	0.08437455	18	7.6608114	<0.0001

Analysis of variance table for regression model:

Source	DF	SS	MS	F-stat	P-value
Model	1	8.7240608E8	8.7240608E8	58.68803	<0.0001
Error	18	2.67572608E8	1.4865145E7		
Total	19	1.13997875E9			

Predicted values:

X value	Pred. Y	s.e.(Pred. y)	95% C.I.	95% P.I.
80137	57206.723	876.5828	(55365.09, 59048.355)	(48899.83, 65513.617)