Exercise 6.1

Linear Regression for Starbucks

Starbucks launched its prepaid (debit) Starbucks Card in November 2001. The card, which holds between $5 and $500, can be used at virtually any Starbucks location. The card was so popular when it first was released that many stores ran out. By mid-2002, Starbucks had activated more than 5 million of these cards. It is believed that the card accounted for a large portion of the company's 7% same store increase in sales in early 2002 and that it is responsible attracting many new patrons to the store. As customers "reload" the cards, it appears they are placing more money on them than the initial value of the card.

Starbucks has gone on to promote their Starbucks Card as a flexible marketing tool that can be used by individuals as a gift of thanks and appreciation for friendship or service and can be used by companies to reward loyal customers and as an incentive to employees.

Data File for RQ1 & RQ2: StarbucksPrepaid.csv

Variable names in the data set:

- **Amount** = Amount of Prepaid Card ($)
- **Age** = Age
- **Days** = Days per Month at Starbucks
- **Cups** = Cups of Coffee per Day
- **Income** = Income ($thousands)

Data File for RQ3: StarbucksGrowth.csv

Variable names in the data set:

- **Year** = Sales Year
- **Revenue** = Sales Revenue
- **Stores** = Number of Stores
- **Drinks** = Number of Types of Drinks Sold
- **AveWeekEarnings** = Average Weekly Earnings of U.S. Production Workers

Answer the following questions

- **RQ1:** Suppose Starbucks management wants to study the reason why some people purchase debit cards with higher prepaid amounts than do other people. Suppose a

study of 25 randomly selected prepaid card purchases is taken. Respondents are asked the amount of the prepaid card, the customer's age, the number of days per month the customer makes a purchase at Starbucks, the number of cups of coffee the customer drinks per day, and the customer's income. Using these data, develop a multiple regression model to study how well the amount of the prepaid card can be predicted by the other variables and which variables seem to be more promising in doing the prediction. What sales implications might be evident from this analysis?

- **RQ2:** Suppose marketing wants to be able to profile frequent visitors to a Starbucks store. Using the same data set already provided, develop a multiple regression model to predict Days per Month at Starbucks by Age, Income, and Number of cups of coffee per day. How strong is the model? Which particular independent variables seem to have more promise in predicting how many days per month a customer visits Starbucks? What marketing implications might be evident from this analysis?
- **RQ3:** Starbucks has grown quite rapidly. As they add stores and increase the types of drinks, their sales revenues increase. In reflecting about this growth, think about some other variables that might be related to the increase in Starbucks sales revenues. Some data for the past seven years on the number of Starbucks stores (worldwide), approximate sales revenue (in $ millions), number of types of drinks sold, and average weekly earnings of U.S. production workers are given here. Most figures are approximate. Develop a multiple regression model to predict sales revenue by types of drinks sold, number of stores, and average weekly earnings. How strong is the model? What are the key predictors, if any? How might this analysis help Starbucks management in attempting to determine what drives sales revenues?

Coordinator's solution to all exercises will be posted on main site after all classes complete lessons at end of week.