BUS 735: Business Decision Making and Research

Instructor: Dr. James Murray Worksheet: Regression Analysis

## Learning Objectives:

- LO2: Be able to construct and use multiple regression models to construct and test hypotheses considering complex relationships among multiple variables.
- LO6: Be able to use standard computer packages such as R to conduct the quantitative analyses.
- LO7: Have a sound familiarity of various statistical and quantitative methods in order to be able to approach a business decision problem and be able to select appropriate methods to answer the question.

**Directions:** Work in groups of up to four people and answer the following questions. All papers will be collected, but only one member's paper will be randomly selected and graded and all members of the group will receive the same grade.

By signing below, you agree that the following work represents the efforts of everyone in the group, and you are willing to accept as your own grade for the group project the grade earned from this representation of your group's work. Every member must agree to these terms to earn a non-zero grade for this assignment.

Signature Group Member 1	Print Name	Date
Signature Group Member 2	Print Name	Date
Signature Group Member 3	Print Name	Date
Signature Group Member 4	Print Name	Date

The data set below includes data on 239 recently sold houses including the selling price (in thousands of dollars), the size of the house (in square feet), the number of bedrooms, whether

or not the house is on a corner lot (1=corner lot, 0=otherwise) and the age of the house in
years. Develop a regression model that can help potential home sellers figure out how much
they might get for their house based on the other variables in the data set.
You can download the data set at one of the following locations:

http://murraylax.org/datasets/house.csv http://murraylax.org/datasets/house.RData 1. Estimate the regression equation and write down the estimated equation. 2. What is your prediction for the average selling price of a house that is on a corner lot, has 3 bedrooms, is 2412 square feet, and is 18 years old? 3. What percentage of the variability in selling price is explained by your explanatory

variables?

4.	Suppose your real estate agent said the age of the house has no bearing on the selling price of a house, it is only the other factors that are important along with preparing your house so that is looks visually attractive to buyers. Test the real estate agent's claim. What is your conclusion?
5.	Test the hypothesis that at least one of your explanatory variables in your regression model helps explain housing prices.
6.	Think about this example. Is there any reason why any of the explanatory variables might be correlated? Which ones? For these variables, compute the Pearson Correlation Coefficient and test whether the correlation is different from zero.