Lab Exam 2A

Please use the data set ***Home Prices.xls*** for all analyses below. The data set can be found in the **ResEc 312** folder on the server. The data set includes the following variables:

- PRICE - the price of the home in dollars.
- TOWN - the town in which the home is located; either Amherst or Belchertown.
- NROOMs - the total number of rooms in the house.
- NBDR - the number of bedrooms in the house.
- NBATH - the number of baths in the house (0.5 indicates "half-bath" or "powder room").
- ACRES – the number of acres upon which the house sits.
- AGE – the age of the house in years.

You are free to choose either Excel of Minitab for most analyses. Your printed output is to be well organized and must use a minimal amount of paper.

(5) 1. Save the Excel spreadsheet in the Exam 2 folder for your section as "***firstname lastname Exam2.xls***."

(10) 2. These data were sorted by price. You must first **sort the data by town** in order to separate Amherst homes and Belchertown homes.

(10) 3. Next, **select only the Amherst homes** from the data set. Place these homes in a separate **worksheet (not a separate spreadsheet)** – choose an appropriate title for the worksheet.

(10) 4. **Provide descriptive statistics** (include at least the means, standard deviations, and medians) for the following variables: price, number of bedrooms, number of baths, number of rooms.

(5) Briefly, **explain** what information we gain from the means, standard deviations and the medians.

(10) 5. Provide a **scatter diagram for Amherst home prices** and the number of rooms. **Include a trendline** on your graph and the **equation for that trendline**.

(4) **Write a short interpretation of this graphical analysis.** What does the graph show?

(10) 6. **Provide a correlation matrix** for the variables: price, number of rooms, number of bedrooms, number of baths, and acres.

(5) Summarize; what do these correlations tell you?

(12) 7. Estimate the following multiple regression model for Amherst home prices:

$$PRICE = \beta_0 + \beta_1 NROOMS_i + \beta_2 NBDR_i + \beta_3 NBATH_i + \beta_4 ACRES_i + \beta_5 AGE_i + u_i$$

(8) Identify the following from your regression results (just enter the numeric values):

The estimated effect of a change in the number of rooms on home price:	
The explained sum of squares:	
The measure for ***goodness of fit***:	
The calculated test statistic for the null hypothesis that acreage has no effect on price:	

(6) 8 Provide a 90% confidence interval estimate for the mean price of a home given the following values: **NROOMS = 7; NBDR = 3; NBATH = 2.5; ACRES = 4.3; AGE = 8**.

	90% Confidence Interval Estiamte	
Point Estimate	Lower Limit	Upper Limit

(5) 9. Print your final set of results. Include in the following order: your scatter diagram; descriptive statistics; correlations; regression results with the confidence interval estimates. Your results should fit on 2 pages; however, careful organization of results counts and printing only what is needed counts. We'd rather review 3 carefully organized pages than 2 cramped pages. (But, Dan's serious about not wasting paper.)