

RE 614 – Real Estate Appraisal
Fall 2008

Regression Analysis Project – Due November 6

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TTh 9:30-10:45

- 1) Estimate the market value of the subject property below using regression analysis.
 - a) You should use the data provided in the RE614_Sales_Comparison_Data.xls spreadsheet for your regressions. You do not need to use all of the data in the spreadsheet. As with the matched pairs analysis, you may limit yourself only to comparables that match the subject across characteristics you like. In choosing the data to use, however, recognize that more data points are always preferred, as long as they are not too different from the subject.
 - b) You will need to choose which variables to include in your regression. In general, these will be the characteristics that differ across properties and affect value. You should try several different models, accepting or rejecting variables based on the criteria discussed in class:
 - Is there a good theoretical/intuitive reason that the variable should matter?
 - Does the estimated coefficient have the “right sign,” and is the magnitude of the coefficient believable?
 - Is the estimated coefficient statistically significant?
 - Is the variable highly correlated with another variable in the model so that the significance of both variables may be understated?
 - Is there an omitted variable bias that makes the estimated coefficient suspect?
 - c) You will also need to choose the right *functional form* for your regression model. In class, we ran regressions in which the dependent variable was Price. Alternatively, you might consider whether Price per Square Foot is a better dependent variable.
 - You might also look at taking the *logarithmic transformation* of Price (Ln Price) and other continuous variables. This is useful, because it changes the estimated coefficients to be “relative effects.”
 - For independent variables that are also log transformed, the estimated coefficient gives the percentage change in Price in response to a one percent change in the independent variable.

For example, if you include Ln(Total SF) as an independent variable and find estimate the coefficient = 0.25, this means that a 1 percent increase in Total SF leads to a 0.25 percent increase in Price.

- For independent variables that are not transformed (such as the number of bathrooms, age, etc.), the estimated coefficient gives the percentage change in Price due to a one unit change in the independent variable.

For example, if you find that the coefficient on Full Baths = 0.065, this means that each additional full bathroom raises Price by 6.5 percent.

The advantage of the log specification is that it gives “relative price” effects, so that you don’t need to worry about whether an additional bathroom has the same impact on a \$50,000 home as it does on a \$300,000 home. If the estimated coefficient is 6.5 percent, then the dollar impact is \$3,250 for the \$50,000 home and \$19,500 for the \$300,000 home.

- d) Once you have chosen your final regression model specification, you need estimate the market value of the home using both of the methods shown in class:
 - Predicted value of the subject using the subject’s characteristics and the regression model coefficients; and
 - Indicated value of the subject using a sales comparison adjustment grid.
- e) Finally, you need to provide a 1-3 page write-up discussing your regression results. In this discussion, you need to demonstrate the quality of “fit” of your model (especially by discussing the significance of the estimated coefficients, the “reasonableness” of your estimated coefficients, and the R Square of your regression model). You also need to discuss why you chose your particular functional form, how you selected the data to include, and how you selected your final model specification (which variables you included in the model).

As always, make sure you turn in a work product that is neat and professional in appearance.

Subject property characteristics:

The subject is a ranch style home with three bedrooms, two full bathrooms, and no half bathrooms. It has 1,157 sf of total finished living area, all of which is above grade. The full basement is unfinished, so there is no “rec room” space either. It has a 480 sf attached garage and sits on a 6,981 sf lot.

The home is 9 years old. It is of average construction (a construction grade of “C”) and the utility of the location is “AV” or average. It is located on a typical residential street (not on a cul-de-sac or on a major street) in “neighborhood 4.” The lot does not front or have a view of any water features.

The primary floor covering in the house is carpet and it has drywall on the walls. It has wood frame exterior walls and an asphalt shingle roof. The home has central heat and air (the heat is forced air fueled by natural gas). There is no attic space in the home. The home has two additional plumbing fixtures beyond those required for the two bathrooms.

You have been asked to appraise the property based on a sale date in January 2007.