Presentation Assignment, BANA 5368, Darren Grant, Summer 2012.

Does school quality affect house prices? To decide, you are to gather data from a sample of 40 houses that lie within a single neighborhood that attends two different schools. You are then to conduct a statistical analysis, either an ANOVA or a regression, to answer the question, and create a presentation that will describe the problem, the data, your analysis, and your conclusion. On the last class night each person will give their presentation to the class.

Steps to Completion.

First, identify a neighborhood than spans both sides of a school attendance zone boundary. The school boundary may concern an elementary, middle, or high school; school district web sites should show these boundaries. Please e-mail me the neighborhood—in the rare event that you and a classmate choose the same neighborhood, it will be first come, first serve.

Second, choose a fairly random sample of houses from that neighborhood from both sides of the school attendance zone boundary. If you pick all the houses on one street—that's not a random sample.

Third, for each house, get information on its value and four basic characteristics (age, size, etc.). Zillow is one source of information; the county appraisal district web site is another. Put this information in a nicely organized sheet of a spreadsheet.

Fourth, create some plots and descriptive statistics to describe the neighborhood and to compare the houses on either side of the school boundary. Put these in another sheet of your spreadsheet. Ideally, the quality of the two schools on opposite sides of the boundary differs but the neighborhood characteristics do not. Conduct tests of the means of your variables to determine whether neighborhood characteristics differ, and look up test scores or school ratings on the Texas Education Agency website to compare school quality. (Test scores are in the "AEIS"; the TEA site also has accountability ratings for every school. This information need not be in your spreadsheet.)

Fifth, formulate null and alternative hypotheses concerning the effect of the school zone on house prices.

Sixth, conduct an analysis to test your hypotheses. You may choose either an ANOVA or a regression. Either way, conduct your analysis at the univariate level first, that is, considering no other variables. Then add in some "blocking factors" for ANOVA, or "control variables" for regression, and conduct a multiple ANOVA or multiple regression. You get to choose these factors/variables, but not all choices are equally good. This should be placed in a third sheet of your spreadsheet.

Seventh, draw your conclusion. Either you reject the null or you don't! The null and alternative hypotheses, along with your conclusion, should be typed into the third sheet of your spreadsheet, so your analysis is there along with your conclusion.

Eighth, create a nicely organized, factual, nicely presented PowerPoint presentation that describes: 1) the problem, 2) the data & neighborhood in question, 3) your framework for analysis, including methods and null and alternative hypotheses, 4) your results, and 5) your conclusions. Your PowerPoint should be exactly eight slides, as specified below. In the "notes" section of each slide, outline what you plan to say about it.

Ninth, print out this PowerPoint in the "notes pages" format. This will print out both the slide and the notes, one per page. Also print out each of the three sheets of your spreadsheet. Turn all of this in at the beginning of the last class period.

Constructing and Delivering Your Presentation.

Your presentation should have the following slides, in the following order:

Slide 1: Introduce and motivate the problem.
Slide 2: Describe the neighborhood and schools, perhaps including a picture or diagram.
Slide 3: Provide descriptive statistics for the houses in your neighborhood, and compare means.
Slide 4: Compare the schools and determine how well the conditions for an ideal experiment are met.
Slide 5: Introduce your analysis (ANOVA or Regression) and state your null hypothesis.
Slide 6: Present the results from your univariate analysis.
Slide 7: Present the results from your multivariate analysis.
Slide 8: Present your conclusion.

After our first test, on June 13, you will make a preliminary presentation, of just the first four slides, of between four and five minutes in length. This presentation is graded only for completeness—completion of all parts of slides 1-4—and adherence to the time limits, not on the quality of your slides or your verbal presentation. We will then critique your presentation. This is an opportunity to work on presentation skills prior to the final, graded version that you will give the night of your second test. Your final presentation will include all eight slides, and must take no less than seven minutes (7:00) and no more than ten minutes (10:00). It will require practice to meet these time limits!

Making an Effective Presentation.

1. *Motivate your presentation by creating a gap in knowledge, which you will fill*. This means you should not begin your presentation with a version of, "This is what I am going to do." **Motivate** the question, ideally with an example, a story, or a conundrum. The story, etc., creates a gap in knowledge, which your presentation will then fill.

2. *Your slides and your words should **complement** each other*. This means you will not put words in bullet points on slides, and then read them to the class for your presentation. Instead, your slides should contain the images, numbers, and graphs that you discuss in your presentation. The only slides that have any material number of words at all should be your introduction and your conclusion.

3. *Maximize the information content of your slides through graphical excellence and careful design, respecting the resolution of your medium*. The purpose of your slides is to **convey information**, so convey as much information as you can. But presentation slides do not have the resolution of paper, so the density of information on a slide cannot be what it is on paper. Thus, maximize clarity by using color, removing clutter, effective labeling, etc., in your charts and graphs.

An example of these principles, please watch the following video by Peter Haas, part of the popular series of "TED" talks: http://www.ted.com/talks/peter_haas_haiti_s_disaster_of_engineering.html . It is clear that Mr. Haas is not a naturally talented speaker, yet his presentation is informative and compelling (and fits comfortably within our 7-10 minute time frame). Notice that he has a concise, unexpected, and memorable theme: "Haiti was not a natural disaster—it was a disaster of engineering." Notice how the vivid, detailed photographs on his slides complement his words, and how he begins by creating a gap in knowledge.