Part of your course grade in STAT 301 depends upon successful, on time, completion of Team Project #1. This project is to be done in a team of no more than 5. It should result in a thorough, but concise, professional quality technical report of not more than 10 typed (12 pt font or larger) double-spaced pages. Projects are to be handed in to Dr. Bob by the end of lab Tuesday, October 28, 2014. The written reports will not be returned, so if you want to have a copy to keep, make a copy before turning in the report.

Statistics is the study of how best to collect, summarize and draw conclusions from data. When working with data one is always faced with variability. The focus of this project is on description, inference and checking conditions, using a randomly selected sample of data.

1. The data you will use for this project will be a random sample of 50 homes selected from data on 2,925 homes sold in Ames from 2006 to 2010. The response variable is the Sale Price ($1000) of a home. You should describe the distribution of sale price, make inferences about the sale price of all homes sold in Ames from 2006 to 2010 and check the conditions and comment on the reliability of your inferences.

2. The size of the garage may play a role in the price of the home. The variable Garage is a categorical variable with two values; S for a small garage (less than 2 car capacity) and L for a large garage (2 or more car capacity). You should compare the sale price of homes with small and large garages, make inferences about the difference between the sale price of all homes with small and large garages sold in Ames from 2006 to 2010 and check the conditions and comment on the reliability of your inferences.

3. There are four possible explanatory variables; Basement Area (sqft), Living Area (sqft), Total Rooms and Age (years). You must choose only one of these for your explanatory variable. Describe the relationship between your explanatory variable and the sale price of a home. Make inferences about the relationship between your explanatory variable and the sale price of all homes sold in Ames from 2006 to 2010. Check conditions and comment on the reliability of your inferences.

You should present your findings in a report. Your report should include:

- An executive summary (a brief, no more than three paragraphs, but complete summary of what you learned about homes sold in Ames between 2006 and 2010 from your analysis of the data). This should be written in a manner that can be read and understood by someone who may not know much about statistics. Although this will appear at the beginning of your report it will likely be the last thing you write.
- Discussion of the sale price of homes. Include any graphs, summaries and analysis that you feel is appropriate to support your discussion.
- Discussion of the comparison of sale price for homes with small and large garages. Include any graphs, summaries and analysis that you feel is appropriate to support your discussion.
• Discussion of the relationship between sale price and the explanatory variable you chose. Include any graphs, summaries and analysis that you feel is appropriate to support your discussion.
• An Appendix that includes the data for your random sample.

Simply attaching a ream of JMP output is **not** an appropriate statistical analysis! The main body of the report should include only the end products of any statistical calculations. You should cut/paste important graphs and output into the body of your report. Remember JMP gives you more than you need so do not include graphs and output that are not needed. Including unnecessary JMP output will result in deductions from your final project score.

Write the report as though someone with only a rudimentary understanding of statistics were going to read it. Statistical jargon used just for the sake of using statistical jargon will not be well received. For example, it is fine to say that something is statistically significant but go further to explain what this means.

Together with the written report, each team member can include a separate sealed envelope giving his/her assessment of the percentage of total team effort provided by each team member. In the event it becomes evident that the project workload is wildly unbalanced within a team, I will assign differing individual project scores to team members. If no envelopes are turned in I will assume that everyone on the team contributed equally.

Due Dates:

• **October 7** – Determine your team members (submit names to me) and turn in the explanatory variable you will investigate. Choose one of: Basement Area (sqft), Living Area (sqft), Total Rooms or Age (years). Your first task will be to determine how you will select a simple random sample of 50 homes from the population of 2925 homes in the JMP data table.

• **October 14 and 21** – You will have some time during lab to work on your project and for your team to meet with me to discuss the team’s progress. You will have regular lab assignments on new material as well so plan to use your lab time efficiently.

• **October 17** – A copy of your data, the random sample of 50 homes, is sent to me by attaching a JMP data table to an email. Once you have selected your random sample and emailed me a copy you must analyze the data you selected. You cannot take a different random sample or change the explanatory variable you have chosen.

• **October 28** – Final reports, one per team, are due. These are to be typed (word processed) on plain white paper and should not exceed 10 double-spaced pages. A cover page, separate pages of JMP output and appendices count towards the total of 10 pages. If there are more than 10 pages turned in, I will ignore the additional pages.