BUS 735: Business Decision Making and Research
Instructor: Dr. James Murray
In-class Exercise: Bivariate Statistics

Learning Objectives:

- LO1: Construct and test hypotheses using a variety of bivariate statistical methods to compare characteristics between two populations.
- LO6: Be able to use standard computer packages such as SPSS and Excel to conduct the quantitative analyses described in the learning objectives above.
- 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. Type up your answers in a Word Processing document that includes the relevant SPSS output and upload your submission to the appropriate D2L Dropbox. For any questions that involve conducting a hypothesis test, be sure to 1) state the null and alternative hypothesis, 2) state the p-value, 3) state the decision regarding rejection of the null hypothesis, and 4) state the conclusion of the hypothesis test in plain English.

Everyone must type up and submit their own work. No copying and pasting from each other! Please put your name first, and all your group members names on your document. I will randomly select one submission from you group, evaluate that submission, and assign everyone the same grade. Please be sure that everyone is working together and understanding everything.

The dataset *electricity.sav* includes data on the average retail price of electricity (expressed in cents per kilowatthour) for residential customers, commercial customers, industrial customers, and overall for each of the lower 48 U.S. states in 2004 and 2005. The dataset also includes the average temperature in each state, the gross domestic product per capita (closely related to average income) by state, and an indicator for the area of the country for each state (area = East, Midwest, South, and West).

1. Is there a difference in the average overall price for electricity between Eastern states and Midwestern states in 2005? If so, which area pays more and what is the average difference in price?
2. Is there a difference in the average price for electricity between residential and industrial customers in 2004? If so, who pays more and what is the average difference in price?
3. Is there a relationship between the average overall price in 2005 and the average temperature in the state? If so, is it a positive or negative relationship?
4. Is there a relationship between the average overall price in 2005 and the GDP per capita for the state? If so, is it a positive or negative relationship?