Reflection

 Throughout this course, Statistics for Social Sciences, I have learned about the basics of statistics as well as different ways to conduct various statistical tests and analyses. The basics of statistics I learned were measures of central tendency, measures of variability, z-scores, probability, and confidence intervals. The statistical tests I learned included Independent and Dependent T-tests, Analysis of Variance (ANOVA), Chi-Squared, Pearson’s Correlation Coefficient, and Linear Regression. With all of these topics, I learned how to calculate them by hand and through computer programs Statistical Package for the Social Sciences (SPSS) and RStudio.

 In the beginning of the course, I was taught about the backbone pieces of inferential statistics. First, I learned how to find central tendencies in a dataset including the mean, median, mode, and range. I was able to calculate each through the formulas by hand as well as in SPSS and R. Next, I learned about the measures of variability and how to calculate them in the same forms. These included how to find range (IQR), variance, and standard deviation of a distribution with a continuous variable. After this, I learned how to find z-scores and probability within a normal distribution. On top of understanding how to calculate by hand and in the programs, I had to properly use the tables in my textbook that showed the areas of the curve by the calculated z-score. The last topic I learned was how to find confidence intervals in a distribution using the formula as well as the standard error of a dataset.

 After gaining an understanding of the basic concepts, I learned about the different statistical tests that are used to determine significance between variables. First, I was taught how to conduct an Independent and Dependent T-test. With both these tests, I was able to calculate by hand using the necessary formulas as well as through SPSS and R. Next, I learned how to complete a one-way ANOVA. By hand I used the formulas to calculate the sum of squares, sum of squared scores, means for variable groups, degrees of freedom, and the F-ratio to find the significance. Using simple commands in SPSS and R, I could achieve the same results. Then, I learned how to complete a Chi-Squared test by hand and in the computer programs. By hand I completed the same calculations as the ANOVA but then squaring the end result. The next statistical test I learned was the Pearson’s Correlation. I was able to calculate the coefficient by hand and using SPSS and R to achieve the same result. The last test I was taught to do by hand and in the computer programs was Linear Regression. Similarly to the Pearson’s Correlation, I was able to calculate by hand using the formulas and computed in R.

 In the grand scheme of things, all of these inferential statistics are useful in our daily lives. Specifically, the business and marketing industry use all of these formulas and tests to determine supply and demand or profit. For example, a person in business may want to calculate the mean and standard deviation of the number of a product sold to determine how well their overall sales are going and predict future sales. Without this knowledge, it would be practically impossible to run a success business. Besides that, other industries use at least the basics of inferential statistics for similar means. In my own experiences, I created various frequency charts for my internship at my county sheriff’s office. One example being a chart I created for every deputies’ number of arrests, ticket writeups, community service hours, and performance score to determine who qualified for a pay raise or promotion. Of course, these statistical analyses are most often used in the world of science research but the use of statistics is not limited.

 Going forward in my professional career, I will be using the methods and topics I’ve learned from this course in my daily life. While I’m not planning to conduct my own research, as someone working for the criminal justice system, I will be using at least the basic concepts of inferential statistics. As previously stated, working with police includes being able to understand various mathematical aspects. As an officer, I will have to use these concepts to complete reports, track arrests and citations, and maintain my workload. I may also use these tests to understand any crime trends that occur and how to decrease them. Although I don’t believe I will use much of the statistical analyses, I think it’s possible that it could happen.