**Reflection on Statistics**

 In the statistical portion of this course, I learned how to analyze and calculate statistical data, both by hand and by using two computer-based statistical programs; SPSS and RStudio. I used these methods to interpret a series of statistical analyses with data collected from the Head Start program in three rural Virginia counties; Prince Edward County, Cumberland County, and Nottaway County, from a research study conducted last semester.

For each method, including measures of central tendency, measures of variability, Z-scores and probability, confidence intervals, T-test, analysis of variance (ANOVA), Chi-squared test (2 categorical variables), Pearson’s Correlation Coefficient, and regression, I often used both computer and by-hand computation. . When first seeing all the different methods, I was intimidated and overwhelmed because I knew little to none about any of them. The different methods applied to numeric data in order to assess the significance of research findings seemed very complex.

I have learned how to compute and analyze inferential and descriptive statistics using both by hand and computer calculation methods. Through these methods, I can now summarize numeric data and explain the basic concepts of social statistics. I can now explain the differences between the different statistical techniques, and I know the correct technique needed based on the given research questions. With these new skills obtained to run various statistical analyses through SPSS and RStudio and by hand, I was able to test the hypotheses from the evaluation research conducted the previous semester using an ethical survey.

I ran into a few different challenges based on the different analyses performed. There was no significance found between the take-home activities and parental involvement. Furthermore, the research had limitations; the sample size was a small portion of the population of Head Start programs. However, I noticed that the qualitative and quantitative analyses completed in the first phase of the research examined a positive relationship between the take-home activities and increased parental involvement. The various statistical analyses I learned provided new ways to test the data collected, and I was ultimately able to show that to get better results the research needs to include a larger population.

I had the expectations that after preforming the series of statistics that the outcome would show a significance, Not finding a significance between my variables was frustrating and surprising because I had worked so hard over the course of two semesters, but showed the value of an unbiased analysis.. Through this experience I learned that expected results must be tested and that testing a small sample size will not provide enough data. Also, T-test, confidence intervals, and Z-score caused the most challenges when I was calculating the data by hand. I understand why the different statistics performed are important when conducting research and understanding the numeric data but conducting the calculations by hand and having confidence in the results proved to be a struggle. I used the resources given to me and the help from other students to gain a better grasp of the different methods.

After reflecting on my experience, I know that I want to get better at computing numeric data by hand, in order to make sure I have correct data when doing research in the future. I believe it turned out to be really helpful for me to be intimidated by the material, because it showed me how much I really learned and how easily these methods can be applied to different data sets, and that assumptions must be proven or disproven. In the future I hope to attend graduate school and this project has provided an excellent foundation to statistics and made me more comfortable in computing the various statistical methods. Another resource that I gained through the course on statistics is the Statistics Manual, created with each statistical method broken down into steps by hand and computer methods (SPSS and RStudio).