Wooddale Church is home to 10,000 members and around 100 full-time staff. At the hierarchy of the organizational structure, pastors manage all aspects of the churches operations. In order for one to become a pastor, one must complete a lengthy Master of Divinity (MDiv). Through an MDIV, one gathers biblical training, language skills, and communication training. Qualitative skills such as statistics are not stressed or required for an MDiv. Subsequently, decisions are often made ‘from the gut’ with little thought given to data-driven statistics. Since starting my Master of Science in Predictive Analytics (MSPA), I have been able to utilize statistical techniques utilizing data to inform decision makers. Specifically, I have persuaded management to utilize the value of the t-test and standard deviation to better understand who attends our services, use different levels of data for attendance reports to better analyze program performance, and apply appropriate measures of dispersion to more accurately define our member demographic information. Through my use of statistical techniques, I have demonstrated to management the importance of quantitative, data-driven decision making to improve the overall organization.

Any given Sunday 6,000-8,000 people attend Wooddale Church during one of their five services. At every service, a pastor who is sitting in service discreetly conducts a head count. Attendees are asked to fill out an attendance card, and about 450-550 people fill out an attendance card each service. The attendance card is then entered into Wooddale’s Fellowship One (F1) database, which has ongoing records of attenders. I used the information cards from each service as a sample population of the entire service from which the attendance cards were gathered. F1 created an electronic report in the form of an excel document for all the attendance. Selecting data for age and service attended, I imported the data into SPSS. Using the sample data, I ran the standard deviation and mean. Surprisingly, the data followed a relatively normal distribution. I had a very large degree of freedom seeing that my sample population was around 450-550 per service. Seeing that I knew the population size I conducted a t-test. From this information, I could communicate to management with a 99% confidence interval the average age of attenders and the related standard deviations of age at each of Wooddale’s five services. One of the head pastors replied, “Now that I know that 68% of the attenders are within ten years of my age I can tell better analogies to my stories targeting that age group.” From my brief time in statistics, it was great to apply the techniques of standard deviation and t-score confidence intervals to demonstrate the importance of data-driven decision making to my management.

One of the programs I manage is refugee tutoring program. The program works with over 135 students throughout the school year. From learning about the different aspects of data, I created an attendance sheet that was ratio level data, meaning zero equaled lack of attendance. Through this grouping, I was able to rank, sort, and analyze the past years attendance. Importing this information into SPSS I created a histogram of attendance by students and found that 5 families representing 25 students accounted for 85% of our overall attendance. I also created a scatter plot showing student age and attendance, from which I learned high school students attended more often. I shared this information with management and changed our strategy to communicate and coordinate with the five key families to better maintain program consistency. Using the techniques of different data measurement, I demonstrated to management the effectiveness of precisely knowing and measuring program attendance.

In the past, management utilized the measure of dispersion known as the arithmetic mean, or mean, to generalize program age for participants. I demonstrated that the arithmetic mean can be misleading if one has polarity of ages in the populations being measured. Using the frequency distribution for median position formula (sum of f +1/2), I showed that the median was a better indicator of program age participation. For the evening programing, the mean was about 55, but the median was 35. After further analysis, I was able to communicate to leadership that there was a population of older people in this particular program that was skewing the traditional measurement. The median revealed that the middle person’s age in attendance was 35. From this information, management has changed programming to better accommodate the younger population.

Through persuasively demonstrating to management the value of statistical techniques, I am slowly changing ‘the gut’ decision making model to incorporate data-driven decision making. Utilizing standard deviation, t-scores, confidence intervals, measures of data, and measures of dispersion, Wooddale Church operates more effectively and is better tuned to meet the needs of its members.