**Project 1 Summary**

**Team Members:** Steve Bark, Xiaodi Lin, Jeff Eickholt

**Topic:** Analysis of 2019 Texas Assessment of Academic Readiness (STAAR) Math Results

**Summary:** The state of Texas administers standardized tests to all Public and Charter schools each year to evaluate student readiness to move to the next grade level. The tests cover several topics, but our team chose to focus on the math results in grade 3, 4, and 5. The questions proposed were the following: 1) Do test results differ from Pubic to Charter School? 2) Are there geographical difference in test results? 3) Does proximity to higher education affect results? 4) What Xiaodi is looking at?

**Data:** The results of the tests for each school are available on a public website in csv formats. This file includes data on over 4,500 schools across the state. For each school and grade, the number of students were classified into four categories based on their test results: Below Grade Level, Approach Grade Level, Meet Grade Level, and Master Grade Level. The file also contains a breakdown by percentage. These categories are reported for all different student populations tested and subdivided into demographic and economic categories. The raw data files contain over 3,000 columns, so analyses focused on a subset of these data.

Although the files contain a great deal of demographic data, they don’t contain data on the school type (ie. Public vs. Charter) or school location, which would allow for examination of geographical data or other demographic of interests. A second csv file was found that contained information on the school type, as well as the address of the school. The address allowed us to access the Google Geocode API to gather geographical coordinates, which were then used with the Google Places API to determine if schools were near universities. Having the zip code of the schools also allowed us to bring in Census data to compare results by zipcode indexes. Census data provides links to economic, demographic, immigrant, and educational information relevant to the underlying educational questions posed in this preliminary study.

**Analysis:** Each team member focused on a particular area of the analysis. Steve focused on the analysis of charter vs public schools overall and by several demographic categories. Jeff focused comparing results across different regions of the state, as well as examining whether proximity to a university affects results. Xiodi focuses on comparing results zipcodes to facilitate incorporation of Census data, which provides an important avenue for future longitudinal studies.

**Results:** The analysis of school types found that Charter school do not have better results than public schools. Evaluation of Independent ISD school and public Charter school performance was evaluated quantitatively and statistically for Grades 3-5 in global analysis (all students), demographic analysis based on ethnicity (White, Black, Hispanic, and Asian students), and economically disadvantaged students. These data indicate a small but statistically significant advantage for ISD schools compared to Charter schools at global level, and no statistically significant differences observed in respect to ethnicity and economic disadvantaged status. This last point is particularly relevant for study because Charter schools are supposed to provide an alternative school choice in lower-income geographical locations. The failure to observe any enhancement of performance in the educationally disadvantaged student population calls this assumption into question.

Although formal statistical tests were not used for geographical analysis, these data found that there was no obvious differences in success rates across different regions. The proximity to a university did have a statistically significant difference, but the actual difference was still small. It is also not clear that the difference is caused by the proximity to a university. In fact, the proximity to a university may be related to other factors, such rural vs. urban environment.

The analysis …. Xiaodi to add something.

**Future Studies:** While these data answered the focused questions presented in this study, these results raised several important questions. First, while differences between Independent and Charter schools was not evident in large-scale analyses, are there actual differences when considering focused areas (i.e. Rural versus Urban)? Second, are there geographical correlations for school performance considering socioeconomic factors (i.e. lower income areas versus more affluent areas)? Third, we have only considered data from the 2019 STAAR Test. Data from 2013-2019 STAAR Tests are available, which would enable evaluation of global, demographic, and economically disadvantaged data over years and potentially following a cohort of students through elementary and middle school education. Finally, many other data are available in these datasets including migrant students, English-as-a-Second Language students, and students in at-risk and special education status. All of these potential demographics and student populations may present advantages or disadvantages for Charter schools and should be evaluated in future longitudinal studies.