Spurrier. Sarah
OU # 113549855
GIS 5003
Term Project Report

Title
Regional Education Equality in Texas

Abstract
Texas prides itself on educating “Every child, prepared for success in college, a career or the military”. (TEA, Strategic Plan) Texas has 254 counties and one governing educational body. Thus, does the educational rate in each county meet the same level of success? Does a student in Dallas County in North Texas have the same educational level of success as a student in Zavala County in the Rio Grande Valley? (Wiki, Counties) So, does Texas have a gap between its counties and its preparedness of its future adult population? One of the indicators of education is level of literacy. Thus, the level of the literacy rate in a population can indicate the general level of education of that population. By examining literacy rates and the Texas counties, does Texas meet its goal of preparing ‘every child’ for success? Are the literacy rates in all counties at the same level. Texas’ overall literacy rate is 81.0% with 19.0% of adults “lacking basic prose literacy skills.” (WorldPop)

Introduction
The motivation behind this research was to show the actual education levels of Texas using the basic literacy level rate. Often Texas politicians rave that Texas public schools are properly funded and have enough resources however, on national rankings Texas scores in the lower percentile. So, this research was to see if Texas is giving preferential treatment to certain counties over others.

Data Requirements
In order to complete this research, I would need a data set that contains a list of the 254 counties and the regions in Texas. I would also need a list of the educational rates per county. For educational rates, this could be literacy rates, high school graduation rates or a lack of literacy skill. I am anticipating that these lists do not exist in the same data set. The counties data set would be in a form of a polygon with

the area of the county while also have absolute location data in a raster file to locate the county on a Texas map. The regions of Texas would also be a polygon bound with an absolute location in a raster file to locate the regions on a map of Texas. The educational data should all be points so that each point is the educational rate of that county.

Process Description:

The first step will be finding suitable data sets. I will start with the data.world search database for the data needed for the project. The polygon data sets needed include a listing of Texas counties and a listing of the regions of Texas. These data sets would need to be an in excel file that can be imported into SQL. Then there will need to be merging of these two data sets so that the counties get divided by the regions of Texas. This merging can be done through an overlapping geometry command. The overlapping command would be needed because you need the boundaries of the region and counties and the counties that are inside the region then should be sorted together by region. This sorting is important so that the regions can also be analyzed for educational equity. This will need an overlapping geometry and joins within or contains query in order to merge the data. After this query the data set should be sorted by counties within each Texas region. This is an important step because even though Texas is broken down into counties, it contains 254 counties. 254 is a huge number of individual data points to look for a trend. So, by grouping the counties by region you can see a difference between the different regions of Texas. Now, in order to get to the educational inequality issue, you have the educational data. The educational data would come in a listing of points, by meaning, a percentage of people that are literate, lacking functioning literacy or percentage of graduation rates. I will look first at the state's own educational agency, Texas Educational Agency, for this data set since they are required by state law to publish statewide educational data. How this data is presented will be the interesting part. I am hoping that the data is in a neat file. However, I will probably have to clean the data file by eliminating different columns of insignificant data. Since the literacy data will come in a point form it needs to be matched with its appropriate county by looking at the SQL contains and within functions so

that the literacy point is put with the appropriate county. Then the Texas literacy rate and lack of literacy function will need to be compared to distinguish which counties fall below the average. This could be done by a grouping of counties in the table that are above the needed percentage amount. In a raster file it could be done by color coding the counties by those higher than the average and those counties lower than the average. Then, you can use a raster file and graph the counties individually with by their regional boundaries to see if there is a trend within a region. So, does Texas have an educational inequality issue from region to region but also intraregional. Thus, does the Rio Grande Valley's education level differ greatly from North Texas or the Hill Country? And, if so, is there an inequality inside each region? Does the inequality go deeper than just the major regions?

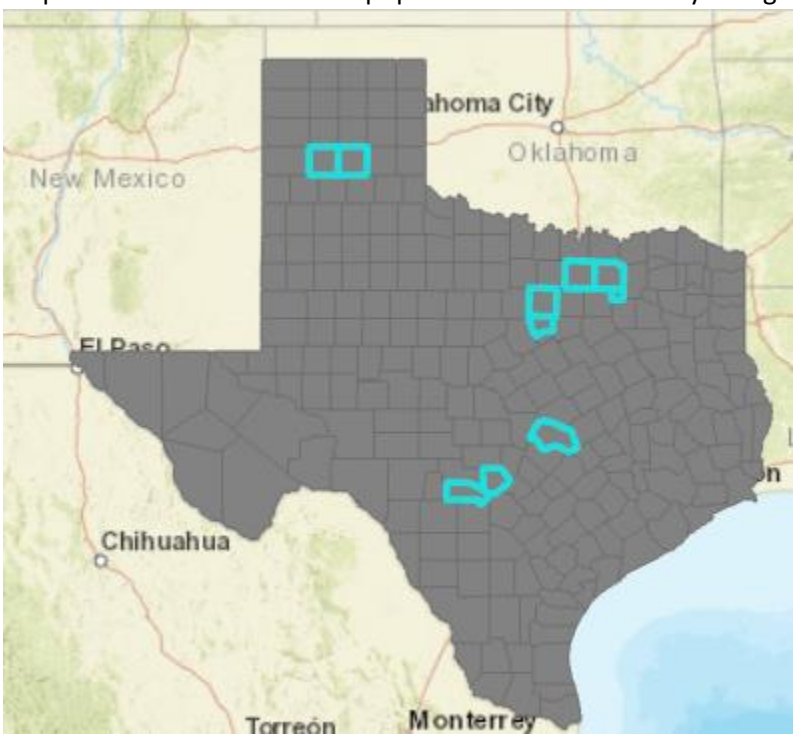
Side Note: This then could be disaggregated into smaller and smaller units until you reach the school district level. School districts in Texas cross city, county and regional lines. They are truly "independent" districts. Thus, this would require a more complicated joining with intersects and contains commons in the SQL program.

Results:

The results were not what I was expecting. While there were pockets of higher literacy in the Austin and Dallas metroplex areas there was not one in the Houston area but instead some pockets in the panhandle area. It would be interesting to plot the major universities to see if the locations of the universities influence the local literacy rates.

Roberts County	48393	669	7
Randall County	48381	81,275	7
Collin County	48085	437,018	8
Williamson County	48491	217,805	8
Denton County	48121	371,897	8
Rockwall County	48397	40,168	8
Kendall County	48259	19,802	8
Armstrong County	48011	1,575	9
Parker County	48367	72,454	9
Hood County	48221	35,299	9

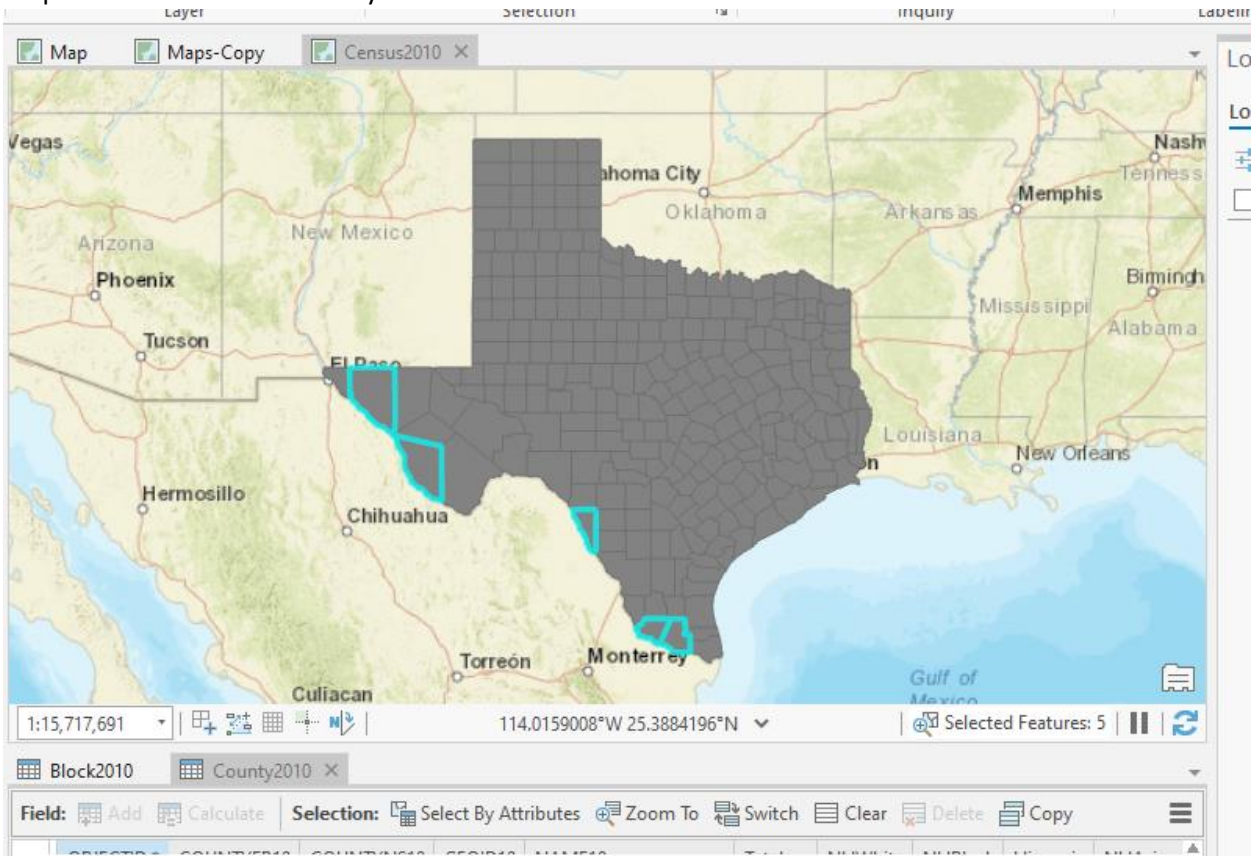
Map of Texas Counties whose population is at 91% literacy or higher



However, the case for the education levels in the Rio Grande Valley being the lowest in the state did run true. The counties with literacy rates at 50% or below are all located in the Rio Grande Valley. Thus, education levels are not the same across the state.

Hidalgo County	48215	423,295	50
Hudspeth County	48229	2,292	52
Maverick County	48323	33,369	56
Presidio County	48377	5,335	61
Starr County	48427	37,975	65
			prose literacy skills[2]

Map of Counties whose literacy rate is at 50% or HIGHER.



Conclusion.

Thus, the state of Texas has a lot of work to in education its population. Not only does Texas fall in the lower quarter for all the states but it has an equality issue across the state. How to solve this issue will be debated by politicians in Austin without much teacher input as usual. However, the usual, is not working.

Working Bibliography:

https://tea.texas.gov/about-tea/welcome-and-overview/tea-strategic-plan
https://simple.wikipedia.org/wiki/List_of_counties_in_Texas
https://worldpopulationreview.com/state-rankings/us-literacy-rates-by-state