URP FINAL REPORT

Where is the best zip code to live in the U.S.?

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MAIN GOAL

The goal of this project was to use GIS to search for the best place to live in the US by examining physical, demographic, and socio-economic data of the US population by zip codes and counties. In order to find the best place to live we first had to define the person who was looking. We created a fake profile; a single parent with a bachelor's degree and children looking for a home. From the profile, we created a list of criteria that would be important to examine, and then found public data that we could manipulate in order to satisfy these criteria. There was a set of master criteria, education criteria, and community amenity criteria with indicators for each.

SCOPE AND CHARACTERISTICS

We selected two states in which we would search and use as the scope for our study area; Florida and Colorado. We chose Florida because as a group, we all either attend school here or lived here for a major part of our lives. We thought it would be interesting to examine the demographic and socio-economic aspects of a state so close to our lives. It is also a highly populated state with much diversity which offered a large range of flexibility when examining our criteria. Communities and cities range from rural towns to the Miami metropolitan area. The population is also diverse in race, income, and education.

We chose Colorado due to its increased popularity in recent years. Additionally, none of our group members have ever lived in the state, so it was able to serve as a learning experience. Colorado is also very different from Florida. It is state with more rural area than metro and it shows less diversity over all. The variation between Florida and Colorado made for a much more interesting project overall, as well as a more meaningful learning experience.

OBJECTIVES FOR ACCOMPLISHMENT

As briefly mentioned before, we created a set of criteria with multiple indicators. The master criteria had two indicators. The first indicator was demographic areas with adults who earned similar incomes to our single parent. The average income for an adult with a bachelor's degree in the US is about $50,000 a year. We decided to isolate areas in the our two states where the average income of adults in the population was between $40,000-$60,000 per year. This would ensure our single parent lived around people with a similar lifestyle as their family. Our second indicator for the master criteria was the

percent of college graduates in the population. We isolated areas that had a equal to or greater than 40% of the population having graduated from college. This would ensure that they would be surrounded by other educated adults. Our next criteria was education with one indicator; the number of middle schools per zip code. We isolated zip codes that had greater than or equal to four middle schools per zip code. This would ensure that the area we were choosing had not only many options for schooling but also many children. Our last criteria was community amenities and it contained 5 indicators. For the first indicator we looked at counties where less than or equal to .5% of people have low access to the food stores and compared them to the zip codes we had already isolated. For Florida all of our zip codes were within these counties, but for Colorado we eliminated a single county that did not meet the indicator. Next, we isolated zip codes that intersected a buffer of 10 miles from any hospital and zip codes that intersected a buffer of 25 miles from a National Park. Then we isolated zip codes that intersected urban areas. Lastly we isolated zip codes that intersected a buffer of 1 mile from a Boys and Girls Clubs.

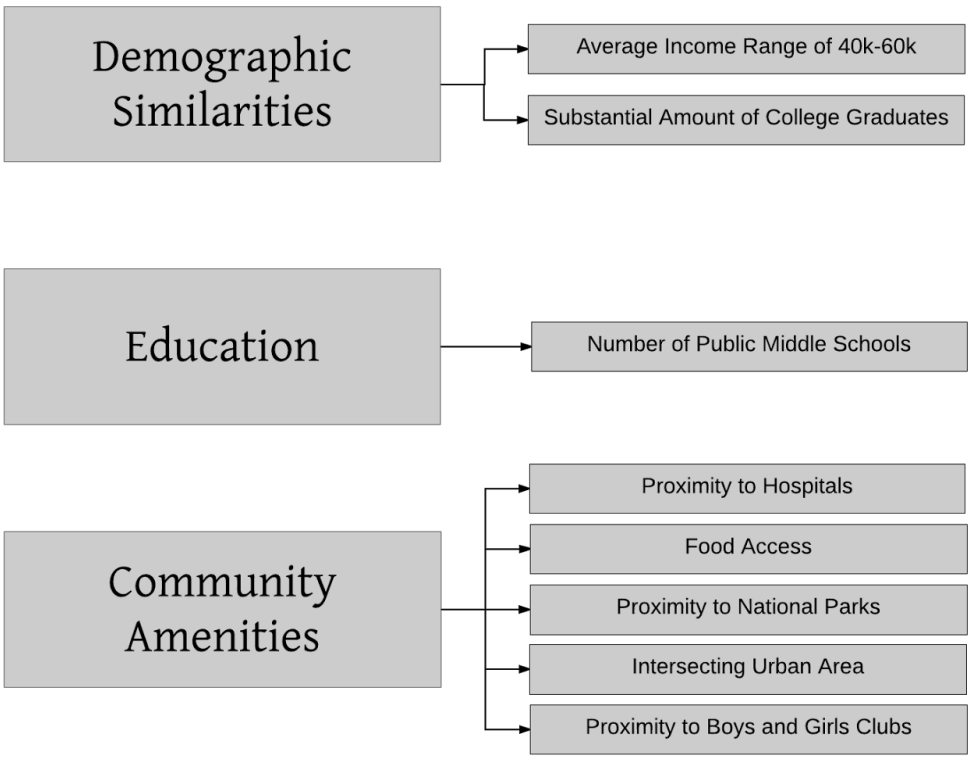

Image 1: Criteria and indicator flow chart.

METHODOLOGY

In order to perform our project, we first had to isolate the boundaries of our chosen states of Florida and Colorado. To do this, we created a definition query, using Standard Query Language, to just isolate the state boundaries within Colorado. Then, also using a definition query in SQL, we isolated major roads, county, city, and zip code boundaries within the state. We replicated this process for Florida, thereby effectively creating a base which we could use when applying the criteria.

Because our parent made ~50,000 per year, our first criteria was to isolate zip codes within our chosen states with a similar average income to the parent. We did this by using a definition query (defined as greater than or equal to 40,000 and less than or equal to 60,000) and saved this file. Then, we went back to the file with all of the zip codes and used another definition query to isolate zip codes that had greater than or equal to 40% of the population as college graduates. We then joined the layers so that the map only displayed the overlapping zip codes, later saving this layer.

Our next step was to isolate middle schools. We first isolated middle schools in each state using a definition query, defining that the end grade could not be before grade 06 and that the start grade could not be after grade 08. Then, we opened the attribute table for the layer with all the points that are schools which also had what zipcodes they were in. A summary of the zip codes was created using the summarize function. This created a table with all the zipcodes and how many schools were in those zip codes. This table was related to the layer with the income and percent college graduated created before. Then a definition query was used so that only zip codes with four or more middle schools remain.

Then, we added our community criteria. First, we isolated all of our community data by state using a Definition Query and Standard Query Language. Then, we went about narrowing down our data using our set criteria. We used a definition query to define areas that had less than 0.5% of people living with low access to food. Then, we used the buffer tool to create a 10 mile radius from each hospital in Florida and Colorado. We also used the buffer tool to create a 25 mile radius from each national park within our chosen states. We then used the select by location feature to isolate areas within our states that intersected with an urban area. After this, we used the buffer tool to apply a 1 mile radius from Boys

and Girls Clubs within our two states.

Finally, we added our community criteria to our education and master criteria layer for each state. We used the select by location tool to combine all of them. First, we added the layer with less than or equal to 0.5% of people living with low access to food. Then we added the hospital buffered layers, followed by the national bark buffered layers. We followed these layers by our urban areas layer, ending with our Boys and Girls Clubs buffered layer. Once we added all of these with the select by location tool, we were able to narrow down our zip codes to a select few.

RESULTS AND DISCUSSION

Using our criteria we found various zip codes in Florida for our single parent with two kids to live. Our zip codes are located in Milton, St. Augustine, Pinellas Park, Bradenton and there were two zip codes in the cities of Pensacola and Jacksonville. An interesting quality about the selected zip codes is their proximity to the coast, and South Florida. While all of our zip codes are coastal, none of them were located in the southern part of the state. When beginning this project, there was an assumption that we would end up with at least one zip code in South Florida due to its population density. It was interesting to find that the opposite occurred.

Only one of the zip codes were selected by the data in the state of Colorado when all our criterias were used. We believe this is because Colorado is so rural that it does not have all of the community amenities we were looking for. The zip code that was the closest was in Grand Junction. It met all of our criteria except for community amenities. It lacked close proximity to a Boys and Girls Club; however, it should be noted that the community is working on bringing this amenity into the city. Grand Junction is located on the Colorado River about 250 miles southwest of Denver. Below are images that showcase the location of our final zip codes in Florida and the almost perfect zip code in Colorado.

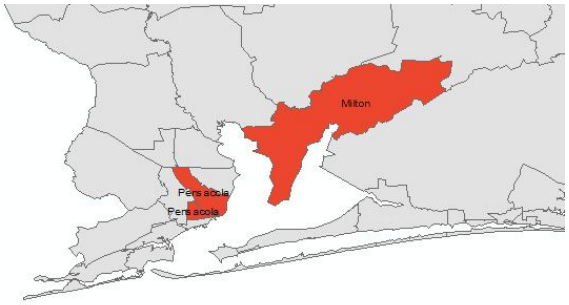

Image 2: Milton and Pensacola, located in the Florida Panhandle.

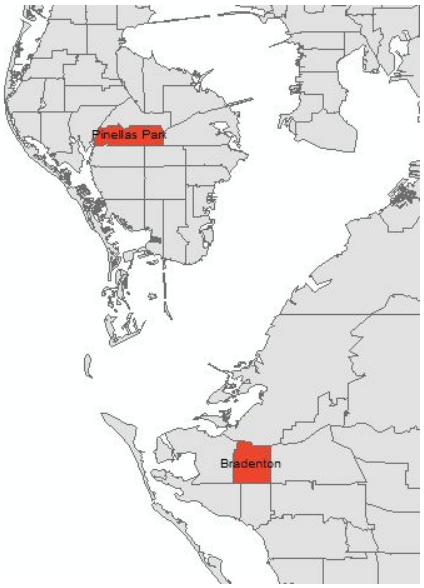

Image 3: Pinellas Park and Bradenton, located on the West Central coast Florida near Tampa Bay.

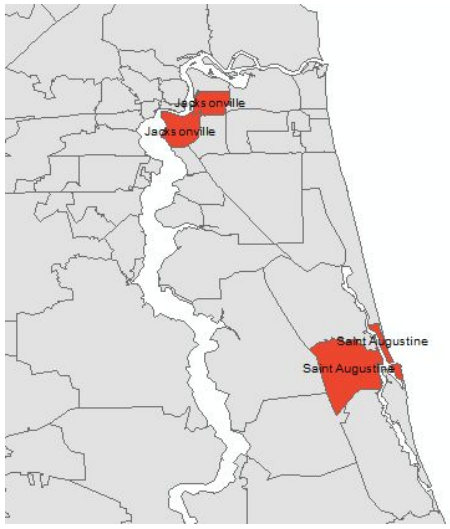

Image 4: Jacksonville and St. Augustine, located on the North Eastern side of the state.

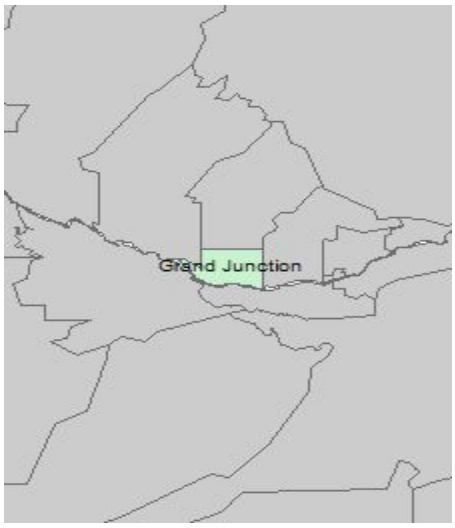

Image 5: Grand Junction, located roughly 250 miles southwest of the Denver Metro area.

CONCLUSION

For this project, we were able to successfully narrow down the best place to live to only 8 zip codes within 5 different cities using our criteria and their indicators. All 8 of these zip codes are in Florida and would be suitable for a single parent with two middle school aged children and a yearly household income of 50k USD. With 8 zip codes to choose from, one could add personal criteria such as which beach they would prefer to frequent or if they would like to be close to an international airport. Just as well, it may also be a good idea to relocate to the 81501 zip code in Colorado after the community is able to establish a Boys and Girls Club for local children.

SOURCES OF DATA

1. https://hub.arcgis.com/datasets/LNR::2010-pct-low-store-access?geometry=-256.099%2C29.346%2C10.912%2C67.392
2. https://hub.arcgis.com/datasets/geoplatform::public-schools/data
3. https://hub.arcgis.com/datasets/ej::hospital-2/data
4. https://hub.arcgis.com/datasets/c54be84491364a04a0caecc837ab492a_0/data
5. https://download.fgdl.org/pub/state/gc_communitycenter_feb15.zip
6. Data zip provided to class by J. Papajorgji