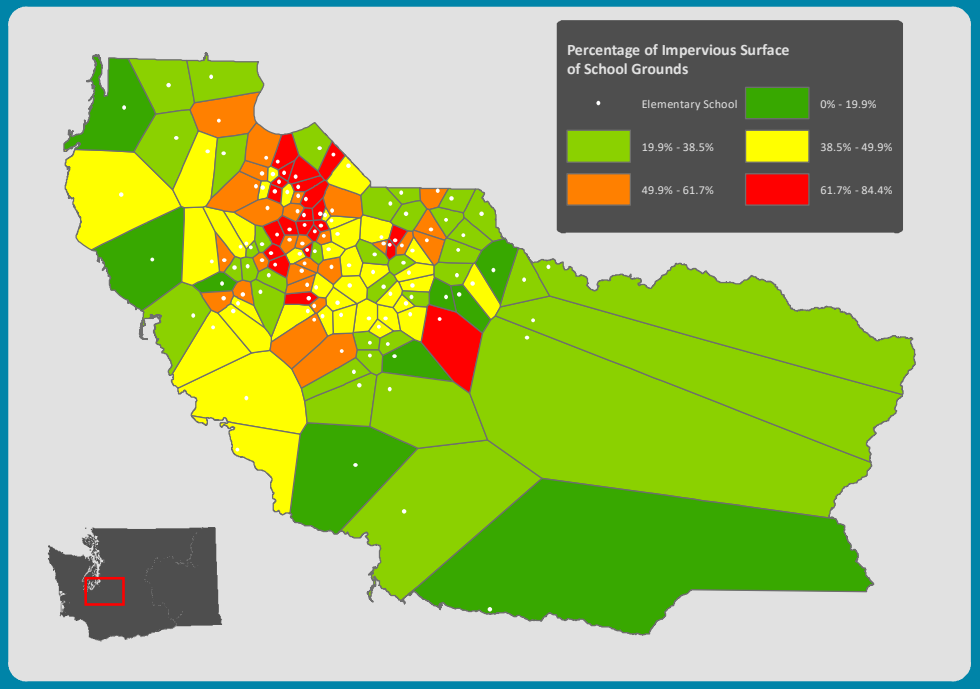

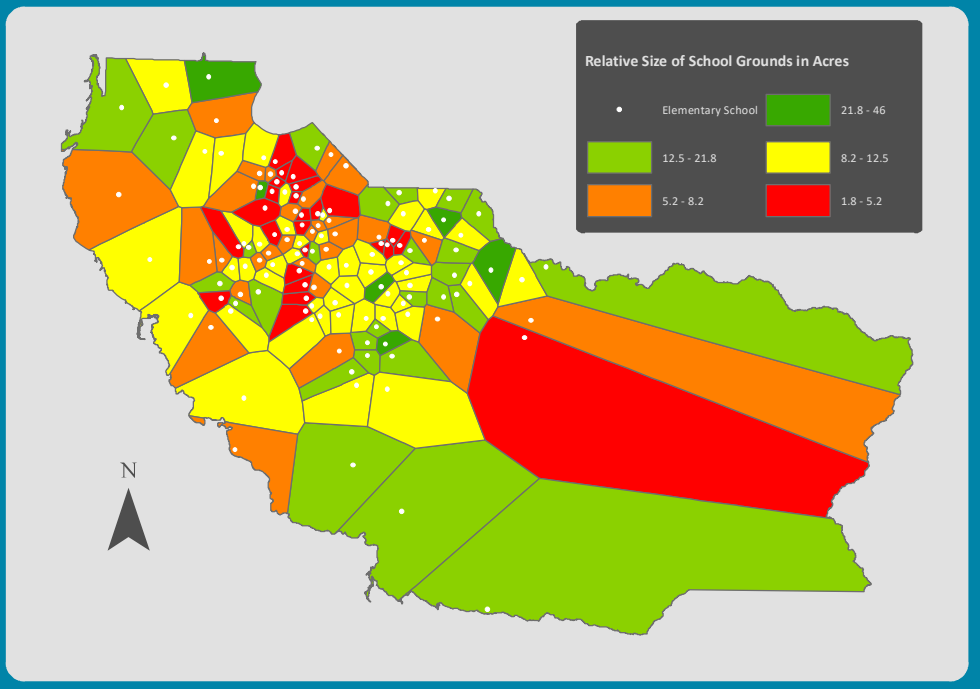

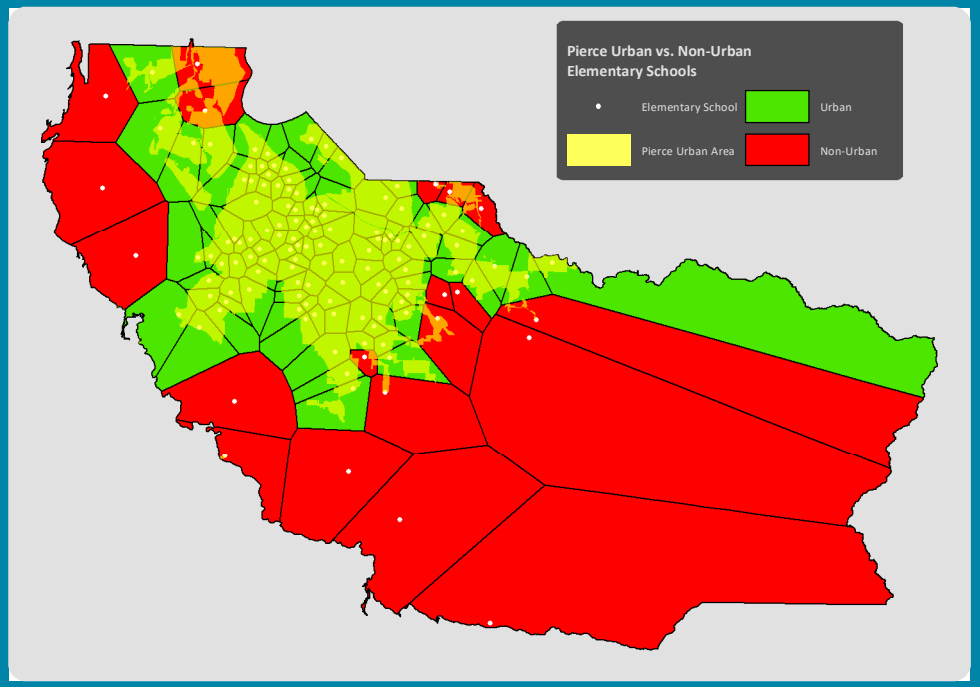

Analyzing Hypothetical Elementary School Feeder Regions in Pierce County

A series of spatial analyses were performed to create choropleth maps that show a) urban/non-urban elementary schools, b) area of school grounds (in acres), c) composition of school grounds, and d) hypothetical feeder zones for schools in Pierce County. Such information is essential to motivate city officials, urban planners, school officials, and concerned parents in lobbying for building new schools or re-designing existing ones.

Impervious surface is defined as: any material that prevents or reduces natural infiltration of water into the soil. This includes asphalt, stone, brick, and concrete. The relationship between that and urbanization is a positive one; as cities develop and expand, use of impervious surfaces increase and replaces the natural landscape.

To perform this analysis, the urban area shapefile and Washington raster were respectively clipped and extracted by mask, using Pierce County basemap as the target feature. The Pierce County schools shapefile was exported to show only elementary schools. Using select by attribute and field calculator, data from three analyses on elementary schools were populated, categorized, and symbolized. The calculate geometry tool was used to determine relative size of schools in acres. Next, select by location was used to determine which schools intersected with the Pierce urban areas shapefile. And finally, imperviousness of school grounds was determined using zonal statistics. For the final portion of the analysis, a series of steps were performed to create hypothetical feeder regions for each elementary school (conversion tools and thiessen polygons). This suggests any area within a given feeder region is closer to the elementary school within it than to any other school.

Resources/References

Name: Kevin Tran • Date Created: 2/12/2019 • Software Used: ArcMap 10.6.1 • Projected Coordinate System: NAD 1983 HARN StatePlane Washington South FIPS 4602 Feet • Data References: Pierce County GIS Portal, USGS, Lab 3 Data