Educational Opportunity Levels Across King County by Aditi Teriar

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Introduction

In this investigation, I am exploring how five educational variables each result in different educational opportunities depending solely on the geographic location that is being examined. The five educational variables being studied are reading test scores, math test scores, student poverty, teacher qualification and graduation rate. I review below how data for these datasets was collected. I also continue this line of investigation by taking the average of all five datasets and creating a Composite Index Map to further study educational opportunity level based on geographic location.

Observing the patterns in Maps 1-5 and the Composite Index Map, such as certain areas having a completely different opportunity level from an area adjacent to them, or seeing two similar opportunity levels in specific areas consistently, the reader can deduce that there are external factors playing a direct role. I believe that family income is a factor, as families who make a higher salary can provide for their children by living in wealthier areas and enrolling them in the good (high quality) school districts. I consulted an income map in the king county to verify my thoughts on this. I also compared Maps 1-5 with each other, and was surprised that while there isn't always a perfect correlation the way I would have expected, there are instances when one variable is in line with or affects another variable.

Potential of Opportunity Mapping

Data collected from opportunity mapping is significant because it allows for an analysis of how geographic and spatial variables play a role in a student's opportunity level. Just as we have ecosystems shaping organisms throughout their entire lifespan, we can acknowledge that our surroundings have a substantial impact in what our future looks like as well. This is especially in the academic and professional realm. It is widely understood that an individual's background can either open doors for them or act as a hindrance in achieving their goals. This is largely contingent on how wealthy or unwealthy their family is, because the wealthier families can provide extra resources, send their kids to the good schools and in general, are able to provide a safety net that gives the student a sense of freedom and ease. An individual lacking these resources or connections, especially one who may have to work or take care of a family member, may not be able to focus as much on excelling at school because their background dictates that they need to prioritize something else. There is also the added burden of not having a safety net to fall back on, or even providing for their family as soon as possible. It can also be a more minor example, such as the fact that rich families can hire the best private SAT tutors for their children while many families cannot. The area where an individual lives is very often indicative of their wealth as well, and ultimately shapes their academic opportunity, which is where the geographic factor comes into play.

Providing empirical evidence through opportunity mapping to support this claim is important in moving the needle on social and legislative actions. This may reduce the gap that exists between opportunity levels for students who live in a wealthier neighborhood and students who live in an unwealthy neighborhood.

Variables

Educational Variable 1: Reading Test Scores

This was derived from the school proficiency rate on the WASL, which is a reading exam that students take in the 4th grade. The source of this data was the Washington State Report card and Office of Superintendent of Public Instruction in the 2010 – 2011 school year. Each tract was allotted the average reading proficiency score of the three nearest elementary schools to the tract. Another consideration in place was to ensure schools were in the same school district as the tract they were being assigned to.

Educational Variable 2: Math Test Scores

This was derived from the school proficiency rate on the WASL, which is a math exam that students take in the 4th grade. The source of this data was the Washington State Report card and Office of Superintendent of Public Instruction in the 2010 – 2011 school year. Each tract was allotted the average math proficiency score of the three nearest elementary schools to the tract. Another consideration in place was to ensure schools were in the same school district as the tract they were being assigned to.

Educational Variable 3: Student Poverty

This was derived by the percentage of elementary school students who were eligible for either free or reduced school lunches. The source of this data was the Washington State Report card and Office of Superintendent of Public Instruction in the 2010 – 2011 school year. Each tract was allotted the student poverty rate of the three nearest elementary schools to the tract. Another consideration in place was to ensure schools were in the same school district as the tract they were being assigned to.

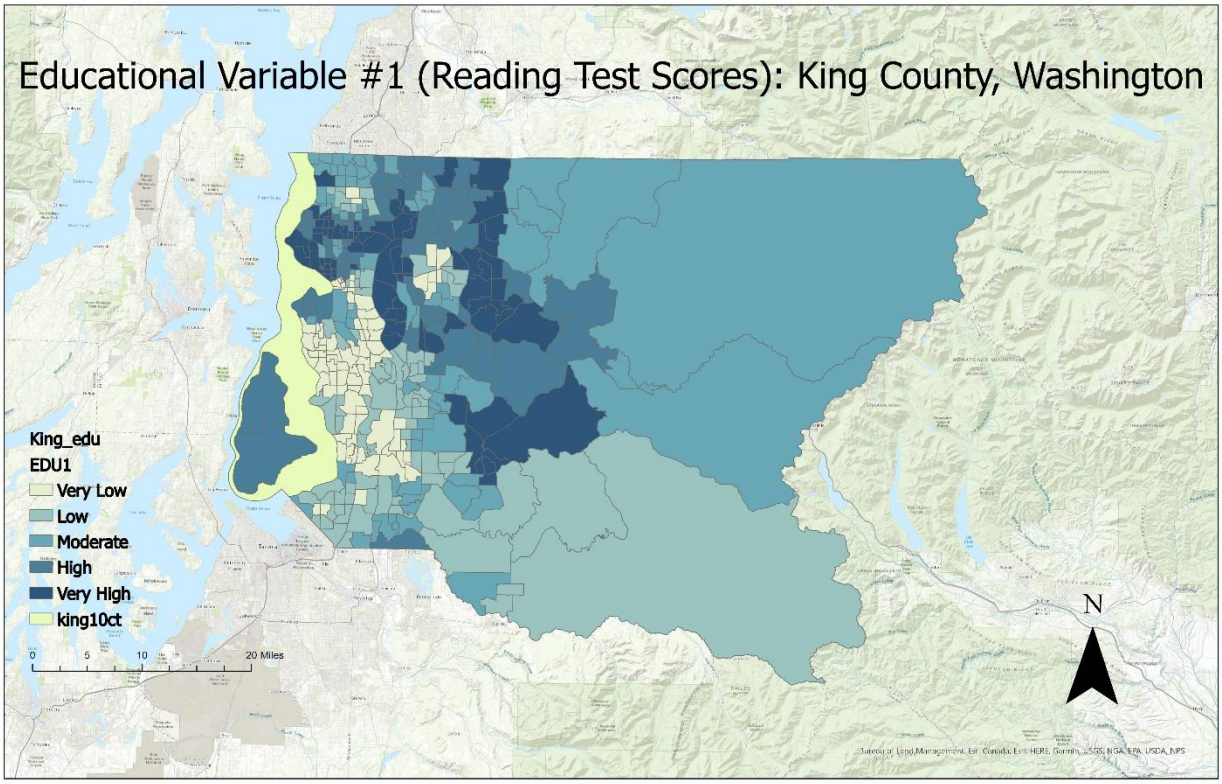
Educational Variable 4: Teacher Qualification

This was derived by the percentage of teachers with a master's degree or higher. The source of this data was the Washington State Report card and Office of Superintendent of Public Instruction in the 2010 – 2011 school year. Each tract was allotted the teacher's master's degree or higher achievement rate, of the three nearest elementary schools to the tract. Another consideration in place was to ensure schools were in the same school district as the tract they were being assigned to.

Educational Variable 5: Graduation Rate

This was derived by the percentage of students who graduated from high school in a timely manner. The source of this data was the Washington State Report card and Office of Superintendent of Public Instruction in the 2010 – 2011 school year. Each tract was allotted the graduation rate of the three nearest elementary schools to the tract. Another consideration in place was to ensure schools were in the same school district as the tract they were being assigned to.

Map 1 – Map 5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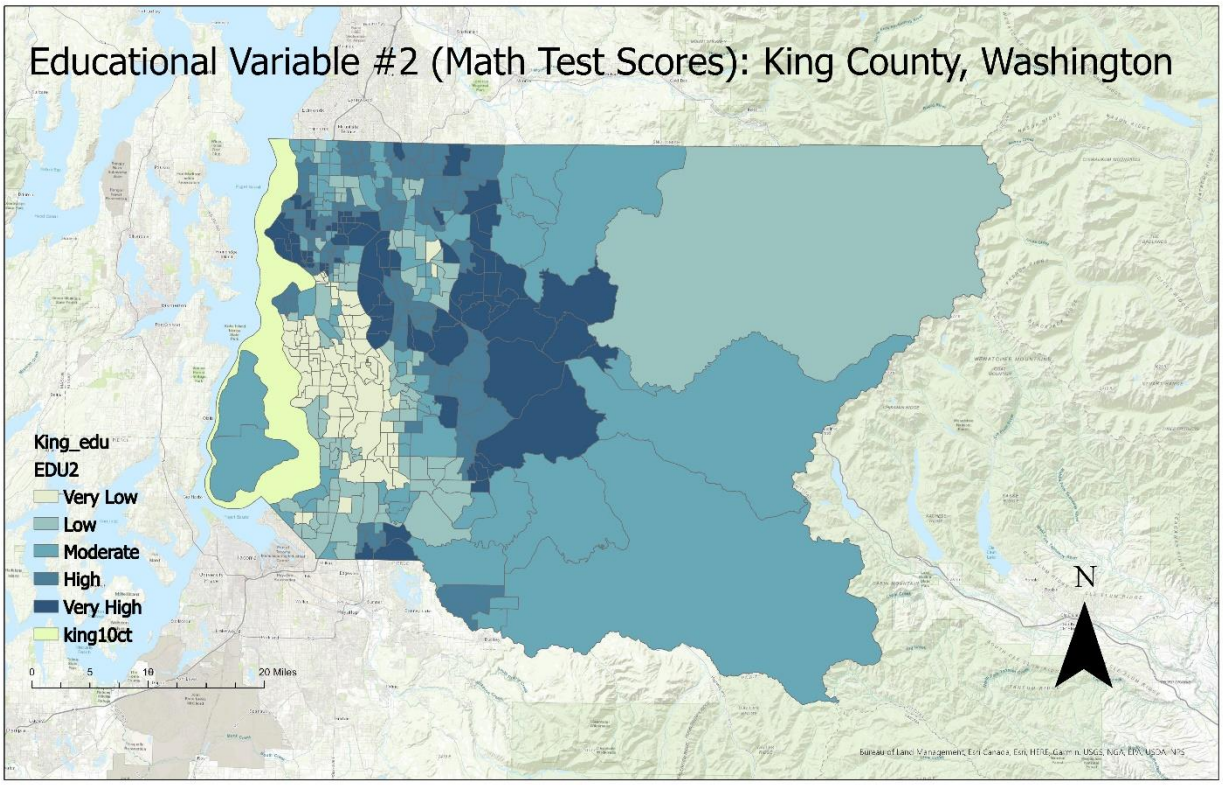
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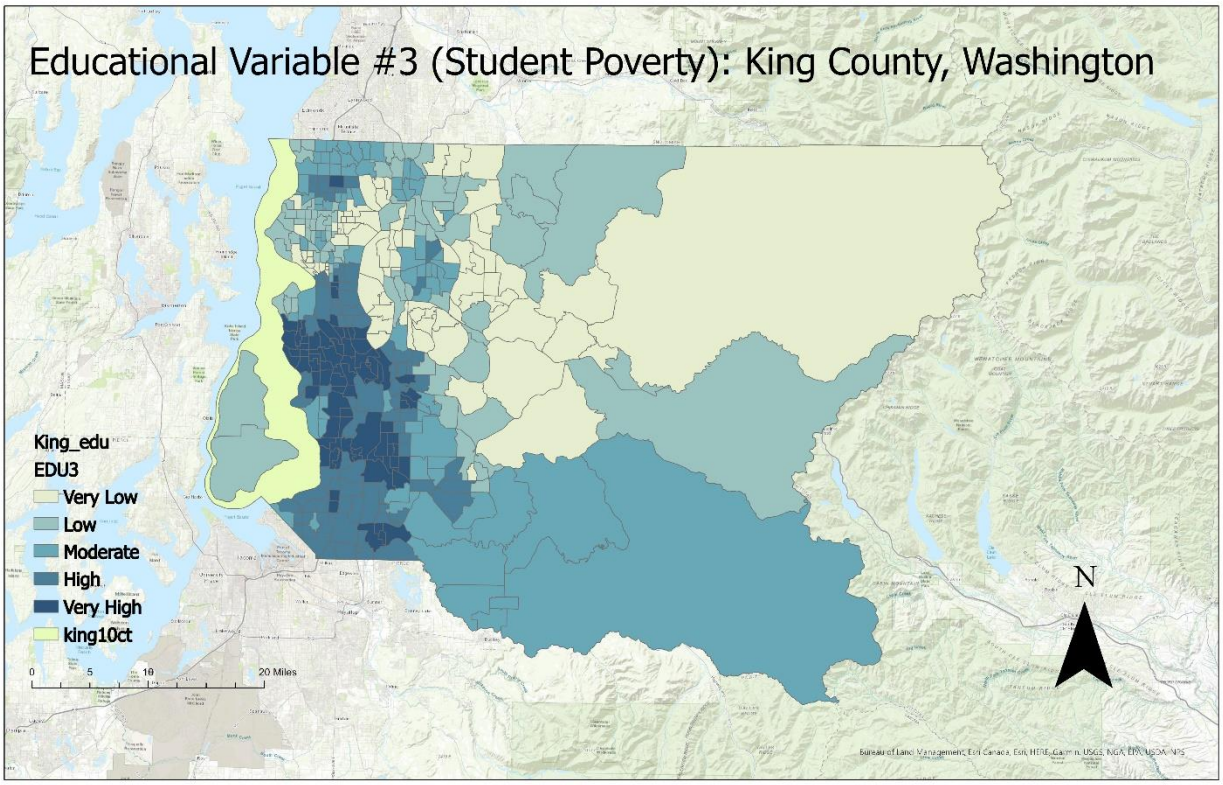
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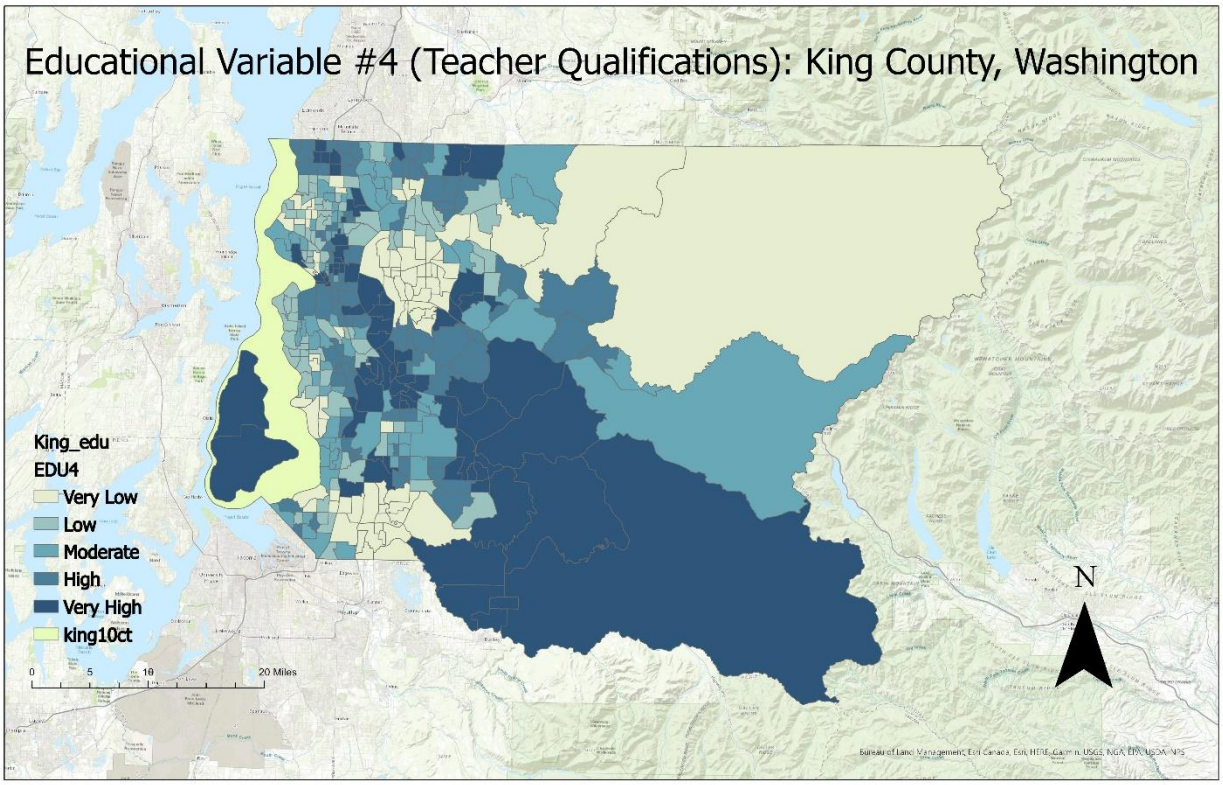
Educational Variable #4 (Teacher Qualifications): King County, Washington
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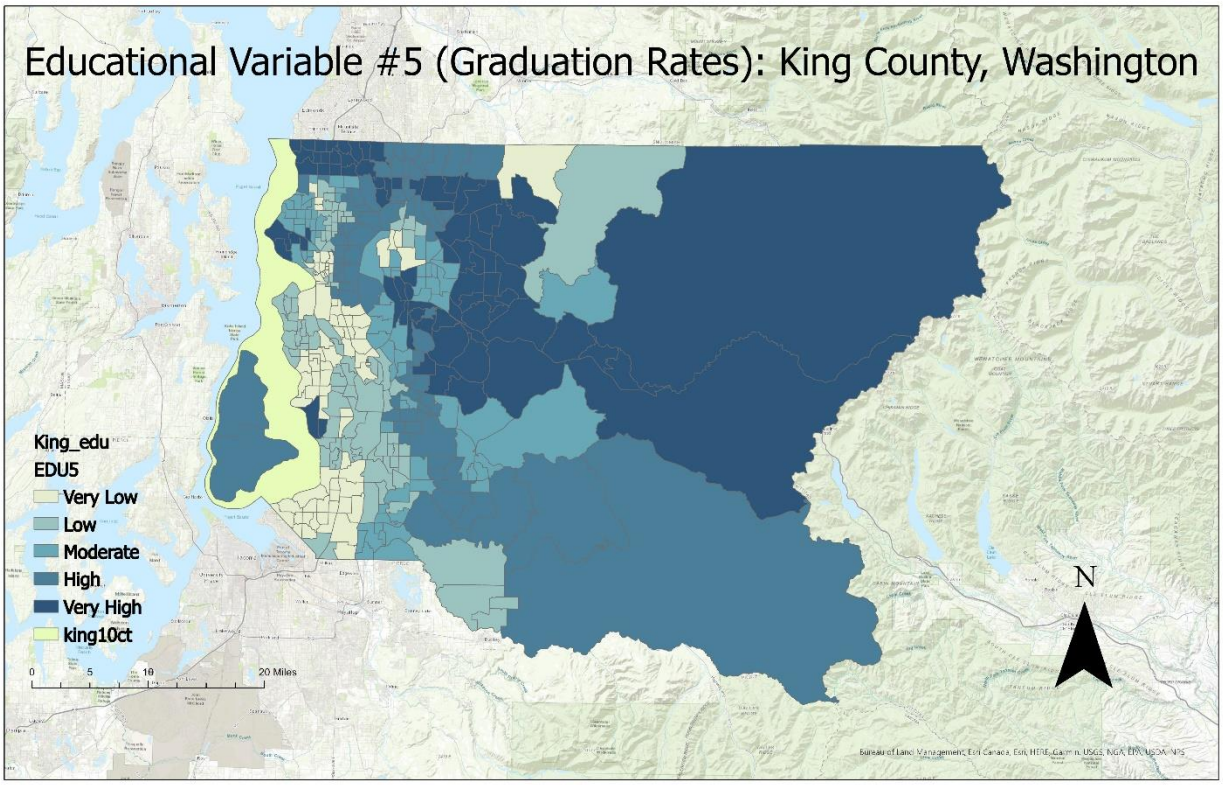
Educational Variable #5 (Graduation Rates): King County, Washington
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Moderate
High
Very High
king10ct
0
5
10
20 Miles
N

Discussion: Map 1 – Map 5

In Map 1, it appears that the very low opportunities are all clustered in the western, almost sidelined part of the county. There is a small region of high opportunity to the west of that, right by the western border. The low opportunities are clustered prominently around the south and sprinkled in along the west as well. It is interesting that the high and very high opportunities are in the middle west of the county, and they are also situated right next to the very low opportunities. This calls into question why students who live in regions adjacent to each other receive such a stark difference in their opportunity levels for reading. It also seems that the eastern half of the county is completely covered with moderate and low opportunity. One might question why students who live in the same region are prone to having the same opportunity level. However, students who live in the same area likely have access to the same resources and attend school districts that receive the more funding because they are located in more affluent areas. Having different areas of the country segmented to denote where one school district ends and another begins also explains why students who live in regions bordering each other and can have such different opportunity levels.

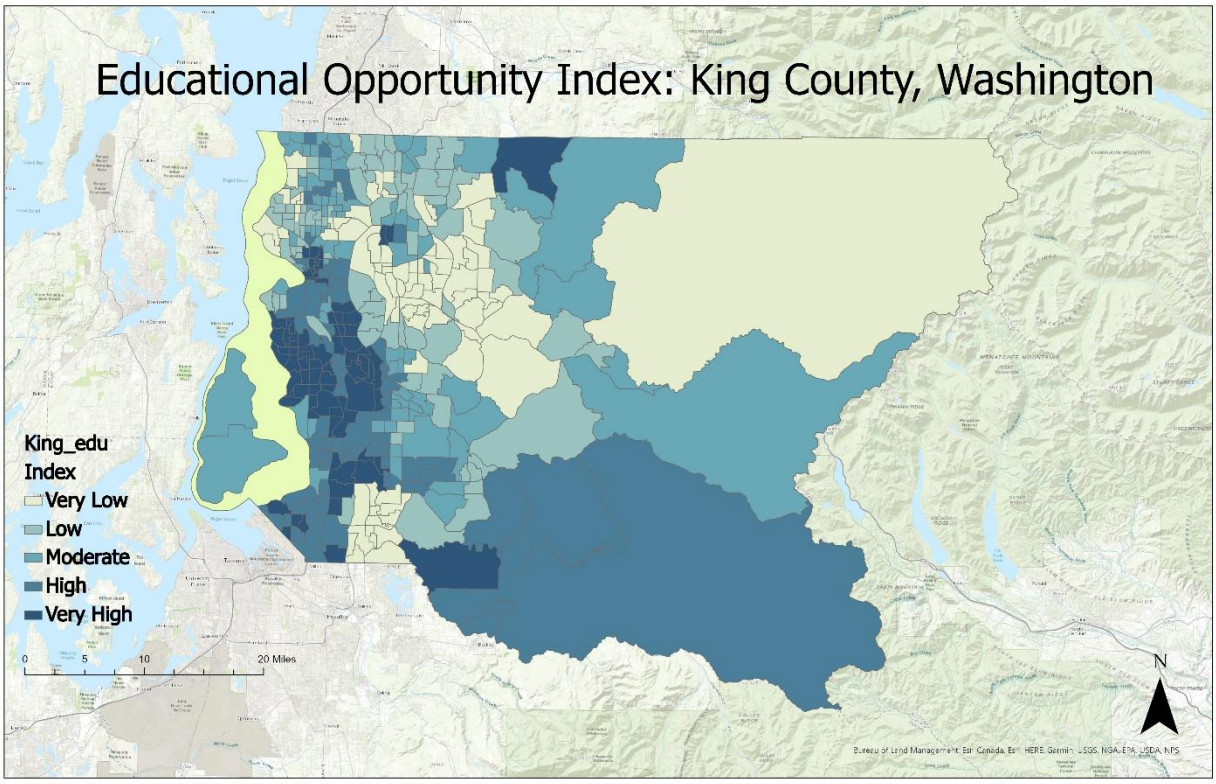
In Map 2, it seems that the distribution of opportunity level is very similar to that of Map 1, with a few notable exceptions. The almost sidelined western region is completely designated as very low opportunity, rather than having sprinkles of low opportunity in the region. To the west of that, the region is moderate rather than high. There is also a more uniform distribution of very high and high opportunity in the middle of the county. The moderate and low opportunity regions at the eastern border are switched around vertically in comparison to Map 1. There are also two chunks at the lower border of the county that are denoted as very high and high opportunity areas, rather than high and moderate as they are in Map 1. It appears that the opportunity levels in Map 2 may be slightly elevated all across the country, when compared to Map 1, with more regions being very high or high.

The opportunity levels in Map 3 are very different in comparison to Map 1 and Map 2. The eastern portion of the county is very low at the top, low in the middle and moderate at the bottom. These encompass large chunks of the county. The western, almost sidelined region is very high, a stark difference from the very low opportunity level in Map 1 and Map 2. The area below that is high in Map 3 rather than moderate the way it was in Map 1 and Map 2, and the area above is low in Map 3 rather than high, like it was in Map 1 and Map 2.

The eastern area of the country seems to be a step higher in opportunity levels in Map 4, when being compared to the eastern area in Map 3. The lowest eastern region is very high, the middle region is moderate and the top is very low in Map 4. In Map 3, these areas were moderate, low and very low, respectively. There is also a lot more variety in opportunity level in Map 4 in the western sidelined region that is not quite at the border but still very much in the western side of the country. There is a combination of smaller regions that are very high, high, moderate, low and very low.

It seems that the opportunity level for Map 5 is higher across most regions of the country, in comparison to the previous maps. There are only few regions that have a very low opportunity level, but very high, high and moderate opportunity levels are dominating most of the county in this map. This is interesting to see, as I would assume areas with lower opportunity levels in math test scores, reading test scores, poverty and teacher qualifications would correlate with a lower opportunity in graduation rates. However, it appears that there is a lack of reason to believe there is any relationship between opportunity levels for graduation rate and opportunity levels for these variables.

Composite Index Map



Discussion: Composite Index Map

The index map takes data from each of the previously discussed 5 maps and combines them into a singular depiction of the data, this is done by taking the average of the datasets. This creates a composite map, with each region of the county being denoted as a very high opportunity level, a high opportunity level, a moderate opportunity level, a low opportunity level or a very low opportunity level.

The eastern region of the county is very low opportunity in the upper area, moderate in the middle area and high in the lower area. There are parts of the middle that are also very low opportunity, all clustered together, and on the western side of that there is a cluster of very high and high opportunity levels. At the western border, further left of the previously discussed area, there is a small chunk that is completely moderate. At the top of the western region there is a cluster of high and moderate areas. At the bottom of the western area, half of it is very low opportunity and another half is high opportunity with aspects of very high opportunity. On polar sides of the county, there are small chunks that are each very high opportunity. It appears that the eastern region is extremely and clearly divided in terms of opportunity level. The western and middle regions have clusters of opportunity levels that are the same, and other clusters that are either a combination of very high and high, or moderate and low. Another consistent aspect of the map is that there is often a very stark difference in opportunity level between clusters in one area and clusters or cluster combinations in the area adjacent to it. From my research, the average income in counties in the western region (excluding the area directly adjacent to the western border), the upper western region and lower eastern region of the county is on the higher end. The average income in the upper eastern region and lower middle region is on the lower end. This is relevant because people who are affluent will live in affluent areas as well, and these areas in particular will have the school districts with the best resources and most funding. It seems there may be a correlation between educational opportunity level and family income, but there is a notable exception in this pattern in part of the lower middle region. However, apart from this one inconsistency, most regions in the county that have higher educational opportunity levels are located in areas where the average family income is high, and lower educational opportunity level areas correlate with areas that have a lower average family income.

Conclusion

While more research needs to be conducted in order to confirm a positive relationship between family income and educational opportunity, there is enough data in this analysis to support the idea and encourage more research on this topic. Looking further, the implication here is that students from richer families gain better education because they are located in the best school districts, and eventually, when they have families of their own, are earning a higher income on average. They are then able to successfully support their children in their own educational endeavors. This means that a student's family background may play a substantial role in steering the direction and quality of their education, which has an effect on career opportunities, earning potential, and ability to support their own future children in their education. If we want to create a future of professionals that come from all types of backgrounds, mindsets and perspectives, it is worth investigating ways to level the field in terms of geographic locations and the impact they have on educational opportunity level for students. This adjustment will probably require several steps, but improving funding in regions with school districts that are lacking, and allocating resources more fairly overall, will be a huge aspect of change moving forward. Ignoring this issue in education opportunity and quality is becoming complicit in a system that only allows for the rich to become successful, and perpetuate this unbalanced and difficult to break cycle. Cultivating a well rounded generation of professionals and scholars is not only useful and just for students of all backgrounds, it is important for the development of our society.

Sources

Puget Sound Regional Council, Opportunity Index, 2011