# *Educational Opportunity in King County*
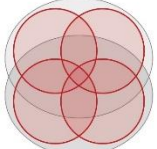


Study author: Steve Schultz; April 20, 2021

UNIVERSITY *of* WASHINGTON | TACOMA

Equity of Opportunity Foundation

Puget Sound Regional Council
PSRC

KIRWAN INSTITUTE
for the Study of Race and Ethnicity

## Introduction: Importance of Educational Opportunity

This report presents a geographic analysis of educational opportunity in King County, Washington. It illustrates locations of opportunity-rich communities and shines a light on areas for improvement in opportunity-poor neighborhoods. This report is sponsored by the Equity of Opportunity Foundation of King County, dedicated to encouraging greater equity in educational opportunities across the country.

> "We are true to our creed when a little girl born into the bleakest poverty knows that she has the same chance to succeed as anybody else."
>
> — Barack Obama

Access to a world-class education can help to ensure that all children in the country can reach their potential (Equity of Opportunity).

As the most populous county in Washington state with the largest city, King County is a logical study area to address educational opportunity disparities.

The Equity of Opportunity Foundation* acquired data from the Puget Sound Regional Council's (PSRC) study *Equity, Opportunity, and Sustainability in the Central Puget Sound Region.* This cooperative study with the Kirwan Institute provided a comprehensive evaluation of opportunity throughout the urban areas of Puget Sound. While the PSRC study measured five elements of neighborhood opportunity, this study concentrates on Education. This study also encompasses the entire geography of King County and is not limited to urban areas.

*The Equity of Opportunity Foundation is a fictional organization created for this lab.

## Opportunity Mapping

Multiple factors work together in creating marginalized communities. Patterns of racial and spatial isolation are often the result of historic policies and practices, some of which were overtly racist. Policies like mortgage redlining and suburban highway investment often created an inequitable and segregated social landscape, resulting in uneven opportunities and burdens that persist in the present day.

The Kirwan Institute's Communities of Opportunity framework is a model of opportunity that considers housing, education, jobs, transportation, health, and engagement in one's life and community, among other factors. This approach is based on two premises: (1) All people should have fair access to the critical opportunity structures and the necessary social infrastructure to succeed in life. (2) Connecting people to opportunity creates positive, transformative change in communities. The Communities of Opportunity model advocates for a fair investment in all people and neighborhoods, to improve life outcomes for all citizens, and to improve the health of entire regions. The Kirwan Institute's opportunity maps have been utilized in policy advocacy, litigation, applied research, community organizing, and coalition building, and to inform service delivery.

Opportunity maps are based on variables indicative of high and low opportunity, where a clear connection has been demonstrated between the indicator and opportunity. "Opportunity" is defined as "a situation or condition that places individuals in a position to be more likely to succeed and excel." Indicators could be either impediments to opportunity (which are analyzed as negative neighborhood factors, e.g., high neighborhood poverty) or conduits to opportunity (which are analyzed as positive factors, e.g., an abundance of jobs). High opportunity indicators include high-performing schools, the availability of sustainable employment, stable neighborhoods and a safe environment. These multiple indicators of opportunity are then assessed at the same geographic scale, enabling the production of a comprehensive opportunity map for the region (Martin & Parham, 2012).



When looking at data related to equity and social justice, we want to be mindful not to reinforce historical representations of low income or communities of color as bad or negative. To do this, the Opportunity Index shows darker colors for areas with more opportunity rather than showing darker colors for worse outcomes. This helps to visualize the areas of high opportunity by using red and lighter colors in areas of lower opportunity to call out the need for more investment and opportunity. This "flipped" gradient does not use green, or "positive" colors, when referring to historically high investment communities (Equity Index).

## Education Variables

Education Opportunity is an aggregate of five variables: reading test scores, math test scores, student poverty rates, teachers' qualifications and graduation rates. These indicators represent the quality of local schools and educational resources. Each of the indicators in this category is based on the location of the three nearest schools within the school district of each census tract. Therefore, a series of steps was taken to attribute data to the tracts. It should be noted that the figures attributed to each tract are the average of the rates or scores of the three nearest schools from the center of each tract.

*Reading test scores.* These scores were derived from the Washington Assessment of Student Learning (WASL) exams given in the 4th grade. The WASL was the primary, standardized educational assessment system in the state of Washington. These scores were collected in 2010-2011 and were made available for this study from the Washington State Report Card, Office of Superintendent of Public Instruction (OSPI). The results of this indicator are visualized in Appendix B.1, Reading Test Scores. It is apparent that very low test scores are prevalent in South Seattle along the I-5 corridor to Kent. Low scores dominate in the south while very high scores are in clusters to the north and east.

*Math test scores.* These scores were derived from WASL exams given in the 4th grade. The test scores were collected in 2010-2011 and made available by the OSPI. The results of this indicator are visualized in Appendix B.2, Math Test Scores. Very low test scores are prevalent in South Seattle, Renton and Kent. It is interesting to note the reversal of low math test scores to the northeast as opposed to reading test scores in the southeast. Very high scores are again to the north and east.

*Student poverty rates.* These scores were based on the percentage of students receiving free or reduced priced lunches. The data was derived from 2010-2011 OSPI records. The results of this indicator are

visualized in Appendix B.3, Student Poverty. As noted in the methodology described below, student poverty rates were reversed to demonstrate that higher poverty results in lower opportunity. The South Seattle, Renton and Kent corridor shows very low opportunity rates (i.e. high student poverty rates). Meanwhile the northern half of the county enjoys mostly high and very high opportunity.

*Teachers' qualifications.* This variable represents the percentage of teachers who have obtained a master's degree or higher. The data came from 2010-2011 OSPI records. The results of this indicator are visualized in Appendix B.4, Teachers' Qualifications. A patchwork of low and high opportunity indicates that teachers with master's degree or higher appear throughout the county.

*Graduation rate.* This variable shows the percentage of students who graduated from high school on time. The data was obtained from 2010-2011 OSPI records. The results of this indicator are visualized in Appendix B.5, Graduation Rates. The South Seattle, Renton and Kent corridor shows very low to low graduation rates. The north and east have much higher graduation rates.

*Z-score conversion.* The raw data from each variable were standardized as z-scores. This allowed the variables to be compared directly with each other and combined into a composite score. For example, test scores and poverty rates were on different scales that couldn't be directly compared. Z-scores were derived for each census tract with the formula:

$$\text{z-score} \ = \ \frac{(\text{observation} - \text{mean})}{\text{standard deviation}}$$

For each census tract, the mean score was subtracted from the average variable score observed and was then divided by the standard deviation across the scores. This resulted in z-scores that ranged from -5 to +5 with the mean being 0. (About 97 percent of the z-score range falls between -3 and +3). Positive numbers represent higher opportunity while negative numbers represented lower opportunity. The poverty score was reversed by multiplying the z-score by -1. In the case of poverty, a higher poverty rate therefore equated to a lower opportunity.

Each variable was further divided into quintiles, or five categories of equal numbers of observations. These classes were labeled by their levels of opportunity ranging from very high to very low.

Table 1. Descriptive statistics for component indicators before and after z-score transformation

| INDICATOR | RAW SCORES | | | | Z-SCORES | | | |
|---|---|---|---|---|---|---|---|---|
| | MEAN | SD | MIN | MAX | MEAN | SD | MIN | MAX |
| Reading test scores | 71.5 | 14.1 | 40.0 | 93.5 | 0.0 | 1.0 | -2.8 | 1.6 |
| Math test scores | 65.4 | 15.1 | 27.1 | 90.8 | 0.0 | 1.0 | -2.5 | 1.7 |
| Student poverty rates | 0.4 | 0.2 | 0.0 | 0.9 | 0.0 | 1.0 | -2.0 | 1.6 |
| Teachers' qualifications | 0.6 | 0.2 | 0.0 | 0.8 | 0.0 | 1.0 | -2.7 | 1.2 |
| Graduation rates | 0.8 | 0.1 | 0.3 | 1.0 | 0.0 | 1.0 | -4.9 | 1.4 |

# Results: Weighted Composite Education Index

Illustrated as Appendix A, a weighted composite of the five education variables shows the range of educational opportunity throughout King County. The z-scores of the five variables were averaged to create a composite z-score.

*Weighting scheme.* Of the five education variables, four were based on elementary school data and only one was from high school data. Also, two variables were predictive of educational opportunity while three were results-based. Consequently, z-scores for student poverty rates and teachers' qualifications were each represented with half their weight while the remainders were at full weight. This not only put the burden on results-based variables, but it also helped to increase the significance of high school graduation rates against the four elementary school variables.

| Variable | Weight |
|---|---|
| Reading test scores | 1.0 |
| Math test scores | 1.0 |
| Graduation rates | 1.0 |
| Student poverty rates | 0.5 |
| Teachers' qualifications | 0.5 |

# Conclusion

While the five education variables demonstrate a range of opportunity patterns, illustrated in Appendices B.1 to B.5, there are some obvious patterns that reinforce the weighted composite index, shown in Appendix A.

Foremost, there is a wide range of education opportunity throughout the geography of King County. The five census tracts with the highest overall education opportunity were east of Seattle and Bellevue in the neighborhoods of Sammamish, Issaquah Highlands, Klahanie, Redmond Ridge and Duthie Hill. Meanwhile, the five census tracts with the lowest education opportunity were split between downtown Seattle: Belltown and Pike/Pine, and South Seattle in South Park, South Delridge and McMicken Heights.

With a possible exception in teachers' qualifications, all educational variables show the urban areas of the I-5 corridor from Seattle through Kent are areas that could benefit the most from educational investment.

# References

Equity of opportunity. (n.d.). Retrieved April 17, 2021, from https://www.ed.gov/equity

Equity index - city of Tacoma. (n.d.). Retrieved April 17, 2021, from https://www.cityoftacoma.org/cms/One.aspx?portalId=169&pageId=175030

Martin, M., & Parham, T. (2012). *Equity, opportunity, and sustainability in the Central Puget Sound Region: Geography of opportunity in the Central Puget Sound Region*. Seattle, WA: The Puget Sound Regional Council.
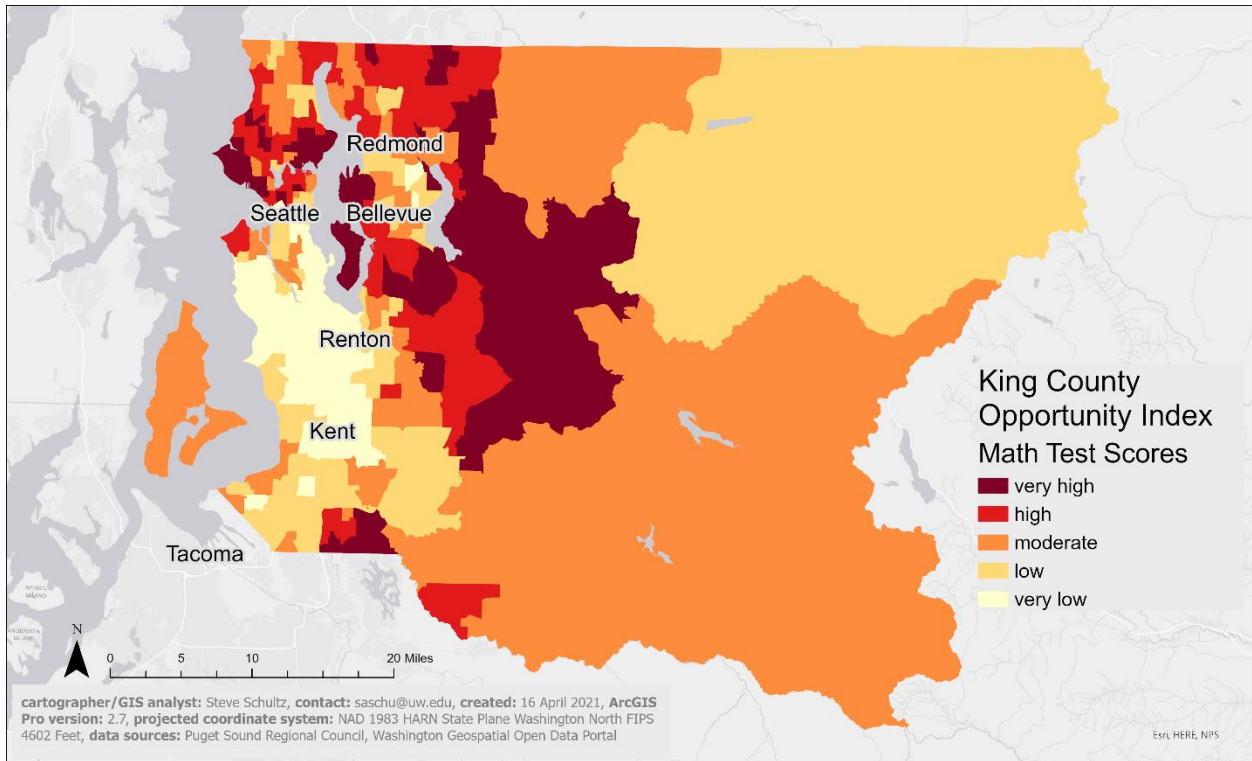
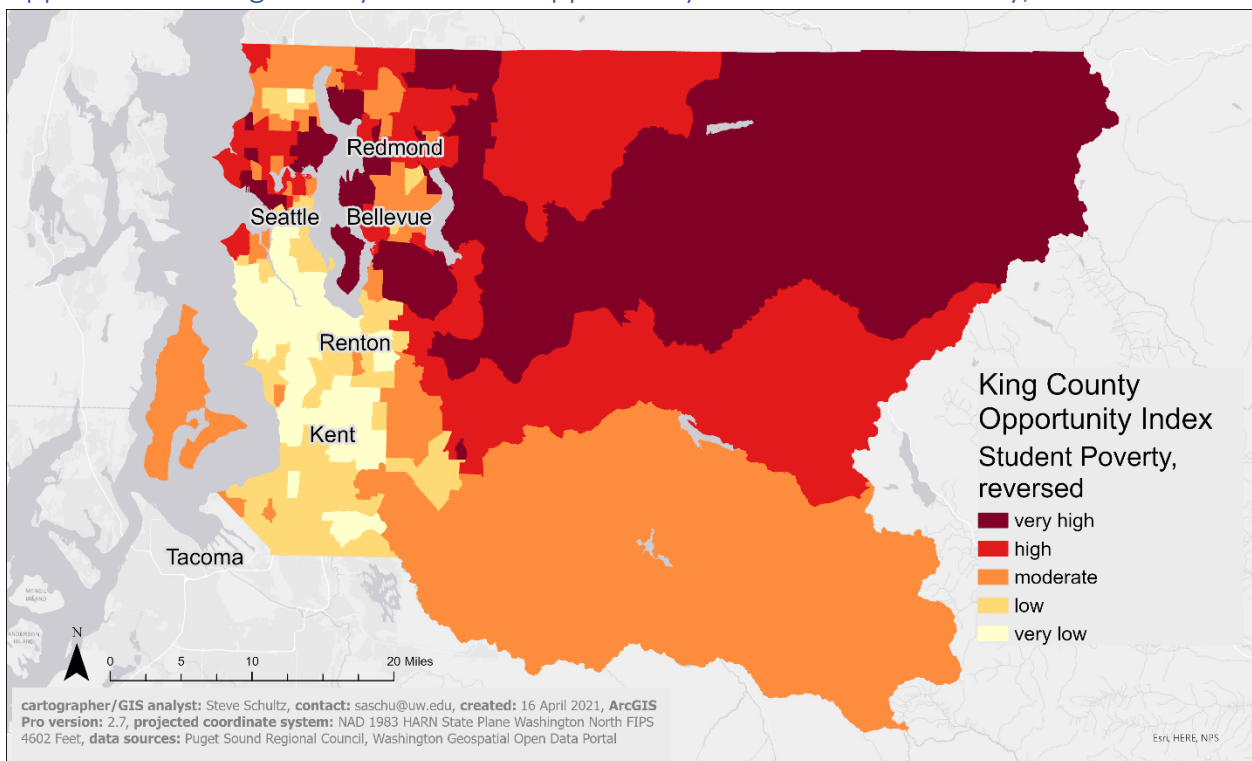## Appendix A: King County Education Opportunity Index: Weighted Composite
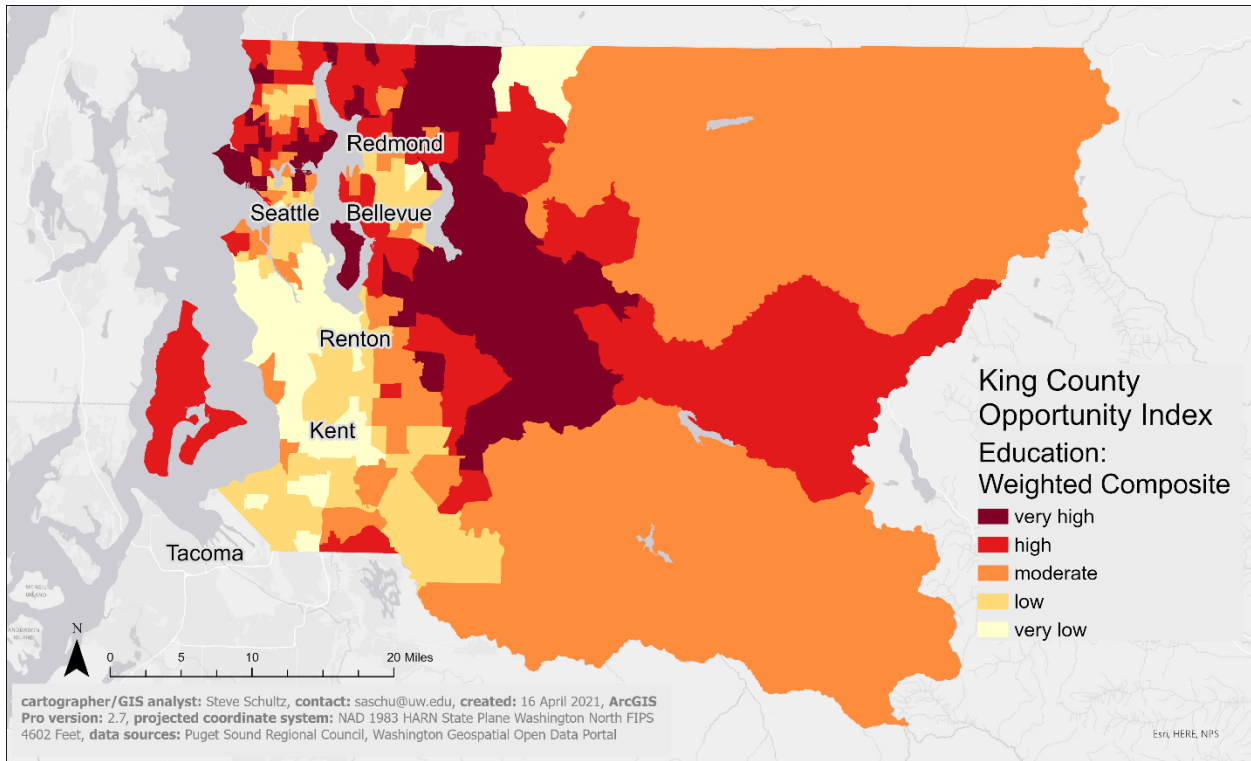


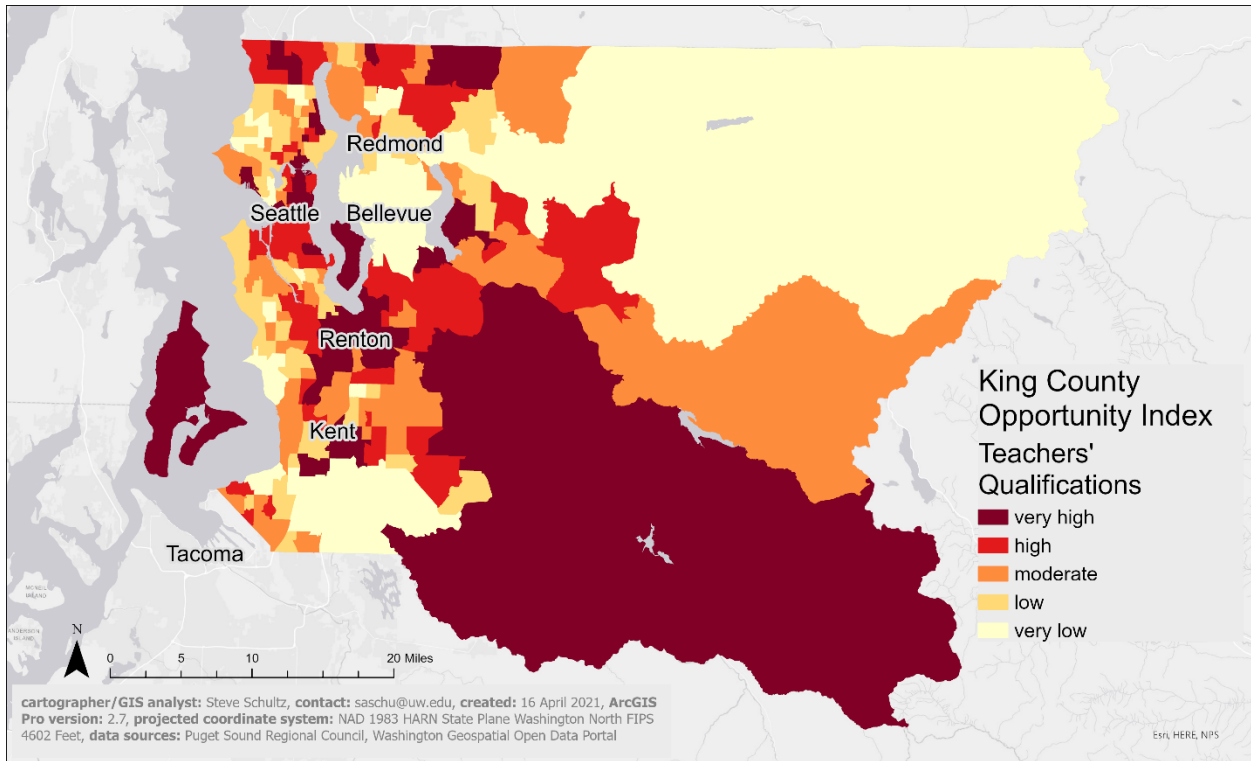## Appendix B.1: King County Education Opportunity Index: Reading Test Scores
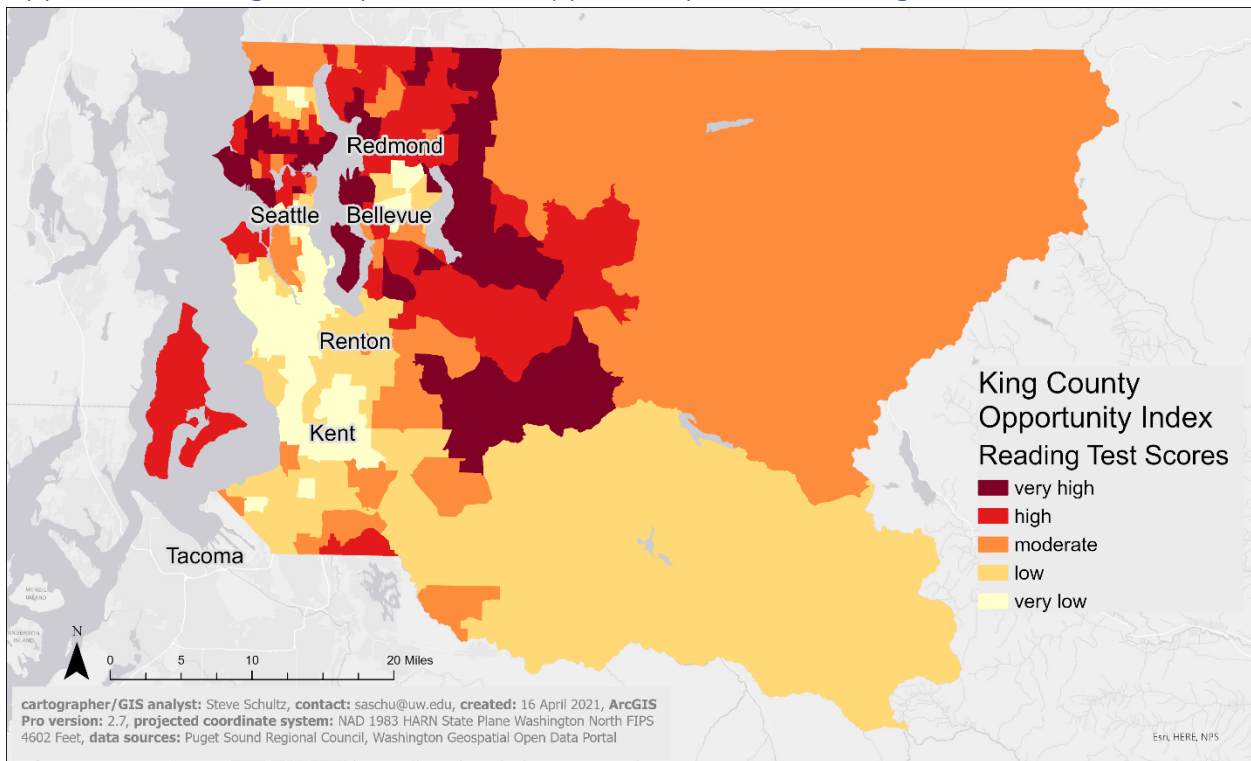
## Appendix B.2: King County Education Opportunity Index: Math Test Scores



## Appendix B.3: King County Education Opportunity Index: Student Poverty, reversed

## Appendix B.4: King County Education Opportunity Index: Teachers' Qualifications



## Appendix B.5: King County Education Opportunity Index: Graduation Rates