WHO BENEFITS FROM GENTRIFICATION?:

A Case Study of Oregon Public High Schools

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Abstract

Gentrification, defined as an influx of wealthy individuals into a neighborhood, has decreased the number of low-income students at some schools and forced these same low-income students into Title I schools. This paper looks at the effect of gentrification in Oregon and how it affects graduation rates for low-income, Black, and Hispanic students for Oregon public high schools, using a multivariate regression. When higher-income schools gentrify, on average, remaining white and/or low-income students experience an increase in graduation rates. In lower-income schools that reverse-gentrify (measured as an increase in the percentage of low-income students), once again, remaining white and/or low-income students experience an increase in graduation rates.

1. Introduction

Gentrification in the United States has been forcing people out of their neighborhoods since the 1960s, and as a result, has impacted our public education system. Gentrification, the influx of wealthy individuals into a neighborhood, allows the wealthy to put their children in their own well-funded public schools while leaving low-income families and students concentrated on their own, usually under-resourced schools. I want to assess the effects gentrification has on white, Black, Hispanic, and/or low-income students at schools that are gentrifying and reverse-gentrifying (increasing in low-income population). In addition, students at schools that start off with lower percentages of low-income students will likely react differently to gentrification than students at schools with higher percentages of low-income students, because

the base-level resources, school climate, and composition are fundamentally different for these two groups.

I study Oregon because it is known as one of the states that is gentrifying the fastest, especially the city of Portland. The Oregon Department of Education publishes yearly data on most public schools in the state for the past ten years which made it a reliable and consistent data source. In addition, the dataset included subgroup-level information that allows me to estimate race-specific effects. I chose graduation rates to be the academic measure because it is a commonly used metric for student performance. Every student has equal potential to succeed but race, being low-income or not, and a school's resources influence the graduation rates for various subgroups.

In an ideal experiment, I would run a randomized control trial and randomly choose high-income students and send some to select schools with lower percentages of low-income students and to select schools with higher percentages of low-income students to simulate random gentrification. This way, we would be able to estimate the effects of this change on the students that remain at these schools that are randomly gentrifying. Unfortunately, because I am unable to run an RCT, this compositional change is not random, and therefore I am looking at both compositional effects and the actual change of graduation rates for remaining students due to gentrification.

In terms of the actual quantitative methods, I utilize multivariate linear regressions in my model looking at the effect that an increase in low-income student percentages has on graduation rates for various subgroups. I look at the overall effects of gentrification and then look at how the effects vary from schools with lower levels of low-income students versus schools with higher levels of low-income students. It is a known phenomenon that schools with wealthier students

have more resources so theoretically, if race/low-income status didn't play a role, when schools gentrify, all students' graduation rates should go up. If graduation rates decrease for a specific subgroup like low-income, Black, or Hispanic students, that could indicate there is another effect at play. Resources at predominantly higher-income schools may not be accessible to all students as well through tracking and other well-known ways of segregating students based on socioeconomic status and predominantly race.

How each demographic responds to gentrification or even the reverse-gentrification shows how different schools are equipped and have resources for low-income and underrepresented minority populations. My research shows that white students at schools that have a low percentage of low-income students are positively affected by gentrification which likely means there is some social effect on students or the school when the percentage of low-income students increases. This could mean that schools gain resources when the percentage of low-income students rises, and vice versa. What's interesting is that the effect of gentrification is different in schools that are Title I (have a greater than 40% low-income population), which means schools are not equally equipped to teach low-income students and some may have the resources while others don't. In terms of the education policy perspective, it is important to look at these effects to make sure that schools, Title I or not, are equipped with the resources to educate *all* students, regardless of their race or socioeconomic status.

2. Literature Review

Currently, there is almost no research that exists on gentrification and its effect on graduation rates, however, there have been papers on gentrification and its effects on a few other school-related factors.

The first paper discusses the effects of gentrification and neighborhood public schools in terms of math and reading achievement at schools in areas that are becoming gentrified. What the paper finds is that gentrification (in Chicago specifically) does not affect school achievement at public schools. Although this is an important finding, the paper does not discuss specific effects on minority race groups as well as low-income students and their academic performance (Keels et al., 2013).

The next paper discusses the effect of school choice on gentrification and how increasing school choice might incentivize rich, non-minority populations to move to inner-city regions and take advantage of that choice to still attend "better schools." The results of this paper were that increasing school choice actually did increase the likelihood of gentrification quite significantly in communities of color. This provides important context for the topic of my paper because Oregon does provide school choice options for its residents which could be a factor to the immense gentrification that has been and is currently taking place in neighborhoods of color (Pearmen et al., 2017).

The third paper discusses the implications of gentrification on children's well-being in affected areas. Specifically for low-income students whose families may be getting displaced or who are being isolated in schools, this may cause a psychological burden on them. The paper also

discusses the potential positives for low-income students and the resources that gentrification brings into local public schools due to property taxes. This is less so an experiment-based results paper but rather a paper that provides recommendations on how to help low-income youth in gentrified areas. I'm curious to see how the results of my paper tie into these recommendations depending on where low-income students increase or decrease their graduation rates within gentrified schools (Formoso et al, 2010).

The last (somewhat) relevant paper I found discusses how gentrification perpetuates tracking and ends up harming low-income students in schools being gentrified by tracking them to lower-level programs and classes. It specifically talks about an area within Brooklyn and how rich, white families moving used strategies to put their students in schools outside of their neighborhood—between-school tracking. This again is a consideration to keep in mind when looking at gentrification in Oregon and where the new families are actually sending their kids to school (DeSena et al., 2009).

Although there is a lot of existing research on gentrification and the actual metrics for what classifies an area as gentrified, there is not much research on how it affects student performance, specifically how it affects the performance of low-income and/or underrepresented minority students within gentrified neighborhoods which is what my paper aims to do. One paper that discusses peer effects, which is relevant because gentrification influences the peers one has at a school, is the Sacerdote paper on Peer Effects in Education.

This paper uses both linear and non-linear models to estimate the effects of having peers of various demographics, socioeconomic statuses, and ability levels. Key findings are that high

ability students benefit from having other high ability students around them. Students are also affected by the racial composition of their peers and by the achievement of their same race peers, which is essential to understanding the effects of gentrification and changing compositions of students at the school level (Sacerdote). This paper demonstrates that there are so many factors, tied to race, gender, and socioeconomic status, among others, that impact how a student performs. For example, the "acting white effect" negatively influences the academic performance of Black students at schools that are mostly White (Sacerdote). As most of the schools in Oregon are mostly White, this effect is important to keep in mind. While this paper discusses the effects of change in composition, it does not discuss gentrification and other trends that cause these changes in the composition of students at schools.

While the Sacerdote paper discusses the end result of composition effects, the Keels et al. paper has a similar research question to mine and discusses the topic of gentrification. One fundamental difference is the dataset- my paper is discussing gentrification in the state of Oregon while Keels et al. paper only looks at the city of Chicago. The racial and socioeconomic demographics of both areas are extremely different, with Chicago having a much higher underrepresented minority population (Chicago: 29% Black, 28.7% Hispanic; Oregon: 4.5% Black, 13.3% Hispanic). Because a significant portion of the economically disadvantaged population in Oregon is white, the gentrification effects will differ. My paper also includes the effects of gentrification on low-income white students, which is normally not discussed. I would predict that the effects on Black and Hispanic students would be different in Oregon public schools than Chicago public schools due to the fundamental difference in demographics; this would be an interesting comparison to make between the two papers.

Another key difference between the datasets is the age range of the students. This paper focuses on elementary schools (and academic achievement) whereas my paper focuses on high school students (and graduation rates). Specifically, the paper uses third-grade annual reading and math scores which is a very different outcome than graduation rates (Keels et al., 2013). Almost all students in the US attend third grade whereas about 25% of students drop out of high school, inherently limiting my sample. In addition, the factors that influence elementary schoolers are unlike those that affect high schoolers in terms of schooling experience so the findings of my paper provide insight into and are relevant for a separate demographic.

Overall, my paper aims to analyze the influence of school-level gentrification on high school students' graduation rates; no current research exists on this topic. This will not only provide insights into the effects in Oregon but other states as well that have a significant white population and are experiencing gentrification.

3. Data

3.1 History of Oregon

In 1857, Oregon proposed a state constitution that banned Black people from entering, residing, or acquiring property (Oregon Secretary of State). Oregon also had the largest Ku Klux Klan (KKK) membership per capita in the US (Capatides). These two historical facts align with the recent statistics that show a very small Black population in Oregon. In addition, specifically Portland, Oregon's largest city, has a deep history of racism and it is very well-known as one of

the most gentrifying cities in America. Although Oregon still has a low-income population of 13-17% over the past ten years, the majority of this population is white for the aforementioned reasons. It is important to keep this in mind because most gentrification studies are centered around low-income populations of color and while this study does take that into account, it also looks at the large white and low-income population.

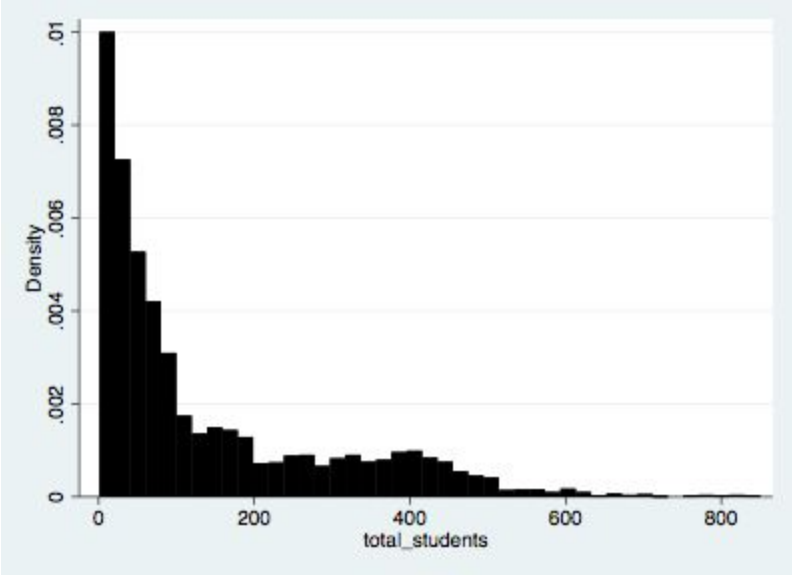
3.2 Data Source

The data I used for this research is from the Graduation Reports published by the Oregon Department of Education. These reports cover ten years of data from the School Year 2008-2009 to the School Year 2018-2019. Each school year's information is presented in a panel format in a separate media file. Every file contains school-, district-, and state-level data on graduation rates and cohort size for a given school year. In addition, these graduation rates are subgroup-specific; the two key subgroups are Ethnicity (American Indian, Black, Hispanic, Asian, White) and Economically Disadvantaged. The data includes about 600 student institutions including Traditional Public Schools, Charter Schools, Academies, Alternative High Schools, Community Schools, Juvenile Centers, and more. I filtered this list to exclude Juvenile Centers, Technical Institutes, and other very unconventional high schools in order to avoid omitted variable bias since these schools were likely to have different instructional methods and a biased cohort of students.

At first, I was going to filter the data to only include traditional public and charter schools but that limited the dataset to about 250 schools and the regression results for this dataset were similar to the results with the other schools included. After these limitations, over 24,000

observations remained covering ten years of data, about 49,000 students per year, and over 325 schools. The graduation rates only included those who stayed at the school for all four years and excluded those who transferred or died. This is a limitation because there could be a correlation between academic performance and transferring out of school.

Figure 1: Histogram of Class Sizes



Note: This figure shows the distribution of per school class sizes. The data is skewed right which indicates that smaller class sizes are much more common in this data set.

Because the data is skewed to the right, with a median of 71 and an average of 142, I decided to weight the regression by the number of students.

3.3 Descriptive Statistics

Table 1: Demographics of the Data

Race/SES	Percent
American Indian	1.8%
Black	2.5%
Asian	4.6%
Hispanic	18.5%
White	67.7%
Low-income	52.6%

Note: This table provides the overall breakdown of the data by race and socioeconomic status.

Overall in Oregon, 44% of children lived in low-income families in 2016 which generally aligns with my dataset; the percentage of low-income students is likely higher here because this dataset only includes public schools and not private schools, which have a significantly lower low-income population. By race, 67% of Hispanic children, 64% of Black children, and 36% of White children live in low-income families (NCCP).

Table 2: Descriptive Statistics on Graduation Rates

Race/SES	Mean	Std. Dev.
Black	62.2%	37.5%
Hispanic	66.7%	29.8%
White	72.4%	23.6%
Low-income	68.7%	21.9%

Note: This table provides descriptive statistics on the graduation rates of the relevant subgroups in the dataset.

Looking at Table 2 on graduation rates by subgroup from 2008-2018, the mean graduation rate for Black and Hispanic students is 10% and 6% less than that of white students which demonstrates a clear racial disparity. By the nature of Oregon demographics, low-income income students are predominantly white. Black students have the largest SD; this shows that there is a very large range of graduation rates for black students. The average graduation rate for low-income students is higher than that of Black and Hispanic students which likely means that a significant portion of low-income students are White as well.

Table 3: Desc. Statistics on % Low-income

1st percentile	4.7%
25th percentile	44.4%
50th percentile	57.1%
75th percentila	71.8%
99th percentile	100.0%
Mean	58.4%
Std. Dev.	22%

Note: This table shows the percentiles of % low-income students at every school. It is clear that the majority of the public schools in this dataset would be considered Title I schools.

It is important to keep the context of Oregon public school demographics in mind because the majority of schools are Title I Schools, indicating that there is likely alternative enrollment in private schools and such since this distribution does not match that of Oregon overall.

4. Methods

4.1 Overall Effects

This research paper aims to answer the question "what impact does school-level gentrification have on graduation rates for various student subgroups within these schools?" My empirical hypothesis is that gentrification causes the graduation rates of the remaining low-income, Black, and Hispanic students to decrease while causing the graduation rates of white students to increase. Because the non-random compositional changes will inherently change graduation rates for the remaining students, the results might be (if anything) biased upwards; this is because as schools gentrify, the low-income families that leave are likely the poorest families. An increase in wealth is also associated with an increase in school performance, so by pure compositional effects, this would cause graduation rates for the remaining low-income students to increase. I will use the regression below to estimate this gentrification effect on graduation rates for all schools in Oregon:

$$Graduation\ Rate_{it} = \beta_0 + \beta_1 (Low\ income)_{it} + \beta_2 (Subgroup\ x\ School)_{it} + \gamma_1 D_{time} + \mu_{it}$$

Low income refers to the percentage of low-income students at a school, which I use as the gentrification measure. *i* is a subgroup by school and *t* is a time period. Subgroup by School fixed effects are included because students from different racial groups perform differently based on the school they attend. Schools have differing levels of resources for low-income, black, and Hispanic students which will end affecting their graduation rates. Time fixed effects are included because graduation rates tend to rise or fall depending on the time period and I wanted to separate these effects from the gentrification-induced effect on graduation rates. Ideally, we

would want to have student-level data to look at the interactions between being low-income and Black or Hispanic but unfortunately, this dataset only provides school-level data. Because the size of schools and subgroups within a school vary significantly, I weight the regression by the number of students in a subgroup. Ultimately, the estimated causal effect is shown as B1. This is essentially a difference-in-difference at the school by subgroup level over ten years. Unfortunately, this model does not account for unobserved time-variant factors that could differentially reduce achievement for schools that are experiencing varying levels of change in the share of low-income students. For example, schools that experience a significant drop in the share of low-income students might lose government funding, thus potentially lowering achievement levels.

4.2 Effects by Schools based on low-income population

While the previous regression includes all schools from the dataset, I also wanted to run regressions on schools with differing levels of low-income students. The overall effect might be clouded because in my dataset the over 75% of the public schools would be considered Title I, or having a low-income population that is greater than 40%. Separating the data into quartiles by the percentage of low-income students at a school, I am going to run 4 different regressions (same equation as above), one for each subset of schools. I hypothesize that schools the gentrification effect for schools with a relatively large percentage of low-income students will be the opposite sign as the effect for schools with a relatively small percentage of low-income students. In other words, the percentage of low-income students at a school influences the gentrification effect and whether or not it positively or negatively affects graduation rates.

4.3 Subgroup-specific Effects

To further look into the specific effects of gentrification, I run a set of regressions by subgroup for each low-income quartile of data to decompose the overall effect. The subgroups included are Black, Hispanic, White, and Low-income. White students likely respond differently to gentrification than Black and Hispanic students which is why I am running a subgroup-specific analysis. I would anticipate that there are more significant effects in the first and fourth quartile where this a drastic difference in school low-income populations. Because the large majority of Oregon public schools are Title I (even those in the first quartile), I run one last set of subgroup-specific regressions separating Title I schools from non-Title I schools. From a Public Policy perspective, Title I schools often get additional resources and I want to see if this plays into graduation rates as well. Here is the modified subgroup-specific regression:

$$Grad\ Rate\ (subgroup/lowinc\ quartile)_{it} = \beta_0 + \beta_1 (Low\ income)_{it} + \gamma_1 D_{time} + \gamma_2 D_{school} + \mu_{it}$$

This regression includes school fixed effects because schools have different resources, programs, and curriculums that likely affect subgroups of students differently, even within a low-income quartile. Since subgroups are now isolated in their respective regressions, there is no need for subgroup*school fixed effects.

5. Results

5.1 Overall Effects

Table 4: Estimates of Gentrification Effect on All Schools by Subgroup

	Full Sample	Black	Hispanic	White	Low-income
	(1)	(2)	(3)	(4)	(5)
lowinc	.0470***	-.1138	0.0266	-0.03	.1183***
	(.016)	(.079)	(.029)	(.018)	(.019)
2009	0.578	1.713	1.761	0.447	1.123
	(0.323)	(1.811)	(0.947)	(0.524)	(0.658)
2010	1.561***	5.492**	3.963***	0.705	2.778***
	(0.329)	(1.922)	(.948)	(0.536)	(.663)
2011	2.274***	6.992***	5.342***	1.911***	2.758***
	(0.337)	(2.011)	(.961)	(0.555)	(.671)
2012	8.846***	15.51***	12.32***	8.201***	9.654***
	(0.345)	(2.058)	(.982)	(.572)	(.681)
2013	6.267***	13.45***	11.14***	5.582***	6.550***
	(0.349)	(2.130)	(.992)	(.583)	(.688)
2014	7.809***	15.21***	13.43***	7.149***	7.936***
	(0.356)	(2.156)	(1.002)	(.596)	(.698)
2015	8.829***	18.51***	15.24***	7.686***	9.152***
	(0.357)	(2.278)	(1.000)	(.598)	(.701)
2016	10.52***	19.10***	17.50***	9.138***	10.97***
	(0.357)	(2.239)	(1.002)	(.598)	(.703)
2017	12.61***	20.44***	19.32***	10.80***	13.44***
	(0.360)	(2.274)	(1.005)	(.604)	(.709)
2018	13.99***	21.83***	20.78***	11.91***	15.18***
	(0.363)	(2.407)	(1.006)	(.608)	(.711)
R-squared	0.8247	0.6338	0.7775	0.8602	0.8401
N	15097	1633	2910	3349	3342

Standard errors in parentheses * p<0.05, ** p<0.01, *** p<0.001

Note: This table provides the regression results for the overall regression run on all schools in the dataset, as well as the subgroup-specific regressions. Fixed effects include Year and effects between School and Subgroup.

The regression for the overall effect of gentrification on all schools in the dataset shows that on average, when the percentage of low-income students goes up by one percentage point, the graduation rate increases by .047%. To put this in perspective, if the low-income population

increased by 25%, the average subgroup-specific graduation rate would increase by 1%. This is not specific to being low-income or a part of a race group, which will be discussed in the next section. The average graduation rate for schools with a 0% low-income population in 2008 is 63.8% as shown by the constant. It is important to notice the upward trend in graduation rates over the ten years as well. By 2018, the average graduation rate for schools with a 0% low-income population is 77.8%, an increase of 14% in just ten years. Graduation rates have increased on average every year except from 2012 to 2013.

5.2 Effects by Schools based on low-income population

After splitting up the data into four subsets based on low-income quartiles, the results that are most significant are the first and last quartiles. The first quartile includes schools that have a low-income population of less or equal to 44.4% and the last quartile includes schools that have a low-income population of greater than 71.8%.

Table 5: Estimates of Gentrification on Q1 Schools by Subgroup

	Full Sample	Black	Hispanic	White	Low-income
	(1)	(2)	(3)	(4)	(5)
lowinc	-0.1948***	-0.4524	-0.1504	-0.202***	-.1865*
	(0.039)	(.275)	(.130)	(.059)	(.089)
Year	✓	✓	✓	✓	✓
R-squared	0.7967	0.5729	0.7539	0.8351	0.772
N	3911	461	703	837	815

Standard errors in parentheses * p<0.05, ** p<0.01, *** p<0.001

Note: This table provides the regression results for the first quartile of low-income students with Year fixed effects. It includes the overall regression and then the subgroup-specific regressions.

For schools in the first quartile of low-income percentages, an increase of one percentage point of low-income students causes an average decrease in graduation rates by .195%. This may not seem significant but that indicates that a 10% increase in low-income students causes an average decrease in graduation rates by about 2%. This is significant at the 1% significance level with a t-statistic of -4.95.

For schools in the second quartile of low-income percentages, an increase of one percentage point of low-income students causes an average increase in graduation rates by .099%. This indicates that a 10% increase in low-income students causes an average increase in graduation rates by about 1%. This is significant at the 10% significance level with a t-statistic of 1.91.

For schools in the third quartile of low-income percentages, an increase of one percentage point of low-income students causes an average increase in graduation rates by .083%. This indicates that a 10% increase in low-income students causes an average increase in graduation rates by .8%. This is significant at the 10% significance level with a t-statistic of 1.73.

Table 6: Estimates of Gentrification on Q4 Schools by Subgroup

	Full Sample	Black	Hispanic	White	Low-income
	(1)	(2)	(3)	(4)	(5)
lowinc	-.2378***	-0.2184	0.097	0.3061***	.2625***
	(.038)	(.173)	(.089)	(.075)	(.064)
Year	✓	✓	✓	✓	✓
R-squared	0.882	0.7983	0.8575	0.8938	0.9086
N	3450	346	697	827	3342

Standard errors in parentheses * p<0.05, ** p<0.01, *** p<0.001

Note: This table provides the regression results for the fourth quartile of low-income students with Year fixed effects. It includes the overall regression and then the subgroup-specific regressions.

For schools in the fourth quartile of low-income percentages, an increase of one percentage point of low-income students causes an average increase in graduation rates by .238%. This indicates that a 10% increase in low-income students causes an average increase in graduation rates by about 2%. This is significant at the 1% significance level with a t-statistic of 6.33.

Comparing the results from the first and fourth quartile, there is an almost exact opposite effect of an increase (or decrease) in low-income students; in schools with a lower low-income population, there is a decrease in graduation rates as a result from an increase in low-income students whereas in schools with a higher low-income population, there is an increase in graduation rates instead.

The baseline constants changed drastically throughout the quartiles; in the first quartile it is 80.38%, in the second quartile it is 63.3%, in the third quartile it is 56.1%, and in the fourth quartile, it is 35.7% demonstrating a steep decline in graduation rates as the percentage of low-income students increases at schools. In each of the quartiles, the increase over the ten years was relatively similar, ranging from a 10.44% increase in the fourth quartile to a 13.41% increase in the first quartile. The biggest jump in graduation rates overall occurred from the school years 2011-2012 to 2012-2013, however, schools in the first quartile were able to maintain this jump while schools in the fourth quartile were unable to maintain this increase and had a severe drop in graduation rates in the 2013-2014 school year.

5.3 Subgroup-specific Effects

Looking back at Table I with all schools in the dataset, there are no significant effects except when filtering for only low-income students. An increase in low-income students by one

percentage point causes an average increase of .12% in low-income student's graduation rates. The constant varies significantly with the low-income constant of 62.82 being the lowest and the white constant of 77.32 being the highest.

When filtering by low-income quartiles, the regression for the first quartile shows that the only significant effects are for the white and low-income subgroups. An increase in low-income students by one percentage point causes an average decrease of .202% in white student's graduation rates. An increase in low-income students by one percentage point causes an average decrease of .19% in low-income student's graduation rates.

In the second and third quartiles, there are no results significant at the 5% level. In the fourth quartile, an increase in low-income students by one percentage point causes an average increase of .306% in white student's graduation rates. An increase in low-income students by one percentage point causes an average increase of .262% in low-income student's graduation rates.

6. Discussion

6.1 Regressions

The regression and results indicate the reverse-gentrification effect or how the increase in low-income students affect graduation rates. The overall results suggest that on average, all subgroups at a school would experience higher graduation rates if there was an increase in low-income students or equivalently, would have lower graduation rates as a result of gentrification. This effect is likely biased because the % low-income distribution of schools is

skewed left, with over 75% of the schools being Title I schools. This means that the effect on lower-income schools overpowers the result, which is why I divide the schools into four quartiles of % low-income schools.

Regarding the first quartile, my hypothesis was that gentrification would affect all students positively as the influx of wealthy families usually increases resources at schools. Based on the results, this appears to be true with gentrification having a positive effect on graduation rates with a decrease in low-income students causing a significant increase in graduation rates. But looking specifically at subgroups within this first quartile, we see that there is no significant effect of gentrification on Black or Hispanic students' graduation rates and that this result is only true for White and low-income students, respectively. It is important to keep in mind that the majority of low-income students are White in this dataset and that the percent of Black and Hispanic students is relatively low in the first quartile, with a mean of 10% Hispanic and Black students. It makes sense why the results for White and Low-income students tend to line up for these reasons, and it demonstrates that when gentrification occurs, the influx of potential resources is primarily given to White and/or low-income students.

My hypothesis was that there would be a similar effect on the third quartile but based on the results, gentrification has the almost exact opposite effect on this group of schools. Another trend that is important to keep in mind is that gentrification has not equally affected all schools in Oregon. Schools that are in the first quartile are much more likely to gentrify and as a matter of fact, schools in the fourth quartile experience reverse gentrification with a ten-year trend of gradually increasing low-income populations. Moving from the first to the fourth quartile, the effects of gentrification reverse, with them going from being positive to negative. Schools in the

fourth quartile which are experiencing an influx of low-income students experience an increase in graduation rates overall. Again, the effect is not significant for Black and Hispanic students but is significant for White and/or low-income students. The mean Black and Hispanic population in this quartile is 28.9% with white students being the low-income majority once again.

Essentially over time, certain schools have gentrified and others have not, making the low-income distribution one of extremes- schools tend to have either a low low-income population or a high low-income population- there are not many schools in the middle.

I hypothesized that students, regardless of race, would see an improvement in graduation rates, yet, in both higher income gentrifying schools and the reverse-gentrifying lower-income schools, this improvement is only seen in White and/or low-income students. In higher-income schools, gentrification presumably brings in more resources and support as previous research has shown, yet these resources only seem to help the white students. At schools that are lower-income and are experiencing an influx of low-income students (who are predominantly white), once again, the white students are experiencing an increase in graduation rates while Black and Latino students are not. It is possible that schools with a higher low-income population would benefit from this influx because they might get increased resources from the state with such a high low-income population. It is also possible that there is some sort of cohort effect which allows low-income students to thrive when surrounded by students like themselves. It could also be the case that these extremely low-income schools are a special type of school (e.g. Charter) and have an increased amount of resources or funding. Unfortunately, schools in the middle quartiles, which are still Title I, do not experience a similar positive effect on graduation rates. It is

incredible to see that white students on both ends of socioeconomic status receive the benefits regardless of whether they are at a low-income or high-income school.

6.2 Trends

It is reassuring to see that graduation trends from 2008-2018 are positive for both Black and Hispanic students, particularly from 2012-2018 for this fourth quartile of students. The average increase in graduation rates across these six years was 12.9% and 5.61% for Black and Hispanic students, respectively, which indicates there is an improvement, positive change, and that underrepresented minority students are catching up but the overall graduation rates still remain higher for White students in 2018.

We see a similar improvement in the first quartile and a positive trend starting even earlier throughout the entire 2008-2018 time period. The average increase in graduation rates across these ten years in this quartile was 23.3% and 25.5% for Black and Hispanic students, respectively, which again shows immense growth. This improvement is much greater than that of White students and the gap is slowly closing but the overall graduation rates still remain higher for White students in 2018.

With these results in mind, more research needs to be done about resource allocation in schools for all ranges of low-income student demographics because it looks as if only white students benefit from the effects of gentrification. Looking back, I would also include analyses of Asian students, another minority group in Oregon, but I would predict that the results align with those of White students. The primary uncertainty I have about these results is that schools on both

extremes of the low-income spectrum may not be of the traditional high school model and therefore there might be other factors that affect graduation rates.

7. Conclusion

Ultimately, the main findings of my paper were that gentrification tends to have a positive effect on White students and/or low-income students, but has an uncertain effect on Black or Hispanic students. Schools in the first quartile, or alternatively, high-income experience an overall increase in graduation rates but I only find a significant subgroup-level increase for White and/or low-income students. Gentrification does not have a significant effect on schools in the middle quartiles. In the fourth quartile, or the quartile representing schools with the most concentrated low-income populations, schools with a higher percentage of low-income students actually had higher graduation rates, showing an overall positive effect of reverse gentrification. Again, this effect was only significant for White and/or low-income students.

These results demonstrate a simple theory- resources at schools are more accessible to White students, irrespective of the school's overall socioeconomic status. It is possible that these results are also a byproduct of the fact that schools on either extreme of the socioeconomic scale have an increased amount of resources, and even if that were the case, the resources should, in theory, increase all students' academic achievement, not just that of White students. Although there has been great progress and a positive trend in Black and Hispanic students' graduation rates, they still lag behind White students' graduation rates.

This is important to keep in mind when crafting policies, especially for Title I schools. It is not enough to just provide resources and funding to low-income schools because they likely will not be equitably distributed. As the book Achieving High Educational Standards for All discusses, there must be six key R's for an equitable education system to exist, four of which are extremely relevant to this paper: resources, reform, rules, and research-based pedagogy. Gentrification is a form of legal segregation and there must be reform to increase school diversity (Ready et al.). But even at schools that are gentrifying (and those that are reverse-gentrifying), the White students get the resources. The rules at school play a huge role in who gets the resources, due to systemic racism and inequity- tracking is very common in higher-income students in order to segregate racial groups. With these results in mind, along with tens of other studies on the effects of gentrification on students, it is important to modify pedagogical techniques to make sure that all students are held to a high standard and students aren't treated inequitably due to race.

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