Differences in Graduation Rates as a Function of High School Size for Students of Poverty: A Texas Multiyear, Statewide Study

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Abstract
In this investigation, the graduation rates of students in poverty as a function of school size were examined. Archival data were analyzed from the Academic Excellence Indicator System report from the Texas Education Agency. School size was analyzed based on groupings as defined by [1, 2, 3]. Graduation rates were analyzed annually and longitudinal. In both the 2012-2013 and 2013-2014 school years, statistical significant differences were yielded for Graduation rates of students in poverty as a function of high school size. Students who lived in poverty who were enrolled in larger high schools had higher graduation rates than students in poverty who were enrolled in smaller high schools. For both school years, as student enrollment increased, graduation rates increased. Implications for policy and practice and recommendations for future research are provided.

1. Introduction

Despite an increase of six percentage points in graduation rates between 2000 and 2010, high school completion-rate disparities still exist by ethnicity/race, income status, and gender [4]. With the widening achievement gap, educational leaders are searching for answers for higher graduation rates and college readiness [5, 6]. Students who do not graduate high school and receive a diploma may face a wide variety of hardships in their lifetime. Further, without completing high school, students may face grave outcomes such as financial government assistance, lower wages, or incarceration [7, 8, 9, 10]. These hardships are more daunting for Black and Hispanic students or students in poverty who are disproportionately affected by not completing high school [8].

Students complete high school typically have better health, have higher lifetime incomes, and are less likely to participate in criminal activity [11] than students who do not complete high school. Further, students who possess a high school diploma are more likely to obtain a job after high school compared to students who do not attain a high school diploma [12, 13]. High school completion rates and students entering the workforce are vital to the stabilization of the United States economy [14, 15].

Although dropout rates have decreased over the last 15 years, as of the 2011-2012

school year, only 81% of high school students graduate with a traditional high school diploma [16]. Researchers [e.g., 17, 18] have revealed that students who live in economically disadvantaged areas can be an additional challenge in increasing graduation rates. Given that high school graduation rates are used to measure a high school's performance and are used for accountability ratings, graduating high school students is an important goal for school administrators to accomplish.

[19] discovered students who live in disadvantaged neighborhoods have lower graduation rates than student who do not live in disadvantaged neighborhoods. Students living in disadvantaged neighborhoods have a reduced likelihood of graduating. For Black children in disadvantaged neighborhoods, the probability of graduating dropped from 96% to 76%. For non-Black children, the probability of graduating dropped from 95% to 87%. Therefore, living in these disadvantaged neighborhoods may have a substantial influence on high school graduation rates.

[18] analyzed data from the Educational Longitudinal study of 2002 to determine the relationship of socioeconomic status to high school graduation and college enrollment. Students who attended schools of higher economic status were 68% more likely to graduate high school and to enroll into a 4-year college than were students who attended low socioeconomic schools. Palardy suggested integrating more affluent schools and schools that have a large population of students in poverty to offset the negative consequences of attending low socioeconomic schools to promote economic diversity in schools and to allow for equal educational opportunity.

[17] examined the relationship between economic status and children's human capital development. In his investigation, students living in families of poverty had lower (a) academic achievement scores, (b) high school graduation rates, (c) college enrollment rates, and (d) college graduation rates. Higher income families were viewed as having an educational advantage, thus supporting the idea that educational inequalities for students in poverty exist.

Students from low socioeconomic families are more likely to exhibit poorer reading and mathematics skills compared to their more affluent peers [20, 21]. Several researchers [e.g., 22, 23 24] have established the achievement gap widens as students are promoted through the grade levels. Larger achievement gaps in reading and mathematics exist for students of poverty and for students who are homeless or who experience high residential mobility [21, 25, 26]. These gaps may be a predictor for not earning a high school diploma or even obtaining job placement [27].

With academic achievement and higher graduation rates being emphasized in school accountability ratings, policymakers continuously think about constructing schools that might lead to better outcomes [28, 5]. School size, with respect to student enrollment, is one factor that may influence student performance [5]. Some researchers [29, 30] supported the idea that smaller schools are more effective when it comes to supporting high school students' needs. Yet, other researchers [31, 32] have documented moderate-size schools as being more ideal for student achievement. However, some researchers [e.g., 1, 33] have determined larger high schools support student achievement the best.

Lower test scores are associated with lower income regardless of race [24]. However, statistically significant differences have occurred with White students in poverty performing better than Black students in poverty [24]. In 2011, a 25-point gap was present in reading scores and a 31-point gap was present in mathematics scores between Black and White Grade 8 students on standardized tests [34].

[35] used the Educational Longitudinal Study 2002 to analyze school size and mathematics achievement as it pertained to dropout rates of sophomores and seniors ($n = 16,081$). High schools that had very large student enrollment (2,592 or more students) or very small student enrollment ls (674 or fewer students) had higher student achievement in mathematics. Upon further analysis, [35] determined that dropout rates in larger size high schools were greater than in small-size high schools. Similarly, [36] used the Educational Longitudinal Study 2002 data tool to examine the relationship of mathematics achievement and high school size. Carolan determined statistically significant differences in mathematics achievement and high school size. Mathematics achievement was best in moderate-size schools (600-999 students). However, neither of these researchers analyzed data on students in poverty.

In a recent Texas statewide study, [37] analyzed five school years to determine the extent to which college readiness was related to high school size of Black students. High school sizes were categorized into three groups: small-size (< 400 students), medium-size (401-1500 students), and large-size high schools (> 1500 students). Black students who attended large-size high schools had statistically significant higher college readiness rates then Black students who were enrolled in either small or medium-size high schools. In a similar study, using the same student enrollment criteria, [38] examined five years of Texas statewide data on school size and college readiness for White students. White students who attended large-size high schools had statistically significant higher college readiness rates in large-size high schools than did White students who were enrolled in either small or medium-size high schools. In a third investigation, [39] used the same student enrollment criteria to determine the extent of the relationship between high school size and college readiness of Hispanic students. Hispanic students attending large-size high schools had statistically significant higher college readiness rates than Hispanic students attending small-size or moderate-size high schools. In their three studies, Moore et al. [37, 38, 39] provided evidence that college readiness rates were higher in large-size high schools for Black, Hispanic, and White students. They did not, however, analyze the graduation rates of students in poverty.

2. Purpose of the Study

The purpose of this investigation was to ascertain the extent to which graduation rates might differ as a function of high school size for students in poverty. Specifically, high school size and annual graduation rates were analyzed for two school years: 2012-2013 and 2013-2014. Longitudinal data were also examined for 2013 and 2014 to determine the status of the cohort of students that the annual data represented. These school years were selected because they constituted the most recent data available for Texas high schools.

3. Significance of the Study

Through this investigation more information has been gained with regard to graduation rates and high school size for students in poverty. Findings from this study may be used to provide insight for educators and policymakers when considering school construction and consolidation that might best support subgroups. School district leaders and state legislators may gain insights from this study that may provide policy and decision making related to funding for programs designed to support students who are at risk of dropping out. From an administrative standpoint, decreasing dropout rates may in turn help schools and school districts to improve accountability ratings.

4. Research Questions

The following research questions were addressed in this study: (a) What is the difference in annual graduation rates as a function of high school size for students in poverty using the [1] school size definition? (b) What is the difference in annual graduation rates as a function of high school size for students in poverty using the [2] school size groupings?; (c) What is the difference in annual graduation rates as a function of high school size for student in poverty using the Texas University Interscholastic League groupings?; (d) What is the difference in the longitudinal graduation rates as a function of high school size for students in poverty using the [1] school size definition?; (e) What is the difference in longitudinal graduation rates as a function of high school size for students in poverty using the [2] school size groupings?; (f) What is the difference in longitudinal graduation rates as a function of high school size for student in poverty using the Texas University Interscholastic League groupings?

5. Method

5.1. Research Design

The research design for this empirical investigation was non-experimental, causal comparative [40]. In this causal comparative research investigation, archival data were analyzed. With archival data, the independent and dependent variable had already occurred. Accordingly, neither variable could be manipulated [40]. In this study, the independent variable was the size of the high school, with respect to student enrollment. The dependent variable was the graduation rates of students in poverty.

5.2. Participants and Instrumentation

Participants in this study were students from all traditionally configured Grade 9 through Grade 12 Texas high schools in which graduation rates were reported to the Texas Education Agency. Students who are considered to have completed high school typically refer to students who are from a class of first-time ninth graders who complete their high school education by their anticipated graduation date [41]. Once a class has finished high school, students are assigned a final status of graduate, continuer, GED recipient, or dropout [41]. Students who are identified to be of poverty level typically refer to students who are of economic disadvantage and indicates the student's household income is 130% (free) and 185% (reduced) of the federal poverty guidelines 41.

For the purpose of this study, high school size in the [1] definition consisted of three groupings: Small, Moderate, and Large. A Small-size high school was defined as a school with an enrollment of 400 or fewer students, with a minimum of 50 students [1]. A Moderate-size high school was defined as a school with an enrollment of 401 to 1,499 students [1]. A Large-size high school was defined as a school with an enrollment of 1,500 or more students [32].

In the [2] definition, high school size consisted of four categories: Small, Moderate, Large, and Very Large. A Small-size high school was defined as a high school with a student enrollment of 50 to 500 students [2]. A Moderate-size high school was defined as a high school with a student enrollment of 501 to 1,499 students [2]. A Large-size high school was defined as a high school with a student enrollment of 1,500 to 2,499 students [2]. A Very Large-size high school had a student enrollment of 2,500 or more students [2].

The third grouping of high school size was the University Interscholastic League guidelines: Very Small, Small, Moderate, Medium, Large, and Very Large. A very Small-size high school was defined as a high school with a student enrollment of 25 to 104 students. A Small-size high school was a high school with a student enrollment of 105 to 219 students. A Moderate-size high school was a high school with a student enrollment of 220 to 464 students. A Medium-size high school was defined as a high school with a student enrollment of 465 to 1,059 students. A Large-size high school was a high school with a student enrollment of 1,060 to 2,099 students. Finally, a Very Large-size high school was a high school with an enrollment of 2,100 or more students [3].

Archival data were obtained from the Texas Academic Performance Report as published annually by the Texas Education Agency. Available at the Texas Academic Performance Report website were data for each of the two school years. With specific reference to this investigation. Texas Academic Performance Report data were downloaded

for the 2012-2013 and 2013-2014 school years. Longitudinal data were also downloaded for 2013 and 2014. Specific variables that were downloaded were: (a) configuration of each high school; (b) total student enrollment; and (c) graduation rates of students in poverty.

6. Results

To determine whether a difference was present in graduation rates as a function of school size for students who were economically disadvantaged, an Analysis of Variance (ANOVA) procedure were conducted. Standardized skewness coefficients and standardized kurtosis coefficients were checked for graduation rates to ascertain the degree to which they were reflective of normally distributed data across the three school sizes. All coefficients were calculated to ensure they all are within range of normality of +/- 3 [42]. A Levene's Test of Error Variance was analyzed to ensure homogeneity of the variables. When all assumptions were met, an ANOVA procedure was justified. However, Field (2009) contended the ANOVA procedure is sufficiently robust against failures to meet all assumptions. When a statistically significant difference was determined, Scheffe` post hoc procedures were calculated to determine which groups were statistically significantly different.

6.1. Research Question 1

For the first research question, student enrollment was analyzed according to the groupings as defined by [1] For the 2012-2013 school year, a statistically significant difference was revealed for the annual graduation rates for students in poverty as a function of school size, $F(2, 1090) = 38.55$, $p <.001$, $\eta^2 =.066$, a medium effect size [43]. Scheffe` post hoc procedures were analyzed next to determine which high school size pairwise comparisons were statically significant with respect to graduation rates of students who were in poverty. Four of the six post hoc comparisons yielded statistically significant differences. Students in poverty who were enrolled in Small-size high schools had statistically lower graduation rates than students in poverty who were enrolled in either Moderate-size or Large-size high schools. The graduation rates were similar for students in poverty in Moderate-size and Large-size high schools.

Concerning the 2013-2014 school year, a statistically significant difference was determined in the annual graduation rates of students in poverty as a function of high school size as defined by [1], $F(2, 1104) = 40.65$, $p <.001$, $\eta^2 =.069$, a medium effect size [43]. Similar to the previous school year, students in poverty who were enrolled in Small-size high schools had statistically significantly lower graduation rates than students in poverty who were enrolled in either Moderate-size or Large-size high schools. The graduation rates were similar for Moderate-size and Large-size high schools. Descriptive statistics for the analysis of the 2012-2013 and the 2013-2-14 school years are presented in Table 1.

Table 1. *Descriptive Statistics for the 2012-2013 and the 2013-2014 Annual Graduation Rates for Students in Poverty as a Function of High School Size Using the Greeney and Slate (2012) Definition.*

School Year School Size Grouping	n of schools	M	SD
2012-2013			
Small (400 or less)	369	68.72	24.98
Moderate (401-1,499)	350	78.57	13.61
Large (1,500 or more)	374	78.62	10.72
2013-2014			
Small (400 or less)	375	70.52	25.21
Moderate (401-1,499)	353	80.57	13.46
Large (1,500 or more)	379	80.78	11.03

6.2. Research Question 2

For this research question, student enrollment was analyzed according to the groupings defined by [2]. For the 2012-2013 school year, a statistically significant difference was revealed for graduation rates for students in poverty as a function of school size, $F(3, 1089) = 25.99$, $p <.001$, $\eta^2 =.067$, a medium effect size [43]. Students in poverty who were enrolled in Small-size high schools had lower graduation rates than students in poverty who were enrolled in either Moderate-size, Large-size, or Very Large-size high schools. No other pairwise comparisons yielded statistically significant results. In regard to the 2013-2014 school year, a statistically significant difference was determined in the graduation rates of students in poverty as a function of high school size as defined by [2], $F(3, 1103) = 27.23$, $p <.001$, $\eta^2 =.069$, a medium effect size [43]. Similar to the previous school year, students in poverty who were enrolled in Small-size high schools had statistically lower graduation rates than students in poverty who were enrolled in either Moderate-size, Large-size, or Very Large-size high schools. No other pairwise comparisons yielded statistically significant results. Table 2 contains the descriptive statistics for the 2012-2013 and the 2013-2014 analysis with regard to the [2] school size definition.

Table 2. *Descriptive Statistics for the 2012-2013 and the 2013-2014 Annual Graduation Rates for Students in Poverty as a Function of High School Size Using the Perez and Slate (2015) Definition.*

School Year School Size Groupings	n of schools	M	SD
2012-2013			
Small (400 or less)	369	68.71	24.98
Moderate (401-1,499)	350	78.57	13.61
Large (1,500-2,499)	251	79.22	11.00
Very Large (2,500 or more)	123	77.39	10.05
2013-2014			
Small (400 or less)	375	70.52	25.21
Moderate (401-1,499)	353	80.57	13.46
Very Large (2,500 or more)	123	79.92	9.96

6.3. Research Question 3

For the third research question, the following enrollment numbers were used for each high school grouping [3] For the 2012-2013 school year, a statistically significant difference was revealed for graduation rates for students in poverty as a

function of school size, $F(5, 1019) = 57.41$, $p < .001$, $\eta^2 = .206$, a large effect size [43]. Scheffe` post hoc procedures were used next to determine which school size pairwise comparisons were statistically significantly different with respect to graduation rates for students in poverty. Students enrolled in Very Small-size high schools had statistically significantly lower graduation rates of students in poverty than any of the other school size groupings. Similarly, students who were enrolled in Small-size high schools had statistically significantly lower graduation rates for students in poverty than high schools with more students enrolled. The other high school size groupings had similar graduation rates of their students in poverty. Further, in regard to the 2013-2014 school year, a statistically significant difference was determined in the graduation rates of students in poverty as a function of high school size as defined by [3], $F(5, 1126) = 57.55$, $p < .001$, $\eta^2 = .204$, a large effect size [43]. Scheffe` post hoc procedures revealed that students enrolled in Very Small-size high schools had statistically significantly lower graduation rates of students in poverty than any of the other school size groupings. Similarly, students who were enrolled in Small-size high schools had statistically significantly lower graduate rates of students in poverty than high schools with more students enrolled. The other high school size groupings had similar graduation rates of their students in poverty. Presented in Table 3 are the descriptive statistics for the 2012-2013 and the 2013-2014 analysis by the [3] school size definition.

Table 3. *Descriptive Statistics for the 2012-2013 and the 2013-2014 Annual Graduation Rates for Students in Poverty as a Function of High School Size Using the University Interscholastic League Definition.*

School Years / School Size Groupings	n of schools	M	SD
2012-2013			
Very Small (25-104)	66	41.81	33.97
Small (105-219)	136	67.59	23.85
Moderate (220-464)	241	75.33	20.54
Medium (465-1069)	213	78.28	12.69
Large (1,070-2099)	234	79.15	11.16
Very Large (2,100 or more)	225	78.27	10.67
2013-2014			
Very Small (25-104)	69	43.54	35.61
Small (105-219)	139	69.26	24.48
Moderate (220-464)	244	76.78	21.25
Medium (465-1069)	215	79.83	13.12
Large (1,070-2099)	240	81.63	11.39
Very Large (2,100 or more)	225	80.47	10.12

6.4. Research Question 4

With regard to the 4-year longitudinal graduation rates in the 2012-2013 school year, student enrollment was analyzed according to the groupings defined by [1]. For the 2012-2013 school year, a statistically significant difference was revealed for longitudinal graduation rates for students in poverty as a function of school size, $F(2, 1032) = 29.23$, $p < .001$, $\eta^2 = .054$, a small effect size [43]. Scheffe` post hoc procedures revealed that students in poverty who were enrolled in Small-size high schools had statistically

significantly lower 4-year longitudinal graduation rates than students in poverty who were enrolled in either Moderate-size or Large-size high schools. A stepwise effect was present, with increasing graduation rates from as student enrollment increased from Small-size high schools to Large-size high schools. Large-size high schools had the highest 4-year longitudinal graduation rates for students in poverty.

Concerning the 2013-2014 school year, a statistically significant difference was determined in the 4-year longitudinal graduation rates of students in poverty as a function of high school size as defined by [1], $F(2, 1071) = 42.24$, $p < .001$, $\eta^2 = .073$, a medium effect size [43]. Similar to the previous school year, students in poverty who were enrolled in Small-size high schools had statistically significantly lower 4-year longitudinal graduation rates than students in poverty who were enrolled in either Moderate-size or Large-size high schools. The 4-year longitudinal graduation rates were similar for Moderate-size and Large-size high schools with only a 1% difference. Descriptive statistics for the 2012-2013 and the 2013-2014 school years analyses based on the [1] high school size definition are presented in Table 4.

Table 4. *Descriptive Statistics for the 2012-2013 and the 2013-2014 4-year Longitudinal Graduation Rates for Students in Poverty as a Function of High School Size Using the Greeney and Slate Definition.*

School year / School Size Grouping	n of schools	M	SD
2012-2013			
Small (400 or less)	345	69.96	23.48
Moderate (401-1,499)	335	77.68	17.07
Large (1,500 or more)	355	79.86	11.22
2013-2014			
Small (400 or less)	360	70.07	25.49
Moderate (401-1,499)	347	80.56	15.12
Large (1,500 or more)	367	81.53	12.40

6.5. Research Question 5

Concerning 4-year longitudinal data in the 2012-2013 school year, student enrollment was analyzed using [2]. For the 2012-2013 school year, a statistically significant difference was revealed in the 4-year longitudinal graduation rates for students in poverty as a function of school size, $F(3, 1031) = 19.65$, $p < .001$, $\eta^2 = .054$, a small effect size [43]. Students in poverty who were enrolled in Small-size high schools had lower 4-year longitudinal graduation rates than students in poverty who were enrolled in either Moderate-size, Large-size, or Very Large-size high schools. Moderate-size and Very large-size high schools had similar graduation rates.

In regard to the 2013-2014 school year, a statistically significant difference was determined in the 4 year longitudinal graduation rates of students in poverty as a function of high school size, $F(3, 1070) = 28.27$, $p < .001$, $\eta^2 = .073$, a medium effect size [43]. Similar to the previous school year, students in poverty who were enrolled in Small-size high schools had statistically significantly lower 4-year

longitudinal graduation rates than students in poverty who were enrolled in either Moderate-size, Large-size, or Very Large-size high schools. The biggest difference yielded was between Small-size and Moderate-size high schools, with a mean difference of approximately 10% in 4-year longitudinal graduation rates. Readers are referred to Table 5 for the descriptive statistics for the 2012-2013 and the 2013-2014 school year analyses with respect to the [2] definition of high school size.

Table 5. Descriptive Statistics for the 2012-2013 and the 2013-2014 4-year Longitudinal Graduation Rates for Students in Poverty as a Function of High School Size Using the Perez and Slate Definition.

School Size Grouping	*n* of schools	*M*	*SD*
2012-2013			
Small (400 or less)	345	69.96	23.48
Moderate (401-1,499)	335	77.68	17.07
Large (1,500-2,499)	234	80.34	11.83
Very Large (2,500 or more)	121	78.91	9.93
2013-2014			
Small (400 or less)	360	70.07	25.49
Moderate (401-1,499)	347	80.56	15.12
Large (1,500-2,499)	245	81.95	12.55
Very Large (2,500 or more)	122	80.70	12.08

6.6. Research Question 6

Regarding the 4-year longitudinal graduation rates in the 2012-2013 school year, the following enrollment numbers were used for each high school grouping [3]. For the 2012-2013 school year, a statistically significant difference was revealed in the 4-year longitudinal graduation rates for students in poverty as a function of school size, $F(5, 1046) = 45.02$, $p < .001$, $\eta^2 = .177$, a large effect size [43]. Scheffe` post hoc procedures revealed that students enrolled in Very Small-size high schools had statistically significantly lower 4-year longitudinal graduation rates of students in poverty than any of the other school size groupings. Similarly, students who were enrolled in Small-size high schools had statistically significantly lower 4-year longitudinal graduation rates for students in poverty than high schools with more students enrolled. Of note was the magnitude of the difference, almost 40%, between the 4-year longitudinal graduation rates of students in poverty in Very small-size high schools and Very large-size high schools.

Concerning the 2013-2014 school year, a statistically significant difference was determined in the 4 year longitudinal graduation rates of students in poverty as a function of high school size, $F(5, 1088) = 48.63$, $p < .001$, $\eta^2 = .183$, a large effect size [43]. Scheffe` post hoc procedures revealed that students enrolled in Very Small-size high schools had statistically significantly lower 4-year longitudinal graduation rates of students in poverty than any of the other school size groupings. Large-size and Very large-size high schools had very similar 4-year longitudinal graduation rates. Presented in Table 6 are the descriptive statistics for the 2012-2013 and the 2013-204 analyses related to the [3] definition of high school size.

Table 6. Descriptive Statistics for the 2012-2013 and the 2013-2014 4-year Longitudinal Graduation Rates for Students in Poverty as a Function of High School Size Using the University Interscholastic League Definition.

School Size Grouping	*n* of schools	*M*	*SD*
2012-2013			
Very Small (25-104)	55	42.78	32.98
Small (105-219)	128	69.30	21.84
Moderate (220-464)	226	74.91	20.32
Medium (465-1069)	209	78.50	13.79
Large (1,070-2099)	218	78.50	16.37
Very Large (2,100 or more)	216	79.71	10.39
2013-2014			
Very Small (25-104)	63	44.95	34.74
Small (105-219)	132	68.69	25.05
Moderate (220-464)	235	76.31	21.21
Medium (465-1069)	212	80.83	12.73
Large (1,070-2099)	232	81.05	15.64
Very Large (2,100 or more)	220	81.52	11.27

7. Discussion

In this investigation, the extent to which graduation rates differed as a function of high school size for students in poverty was examined. Statewide Texas data were obtained from the Texas Academic Performance Reports for two school years (i.e., 2012-2013 and 2013-2014). Inferential statistical procedures were used to determine whether high school size was related to the graduation rates of students in poverty in Texas.

7.1. Summary of Results for Graduation Rates of Student in Poverty

Statistically significant differences in the graduation rates of students in poverty as a function of high school were evident based upon the results of the three sets of inferential analyses. These statistically significant differences were established in both school years as a function of high school size using the groupings as defined by [1], [2], and [3] for the graduation rates of enrolled students who were economically disadvantaged. Students in poverty who were enrolled in Small-size high schools had statistically significant lower graduation rates than students in poverty who were enrolled at either Moderate-size or Large-size high schools. The lower the student enrollment at a high school, the lower the graduation rates documented for students in poverty.

However, for both school years, Very small-size high schools had the lowest graduation rates for students in poverty using the classifications as defined by [3]. Graduation rates gradually increased as student enrollment increased; however, graduation rates decreased again once student enrollment was 2100 or more. Very large-size high schools also had similar graduation rates to the Medium-size high schools.

7.2. Connection to the Literature

For this analysis, the larger high schools in Texas were experiencing higher graduation rates for students in poverty. This result was similar to the results of previous researchers [44, 33]. In the previous literature, dropout rates were higher

at smaller high schools with lower dropout rates at the larger high schools. In respect to previous literature and the results of this investigation, results are congruent to each other. Smaller dropout rates in a larger high school means higher graduation rates. Overall, researchers [1, 2, 5] have discussed the effects of school size on various aspects of student success.

7.3. Implications and Recommendations for Policy and Practice

The larger size high schools in each of the three definitions of school size had statistically significantly higher average graduation rates than any of the smaller high school size groupings. Furthermore, when longitudinal graduation rates were examined, Very-small size high schools had the lowest graduation rates. Audits of economic status and other demographic characteristics are encouraged to determine the effectiveness of programs that support students in graduating high school. Larger high schools may have more resources and be able to offer programs and interventions that help students persist. Therefore, policymakers and educational leaders are encouraged to examine the possibility of having high schools, with larger student enrollments. Consolidation of smaller high schools should also be considered by policymakers and educational leaders. Furthermore, when making construction decisions for high schools that may serve a large population of students in poverty, larger high schools should be considered.

7.4. Recommendations for Future Research

In this investigation, the graduation rates of students in poverty were analyzed as a function of high school size, with respect to student enrollment. Aggregated graduation rate data, annual and longitudinal, were examined. Future researchers are encouraged to analyze the graduation rates of students by important demographic characteristics such as ethnicity/race, at-risk status, and English Language Learner designation. The graduation rates of students by demographic characteristics other than poverty may be influenced by high school size.

Researchers are also encouraged to investigate the relationship of high school size with other important accountability standards such percentages of passing state standards for testing and college readiness. The results in this study are not known to be generalizable to other academic outcomes. The state of interest in this research study was conducted only on high school students in Texas and should be replicated in other states to determine if similar results can be yielded.

8. Conclusion

The results of this investigation are consistent with the idea that larger size high schools are better for students [1, 2]. Graduation rates for students in poverty were statistically significantly higher in the larger size high schools. Although, all size groupings yielded statistically significant differences,

results yielded with the use of the classifications defined in [3] were more defined in the respect of student enrollment. Evident in this study high schools with more than 25 and less than 104 students really struggle with graduating students. Based on data and the analyses from this study, a discussion of consolidating current high schools and building larger high schools is validated. School leaders have advanced their thinking for demographic groupings when considering interventions for students. However, for school systems to increase the graduation rate of students in poverty, school leaders must continue to look for interventions, and the effects of school enrollment size must be considered when determining how to provide for these students.

References

[1]   Greeney, B., & Slate, J. R. (2012). School climate and high school size: A multi-year analysis of Hispanic students. *American Clearinghouse Education Facilities Journal, 2* (2), 27-45.

[2]   Perez, A., & Slate, J. R. (2015). Differences in Texas postsecondary enrollment as a function of high school size. *Journal of Global Research in Education and Social Science, 5* (1), 34-39.

[3]   University Interscholastic League. (2014). *2014-2015 and 2015-2016 Tentative Football and Basketball District Assignments and Reclassification Information*. Retrieved from http://www.uil.utexas.edu/?SPID=11349

[4]   Murnane, R. J., & Hoffman, S. L. (2013, Fall). Graduations on the rise. *Education Next, 13* (4), 58-65.

[5]   Fitzgerald, K., Gordon, T. V., Canty, A. L., Stitt, R. E., Onwuegbuzie, A. J., & Frels, R. K. (2012). Ethnic differences in completion rates as a function of school size in Texas high schools. *Journal of At-Risk Issues, 17* (2), 1-10.

[6]   Martin, P. J., & Robinson, S. G. (2011). Transforming the school counseling profession. In B. T. Erford (Ed.), *Transforming the school counseling profession* (3rd ed., pp. 1-18). Upper Saddle River, NJ: Pearson Education.

[7]   Bjerk, D. D. (2012). Re-examining the impact of dropping out on criminal and labor outcomes in early adulthood. *Economics of Education Review, 31*, 110-122. doi: 10.1016/j.econedurev.2011.09.003

[8]   Messacar, D., & Oreopoulos, P. (2013). Staying in school: A proposal for raising high-school graduation rates. *Issues in Science & Technology, 29* (2), 55-61.

[9]   Rumberger, R. W. (2011). *Dropping out: Why students drop out of high school and what can be done about it*. Cambridge, MA: Harvard University Press. doi: 10.4159/harvard.9780674063167

[10] Zachry, E. M. (2010). Who needs a second chance? The challenge of documenting K-12 dropout and why adult educators should be concerned. *Adult Basic Education & Literacy Journal*, 4 (2), 75-85.

[11] Cataldi, E. F., Laird, J., & Kewal Ramani, A. (2009). *High school dropout and completion rates in the United States*. Washington, DC: National Center for Education Statistics. Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2009064

[12] Holzer, H. J. (1996). *What employers want: Job prospects for less-educated workers*. New York, NY: Russell Sage Foundation.

[13] McDaniel, M., & Kuehn, D. (2013). What does a high school diploma get you? Employment, race, and the transition to adulthood. *The Review of Black Political Economy, 40*, 371-399.

[14] Burrus, J., & Roberts, R. D. (2012). Dropping out of high school: Prevalence, risk factors and remediation strategies. *R & D Connections, 18*, 1-9. Retrieved from http://www.ets.org

[15] Nadirova, A., & Burger, J. (2014). Assessing student orientation to school to address low achievement and dropping out. *Alberta Journal of Educational Research, 60*, 300-321.

[16] National Center for Education Statistics. (2015). *Public high school graduation rates*. Retrieved from http://nces.ed.gov/programs/coe/indicator_coi.asp

[17] Elliott, W. (2013). The effects of economic instability on children's educational outcomes. *Children & Youth Services Review, 35*, 461-471. doi: 10.1016/j.childyouth.2012.12.017

[18] Palardy, G. J. (2013). High school socioeconomic segregation and student attainment. *American Educational Research Journal, 50*, 714-754. doi: 10.3102/0002831213481240

[19] Wodtke, G. T., Harding, D. J., & Elwert, F. (2011). Neighborhood effects in temporal perspective: The impact of long-term exposure to concentrated disadvantage on high school graduation. *American Sociological Review, 76*, 713-736. doi: 10.1177/0003122411420816

[20] Burchinal, M. R., Roberts, J. E., Zeisel, S. A., & Rowley, S. J. (2008). Social risk and protective factors for African American children's academic achievement and adjustment during the transition to middle school. *Developmental Psychology, 44*, 286-292. doi: 10.1037/0012-1649.44.1.286

[21] Herbers, J. E., Cutuli, J. J., Supkoff, L. M., Heistad, D., Chan, C., Hinz, E., & Masten, A. S. (2012). Early reading skills and academic achievement trajectories of students facing poverty, homelessness, and high residential mobility. *Educational Researcher, 41*, 366-374. doi: 10.3102/0013189X12445320

[22] Brunn-Bevel, R. J., & Byrd, W. C. (2015). The foundation of racial disparities in the standardized testing era. *Humanity & Society, 39*, 419-448. doi: 10.1177/0160597615603750

[23] Entwisle, D. R., & Alexander, K. L. (1993). Entry into school: The beginning school transition and educational stratification in the United States. *Annual Review of Sociology, 14*, 249-268.

[24] Magnuson, K., & Waldfogel, J. (Eds.). (2008). *Steady gains and stalled progress: Inequality and the Black-White test score gap*. New York, NY: Russell Sage Foundation.

[25] Huntington, N., Buckner, J. C., & Bassuk, E. L. (2008). Adaptation in homeless children: An empirical examination using cluster analyses. *American Behavioral Scientist, 51*, 737-755. doi: 10.1177/0002764207311985

[26] Obradovic´, J., Long, J. D., Cutuli, J. J., Chan, C.-K., Hinz, E., Heistad, D., & Masten, A. S. (2009). Academic achievement of homeless and highly mobile children in an urban school district: Longitudinal evidence on risk, growth, and resilience. *Development and Psychopathology, 21*, 493-518. doi: 10.1017/S0954579409000273

[27] Arnold, D. H., & Doctoroff, G. L. (2003). The early education of socioeconomically disadvantaged children. *Annual Review of Psychology, 54*, 517–545. doi: 10.1146/annurev.psych.54.111301.145442

[28] Bryk, A. (2010). Organizing schools for improvement. *Phi Delta Kappan, 91* (7), 23-30.

[29] Kuo, V. (2010). Transforming American high schools: Possibilities for the next phase of high school reform. *Peabody Journal of Education, 85*, 389-401. doi: 10.1080/0161956X.2010.491709

[30] Weiss, C. C., Carolan, B. V., & Baker-Smith, E. C. (2010). Big school, small school: (Re) testing assumptions about high school size, school engagement, and mathematics achievement. *Journal of Youth Adolescence, 39,* 163-176. doi: 10.1007/s10964-009-9402-3

[31] Lee, V. E., & Smith, J. B. (1997). High school size: Which works best and for whom? *Educational Evaluation and Policy Analysis, 19*, 205-227. doi: 10.3102/01623737019003205

[32] Slate, J. R., & Jones, C. H. (2008). Secondary school size and gender differences in the state of Texas. *Essays in Education, 23*, 159-176.

[33] Rios, Y. J., Slate, J. R., Moore, G. W., & Martinez-Garcia, C. (2016). Dropout rate differences by high school size for Texas Hispanic students: A multiyear, statewide analysis. *Progress in Education, Volume 39*. Hauppauge, NY: Nova Publishers.

[34] National Center for Education Statistics. (2011). *The nation's report card. Grade eight national results*. Retrieved from http://nationsreportcard.gov/reading_2011/ nat_g8.asp?

[35] Werblow, J., & Duesbery, L. (2009). The impact of high school size on math achievement and dropout rate. *The High School Journal, 92* (3), 14-23. doi: 10.1353/hsj.0.0022

[36] Carolan, B. V. (2012). An examination of the relationship among high school size, social capital, and adolescents' mathematics achievement. *Journal of Research on Adolescence, 22*, 583-595.

[37] Moore, R., Combs, J. P., & Slate, J. R. (2014a). Black student college readiness and high school size: A Texas, multiyear analysis. *Journal of Global Research in Education and Social Science, 3* (2), 85-95

[38] Moore, R., Combs, J. P., & Slate, J. R. (2014b). High school size and White student college readiness: A statewide, multiyear analysis. *NCPEA Education Leadership Review of Doctoral Research, 1* (1), 142-156. Retrieved from http://www.ncpeapublications.org/volume-1-number-1.html

[39] Moore, R., Combs, J. P., & Slate, J. R. (2014c). High school size and Hispanic student college readiness: A Texas, multiyear analysis. In R. V. Nata (Ed.), *Progress in Education, Volume 37* (pp. 73-92). Hauppauge, NY: Nova Publishers.

[40] Johnson, R. B., & Christensen, L. (2014). *Educational research: Quantitative, qualitative, and mixed approaches* (5th ed.). Los Angeles, CA: Sage.

[41] Texas Education Agency. (2015). *Glossary for the Texas Academic Performance Report*. Retrieved from https://rptsvr1.tea.texas.gov/perfreport/tapr/2015/glossary.pdf

[42] Onwuegbuzie, A. J., & Daniel, L. G. (2002). Uses and misuses of the correlation coefficient. *Research in the Schools, 9* (1), 73-90.

[43] Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.

[44] Ambrose, A. R., Slate, J. R., & Moore, G. W. (2016). Differences in high school dropout rates by school size for students in poverty. *International Research Journal for Quality in Education, 3* (3), 1-6.