An Analysis of Performance Among Economically Disadvantaged Students in Texas High Schools: Has the High School Allotment Bill Made a Difference?

By

Julie Finlay
Richard Howard
Anthony Washington

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Summary

This study analyzed whether the Texas High School Allotment Bill (2006), which allocates funding to districts to combat the dropout rate and increase college readiness, is reaching its goals. Statistical analysis of limited data from the Texas Academic Excellence Indicator System (AEIS) suggests that while the rates for both variables have changed since the Bill's implementation, it is too early to suggest whether or not the Bill is having a positive effect among the population most prone to dropout — economically disadvantaged students. Ongoing research of the trends using data from a larger population of students could offer insight into the effectiveness of government-funded initiatives to increase student engagement and lower dropout rates among at-risk student populations in Texas general education high schools.

Introduction

Despite the fact that the National Center for Education Statistics (NCES, 2009) has reported a steady decrease in the dropout rate over the last forty years, some schools, especially in large cities like San Antonio, continue to struggle with high dropout rates. The issue causes concern because decades of research have linked dropouts with decreased earning potential and fewer employment opportunities on an individual level, as well as increased crime and a strain on welfare programs on a societal level (Gage, 1990; Martin, Tobin, & Sugai, 2002). In recent years, school districts have taken a more active role in the dropout problem because of the No Child Left Behind Act (NCLB) of 2001, which requires states to report dropout rates as an accountability measure. Schools that are unable to show yearly improvement in this metric receive intervention, and funding can be affected.

Many dropout intervention programs specifically address economically disadvantaged students (Balfanz et al, 2009). The What Works Clearinghouse (2008a) identified 16 dropout interventions, nine of which specifically target economically disadvantaged students. Research has led education leaders to explore programs that promote deeper engagement in school as a dropout intervention (Ma, 2003), but programs such as these require funding. That is likely one reason behind the Texas H. Res. 1 (2006), also known as the High School Allotment Bill. With this Bill, each Texas school district received $275 multiplied by the number of high school students in average daily attendance, to fund various engagement initiatives designed to increase college readiness and reduce dropout rates. Each school can determine the specific initiatives, but showing improvement remains standard for every district, and reducing dropout rates is one focus. The question is: Do government-funded initiatives like this produce intended results? Taxpayers want to know if the money is being well spent.

Purpose

The purpose of this study is to explore the possible effect of a government-funded initiative (namely, the High School Allotment legislation) on accountability measures reported for the San Antonio Northside Independent School District (NISD). Specifically we explored the trends among economically disadvantaged students, which research suggests are most prone to dropping out. We analyzed 1) whether the dropout rate among economically disadvantaged students decreased since the Bill's implementation, and 2) whether enrollment in advanced courses (a sign of greater engagement) increased since the Bill. We also explored the possible correlation between the two variables.

Context and Literature Review

Because socioeconomic status is captured in detail by government agencies and is widely available for analysis, researchers have spent many years correlating it with dropout rates. Their results have suggested that economically disadvantaged students are more prone to drop out (Fischer & Kmec, 2004; Rumberger, 1987). Because of the growing body of evidence that suggests a connection, many state government-funded intervention programs target the economically disadvantaged category of dropouts.

The latest government-funded intervention that addresses the dropout rate is NCLB, which aims to close the achievement gap among U.S. high schools. Standards-based education reform like NCLB set standards and requires reportable measurable goals to improve outcomes, which should leave subjectivity out of the accountability equation. However NCLB's implementation did not include national standards; rather, each state measures improvement differently, making improvement comparisons difficult. Critics also argue that NCLB's

accountability goals are set unrealistically high (Murnane, 2007), and intervention initiatives have been consistently underfunded (Thomas & Brady, 2005).

Long before NCLB, McDill et al (1986) raised the issue of higher standards in dropout prevention programs. Their analysis suggested that higher standards make students in general work harder, but may have negative consequences for lower-achieving students. On the positive side, non-experimental studies have suggested that state policy can reduce the dropout rate indirectly through changes in school structure (Fitzpatrick & Yoels, 1992). In this study the authors used a large data set to increase generalizability (McEwan & McEwan, 2003) of their conclusion: that districts trying to reduce dropout rates should focus on the interplay between school structure and sociodemographic composition. However the data analyzed was more than ten years old at the time the article was written. Socioeconomic conditions could have changed dramatically over that time period, which could be considered a threat to internal validity (Fraenkel & Wallen, 2003).

Critics of national dropout prevention programs have suggested government-funded incentives on narrower levels as an alternative to national standards. The WWC (2008b) evaluated one such state program in Ohio called Learning, Earning, and Parenting (LEAP), which offers financial bonuses to economically disadvantaged teen parents to stay in school. An effectiveness study on LEAP concluded that teens in the program dropped out at lower rates than control groups. On the individual level, Richmond (1990) envisioned individual incentive programs that tie individual performance in school to real economic consequences — good and bad. He proposed that individual level incentives would make the greatest impression on students and, subsequently, could lower the dropout rate more dramatically.

As accountability remains center stage, we will likely see more government-funded initiatives to try to lower the dropout rate among economically disadvantaged students. This report should be considered additional evidence to add to that body of research.

Research Questions

This study analyzed the hypothesis that the Texas High School Allotment Bill should yield a decrease in the dropout rate for economically disadvantaged students and an increase in the completion rate of Advanced Course/Dual Enrollment (ACDE) for the same cohort. The study asked three basic research questions. First, is there is any difference in the mean dropout rate of economically disadvantaged students in NISD general education high schools between the 2006 school year when the Bill was enacted and the 2007 school year? Second, is there any difference in the mean Advanced Course/Dual Enrollment (ACDE) completion rate for economically disadvantaged students in NISD general education high schools in those same years? Third, is there a relationship between the dropout rate and the ACDE completion rate of economically disadvantaged students in NISD general high schools for the 2007 school year?

Methods

This study compares data gathered from the Academic Excellence Indicator System (AEIS) on seven general education high schools in NISD: Holmes, Jay, Marshall, Clark, Taft, O'Connor, and Warren (n=7). It should be noted that there are actually eight high schools in the NISD, but data was incomplete for one of those schools, so it was dropped from the analysis. Analysis of these questions included calculation of the mean and standard deviation of the data sets, then two t-tests assuming unequal variables to compare variances and determine statistical significance. And finally a correlation test was used to determine if there is any relationship

between the two variables (Carroll & Carroll, 2002). All tests were computed using Microsoft Excel software, and the stated alpha level of $p<.05$.

Table 1 lists the variables used in this analysis. The independent variable used in the two t-tests is a nominal variable (Carroll & Carroll, 2002), school year, with two categories, 2006 and 2007. The dependent variables used were Dropout Rate — Economically Disadvantaged Students and the ACDE Completion Rate — Economically Disadvantaged Students.

The dependent variable Dropout rate — Economically Disadvantaged Students is a ratio variable (Carroll & Carroll, 2002), defined by the AEIS (2007) as a comparison of students as freshmen and as senior graduates. It is calculated as a percentage of students who dropped out and did not return to school before fall of their senior year, as compared with the cohort of students from three years prior. The percentage is calculated by dividing the number of students from the cohort who dropped out by the number of students in the cohort. The Economically Disadvantaged category is a subset of the Dropout rate measure. This statistic was chosen because it is used for the NCLB accountability rating. The variable used in this analysis should not be confused with the Annual Dropout Rate, which compares year-over-year dropout figures and is not used in determining accountability ratings (AEIS, 2007).

The dependent variable ACDE Completion Rate — Economically Disadvantaged Students is a ratio variable (Carroll & Carroll, 2002), expressed as a percentage based on the number of students receiving credit for one or more advanced or dual enrollment courses in the school year, divided by the number of students who completed one or more courses in that same school year (AEIS, 2007). The Economically Disadvantaged category is a subset of this measure. This variable was chosen because some educational leaders have proposed that greater student engagement through special programs may help increase self esteem and lower dropout rates.

Enrollment in and completion of an advanced course or dual enrollment course can be considered an indicator of greater student engagement.

Variable	Type	Sample Size
Dropout Rate — Economically Disadvantaged Students	Ratio	7
ACDE Completion Rate — Economically Disadvantaged Students	Ratio	7

Table 1. *Variable descriptions*

Findings

The null hypothesis for the first test states that there is no difference in the mean dropout rate of economically disadvantaged students for the NISD general education high schools between the 2006 and 2007 school years. A t-Test: two-sample assuming unequal variances resulted in no significant difference, $t(12)=0.25$, $p>.05$, between the two school years, therefore the test failed to reject the null hypothesis (Table 2). For a graphical representation of the means of the dropout rates, see Figure 1. The formula used by AEIS to determine the dropout rate variable did not include data errors or students who left school based on specific leaver codes. This presents threats to the internal validity of this study (McEwan & McEwan, 2003).

Dropout Rate	Mean	(SD)	*t* Value	*df*	P
2006 school year	7.44	3.98	-0.71	12	0.25
2007 school year	9.01	4.29			

p = 0.25

Table 2. *t-Test results show no significant difference in dropout rate among economically disadvantaged students in the NISD for the 2006 and 2007 school years.*

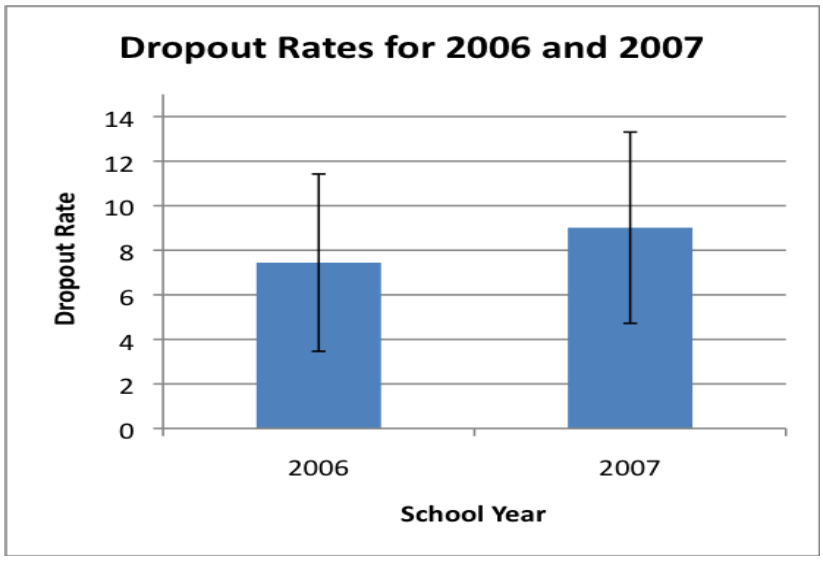

Figure 1. *Comparison of the mean dropout rates among economically disadvantaged students in the NISD general education high schools for the 2006 and 2007 school years.*

The null hypothesis for the second test states that there is no difference in the mean ACDE completion rate of economically disadvantaged students for the NISD general education high schools between the 2006 and 2007 school years. A t-Test: two-sample assuming unequal variances resulted in no significant difference, $t(11)=0.12$, $p>.05$, between the two school years, therefore the second test also failed to reject the null hypothesis (Table 3). For a graphical representation of the means of the ACDE completion rate, see Figure 2.

ACDE Completion Rate	**Mean**	**(SD)**	***t* Value**	***df***	**P**
2006 school year	14.06	2.45	-1.21	11	0.12
2007 school year	16.06	3.59			

p = 0.12

Table 3. *t-Test results show no significant difference in the ACDE completion rate among economically disadvantaged students in the NISD for the 2006 and 2007 school years.*

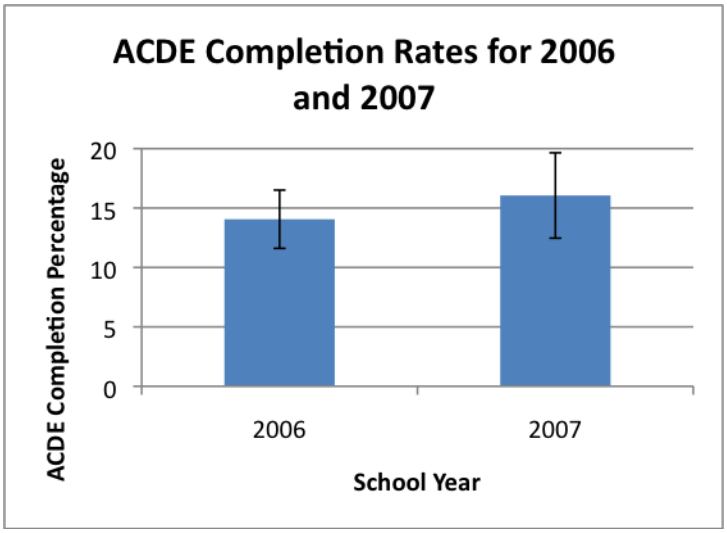

Figure 2. *Comparison of the mean ACDE completion rates among economically disadvantaged students in the NISD general education high schools for the 2006 and 2007 school years.*

The null hypothesis for the third test states that there is no relationship between the dropout rate and the ACDE completion rate of economically disadvantaged students in NISD general high schools for the 2007 school year. Results of a Pearson correlation test with an alpha level of .05 indicated a weak correlation (r=.42) (Table 2). For a scattergram of the correlation between these variables, see Figure 3.

	Dropout Rate 2007	**ACDE Completion Rate 2007**
Dropout Rate	1	
ACDE Completion	0.422528	1

r=0.422

Table 4. *Correlation test results show a weak correlation between the dropout rate and ACDE completion rate among economically disadvantaged students in the NISD general education high schools for the 2007 school year.*

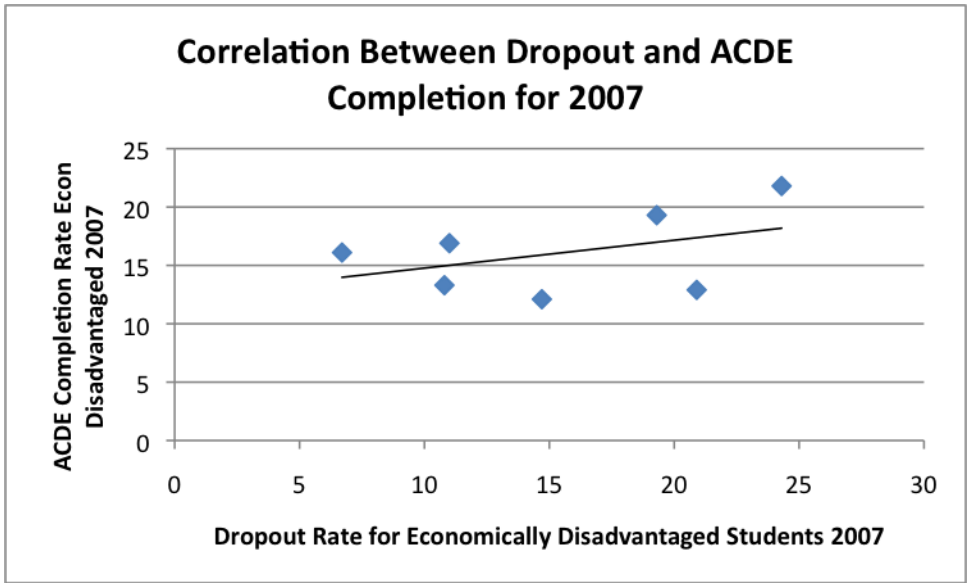

Figure 3. *Scattergram showing weak correlation between the dropout rate and the ACDE completion rate of economically disadvantaged students in NISD for school year 2007.*

Discussion

While there was a difference in the mean dropout rate (an increase) and a difference between ACDE completion rate (an increase) among economically disadvantaged students for the NISD between 2006 and 2007, the data analysis indicates no statistically significant differences. Additionally there was a weak correlation between the high school dropout rate and ACDE completion rate. It should be noted that the formula AEIS used to determine the dropout rate variable did not include data errors or students who left school based on specific leaver codes — the codes that allow students to leave school without being considered dropouts (AEIS, 2007). This presents a threat to internal validity (McEwan & McEwan, 2003) for this study, as does the low power: analysis of just one school district's data as opposed to several or all school districts in Texas that receive funding from the High School Allotment Bill.

The Texas Legislature passed the High School Allotment Bill in 2006, so the full impact of the intervention will likely take longer to gauge. However, this study attempts to identify if

there has been any noticeable impact in the short time since its passage. Because the data is so recent, the external validity of this research is significantly weak and should not be used by administrators to justify the intervention. This study is an initial analysis. The full impact of the High School Allotment Bill will likely require more than one year of implementation. More research should be forthcoming to determine the overall effect.

Conclusion and Recommendations

The essential question this study asked is whether or not implementation of the High School Allotment Bill has succeeded in lowering dropout rates, while simultaneously improving college readiness through increased completion rates for advanced classes and dual enrollment. According to the results of the data analyzed in this study, dropout levels actually increased, potentially refuting half of the original hypothesis.

Supporters of individual incentive interventions for students may jump to the conclusion that the Bill is not achieving its stated goals. However, the program has been active for only a short time, and other variables such as family issues (history), the current economic crisis, or students moving to different areas could be contributing to the dropout rate. Additionally, because the Bill allows districts and schools to choose how they spend the funding, there are no reliable standards by which to compare success.

To gauge impact of the Bill, this study's authors recommend that 1) research and data analysis be conducted on this intervention annually for the duration of the Bill's implementation, 2) future analysis compare more at-risk subgroups of the economically disadvantaged category, 3) research be expanded to include qualitative methods, and 4) data be analyzed from multiple (if not all) school districts affected by the Bill. This recommended non-experimental study should provide a more reliable answer whether money is being well spent on this intervention.

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Appendix

The statistical analysis in this study used the following data sets:

Null Hypothesis #1: There is no difference between the mean of the dropout rate of economically disadvantaged students for the NISD general education high schools between the 2006 school year and the 2007 school year.

t-Test 1 Data:

ID	Campus	DO 2006	DO 2007
1	Holmes	14.9	14.2
2	Jay	10.3	15
3	Marshall	5	6.4
4	Clark	7.6	7.4
5	Taft	6	9.7
6	O'Connor	3.3	3.1
7	Warren	5	7.3
Mean		7.442857	9.014286
Stdev		3.978633	4.292407

p-value of 0.05

t-Test 1 Computation: Two-Sample Assuming Unequal Variances

	Variable 1	Variable 2
Mean	7.442857143	9.014285714
Variance	15.82952381	18.4247619
Observations	7	7
Hypothesized Mean Difference	0	
df	12	
t Stat	-0.710372609	
P(T<=t) one-tail	0.24552439	
t Critical one-tail	1.782287548	
P(T<=t) two-tail	0.49104878	
t Critical two-tail	2.178812827	

Null hypothesis #2: There is no difference between the mean of the ACDE completion rate of economically disadvantaged students for the NISD general education high schools between the 2006 school year and the 2007 school year.

t-Test 2 Data

ID	Campus	ACDE2006	ACDE2007
1	Holmes	11.4	12.1
2	Jay	16.7	19.3
3	Marshall	10.2	13.3
4	Clark	14.9	21.8
5	Taft	16.5	12.9
6	O'Connor	14	16.1
7	Warren	14.7	16.9
Mean		14.05714	16.05714
Stdev		2.450073	3.592519

p-value of 0.05

t-Test: Two-Sample Assuming Unequal Variances

	Variable 1	Variable 2
Mean	14.05714286	16.05714286
Variance	6.002857143	12.90619048
Observations	7	7
Hypothesized Mean Difference	0	
df	11	
t Stat	-1.21687001	
P(T<=t) one-tail	0.12455889	
t Critical one-tail	1.795884814	
P(T<=t) two-tail	0.24911778	
t Critical two-tail	2.200985159	

Null Hypothesis #3: There is no relationship between the dropout rate and the ACDE completion rate of economically disadvantaged students in NISD general high schools for the 2007 school year.

Correlation Test Data: There is no relationship between the dropout rate and the ACDE completion rate of economically disadvantaged students in NISD general high schools for the 2007 school year.

ID	Campus	DO Rate 07	ACDE 07
1	Holmes	14.7	12.1
2	Jay	19.3	19.3
3	Marshall	10.8	13.3
4	Clark	24.3	21.8
5	Taft	20.9	12.9
6	O'Connor	6.7	16.1
7	Warren	11	16.9

p-value of 0.05

Assignment 3, Part 1

Purpose for the study
The purpose of this study is to determine if the mean dropout rate and advanced course enrollment rate among economically disadvantaged students in the San Antonio's Northside School District (NISD) general education high school populations changed since the enactment of the High School Allotment Bill of 2006.

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Research question(s) and proposed computational tests

- Has the dropout rate decreased among economically disadvantaged in San Antonio's Northside ISD from 2006 to 2007? (t-test)
- Has the rate of enrollment in advanced courses among the same cohort increased in San Antonio's Northside ISD from 2006 to 2007 (t-test)
- Is there a relationship between the dropout and advanced course enrollment rates (correlation)?

Null hypotheses

- There is no difference in the mean dropout rate of economically disadvantaged students for NISD General Education High Schools (9-12) between the 2006 school year and the 2007 school year.

- There is no difference in Advanced Course/Dual Enrollment Completion *(found under the College Readiness Indicators subsection)* rates of economically disadvantaged students for NISD General Education High Schools (9-12) between the 2006 school year and the 2007 school year.

- There is no relationship between the dropout rate and ACDE completion rate of economically disadvantaged students for NISD General Education High Schools (9-12) in the 2007 school year.

A description of the sample : High schools in the NISD
AEIS variables: Dropout rates, Advanced course/dual enrollment completion rates