



# **The ABCD's of Texas Education: Assessing the **B**enefits and **C**osts of Reducing the **D**ropout Rate**

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## Executive Summary

The dropout rate can be calculated in numerous different ways, causing confusion among policy makers and analysts. For example, according to the plaintiffs in recent school finance litigation in Texas, “more than half of the Hispanic ninth-graders and approximately 46 percent of the African-American ninth-graders leave the system before they reach the twelfth grade” (Neeley v. West Orange-Cove Consolidated I.S.D., 2005). However, according to the Texas Education Agency, the annual dropout rate in Texas is less than four percent for all students, and less than six percent for Hispanic and African American students. Meanwhile, the National Center for Education Statistics (NCES) estimated that averaged freshman graduation rate (AFGR) for Texas was above the national average at approximately 76.6 percent for the 2003-04 school year (Laird et al. 2007), but average freshman graduation rates were below the national average in El Paso (60.5 percent), Austin (58.2 percent), Fort Worth (55.5 percent), Houston (54.6 percent), San Antonio (51.9 percent), and Dallas (44.4 percent) (Swanson 2008).

A high dropout rate could potentially have significant and long-term effects on the economic well being of the state and its ability to address public needs. Each year, the federal Congress and state legislatures spend millions of dollars trying to correct the perceived dropout problem.

Our client, the United Ways of Texas, has a strong interest in education and its impact on the future of the state. For several years this organization has promoted policy-driven solutions in the area of education as a part of a larger initiative. The United Ways of Texas asked us, the research team, to investigate and provide results and recommendations concerning the dropout rate and its impact within the state. We were provided with an outline of the necessary information that needed to be analyzed to assess the dropout problem in Texas.

1. Identify how to best measure the dropout rate
2. Quantify the dropout rate for the state
3. Estimate the dropout rate’s economic impact on the state of Texas
4. Review available research regarding dropout prevention programs in order to identify best practices

In the first phase, we provide an analysis of the high school dropout rate in Texas. This analysis examines how the term *dropout* and corresponding indicators are defined, and the different theoretical ways in which dropout rates are calculated. The definition of a *dropout* is the basic concept on which all dropout rates are based. However, even this central definition is not agreed upon universally. Texas currently uses the definition provided by The National Center for Education Statistics (NCES). NCES defines a *dropout* as, “a student who is enrolled in public school in Grades 7-12, does not return to public school the following fall, is not expelled, and does not graduate, receive a GED, continue school outside the public school system, begin college, or die” (Texas Education Agency, 2008).

Using this definition, there are three main ways to calculate a dropout rate. All the rates have their pros and cons, depending on the situation in which they are being used. However, problems arise when the wrong rate is used to describe the wrong situation. For this reason, it is important to understand the differences in the rates, the definition of each, how they should be

used, and the advantages and disadvantages associated with each one. The chart below describes the different types of rates, how they are calculated, and their relative values.

**Table 1: Rate Comparison**

	Event Dropout Rate	Status Rates	Averaged Freshman Rate
Numerator	Total dropped out during one year	Total # of dropouts	# of graduates in year 5
Denominator	Total students enrolled in one year	Total students enrolled	Average of years 1, 2 and 3
Relative Value	Yields smallest rate	Yields largest rate	Yields a large rate
Data Used	Yearly dropout rate of students (percentage)	CPS & Census Longitudinal student-level data	Percent of freshman class

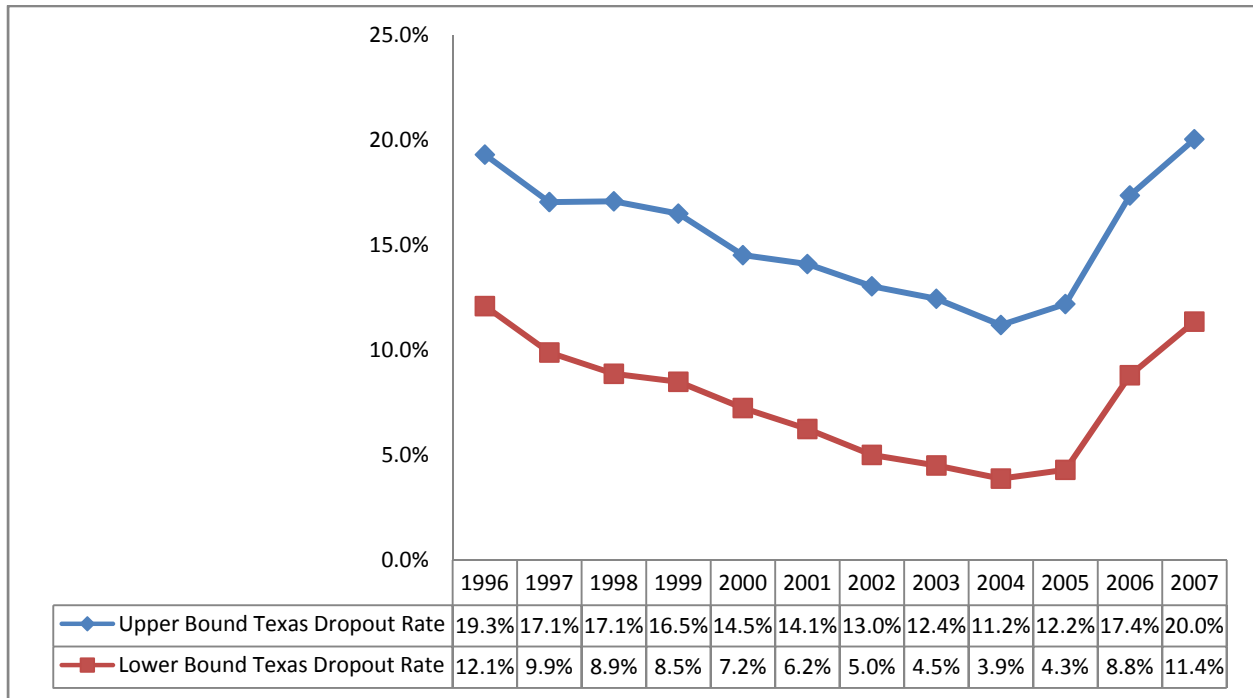
A longitudinal status rate is the most appropriate for determining the economic impact because it uses four year, longitudinal data. An event dropout rate cannot be used to calculate the economic impact of a dropout because this rate only captures dropouts for one year, and misses those within a cohort who previously dropped out. The averaged freshman graduation rate is typically used to estimate the dropout rate when longitudinal data is not available, and consequently the average freshmen dropout rate is not as accurate as the longitudinal status dropout rate.

In phase two, the team used state data within the constraints of availability, and determined a range of dropouts within the state, depicting the dropout conditions in Texas. The team then provided a descriptive analysis of the Texas high school dropout rate, based on indicators suggested in the literature, such as region, school district, and demographic characteristics. Wherever possible we analyzed the data at the state and school district levels, as well as for Texas House and Senate districts. (The Texas House and Senate district analyses are located in the appendices accompanying this report.)

The team looked at the dropout rate in two ways. First, the team considered all who did not graduate as dropouts. We consider this the upper bound dropout rate. It is based on the assumption that all students continuing in school will eventually drop out.

Second, the team looked only at students formally categorized as dropouts, or our lower bound dropout rate. For this calculation, the team made the assumption that all groups other than dropouts will eventually graduate.

**Figure 1: Upper and Lower Bound 9-12 Dropout Rate, State Level**



*Texas Education Agency and authors' calculations*

We projected upper and lower bound dropout rates for the class of 2012, assuming that every ethnic subpopulation would drop out at the same rate as their corresponding subpopulation from the class of 2007. We found that if nothing changes between now and their graduation, the class of 2012 would have a dropout rate between 12.2 and 22.2 percent, or 40,519 and 73,692 students. Both Hispanic and African American populations show the highest dropout projections. The number of Hispanic dropouts will be nearly three times greater than the number of dropouts for any other ethnicity by 2012.

In the third phase, we built on the previous phase's analysis by examining the economic implications of the dropout rate for the state of Texas. These implications are striking and worrisome. Compared with high school graduates, dropouts are less likely to be employed, earn less when they are employed, pay less in taxes, receive more in direct welfare payments, and are more likely to be incarcerated.

To estimate the differences between those who drop out of high school and those who attain a high school diploma, we conducted separate analyses using data from the 2000 Census for each of the following:

- **Probability of employment:** We used an individual's response to the employment status question from the census to create an indicator variable representing the probability of employment.

- Total hours: Based off an individual’s responses to the approximate number of weeks they work in a year and the approximate number of hours they worked per week, we generated the total number of hours worked annually per individual.
- Hourly wage: This is the person’s annual wage and salary income, divided by their total hours.
- Welfare received: This variable represents the amount in welfare an individual reported receiving annually.

Using these estimates, we calculated the cost per Texas dropout in lost wages, sales tax revenue, and welfare payments. Table 2 shows the negative impact on the Texas gross state product due to the loss in potential earned wages.

**Table 2: Potential Loss of Earned Income by Race and Ethnicity**

Race/Ethnicity	One Dropout’s Annual Loss	Lower Bound Present Value	Upper Bound Present Value
Whites	\$4,253	\$735 million	\$1,378 million
Blacks	\$5,293	\$1,145 million	\$1,915 million
Hispanics	\$4,747	\$3,046 million	\$5,626 million
All Others	\$3,805	\$52 million	\$109 million
Total	\$4,935*	\$4,978 million	\$9,028 million

*Texas Education Agency, Integrated Public Use Microdata and authors’ calculations;*

*\*Weighted average of annual loss of potential earned income from one dropout; Numbers in 2009 dollars and based off the predicted number of dropouts from the class of 2012.*

We also researched the effects of dropouts on crime and the associated costs. We then applied these predictions to the projected number of dropouts for the class of 2012.

According to the Texas Education Agency, the cost to educate one student each year is approximately \$7,900. This means it would cost the state between \$625 million and \$1.14 billion, assuming the potential dropouts would require on average two more years of schooling to graduate. Even after taking this number into account, the negative economic impact is still predicted to be a final loss between \$5.4 billion and \$9.6 billion. Therefore, with the state of Texas losing this vast amount from only one cohort, it is essential that policy makers begin making this issue a priority in an attempt to reverse the current trends and their implications on the Texas economy. Table 3 shows a detailed breakdown of the economic impact of the projected dropouts from the class of 2012.



**Table 3: Money Saved By Educating Predicted Dropouts Through Graduation**

	Lower Bound	Upper Bound
Present Value of Potential Earned Income	\$4,978 million	\$9,028 million
Present Value of Decreased Welfare Costs	\$405 million	\$736 million
Present Value of Decreased Incarceration/Crime Costs	\$595 million	\$1,014 million
Present Value of Cost to Educate Dropouts	-\$625 million	-\$1,137 million
Total	\$5,353 million	\$9,641 million

In the final phase of the analysis, the team thoroughly examined how others seek to address the problems highlighted in the previous three phases. We analyzed the available evidence of program efficacy to identify best practices and gaps in the current research models.

We conducted a literature review, critically evaluating available information on current dropout prevention programs. This analysis identified best practices for reducing the number of high school dropouts. The team looked at an assortment of programs, including Communities In Schools, Abriendo Puertas, GEAR UP, and other prevention and intervention programs implemented at various age levels. The literature review and political feasibility drove the selection process. We selected programs that serve as common, popular, or widespread models. A brief excerpt of our analyses is below:

- **Communities In Schools:**  
CIS of Texas has the potential to be a flagship dropout prevention program for the state, given its strong national reputation. The evidence suggests that program structure keeps students in school and meets at-risk students' needs. A potential concern is a lack of checks and balances to ensure that each affiliate is accurately implementing the CIS model. A multiyear longitudinal study needs to be financed to be more convincing, and prove the validity of the CIS program. Despite the need for further research, we feel that Texas should explore expanding funding to CIS Texas.
- **The National Guard's Youth ChalleNGe:**  
A unique aspect of Youth ChalleNGe is its targeting of dropouts and expelled students, as opposed to students labeled at-risk and still in school. However, the lack of performance measurements and absence of comparison to other military-style programs leaves limited ability to judge its effectiveness. Evaluative studies suggest the National Guard needs to develop performance measurements before any substantive efficacy evidence will be available. Given its self-selected population and ultimate recruitment goals, this program may not be a viable option for the state of Texas.

- **Check and Connect:**

This program does not currently operate in Texas; however, efficiency studies provide strong evidence of its effectiveness in its operational areas. It is one of few programs that have been evaluated multiple times, mostly over periods of several years. Each evaluation shows positive performance in at least one area of dropout prevention. Given Check and Connect's success, Texas should consider implementing the program as part of its overall dropout prevention strategy.

- **GEAR UP:**

The specific aim of GEAR UP is not dropout prevention but creating a viable pipeline to college in populations/schools where such a pipeline does not exist or is not effectively serving its student populations. GEAR UP's efforts to create a college going culture and mindset were shown to be effective; however proper academic achievement is the result of quality instruction and academic resources. The supplemental resources provided by the GEAR UP program cannot supplant this. An interview with Austin ISD revealed that GEAR UP is expensive to facilitate as it relates to staffing, especially with the cohort format utilized, and the program is very time consuming due to the case management approach.

- **Abriendo Puertas:**

While the research model for this program has strong evidence of effectiveness in health related fields, no evidentiary basis exists on which to recommend funding.

Unfortunately, Abriendo Puertas has had no evaluation conducted to determine whether or not it is an effective approach for education related topics such as dropout prevention. It sounds like the program should be effective; however, Abriendo Puertas needs to engage in preliminary program evaluation.

Literature suggests the most effective prevention strategies are those based on early intervention. Early intervention is based on the notion that intervention strategies taken at the first indication of being at risk of dropping out are more effective at preventing dropouts than waiting until students reach high school. However, researchers concluded that no one risk factor can predict with certainty whether or not a student will drop out, making dropout prevention/intervention programs in many cases, experimental. Multiple attempts have been made to define and clarify best practices for dropout prevention and standards of evidence for program efficacy. Despite noble efforts to conduct evaluative research, limited evidence of effectiveness is available to decision makers and stakeholders.

This project was not intended as a definitive solution, but an informative tool for policy makers, legislators and other key stakeholders to use in their deliberation of education policy, specific to dropout prevention, within the state of Texas. Through the extensive research and analysis devoted to this project, we believe the findings are vast and troublesome, and in need of immediate attention for the wellbeing of the Texas education system and economy.

# Chapter 1: Introduction

According to the plaintiffs in recent school finance litigation in Texas, “more than half of the Hispanic ninth-graders and approximately 46 percent of the African-American ninth-graders leave the system before they reach the twelfth grade” (Neeley v. West Orange-Cove Consolidated I.S.D., 2005). However, according to the Texas Education Agency, the annual dropout rate in Texas is less than four percent for all students, and less than six percent for Hispanic and African American students. Meanwhile, the National Center for Education Statistics (NCES) estimated that averaged freshman graduation rate (AFGR) for Texas was above the national average at approximately 76.6 percent for the 2003-04 school year (Laird et al. 2007), but average freshman graduation rates were below the national average in El Paso (60.5 percent), Austin (58.2 percent), Fort Worth (55.5 percent), Houston (54.6 percent), San Antonio (51.9 percent), and Dallas (44.4 percent) (Swanson 2008).

As these examples illustrate, the dropout rate can be calculated in numerous different ways, causing confusion among policy makers and analysts. Each of the dropout rates sheds light on a different aspect of the dropout situation, and in turn, presents a different conclusion to policy makers and program planners. Using the wrong strategy to calculate a dropout rate can lead to skewed and inconsistent data. For this reason, it is important to understand the differences in the rates, the definition of each, how each should be used, and the advantages and disadvantages associated with each one.

A high dropout rate could potentially have significant and long term effects on the economic well-being of the state and its ability to address public needs. The current generations of students are the workers who will be providing services and products in the future. If they are not properly trained and educated, the state’s general industries and services will falter. The better educated and more prepared today’s students are for the workforce, the more beneficial they can be to society and the state. A less educated and trained workforce ultimately costs the state in lost revenue and increased demand for social services.

Our client, the United Ways of Texas, has a strong interest in education and its impact on the future of the state. Being aware of the problems associated with dropout rate reporting within Texas, they asked us, the research team, to investigate and provide results and recommendations concerning the dropout rate and its impact within the state. We were provided with an outline of the necessary information that needed to be analyzed to assess the dropout problem in Texas.

1. Identify how to best measure the dropout rate
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4. Review available research regarding dropout prevention programs in order to identify best practices

The following chapters discuss each of these issues in turn.

This project is not intended as a definitive solution, but an informative tool for policy makers, legislators and other key stakeholders to use in their deliberation of education policy within the state of Texas. In the long term it is more beneficial for the state to educate these students than to have them dropout of high school.

## Chapter 2: Measurement

Millions of dollars are spent annually trying to correct the perceived dropout problem. Through programs and policies, the United States attempts to rectify the dropout rates. The problem with rectifying the dropout rate is the necessity to determine when to use what type of dropout rate. Dropout rates can be calculated in a myriad of ways – each shedding light on a different aspect of the dropout situation and, in turn, presenting a different conclusion to policy makers and program planners. Problems arise when the wrong rate is used to describe the wrong dropout situation. For this reason, it is important to understand the differences in the rates, the definition of each, how they should be used, and the advantages and disadvantages associated with each one.

All dropout rates can essentially be organized into a hierarchical structure. At the top, there is the longitudinal *status rate*, which uses a special type of student-level longitudinal data. Status rates use cohort-to-cohort calculations to show the percentage of graduates or dropouts within a population. A cohort-to-cohort calculation is one which uses the same group of students in both the numerator and denominator. Longitudinal status rates (which are also called cohort rates) use data from more than one year. The next step down in the dropout rate structure is the *event dropout rate*. This rate is still a status rate, but it only looks at one year of data. Since longitudinal status rates are considered the gold standard of dropout rates, academics, and researchers try to replicate the rates' accuracy and methodology even when they do not have access to the needed data, causing a need for the statistical approximation of the *averaged freshman graduation rate*. The last group in the hierarchical structure includes *other rates* that do not achieve the gold standard, but produce useful knowledge about dropouts. All of these rates will be discussed in this analysis, according to their hierarchical structure, to show the connections and differences between them.

### Who is a Dropout?

The definition of a *dropout* is the basic concept on which all dropout rates are based. However, even this central definition is not agreed upon universally. A *dropout* is most commonly defined as a student who has not completed the required coursework to receive a high school diploma within four or five years and who has not acquired a GED (General Educational Development) certificate. Most states have realized that students can leave high school and not be considered as dropouts for many reasons other than those just mentioned, but there has not been consensus on a nationwide set of exceptions for being labeled as a dropout. Several common exceptions include being homeschooled, transferring to another school within the state, transferring to another school out of state (whether documentation of enrollment is received or not), joining the military, returning to the home country, and death. NCES defines a *dropout* as, “a student who is enrolled in public school in Grades 7-12, does not return to public school the following fall, is not expelled, and does not graduate, receive a GED, continue school outside the public school system, begin college, or die” (Texas Education Agency, 2008).

Current variations in the definition of a dropout nationwide make it difficult to compare one state’s information to another. To illustrate these challenges, a sample of information was compiled for eight states similar to Texas, in either demographic makeup and size or regional characteristics. Table 2.1 depicts commonalities and variations of dropout definitions among those similar states. Texas and NCES information are included for comparison.

Table 2.1: State Comparison of Dropout Descriptions

	NCES	TX	CA	OK	NY	AZ	FL	NM	LA	AR
Leave prior to graduation without receiving diploma	X	X	X	X	X	X	X	X	X	X
Did not receive a diploma/GED	X	X			X					
Unsuccessful transfer*	X	X	X		X	X	X	X	X	X
A student who has died is not a dropout	X	X	X	X	X	X			X	X
Currently incarcerated students are not dropouts						X				X
Un-enrolled due to illness									X	
Completed all course requirements, but did not pass the exit exam	X	X	X			X				
Expelled and did not return	X	X							X	
A student is not a dropout if they leave the country	X	X	X							

\*An unsuccessful transfer is a transfer for whom school records have been transferred and a student does not show, or when a school does not receive documentation that a student has enrolled elsewhere (based on transcript requests by other schools or Notice of Intent to Home School forms on file with the district). Those that transfer successfully are not considered to be dropouts. Information derived from (ADE 208 – 2, July 2005; New York State Education Department, 2004; NMPED, 2008; de Cos, 2005; Louisiana Department of Education, 2008; TEA, 2007).

In the chart above, an “X” indicates that a state has publicly incorporated the given description or category into its definition of a dropout. As the chart indicates, the state of Texas now follows the NCES definition in all aspects. An example of categories denoting a student as a dropout in Texas’ and NCES’ definition include leaving prior to graduation without receiving a diploma or GED, unsuccessful transfer, and expulsion. A cell in which no information is entered denotes a state that does not publicly acknowledge that category in its definition of a dropout.

As Table 2.1 depicts, all states surveyed and the NCES consider students who quit school prior to graduating to be dropouts. Most states in the analysis also consider unsuccessful transfers a type of dropout. An unsuccessful transfer is a transfer in which school records have been transferred and a student does not attend or a school does not receive documentation that a student has enrolled elsewhere (based on transcript requests by other schools or Notice of Intent to Home School forms on file with the district) (ADE 208 – 2, July 2005; Louisiana Department of Education, December 2008; New York State Education Department, 2004; NMPED, 2008). Of those sampled, most states explicitly express that students who die during the school year are not dropouts. This does not necessarily mean that deceased students are counted as dropouts in other states, but merely that no specification is made. There is less of a consensus among the

states regarding other characteristics provided in the table, further suggesting national dropout rate comparisons will be flawed due to variations across states.

As most states do, Texas created its own terminology specific to how it classifies and measures a graduate and a dropout. The Texas Education Agency (TEA) defines a high school graduate as a *completer*. A completer is a student who has “received a high school diploma with his/her class (or earlier) or have re-enrolled in the fall [following his/her fourth year of high school] as a continuing student” (TEA 2008b, 19). A class is considered the portion of a cohort that “graduated, continued, received GED or dropped out” (TEA 2008b, 180).

<b>Table 2.2: Texas Leaver Definitions, 2007-2008</b>	
<b>Considered a Dropout</b>	<b>Not Considered a Dropout</b>
Failed exit TAAS/TAKS, met graduation requirements***	Graduated
Alternative program, working toward diploma or certificate***	Graduated, returned, left again
Academic performance	Graduated outside Texas, returned, left again***
Court-ordered alternative program***	GED Outside Texas***
Expelled, can return, has not	Expelled, cannot return
Join the military	Died
Pregnancy	Returned to home country
Marriage	Official transfer to other Texas district
Alcohol or other drug abuse problem	College, pursue degree
Age	Enter health-care facility*
Homeless or non-permanent resident	Home schooling
Pursue job or job training	Incarcerated outside district*
<i>* If the student moves to a facility served by a Texas public school district, no code is necessary. For other situations, see the PEIMS Data Standards.</i>	Removed by Child Protective Services
	Enrolled in another Texas public school
	Enroll in Texas private school
<i>***Indicates a change from academic year 2005-06 to 2007-08.</i>	Enroll in school outside Texas
	Administrative withdrawal
	Enroll in University High School Diploma Program***

Source: TEA Accountability Manual, 2008.

All students in Texas are assigned a leaver code, indicating their status when they separated from the school district. Table 2.2 describes the various leaver categories used by TEA for a number of situations, which include graduation, relocation to another educational setting, and withdrawal by district. The table also displays the changes of leaver statistics between the 2005-2006 school year and the current codes (TEA 2008b).

Starting with the class of 2005-06, students who leave school to attend GED programs are counted as dropouts unless they receive their GED certificates by August 31st of the year in which they were scheduled to graduate (TEA 2008b). Furthermore, TEA has stopped relying on school districts to report leaver codes for students who move to another district, leave to pursue a GED or graduate early. Instead, the state now uses administrative databases to determine the status of such students (TEA 2009a). These changes should enhance the accuracy of the dropout numbers, but make it difficult to compare dropout rates across time.

Another significant change in the leaver codes was the treatment of students who could not pass the TAAS/TAKS exit exam. Prior to 2005-06, such students were considered “other leavers” and were excluded from all dropout calculations. They are now considered dropouts (TEA 2008b). Had such students been considered dropouts in 2004-05, the statewide number of dropouts would have been 17,874 instead of 11,650 (TEA 2008b).

The evolving nature of who does, or does not, constitute a dropout affects the statewide accountability ratings considerably. During the transition from the old to new leaver codes, the dropout rate was not included in the state’s accountability system.<sup>1</sup> However, starting in 2009, the new definition applies.

## Longitudinal Data and Collection

Tracking dropouts and other pertinent information has become easier and more accurate due to the passage of No Child Left Behind (NCLB). Under NCLB, states are required to publically provide all dropout data collection in a longitudinal unit. A longitudinal unit is one in which the same student, and his or her corresponding information, is tracked over time. Students are tracked in a statewide database from kindergarten to twelfth grade through an individual identification number by their state’s education system. In a perfect world, this individual number follows a student if he or she transfers to another school or enters the juvenile justice system. For instance, errors do arise when the student, Johnny, does not request his student records from his previous school. Commonly, when this happens, the new school will assign Johnny a new identification number. When Johnny does not return to his previous school, it counts him as a dropout, even though he moved to another school in the same state.

While the case of Johnny sheds light on the disadvantages of longitudinal data, a longitudinal database allows a state to know more precisely how many students drop out of school, instead of the error factor associated with non-student level data. When longitudinal data are not used, states are only left with “fuzzy” counts of the number of students, or average number of students,

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<sup>1</sup> Texas Education Commissioner, Robert Scott, decided to withhold *dropout* from the equation for a short period of time. He did this at the behest of the leaders of several school districts who were fearful of the negative repercussions their institutions would sustain if the new system’s dropout definitions were (continued on next page) taken into account when determining accountability ratings (Houston Chronicle, June 24 2008). Withholding the dropout rates determined by the newly implemented, more rigorous NCEES standards allow for underperforming districts and/or problematic schools to escape the punitive repercussions of underperformance set forth by NCLB. The importance of the leaver codes and their classification as either being defined as a dropout or not a dropout literally saved many schools from shutting their doors.



that attended a school on a given day or year. This fuzzy approach causes problems because a state has no way of knowing if the 456 students that attended a high school for their 9<sup>th</sup> grade year are the same 456 students that enrolled for their 10<sup>th</sup> grade year. Using longitudinal data permits schools to compute accurate calculations because cohort-to-cohort calculations can be assessed.

Each state has some variation of the system by which they track their students. Along with the system used, there are also major differences in how states obtain longitudinal student information. Technology has made it possible to track students and certain characteristics with individual identification numbers. Students are assigned the same number as long as they are in that particular state's public school system; however, there are many different longitudinal data programs available throughout the United States. For example, Arizona recently implemented the Student Accountability Information System (SAIS) to track its students' educational progress and individual demographic information over time. Before the introduction of the SAIS system, Arizona used CPS data to calculate dropout rates. With the introduction of the SAIS system, the new longitudinal data is used for reporting purposes (an example of this is the annual reporting of dropout rates to the NCES common core of data [CCD]) (ADE, 2003).

According to the Data Quality Campaign [DQC], there are ten essential elements for a quality longitudinal data system (DQC 2008). These ten essential elements include

1. A unique statewide student identifier that connects student data across key databases and across years
2. Student-level enrollment, demographic and program participation information
3. The ability to match individual students' test records from year to year
4. Information on untested students and the reasons they were not tested
5. A teacher identification system with the ability to match teachers to students
6. Student-level transcript information
7. Student-level college readiness test scores
8. Student-level graduation and dropout data
9. The ability to match student records between the P-12 and postsecondary systems
10. A state audit system to assess data quality

As of September of 2008, only three states from this sample (Arkansas, Florida and Louisiana) have all ten elements. New Mexico, Texas, and Oklahoma have eight or nine elements, Arizona and California have six or seven, and New York has four or five (DQC, 2008). Although different states use different longitudinal data systems, the information they are seeking is quite similar. The differences in the level of attainment may be due to the differences in the type of system, the amount of time the system has been in place, or even the strategies used to implement them. The research team has examined a state-by-state comparison of the states within the sample mentioned earlier.

## Texas

Texas uses an electronic system, PEIMS (Public Education Information Management System) to collect required information from school districts. PEIMS collects nine out of the ten elements identified by the DQC. The only element that Texas does not use when collecting longitudinal data is element number 5, which links the teachers and students to identify their progress by grouping teachers and students based on their academic achievements. This allows a state to

pinpoint the preparation programs used by certain teachers, which yields a high success rate. By identifying programs that work well with students, school districts can implement the programs and better accommodate student progress.

PEIMS data are collected on a yearly basis. School districts submit their yearly information to PEIMS in accordance with state requirements. TEA, as well as the legislature, uses the data collected to assess and analyze the school districts to produce data regarding the Texas Education System. The information collected by PEIMS provides the longitudinal data used to calculate the dropout rates in Texas. The importance of the school district data is significant in monitoring the progress of the education system in Texas.

### **California**

Comparable with Texas' PEIMS system, The California Department of Education (CDE) requires school districts' administrations to provide enrollment data to the California Basic Educational Data System (CBEDS) on an annual basis. School districts and county offices of education annually collect the necessary data from public schools. These data are collected in October on Information Day. Information is collected on staff and student characteristics, as well as enrollment trends (CDE, 2008). California does not have elements 5, 6, 7, and 9 in the Data Quality Campaign's ten essential elements for a quality longitudinal data system (a teacher identification system with the ability to match teachers to students, student-level transcript information, student-level college readiness test scores, and the ability to match student records between the P-12 and postsecondary systems) (DQC 2008).

### **New York**

Similar to Texas' PEIMS system, the State of New York uses the Student Information Repository System (SIRS), which tracks individual records of students at the local, regional, and state level. SIRS contains the New York Student Identifier System (NYSSIS), which assigns a unique number to each student from prekindergarten through the 12<sup>th</sup> grade (The University of the State of New York & The State Education Department Information and Reporting Services, 2008). The system allows school districts to share student information amongst themselves and enables each district to communicate student and grade level information to the State Education Department (The University of the State of New York & The State Education Department, 2004). Information is reported annually in the Adequate Yearly Progress (AYP) report (The University of the State of New York & The State Education Department Information and Reporting Services, 2008). As mentioned earlier, New York only has five of the Data Quality Campaign's ten essential elements for a quality longitudinal data system. The elements it is missing include: A teacher identification system with the ability to match teachers to students, student-level transcript information, student-level college readiness test scores, and the ability to match student records between the P-12 and postsecondary systems, and a state audit system to assess data quality (DQC 2008).

### **Florida and Louisiana**

In contrast to Texas, Florida and Louisiana use systems that follow students beyond their high school careers. Florida's longitudinal education data is collected through the K-20 Educational Data Warehouse (EDW). The EDW tracks the yearly progress of individual students and teachers throughout their academic and employment careers, including records for K-12, higher education, and employment. The EDW tracking system not only follows the progress of each individual student and teacher within the system, but it also tracks the demographic information

of each subject. Longitudinal data collected through the EDW is reported annually to potential funding sources that require auditable records, including NCLB, the Carl Perkins Act, and the Higher Education Act. (Government Technology's Public CIO, 2007)

Florida provided the model for Louisiana's student tracking system, the Student Identification System (SIS). SIS tracks students throughout their careers in Louisiana public schools, collecting data on enrollment, class schedules, attendance numbers, and school disciplines. It is also used to collect information on dropouts and graduates and is intended to be reported annually to comply with NCLB requirements (DQC: Louisiana, 2008).

### **New Mexico and Oklahoma**

New Mexico has implemented the Student Teacher Accountability Reporting System (STARS), which tracks student and assessment records, program enrollments, special education records, course enrollments, and staff assignment records (NMPED, 2008). The state of Oklahoma, on the other hand, has begun a five year endeavor to improve their longitudinal data collection by initiating use of an information system called The Wave. The Wave is a program which assigns unique student testing numbers to all students and an online component for tracking student transfers. The Wave will enable the Oklahoma State Department of Education (OSDE) to derive enrollment, dropout and graduation statistics (USDE, 2006).

## **Status Completion and Status Dropout Rates**

The gold standard for dropout measurement in the United States is a status rate that uses longitudinal data. While status rates take on many different numerators, denominators, and populations, all follow a simple rule: status rates are cohort-to-cohort comparisons. Put another way, status rates use the same population of observations for both the numerator and denominator of the computation. For example, if a school wanted to know what percentage of 9<sup>th</sup> grade students graduated from 12<sup>th</sup> grade four years later, they would divide 12<sup>th</sup> grade graduates by the same longitudinal cohort of 9<sup>th</sup> graders four years prior. This cohort-to-cohort comparison is known as a status completion rate because it looks at the percentage of high school graduates (or completers) within a population. The other side of this coin is the status dropout rate, which looks at the percentage of high school dropouts within a population. The major difference between these two rates is the question they are asking, and in turn, the numerator they are using. Shown graphically:

$$\text{Status Completion Rate: } \frac{\text{Number of Graduates in a Cohort}}{\text{Total Number of People in a Cohort}}$$

$$\text{Status Dropout Rate: } \frac{\text{Number of Dropouts in a Cohort}}{\text{Total Number of People in a Cohort}}$$

The status completion rate and the status dropout rate are very similar concepts, but each looks at a slightly different portion of a population. A review of the dropout measurement literature demonstrates disagreement on the point of status completion and status dropout rate comparisons. The conflict arises from the idea that these rates can be seen as the heads and tails to the same coin—taking away one tells you the answer to the other, or 1 minus the completion rate gives you the dropout rate, and vice versa (Greene 2002, Laird et al, 2007). Despite flat-out assertions from both sides of this argument, if the populations are exactly the same, the status completion and status dropout rates are simply the two sides of the proverbial coin, or 1 minus a rate results in the other. It is when the populations differ (i.e. the status completion rate looks at 16-24 year olds and the status dropout rate looks at 9<sup>th</sup> to 12<sup>th</sup> graders), that the rates cannot be compared as the opposite of each other. Furthermore, there are times when a person does not complete or dropout; the most obvious case occurs when a student is still enrolled and attending school. For these reasons, there are very few times that a population can be set to control for students still attending school, and in turn, status completion and status dropout rates are seldom the opposite of each other.

With this understanding of the differences in the status rates in mind, it is important to watch which status rate is being used in an analysis. In the Alliance for Excellent Education's 2008 Issue Brief, which examines the effect of the national status dropout rate on economic earnings, a status completion rate is used to find the estimated number of students who will drop out in the coming years. However, because a dropout rate and a completion rate are not opposites of each other, the Alliance for Excellent Education's estimated dropout count could be misleading – it includes students that are still enrolled in school (e.g. students held back). Therefore, their estimated national “total lifetime additional income if dropouts graduated” figure of \$319.6 billion is undoubtedly inflated (Alliance for Excellent Education, 2008).

Since status rates allow the mathematician to explore any question that uses cohort-to-cohort comparisons, these rates commonly look at specific populations to examine how their level of education impacts certain social factors. This is a frequent track taken by academics who are trying to link educational attainment to issues like crime, medical system utilization, lost wages, etc. Use of Current Populations Survey (CPS) and census data commonly takes the place of school-collected high school dropout data. Also, since school-collected data required to compute the status completion and status dropout rates are usually not readily available to researchers and academics because of child privacy laws, the use of CPS and census data has become a common practice with variations of this type of rate.

Researchers need to take into consideration the advantages and disadvantages of status rates before using them to make observations about educational attainment and its social consequences. The status rate seems to be consistent with the public's view and understanding of what a graduation completion rate should look like because the rate is straight-forward in its approach to calculating the percentage of completers, or dropouts, within a specified population. Status rates usually look at one of two populations: graduates (or dropouts) of a particular school system and graduates (or dropouts) of a larger geographical or age cohort (i.e. adult graduates in Texas or U.S high school graduates over the age of 18). For the purposes of this discussion, analysis in this section will primarily focus on the first population, or graduates (or dropouts) of

a particular school system, and end with a brief look at the second, or graduates (or dropouts) of a larger geographical or age cohort.

Because it is typically calculated at the end of the school year, the status rates afford school districts ample time to attempt to re-enroll dropouts. The status completion rate, in particular, is advantageous to schools and school districts because it is a positive indicator that looks at the success of a school rather than its failure to keep students in school. One disadvantage of the longitudinal status rate is the number of years that are necessary to produce an accurate amount of data. If the data for one year is reported inaccurately, then the measure will be skewed and erroneous. For example, if Johnny and nine of his friends were reported as dropouts because they transferred to a private school and did not pass that information to their previous school, an error in the status completion rate of the previous school would occur. The size of the error is determined by the size of the cohort to which Johnny and his friends belonged. If they belonged to a cohort of 1,000 students, the erroneous completion rate would be 10/1000, or 1 percent. However, if Johnny and his friends were part of a small, 100 person rural school, then the erroneous completion rate would now be 10/100, or 10 percent. For this reason, errors in small cohorts increase the error factor in this type of a calculation. This is a bigger problem for the status dropout rate than for the status completion rate. A five student-out-of-a-hundred error could double the status dropout rate (from 5 to 10 percent), but reduce the completion rate by only 5 percent (from 95 to 90 percent).

Using a longitudinal status rate to keep schools accountable for their students who dropout can either be seen as an advantage or a disadvantage depending on where you sit. According to status rate methodology from year to year, accountability for a student that drops out does not fall on the shoulders of the school districts until years after students drop out. The dropout rate that is produced with this computation is an overall dropout rate over a four year period rather than a dropout rate for each grade. (This would be an event rate, which will be discussed later). If Johnny dropped out of school in 10<sup>th</sup> grade and his school only computes a four year status dropout rate (percentage of students who began 9<sup>th</sup> grade together four year before and who drop out of school at any time before graduation), then his dropout status will affect his school only when his cohort is supposed to graduate two years after he drops out. This gives Johnny's school two years to get him to reenroll and graduate on time. On the other hand, the disadvantage to holding a school accountable for Johnny's actions is that his actions cannot be addressed by his school until they see the low graduation rate, at which time is probably too late to convince Johnny to come back to school. The real disadvantage sets in when schools are not following up with their dropouts in a reasonable amount of time.

Much of the academic literature defines and uses status rates after acknowledging their pitfalls. One of the most important pitfalls of this type of rate is that when CPS or census data are used for the population, the resulting status rate is not suited as a measure of performance for any specific education system. With CPS and census data, the computation includes individuals who could have completed their education outside the education system in question (Laird et al, 2007). Furthermore, using CPS and census data renders the status rate as an undesirable measure of the dropout rate because it typically looks at individuals who are older than the average high school student and diploma recipient.

In a study conducted by Lance Lochner and Enrico Moretti, census data are used to determine the effect of educational attainment on crime (Lochner & Moretti 2001). A status rate is applied

to the population of incarcerated persons (the denominator), looking specifically at the aspect of high school graduation (the numerator). While the authors focus on the white and black population, they shy away from analyzing any crime and education links for those of Hispanic origin. By doing this, Lochner and Moretti are silently agreeing with the major drawback to the data they chose to use: *there is no way to link educational attainment to the educational system examined*. Arguably, some of the Hispanic population within the US incarcerated population did not attend school in America, so linking their dropout status with any social factor in America would be erroneous.

While the status rate is beneficial for its broad uses and implications, its pitfalls cast a shadow on what the rate is actually trying to capture – the percentage of a population that are high school degree holders. When this rate is used without school-specific data (as Lochner and Moretti did), it does not give an accurate representation of how a particular school system is doing because it fails to gauge the place of origin of those within the sample (Laird et al., 2007). There is no way to tell if the school system in question actually produced the high school graduates being measured.

Nationally, the longitudinal status rate is used universally, with only minor variations between states.

### **California**

The state of California uses the “completer rate”, which is “calculated using information on high school completers (graduates) and high school dropouts aggregated over a four-year period” (California Research Bureau 2005, 14). It is important to note that the completer rate does not include the number of students who were enrolled or entered the school system for that specific year. However, California’s completer rate does fall into the status rate category for the purposes of this analysis because it is a cohort-to-cohort comparison over time.

### **Louisiana**

Louisiana recently implemented calculations for status graduation rates, which are determined as a “percentage of students in a cohort who graduate within four years with a standard diploma” (Louisiana Department of Education, December 2008). Additionally, the Arkansas Department of Education’s graduation rate is “the percentage of students enrolled during grades 9-12, and completing grade 12 without dropping out” (Rule 6.02, ADE 208-3, July 2005) and is tracked for students in grades 9-12 (ADE 208, 2005).

### **Oklahoma, Arizona, New Mexico, Florida, and New York**

Oklahoma’s graduation rate is calculated using the formula agreed upon by the National Governor’s Association, which is a cohort-to-cohort calculation using longitudinal data. Arizona and New Mexico report their information to NCES, but do not have self-reported rates. New York reports a status dropout rate, but Florida does not. NCLB calls for the standardization of collection and reporting procedures, but varying response times among states have delayed implementation efforts.

### **Texas**

As discussed earlier, TEA has created its own terminology for how it defines and measures the dropout situation in state of Texas. TEA utilizes its longitudinal data for the purpose of calculating status completion rates (also known as Completion Rates I and II). The use of two

separate status completion rates reflects the need for a more accurate portrayal of conditions in schools that may have large sections of the student population who are at risk for dropping out, such as alternative schools. Using status completion rates also allows for a more holistic view of the educational system within Texas, but does have its drawbacks.

### ***Texas' Completion Rate I:***

Completion Rate I calculates the status completion rate for high schools serving grades 9 – 12, considered “typical” high schools in Texas. These schools must have been in operation for at least 5 years to qualify for this method because it requires longitudinal data. This stipulation allows Texas to track students over time, categorizing Completion Rate I as a true status completion rate. As a rule, campuses serving fewer grade levels use the district completion rate, since limited grade levels do not provide appropriate data for this longitudinal calculation. Below is Texas' Completion Rate I:

$$\frac{\text{Number of Graduates} + \text{Number of Continuers}}{\text{Number in Class}}$$

(Texas Education Agency 2008b, 20)

### ***Texas' Completion Rate II:***

In response to mandates for standard accountability procedures, TEA developed an alternative longitudinal measure, Completion Rate II. This rate applies to campuses dedicated to serving students at risk of dropping out, commonly regarded as alternative schools. Completion Rate II uses longitudinal data tracked over time to calculate the percentage of students who graduate, continue in high school or receive GED certificates. Whereas Completion Rate I does not include GED recipients, Completion Rate II does include recipients in the new definition of completers. Using a separate status completion rate for alternative schools allows the state to take these campuses, and their lower-performing students, out of the regular completion rate calculations, improving how Texas' typical schools look and compare nationally (Texas Education Agency 2008b, 20).

These completion rates are calculated as part of the state's accountability system, which issues ratings for individual schools (TEA 2008c, 8). These ratings indicate a school's performance for the previous year, ranging from academically unacceptable to exemplary. The current accountability system has been in place for approximately six years and was recently updated in 2007 to incorporate the NCES definition of a dropout (TEA 2008c, 7). This new dropout definition is used to calculate completion rates for districts within the state. In relation to the No Child Left Behind Act (NCLB), completion rates as calculated for Texas' accountability system are compliant in all the required areas with the exception of minimum size required for rate calculations (TEA 2008c, 167).

### *Texas' Holding Power Index*

Another commonly used indicator by TEA is the Holding Power Index (HPI), which gauges a school's or school system's power or ability to "hold" students in school through graduation (Texas Education Agency, 1999). Although this status index can be seen as a measure of a school's or district's success in keeping students enrolled, it is also beneficial because it can provide useful information to schools or districts about the types and characteristics of students they lose over a certain period of time. This index is the percentage of students in each 9<sup>th</sup> grade class cohort, including the original ninth graders and those who subsequently transfer in, who graduate or are still enrolled when the cohort finishes 12<sup>th</sup> grade. In other words, the HPI examines a cohort over a period of time and communicates the success, rather than the failure, of a school system (Texas Education Agency, 1999). TEA uses the HPI as a means to communicate completion rates for schools, which can then be narrowed to specific groups or a period in time.

### **Event Dropout Rates**

An event dropout rate is a status dropout rate, with one specific variation: it only uses a one year time period for the cohort-to-cohort comparison. This rate is commonly referred to as the annual dropout rate in many states. According to Laird et al, this type of rate "estimates the percentage of both private and public high school students who left high school between the beginning of one school year and the beginning of the next without earning a high school diploma or its equivalent (GED)" (2007). Important aspects to be considered when using the event dropout rate include the following: the rate students are dropping out of school, the time of year where the highest percentage of dropouts occur, and the experiences over a certain year that impact the dropout rate. The event dropout rate is beneficial to researchers and school officials because it provides influential data to show the rate, time of year, and experiences that affect the dropout rate during a certain year. On the other hand, this method does not effectively measure the dropout rate over time because it measures only the yearly dropout rate of students. A common calculation for an event dropout rate can be found below.

Event Dropout Rate:

$$\frac{\text{Number of Dropouts in a Cohort for a Specific Year}}{\text{Total Number of People in a Cohort for a Specific Year}}$$

The event dropout rate can be manipulated as needed by adjusting the parameters for the number of students in the numerator and denominator (Texas Education Agency, 1996). In other words, the rate can encompass all high school students or just 10<sup>th</sup> graders. By adjusting the parameters of this rate, a school or district can see at what point they are losing students and why. Due to the relative ease in being able to change parameters for different event rates, The National Center on Secondary Education and Transition (NCSET) warns that this rate can produce the smallest rates of dropouts compared to the different rates examined in this analysis (National Center on Secondary Education and Transition, 2004). This rate can potentially create a distorted picture



that underestimates the average dropout rate of a school, district, or system. The event dropout rate is best used as an internal instrument to gauge when students are dropping out and why; it is not well-suited for extrapolations, such as dropout accountability.

Due to the shortcomings of this type of rate, the event dropout rate should not be used to determine the economic impact of a dropout on a society. When applying a dropout rate to the social issue of economic impact, it is important to make sure that the rate chosen is the most accurate rate, describing the true dropout situation within the state or country in question. Since an event rate only uses one year of data, a correct portrayal of the number of dropouts is missed. As discussed earlier, event dropout rates change from year to year depending on many different factors; therefore, using an event dropout rate gives a researcher only a snapshot of the situation. Additionally, event dropout rates only capture dropouts for one year, not those within a cohort who previously dropped out. This type of rate only includes the students from a cohort who are in school, not those that should be in school. This issue is further demonstrated by the fact that the denominator of an event dropout rate only includes one year of longitudinal data. With a true status rate, multiple years of cohort data are assessed. For these reasons, a four year longitudinal status rate, instead of an event dropout rate, should be used when applying dropout data to economic impact.

Because the event dropout rate is the most accurate real time snapshot calculated annually, it is the dropout rate most commonly reported by states. However, there are state to state variations on how this rate is calculated. Some states, such as Louisiana, do not report an event dropout rate at all. Dropout rates from the previously used sample of states with similarities to Texas were again studied. The states examined included Arizona, Oklahoma, Louisiana, New York, New Mexico, Florida, Arkansas, and California. Although most states calculate the event dropout rate in a similar straightforward fashion, some variations include the grades accounted for, reporting dates, and how the data was obtained. Most states report dropouts using grades 9-12; however, some states, such as New York and Arkansas, include lower grades such as 7-12 and 2-12, respectively (Part B State Performance Plan 2005-2010 2005 and Arkansas Department of Education 2005). Most of the eight states that were analyzed align themselves with the reporting period used by the National Center for Education Statistics (NCES), which begins in October. However, some states, such as Arizona, begin their reporting period in June (ADE, 2003). Of the states examined, it appears that all but Louisiana use an event dropout rate to measure the state's dropout rate.

Table 2.3, acquired from NCES, compares the eight states in the sample to Texas in regard to dropout rates (a table containing all states is located in Appendix A). While the title only states that it is looking at dropout rates, it is actually looking at event dropout rates since the rates are restricted to cohort-to-cohort calculations for one year. As illustrated in the table, an event dropout rate can be computed for many different cohorts (e.g. one grade level, many grade levels, and race). Arkansas consistently held the worst event dropout rates in the sample over all categories for the 2004-2005 school year (except for 9<sup>th</sup> grade dropouts). This is interesting since Arkansas' definition of a dropout does not include most or all of the categories examined in Table 2.1, so one would expect the dropout rate in Arkansas to be lower. Louisiana also has steadily high event dropout rates compared to the rest of the sample. When looking back on Table 2.1, one sees that a possible reason for this is that students that un-enroll due to illness are coded as dropouts. Comparatively, Texas scored relatively low in the total dropout rate of all

students, 9<sup>th</sup>-12<sup>th</sup> grade, with 3.6 percent of students dropping out. Furthermore, Texas' Hispanic event dropout rate ranks third out of the sample for lowest rate of dropping out, with 5.1 percent dropping out.

**Table 2.3: National Center for Education Statistics**

**Common Core of Data (CCD), "State-Level Public School Dropout Data" , 2004-05**

<b>Table by State</b>									
STATE ABBR (SCHOOL)	TOT DROPOUT RATE- 9TH GRADE	TOT DROPOUT RATE- 10TH GRADE	TOT DROPOUT RATE- 11TH GRADE	TOT DROPOUT RATE- 12TH GRADE	TOT DROPOUT RATE- 9- 12TH GRD	TOT DRP RATE- ASIAN/PAC- 9-12	TOT DRP RATE- BLK, NON- HISP- 9-12	TOT DROP RATE- HISPANIC- 9-12	TOT DRP RATE- WHT, NON- HISP- 9-12
AK	6.7	7.6	8.6	10.3	8.2	7.5	12.7	11.2	6.3
AR	2.4	4.0	5.3	6.3	4.3	3.2	5.8	6.4	4.5
CA	2.1	2.2	2.7	6.1	3.1	1.6	5.5	4.0	2.0
FL	3.3	3.3	3.5	4.3	3.5	1.6	4.8	4.2	2.8
LA	8.1	6.6	6.7	8.3	7.5	3.9	10.2	7.7	5.2
NM	4.2	4.5	4.4	3.5	4.2	3.2	5.8	6.2	1.0
NY	3.1	10.4	4.7	4.8	5.7	5.2	9.6	10.6	2.8
OK	3.1	3.7	3.9	3.5	3.5	1.8	4.7	7.6	3.1
<b>TX</b>	<b>2.6</b>	<b>3.6</b>	<b>3.6</b>	<b>5.0</b>	<b>3.6</b>	<b>1.4</b>	<b>4.2</b>	<b>5.1</b>	<b>2.1</b>

Source: NCES

Looking at this data, a question arises: why is Texas' event dropout rate so low compared with the other states sampled? There are three possible answers to this question. First, Texas might actually have a lower dropout rate than other similar states. Second, more students might drop out of Texas schools before they reach high school. While both of these reasons have some plausibility, the third answer to Texas' low event dropout rate is the most likely: due to Texas' size, it has a greater ability to track in-state transfers. If a student in another state were to move with his or her family several hundred miles, then this student has moved over state boundaries – making the likelihood of a successful transfer very low. However, if a student from Texas were to attempt the same move, he or she would have moved only from Dallas to Houston. This answer is further backed up by the fact that Texas has two to three times as many metropolitan areas than other states. The ability for residents of Texas to move within the state makes TEA's job easier; students stay in the state and can be tracked when they move. These issues bring to light the problems with comparing event rates. Each state is different in its demographic make-up and size and comparing snapshot event rates from these differing states can lead to faulty assessments.

In Texas, TEA commonly refers to event dropout rates as annual dropout rates. TEA calculates different variations of this type of rate. The *Annual Dropout Rate (Grades 9-12)* has recently been introduced to demonstrate dropout rates for high school grade levels only. This rate is intended only as a reporting measure. Consequently, it is not used to determine accountability ratings for school districts. It is an exemplary example of an event dropout rate for several reasons. First, it is a cohort-to-cohort calculation, meaning that the same cohort is examined in the numerator and denominator. Second, Texas' annual dropout rate uses only one year of data to calculate its rate. This method allows the state to see a year-to-year trend in its dropout data. The Annual Dropout Rate (Grade 9-12)<sup>2</sup> is calculated as followed:

Number of Dropouts in Grades 9-12 during a  
School Year

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Number of Grade 9-12 Students Who Were in  
Attendance at any time during a School Year

(TEA 2008c, 3)

### **Averaged Freshman Graduation Rate**

As mentioned earlier, the gold standard for dropout measurement in the United States is a status rate which uses longitudinal data. Due to privacy laws, longitudinal data are not fully available outside of a state's education agency. To combat this restriction, academics and researchers have developed statistical methods to approximate longitudinal data produced by states.<sup>3</sup> The most commonly used method is the averaged freshman graduation rate (AFGR), which measures the percentage of a freshman class who receive their high school diploma four years after entering the ninth grade. The AFGR estimates the proportion of total students who graduate from high school, which is found by collecting student enrollment data over the course of the four years of high school for each class. The formula starts with the sum of the enrollment in the eighth grade and progresses with each grade year.

Averaged Freshman Graduation Rate:

Number of Graduates in Year 5

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Average of (Grade 8 Enrollment in Year 1, Grade 9 Enrollment in  
Year 2, Grade 10 Enrollment in Year 3)

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<sup>2</sup> The second variation of an annual dropout rate is the Annual Dropout Rate (Grades 7-12). Its computation is the same as the Annual Dropout Rate (Grades 9-12), except its cohort includes grades 7 and 8. The third variation of the annual dropout rate in Texas is the Annual Dropout Rate (Grades 7-8). Its computation is the same as the first two, except its cohort only looks at grades 7 and 8.

<sup>3</sup> A few studies that use the AFGR are: Seastrom, Hoffman, Chapman, and Stillwell, 2005; Miao and Haney, 2004.

Laird et al. analyzed AFGR to determine the differences between it and other rates and found that “although [the AFGR is] not as accurate as an on-time graduation rate computed from a cohort of students using student record data, this estimate of an on-time graduation rate can be computed with currently available data” (2007). Available data suggest the averaged freshman graduation rate is not as accurate as some of the other formulas because it is based heavily on estimates and adjusted-weight variables.

Only a few of the states examined for this study report an AFGR. This is expected because districts and education agencies have access to student longitudinal data and have no need to calculate an AFGR, which uses an estimated denominator. Louisiana, for example, reported the NCES averaged freshman graduation rate as their only measurement until 2007, when improved student tracking allowed for status rates to be calculated (Louisiana Department of Education, December 2008). Similar to Louisiana, Texas publically reports NCES’ AFGR, along with many other measures of the dropout situation within the state.

Although most states do not individually report an AFGR, NCES takes data collected from each state and reports the AFGR every year. In Table 2.4, the AFGRs for the sample states are displayed for the 2002-2003 school year (a table containing all states is located in Appendix B). This table clearly shows why using only the 9<sup>th</sup> grade population four years prior in a graduation rate would be erroneous; grade 9 is artificially inflated. The most common reason for this is retention of 9<sup>th</sup> graders from the year before.

**Table 2.4 Averaged freshman graduation rate of public high school students, by state: 2002-03**

State or jurisdiction	Averaged freshman graduation rate	Regular diplomas, school year 2002-03	Estimated first-time 9th graders in 1999-2000 <sup>1</sup>	Grade 10 membership, school year 2000-01 <sup>1</sup>	Grade 9 membership, school year 1999-2000 <sup>1</sup>	Grade 8 membership, school year 1998-99 <sup>1</sup>
Arkansas	76.6	27,555	35,971	35,068	36,772	36,073
Arizona	75.9	49,986	65,842	63,966	68,917	64,644
California	74.1	341,097	460,481	461,030	488,999	431,414
Florida	66.7	127,484	191,065	170,385	223,743	179,066
Louisiana	64.1	37,610	58,715	53,307	64,855	57,982
New Mexico	63.1	16,923	26,833	25,476	29,307	25,716
New York	60.9	143,818	236,030	229,516	266,971	211,602
Oklahoma	76.0	36,694	48,288	46,163	50,523	48,178
<b>Texas</b>	<b>75.5</b>	<b>238,111</b>	<b>315,494</b>	<b>287,355</b>	<b>359,368</b>	<b>299,760</b>

<sup>1</sup> Estimates of enrollment by grade include a prorated count of students reported as not being in a standard grade (students classified as ungraded in CCD data files).

NOTE: The averaged freshman graduation rate provides an estimate of the percentage of high school students who graduate on time. The rate for 2002-03 is computed by dividing the number of regular diplomas issued in school year 2002-03 by the number of estimated first-time 9th graders in 1999-2000. The estimated number of first-time 9th graders in 1999-2000 is the mean of membership in grades 8, 9, and 10 in school years 1998-99, 1999-2000, and 2000-01, respectively.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1998-99, 1999-2000, 2000-01, 2002-03.

When comparing the states within the sample based on the AFGR, one sees something very interesting in regard to Arkansas – it has the highest AFGR. However, it had the highest grade 9-12 event dropout rate of the sample. Since the AFGR takes into account only grades 8-10 when determining the denominator, Arkansas' high AFGR and high event dropout rate could be explained by its relatively steady progression of students from 8<sup>th</sup> to 9<sup>th</sup> to 10<sup>th</sup> grade. Arkansas does not have the artificial inflation in the 9<sup>th</sup> grade like most of the other states sampled.

Again, Texas is ranked relatively well among sample states in reference to the AFGR, with 75.5 percent of students graduating. However, this measure is telling the reader that 24.5 percent of students are not graduating on time for some reason. While the graduation rate in Texas might be bad, it is better than the graduation rate in other states, especially those similar to Texas in either region or demographic characteristics.

## Other Rates Used

Researchers also use a few other common calculations and indicators when analyzing the dropout situation in America. While the gold standard of status rates using longitudinal data is the most commonly used and arguably the best indicators of dropouts within an educational system, important information can be gained from straying from this well-traveled path. Some states have found new ways of improving the gold standard so that it gives a more accurate assessment of the dropout situation. Further, the state of Texas reports calculations which shed light on interesting aspects of educational attainment within the state.

California was the only state other than Texas in the sample that publicly reports rates that are not common from state to state<sup>4</sup>. California, in a preliminary pilot study organized by the Partnership for Urban Education Research (PUER), has partnered with six of California's largest urban school districts to identify opportunities for improving the current dropout rate reporting system. The new formula proposed by PUER is the Longitudinal Four-Year Dropout Rate (L4YDR), which is believed to be the most reliable dropout calculation formula for estimating the number of dropouts in each entering cohort of high school students (PACE 2008, 4). Texas currently uses a longitudinal four year dropout rate, which "measures the percentage of students from an entering cohort of ninth-grade students who drop out of school within four years of initial enrollment. Calculation of the L4YDR requires longitudinal data on individual students covering four years" (PACE 2008, 4). The formula is as follows:

$$\frac{D_{y=01,g=9c} + D_{y=02,g=9c} + D_{y=03,g=9c} + D_{y=04,g=9c}}{E_{y=01,g=9c}}$$

"Dy<sub>g</sub> = High School Dropouts: Students who were enrolled in grade *g* during the fall survey in year *y* and left the educational system without graduating from high school or completing an approved secondary education program. Ey<sub>g</sub> = Enrollment: Students enrolled in grade *g* during the fall survey in year *y*" (PACE 2008, 3). This approach focuses on a longitudinal four-year dropout rate, which more accurately portrays the dropout problem within a state because it uses readily available data, rather than estimations to make concluding assumptions.

California uses a similar rate called the Basic Completion Ratio, which compares the number of students who start in the ninth grade with the number of students who graduate four years later. This ratio is determined by simply dividing the number of graduates by the number of freshmen from four years earlier (California Research Bureau 2005, 17). This rate is considered different from a status rate because, according to the available information, longitudinal data is not used. Instead it is a "snapshot" calculation, taking the number of students who graduate and dividing that number by the number of students in the ninth grade, regardless if these are the same students.

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<sup>4</sup> Oklahoma, New York, Arizona, Florida, New Mexico, Louisiana, and Arkansas did not report a different form for calculating the dropout rate.

TEA frequently employs other calculations when addressing the number of dropouts specifically in the state of Texas; one is the status indicator. While this calculation is pertinent only to Texas, it is important to understand the status indicator to fully comprehend the dropout rates reported within the state. TEA's status indicator "looks at a pool of people in a given age range, at a given point in time, and determines the proportion of persons who are not enrolled in high school and not high school graduates" (TEA, 1999). While this is very similar to a status dropout or completion rate, it differs in that it looks at a snapshot in time, as opposed to the total cohort count. The status indicator is not a status dropout rate; therefore, it is not part of the gold standard. The status indicator is merely an indicator of students who are not currently enrolled in school as well as those who have not graduated. For instance, TEA can determine the dropout rate based on one attendance day on a high school campus. If a hypothetical school, Example High School, has a total student body of 657 16-19 year olds, but only 601 attended school on the day of the "snapshot," then the status indicator for the campus would be 601/657, or 91.5 percent enrolled (not dropped out). This rate indicator can be a problem for Example High School (and, in turn, TEA) because not all of the missing 56 students were dropouts. Instead, these students may have been absent from school for other reasons.

Consequently, status indicators should be used with caution when determining completion and dropout rates. A way to offset misinterpreting this calculation is to use an averaged count of total students for Example High School as the denominator. If the averaged number of students that attended Example High School during a school year had been 646, then the status enrollment rate would be 646/657, or 98.3 percent. This new calculation takes out the error seen with the status indicator by allowing for an averaged numerator. In a TEA report entitled, *High School Completion Rates: Investigating a Longitudinal Performance Measure for Texas Schools*, the challenges with existing indicators are discussed as well as possible solutions to improve accountability within Texas (TEA 1999).

As TEA makes the transition to the NCES dropout definitions, the report-only indicators are also fading out as measurements to calculate accountability in Texas. With each progressing year, the standard procedures for school are increasing to improve accountability. For this reason, TEA used projected longitudinal dropout rates, for grades 9-12, to determine five-year projected rates holding the current policy specific to dropout rates constant (TEC 2008, sec. 39.182).<sup>5</sup> Improvements to current indicators and procedures are made yearly based on the evaluations of the current accountability processes.

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<sup>5</sup> TEC §39.182, Chapter 39 of the Texas Education Code, is the mandate that defines the Projected Annual and Longitudinal Dropout Rates. To find additional Details about comprehensive dropout reports please see <http://tlo2.tlc.state.tx.us/statutes/ed.toc.htm>. The projected longitudinal dropout rates are specifically defined as four-year projected dropout rates calculated by using annual and longitudinal dropout methodologies (TEC 2008, sec. 39.182). Projected annual and longitudinal dropout rates are used because they give legislators, as well as the governor and lieutenant governor, a view of how dropout rates will emerge in the coming years, if the state allows for present trends to continue. For the analysis that will follow, actual dropout rates were used instead of project dropout rates. Projected rates provide legislative and executive officials with information to develop intervention strategies for the Texas public education system. Projected rates are used when determining future expectations and strategies to improve school districts' performances statewide.

## Rate Comparison Discussion

**Table 2.5 – Rate Comparison Chart**

	Event Dropout Rate	Status Rates	Averaged Freshman Rate
Numerator	Total dropped out during one year	Total # of dropouts	# of graduated in year 5
Denominator	Total students enrolled in one year	Total students enrolled	Average of years 1, 2 and 3
Relative Value	Yields smallest rate	Yields largest rate	Yields a large rate
Data Used	Yearly dropout rate of students (percentage)	CPS & Census Longitudinal student-level data	Percent of freshman class

Each rate has a unique formulation, yielding factor, and identifiable purpose; therefore, it is important to recognize that each rate builds off the others in some form, while taking on its own structure. Understanding the similarities and differences among all of the various rates is an integral part to analyzing and properly applying each rate. The longitudinal status rate is the epitome of a gold standard. It is the rate to which other dropout rates are compared. Most states and schools strive to achieve the longitudinal status rate. The longitudinal status rate is the most commonly used formula among school districts that have access to longitudinal data. Each of the other rates has some aspect of the longitudinal status rate, while offering a slightly different angle. The event dropout rate is a status rate that looks at students within only one school year, rather than the multiple years that are used in the status rate equation. When determining economic impact, the status rate must be used. It is necessary to use four-year longitudinal data to get the most accurate information because the use of longitudinal data is based on actual numbers instead of estimates. An event dropout rate cannot be used to calculate the economic impact of a dropout because it looks only at students who are currently in school, rather than those students who are not currently in school, but should be enrolled according to the school's records. Therefore, the denominators of the status rate versus the event dropout rate are different, in this respect. Furthermore, schools that do not have numbers for each grade level cannot use this formula to calculate a dropout rate (Texas Education Agency, 2008). For academics and researchers who do not have access to longitudinal data, the averaged freshman graduation rate is the formula used to calculate dropout rates because the rate is based on an estimation rather than raw (i.e. longitudinal) data.

The chart depicts the similarities and differences of each dropout rate calculation formula. The event dropout rate and longitudinal status rates have similar formulas except for the time period that each represents. The event dropout rate focuses on the illustration of dropouts in one year, while the status rates looks at dropouts over a period of time. The averaged freshman graduation rate, on the other hand, looks at the number of students that graduated 4 years after entering high school. Coincidentally, the event dropout rate yields the smallest dropout rate, while the status rates yield the largest rate. The averaged freshman graduation rate yields a large rate, but typically yields a rate that lands between the status rates and event rates. Each rate uses a multitude of different information sources, which require longitudinal, CPS or census data.



If a school uses four event dropout rates to produce a status rate, the outcome will yield a smaller rate than using a standard status rate, which is favorable to the school district numbers. The problem with using strictly event dropout rates for all four years and averaging, using the same number from one year to apply to all four years of a cohort, then is that not all years can be weighted the same. Inevitably, the number of students in each year will not be identical from year to year; therefore, a combination of four event dropout rates cannot be used to create an accurate status rate.

## Chapter 3: What is the Dropout Rate in Texas?

As discussed in Chapter 2, a status rate based on longitudinal cohort data is arguably the best measure of the dropout rate to use when examining a social issue like economic impact. Therefore, our analysis of the actual dropout rate in Texas will focus exclusively on two longitudinal status rates.

The first rate, an upper bound on the dropout rate, treats all students who did not graduate on time, or receive their GED by the time their class was scheduled to graduate, as dropouts and is, in essence, one minus the on-time graduation rate. Students who did not graduate, but will return to high school the next year, were classified as under represented by TEA, actual dropouts, and those coded as ID errors were all considered dropouts for this calculation.

Below is the equation for the upper bound dropout rate.

Upper Bound Dropout Rate:

$$\frac{\text{Cohort Non Graduates}}{\text{Cohort Non Graduates} + \text{Graduates}}$$

The second rate, a lower bound on the dropout rate, looked only at students formally categorized as dropouts. For the lower bound rate, we assume that all groups other than dropouts will eventually graduate, making the definition of the lower bound rate identical to the dropout rate's definition as defined by TEA.<sup>6</sup>

Although the assumption and numerator are different, the lower bound was calculated in the same manner as the upper bound, using the same longitudinal data. The only difference between the upper bound and lower bound computations is the assumption regarding the numerator. For the lower bound, the non-graduates category was split into only dropouts and everyone else. It was assumed that every student who did not explicitly drop out of school instead continued and graduated from high school. By this criterion, GED recipients are not considered dropouts. This assumption gives the lowest possible number of dropouts for the range. Below is the equation for the lower bound dropout rate.

Lower Bound Dropout Rate:

$$\frac{\text{Cohort Dropouts}}{\text{Cohort Dropouts} + \text{Non Dropouts}}$$

We calculate upper and lower bounds for the dropout rate at the state, Texas Senate district, Texas House district, and school district levels. The different levels of data were chosen in order to better compare and contrast the dropout rates throughout the state of Texas, and, to better see

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<sup>6</sup> The error factor associated with longitudinal data collection is discussed in Chapter 2.

time and regional trends in the data. Here, we focus on the statewide and district level analyses. Analyses for State House and State Senate are included in Appendices C and D.

We start our sub-state analyses in 2000 because there were major educational legislation and policy changes in 1999.<sup>7</sup> The statewide section covers data from 1996 to 2007. The statewide section covers a longer time span in order to demonstrate a more accurate portrayal of trend leading up to 2000. The data in the analysis is concluded in 2007 because it is the most recent data available for review. The data were collected from TEA, so that the actual data make the analysis accurate and relevant. The state and district level data are incorporated in the analysis to scrutinize a smaller level of data and see what differences, if any, surface at this smaller level. Another important factor, the change in exit level testing from TAAS to TAKS, occurred during 2004-05 school year (TEA 2005). The changes that occurred with the prerequisite and changing the exit level test as a requirement to graduate are also taken into consideration during the assessment.

## Statewide Analysis

Several aspects and levels of analysis need to be considered when examining the upper bound dropout rate for the state of Texas. Figures 3.1 through 3.5 depict the Texas dropout rate at the state level in three different ways—state aggregate, gender, and race/ethnicity (respectively)—from 1995 to 2007 for grades 9 through 12. These figures were compiled using information found in the 2008 TEA report titled *Secondary School Completion and Dropouts in Texas Public Schools 2006-07*. TEA based their figures on data gathered at the individual student level; the information provided within the report is more accurate and precise than any information that might be obtained from TEA by an outside source. The information was collected directly from the school districts on a yearly basis; therefore, the data holds more validity than sources that estimate their data. Thus, all dropout rates presented here were based on data that was collected at the student level.

Changes in dropout definition clearly affect the data. Any change in the dropout rate due to the changing definition would only be reflected in the 2006 and 2007 dropout rates and would not affect the previous years' rates. Because the rate increase began in 2005, the definitional change cannot explain all of the increase in the dropout rate. We believe that a majority of the change in rate is a reflection of an actual change in the dropout population.

Figure 3.1 depicts the upper bound and lower bound dropout rates from 1996 to 2007 for the state of Texas as a whole, with the upper and lower bound rates being depicted by the blue line marked with diamonds and a red line marked with squares, respectively. One of the most prominent trends shown in the figure is the gradual decline in the dropout rate from 1996 to 2004.<sup>8</sup> This decrease represents an 8.1 percentage point decrease in the upper bound dropout rate for the first nine years and a 8.2 percentage point decrease in the lower bound. Between 2002

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<sup>7</sup> Legislative changes in the 1999-2000 school year include teacher pay raises, alternative certification for teachers, changes in principal certification, and the decision to replace the TAAS test with the high-stakes TAKS test.

<sup>8</sup> Although regional analysis of the upper bound dropout rate begins with the 2000 cohort, data were available dating back to 1996 with the TEA *Secondary School Completion and Dropouts in Texas Public Schools 2006-07* report. Because of interesting trends observed with this data, the state level analysis includes the extra four years.

and 2005, the Texas upper and lower bound dropout rates decreased from 13.0 percent and 5.0 percent to 12.2 percent and 4.3 percent.

The trend began to change in 2005. Following the slight increase in 2005, the rate increased to an upper and lower bound rate of 17.4 percent and 8.8 percent in 2006, and further jumped to 20.0 percent and 11.4 percent in 2007. The increases in dropouts since 2005 reversed almost all of the dropout improvements in the previous eight years.

**Figure 3.1: Upper & Lower Bound Grade 9-12 Dropout Rate State Level for 1996-2007**

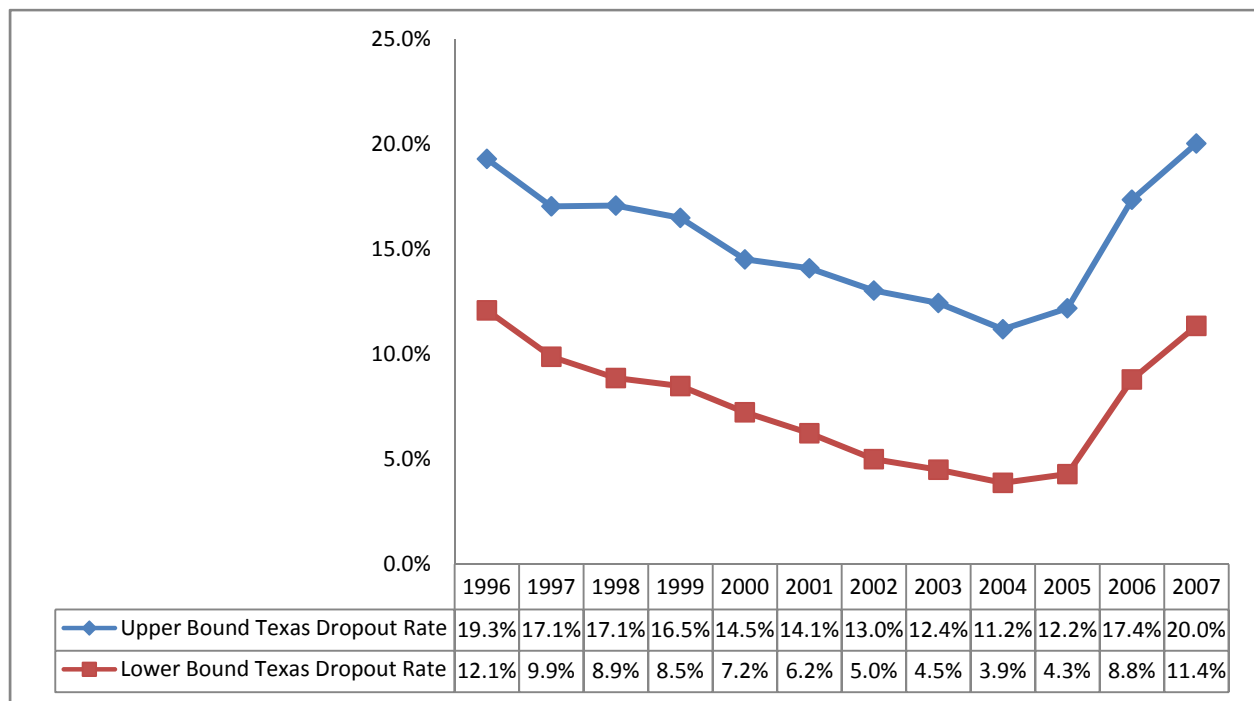
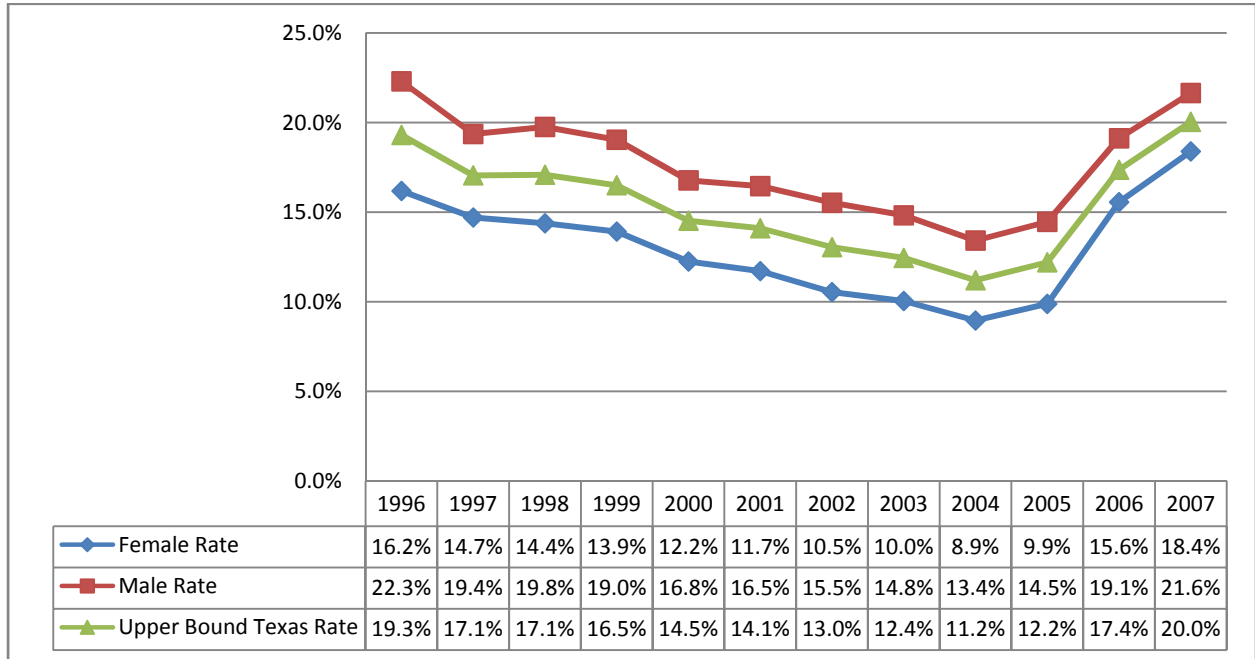


Figure 3.2 and Figure 3.3 breaks down the upper bound and lower bound state dropout rate by gender. The top red line, labeled male, and bottom blue line, labeled female, demonstrate rates derived by dividing the total number of male/female dropouts by the total number of students (that is,  $\frac{\text{Total \# of Male Dropouts}}{\text{Total \# of Male Students}}$  for males and for  $\frac{\text{Total \# of Female Dropouts}}{\text{Total \# of Female Students}}$  females). Thus, this rate represents the total number of gender-specific dropouts. Also included on these graphs are the upper and lower bound state dropout rate, which is depicted in green. These rates were included as a point of reference so that a comparison can be made not only between the sexes, but also between the sexes and the state as a whole.

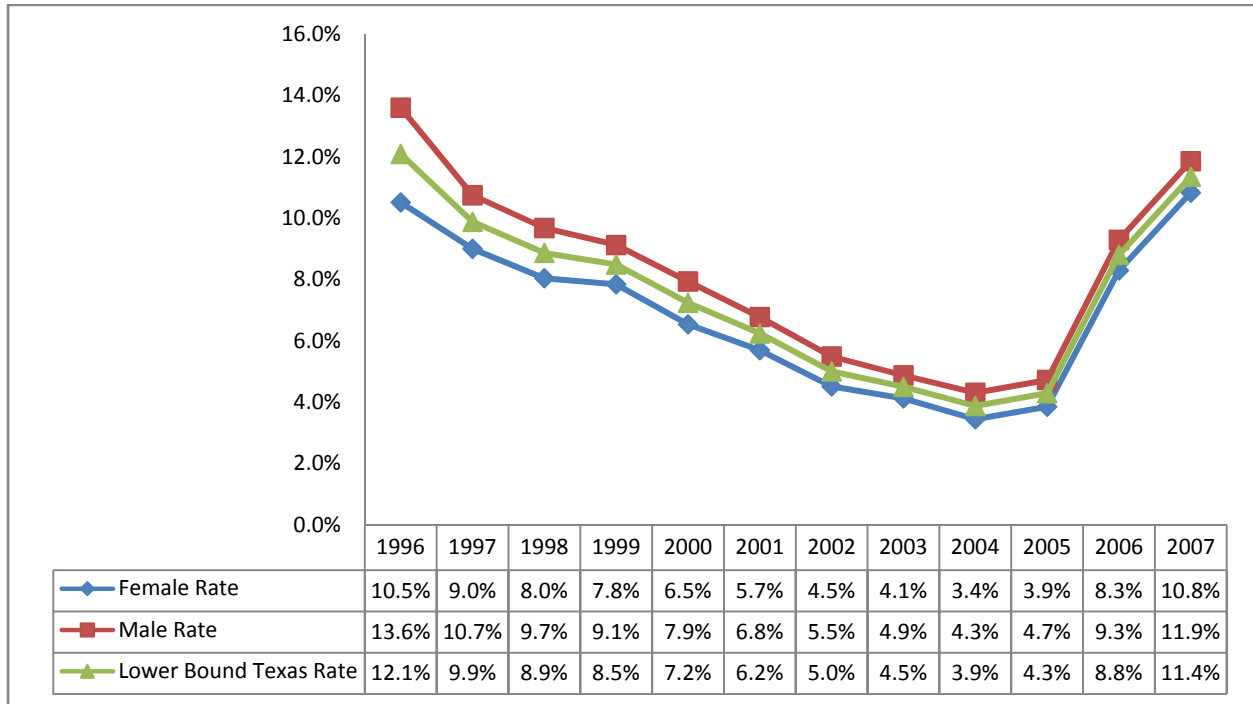
The trends represented in Figures 3.2 and 3.3 are reminiscent of those presented in Figure 3.1; both rates start out high (between 13.6 percent and 22.3 percent for males and 10.5 percent and 16.2 percent for females—lower and upper bounds, respectfully) and systematically decrease until 2004 (where the male and female rates drop to their lowest rates of 4.3 percent and 13.4 percent for males and 3.4 percent and 8.9 percent for females), and then increase steeply, with

the male rates reaching 11.9 percent and 21.6 percent and the female rates reaching 10.8 percent and 18.4 percent. Furthermore, Figures 3.2 and 3.3 indicate that for the past twelve years, males have dropped out at a higher rate than females. The data further indicates that over time the dropout gap between males and females has narrowed.

**Figure 3.2: Upper Bound Grade 9-12 Dropout Rate by Gender  
State Level for 1996-2007**

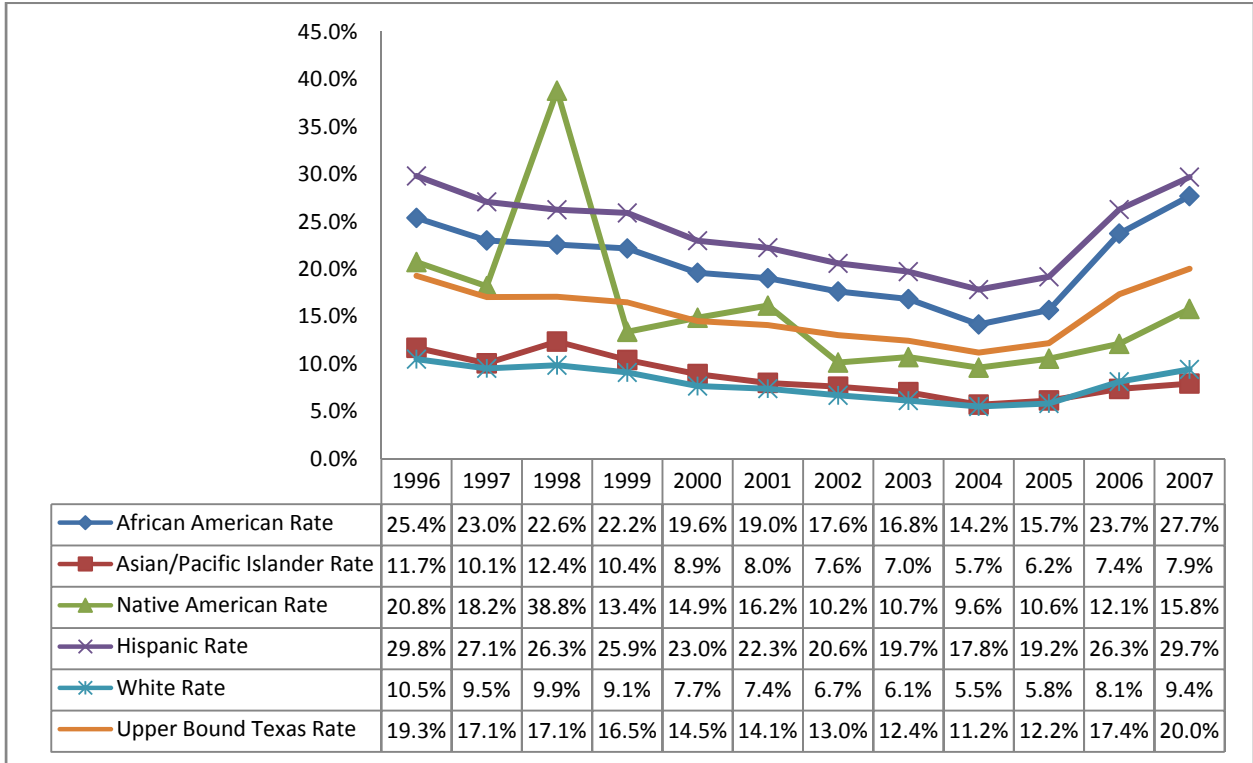


**Figure 3.3: Lower Bound Grade 9-12 Dropout Rate by Gender  
State Level for 1996-2007**

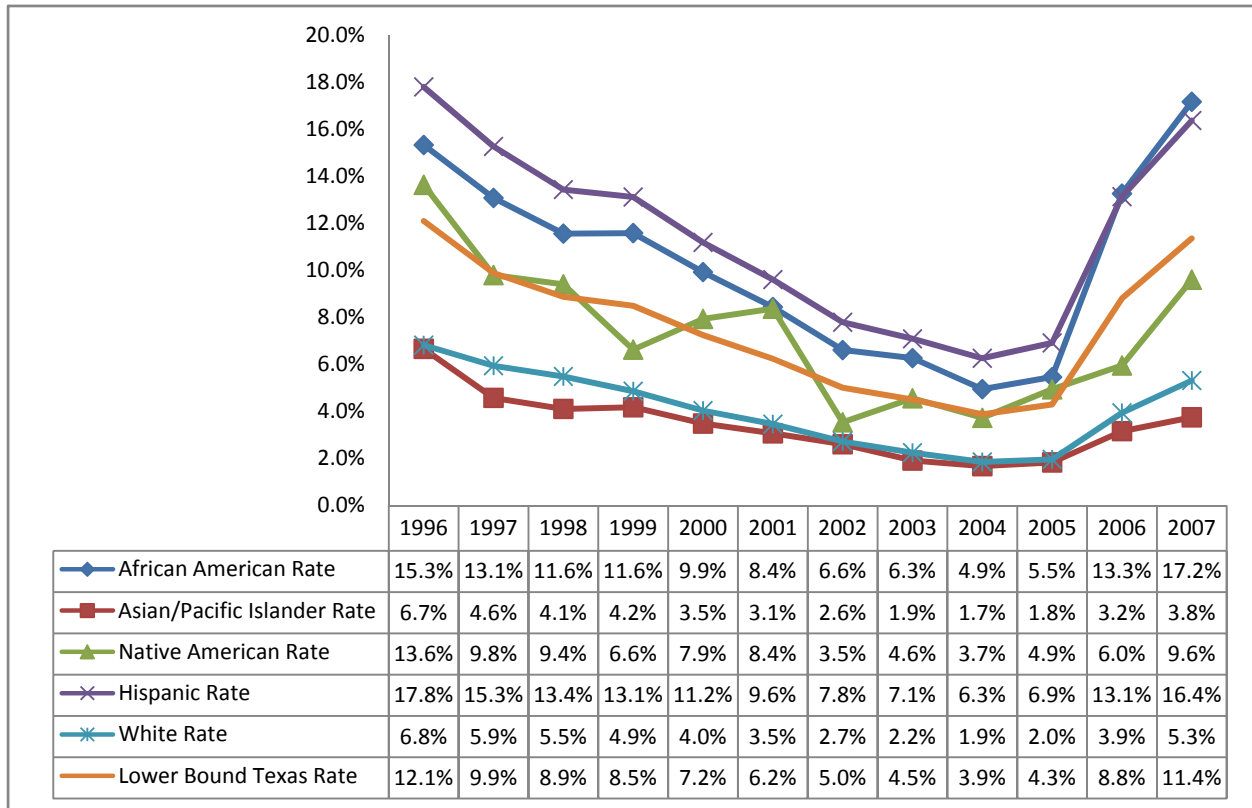


Figures 3.4 and 3.5 depict the upper and lower bound dropout rates by race and ethnicity. The legend codes each race as African American (dark blue - diamond), Native American (green - triangle), White (sky blue - asterisk), Asian/Pacific Islander (red - square), and Hispanic (purple - cross). The upper and lower bound Texas dropout rates were also included for comparison (orange - unmarked). The rates reflect the percentage of each group that dropped out (that is,  $\frac{\text{Total \# of African American Dropouts}}{\text{Total \# of African American Students}}$ , or, like the upper bound for 2007 shows, 27.7 percent of African Americans dropped out). Figures 3.4 and 3.5 also follow trends similar to the previous figures, which is especially evident when looking at the lines for both the African American and Hispanic dropout rates. Both rates are greater than the state rate and all other ethnicities and decrease over the first nine years (by 11.2 percentage points and 10.4 percentage points for African Americans and by 12.0 percentage points and 11.5 percentage points for Hispanics, upper and lower bounds respectively)—a 1 to 3 percentage point greater decrease than the state upper and lower bound changes of 10 percentage points and 8.2 percentage points, respectively. In addition, Figures 3.4 and 3.5 indicate that African American and Hispanic rates increase after a subtle rise in 2005, ending with rates of 17.2 percent and 27.7 percent, and 16.4 percent and 29.7 percent, with respect to race and the lower and upper bound dropout rates.

**Figure 3.4: Upper Bound Grade 9-12 Dropout Rate by Race/Ethnicity  
State Level for 1996-2007**



**Figure 3.5: Lower Bound Grade 9-12 Dropout Rate by Race/Ethnicity  
State Level for 1996-2007**



The White and Asian/Pacific Islander rates also follow the trend, but in a way that is not as extreme as the Hispanic and African American rates. The White and Asian/Pacific Islanders have the lowest dropout rates of all five classifications. In 1996, the lower and upper bound rates were between 6.8 percent and 10.5 percent, and 6.7 percent and 11.7 percent, with respect to ethnicity. The rates for both Whites and Asian/Pacific Islanders reached its lowest upper and lower bound point in 2004 with 5.5 percent and 3.9 percent, and 5.7 percent and 1.7 percent, respectively. By 2007, the White and Asian/Pacific Islander dropout rates had increased to 9.4 percent and 7.9 percent in the upper bound, respectively (with the lower bound increasing to 5.3 percent and 3.8 percent, respectively), and remain the lowest dropout rates of the five classifications.

The rate for Native American dropouts seemed to also follow the statewide trend. Though its rate, which began at the upper and lower bound rates of 20.8 percent and 13.6 percent in 1996, did not gently slope down, but instead increased and decreased as it approached 2004. This erratic rate behavior may be because there is a small population of Native Americans in Texas schools. For instance, there were a total of 506 students who identified themselves as Native American in the graduating class of 1996. Of the 506 Native Americans in this class, lower and upper bound rates indicate that between 69 and 105 students would drop out. Because Native Americans are fewer in number, their numbers and corresponding rates are more sensitive to change.



Due to all the discrepancies associated with the different demographics of the rates, it is also important for the state government to understand the implications of current policies and legislation before it adjusts them. Figure 3.6 compares the upper and lower bound dropout rates for the state of Texas (depicted by the solid blue and red lines, respectively) with the upper and lower bound dropout rates adjusted for the 2005-2006 leaver code change (depicted by the dashed blue and red lines, respectively)—which now categorizes students who met all graduation requirements, but did not pass the Texas Assessment of Academic Skills (TAAS) or the Texas Assessment of Knowledge and Skills (TAKS) as dropouts. Each of the adjusted upper and lower bound rates indicate slightly higher rates than the non-adjusted rates until 2005 where there was a 2.0 to 2.1 percentage point spike in the dropout rates. This jump in the adjusted rate is probably because the passing of the TAKS test became a requirement for graduation for the 2004-2005 school year. This is supported by the fact that during its first two years, 2003 and 2004, the TAKS test was not a requirement for seniors to graduate (although seniors were still required to pass the TAAS exit level exam).<sup>9</sup> Then, in 2005 when the TAKS test became a requirement, nearly three times as many people—around 6,200 students—did not graduate due to test failure than in the previous year.

Finally, it should be noted that the dropout rates are the same in the final two years. This is true because 2006 and 2007 already account for this non-graduating population in their dropout estimates. The formula for the calculations of the years from 2000 to 2005 follows.

Adjusted Dropout Due Rate to Exit Exam Failure:

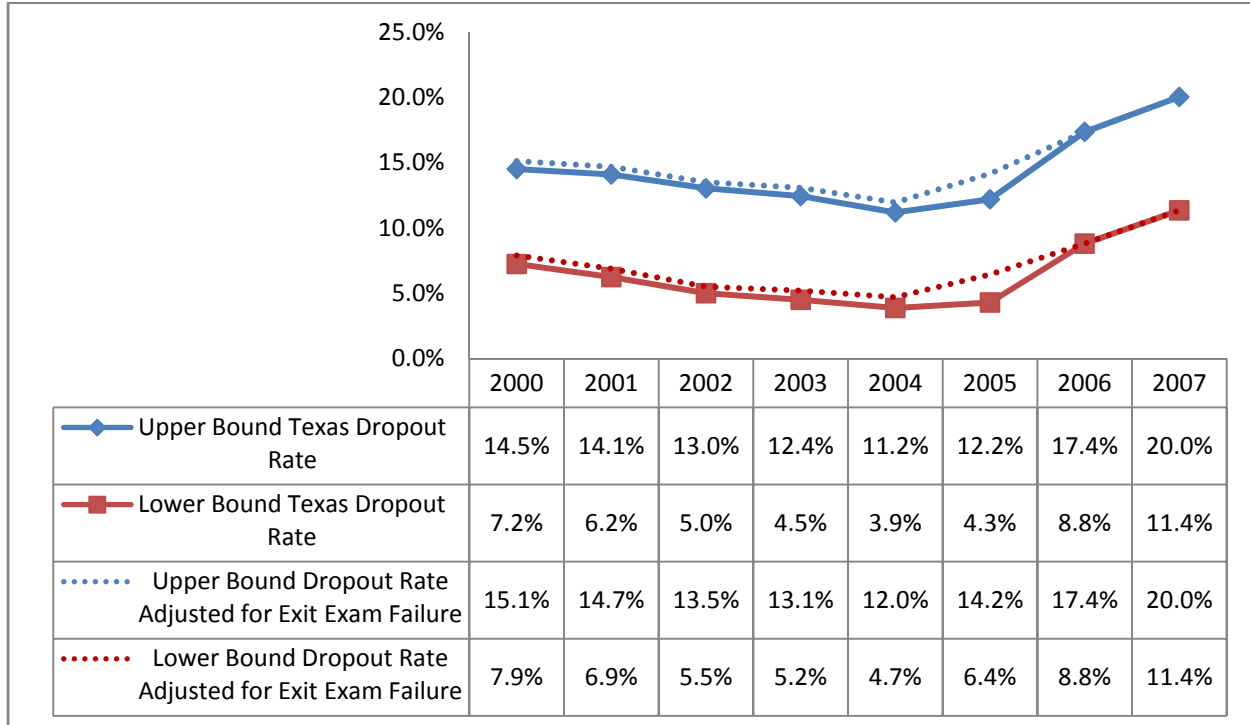
$$\frac{\text{Number of All Dropouts} + \text{Number of Students Who Complete All Graduate Requirements except TAAS/TAKS, And Did Not Graduate}}{\text{Total Number of Students}}^{10}$$


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<sup>9</sup> Under the TAAS program, students are tested in grades 3-8 and 10. The exit-level exam under the TAKS program, which students must pass in order to receive a high school diploma, was moved from the 10th grade to the 11th grade. The 2003–2004 school year was the first for which TAKS was the graduation testing requirement for the majority of grade 11 students. Students who were in grade 9 or above on January 1, 2001, or who were accelerating and planned to meet their graduation requirements by September 1, 2004, were expected to meet their graduation testing requirements. (See Texas Education Agency website for more details: <http://ritter.tea.state.tx.us/student.assessment/resources/techdig07/Chapters/Chapter2-TexasAssessmentofKnowledgeandSkills.pdf>)

<sup>10</sup> The total number of students includes those students who met all requirements to graduate, but did not pass the exit exam. This subpopulation of students is not included in the total population of students within a cohort because they were counted as leavers by TEA prior to 2006. We are including this subpopulation for the purpose of comparing the effects of the leaver code change to the dropout rates.

**Figure 3.6: Grade 9-12 Adjusted Dropout Rates  
State Level for 2000-2005**



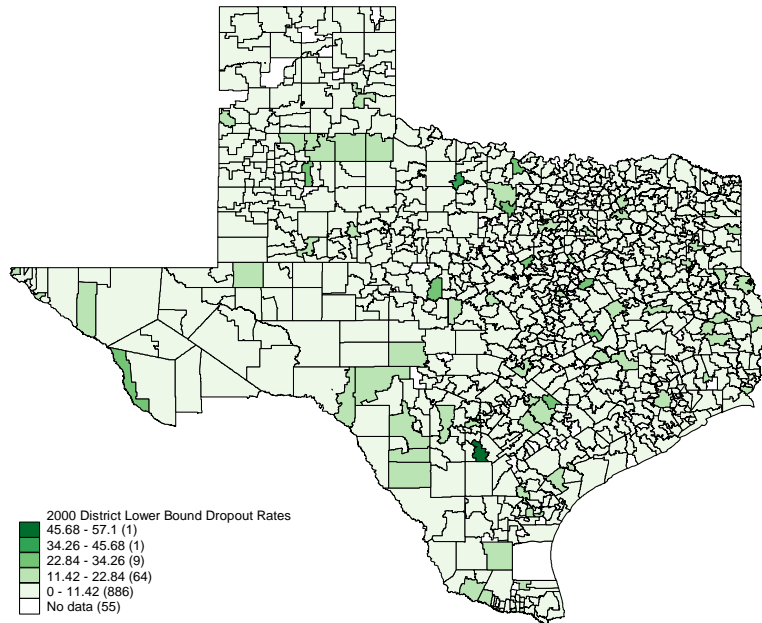
### District Level

The district level was examined to give an even more detailed and smaller geographical cut of the data than could be provided by the larger legislative districts. Figures 3.7 and 3.8, which are coded as green to indicate that they represent the dropout rate for a given year, show the lower bound dropout rate by district for the 2000 and 2007 school years, respectively. Both figures lend support to the hypothesis that urban and border regions experience higher dropout rates than most other regions around the state. Furthermore, rates appear to remain fairly consistent between 2000 and 2007, despite ongoing efforts to decrease dropout occurrence. A noticeable increase in dropout rates occurs along the border from 2005, an occurrence which is possibly due to more rigorous testing and graduation requirements and/or an improvement in the state's capacity for measuring. The changes observed in Figures 3.7 and 3.8 are in line with the statewide trends.

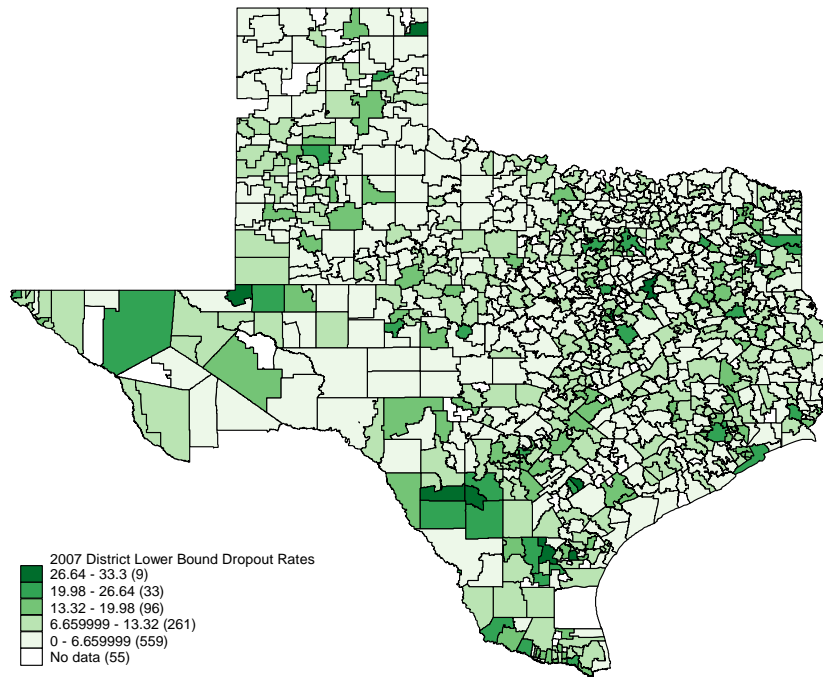
In both figures, lighter greens represent lower rates and darker greens represent higher rates. Two numbers can be found in the legend. The first number set represents the range of rates that each color represents and is denoted with a hyphen separating the two values. The second number is found in parentheses immediately following each range. This number signifies the number of counties found within the corresponding range. As discussed in the previous section, the Texas lower bound dropout rate trend starts high in 2000, decreases to its low in 2004, and then increases through the end of 2007, presumably due to policy changes.

As can be seen in Figure 3.7, the lower bound dropout rate for 2000 is primarily white and very light green (lower than 22 percent). However, Figure 3.8 shows a considerably larger proportion of the school districts with darker green. This is indicative of the increasing dropout rates from the 2000 to 2007, reflecting the overall trends seen in the statewide data.

**Figure 3.7: Lower Bound Grade 9-12 Dropout Rate  
District Level Data for 2000**

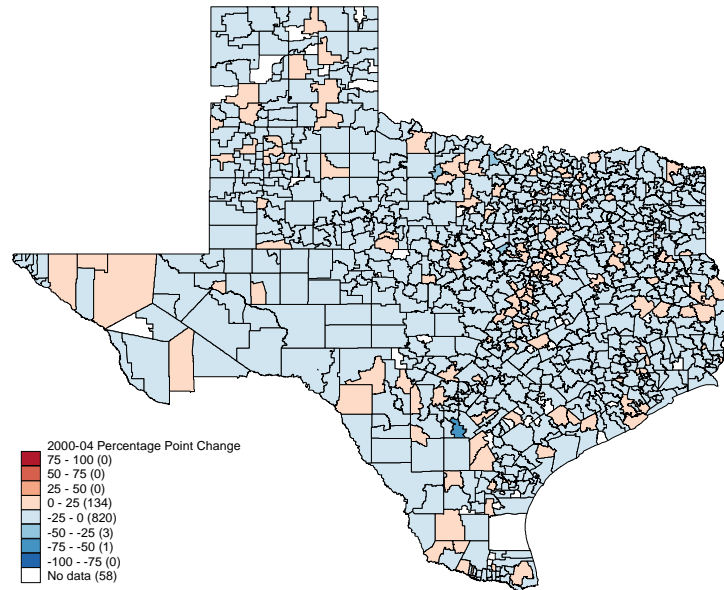


**Figure 3.8: Lower Bound Grade 9-12 Dropout Rate  
District Level Data 2007**



Figures 3.9 and 3.10 illustrate the district percentage point changes in the lower bound dropout rate from 2000-2004 and 2004-2007, respectively. Positive changes—changes that show a decrease in the dropout rate—are coded as blue, while negative changes—changes which indicate an increase in the dropout rate—are coded with red. As previously noted, the darker the color, the greater the percentage change. The district level maps give the best visual representation of the change in rates from 2000 to 2004. Figure 3.9 illustrates that although some districts had an increase in rate over the four year period, a majority of the state—800 districts—enjoyed a decrease in their dropout rates by between 0 and 25 percentage points. However, in stark contrast to Figure 3.9, Figure 3.10 indicates that between 2004 and 2007 a majority of the state—nearly 700 districts—has shown an increase in their district dropout rate by between 0 and 25 percentage points.

**Figure 3.9: Percentage Point Change in the Lower Bound Grade 9-12 Dropout Rate  
District Level Data for 2000-2004**



**Figure 3.10: Percentage Point Change in the Lower Bound Grade 9-12 Dropout Rate  
District Level Data for 2004-2007**

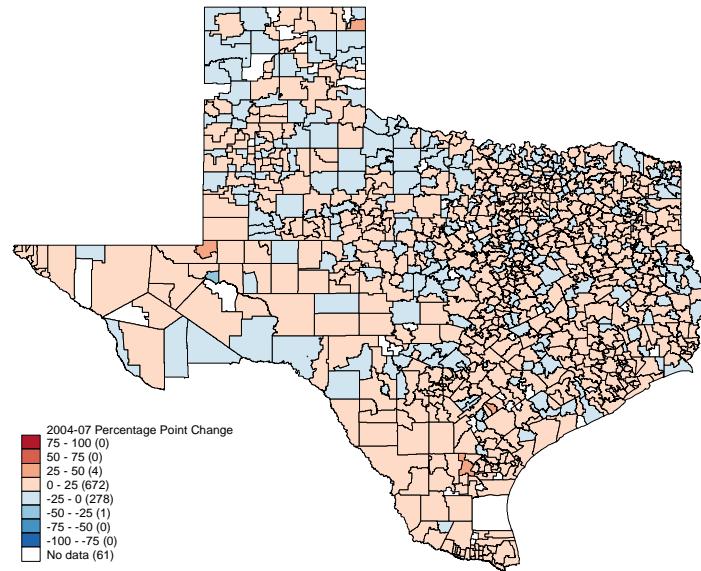
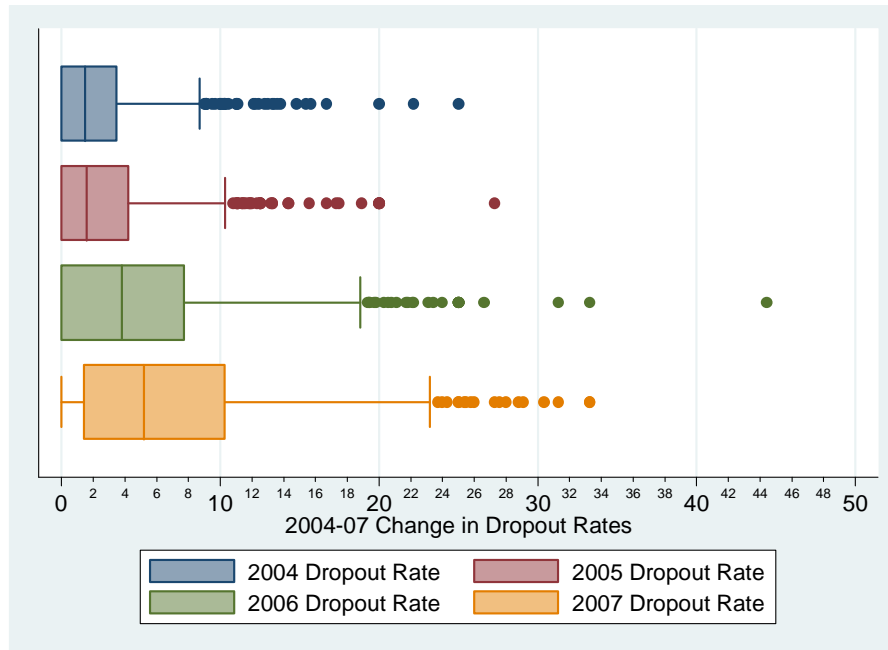


Figure 3.11 illustrates differences in district lower bound dropout rates from 2004, which is the year before the TAKS test was binding, to 2007. The center bar inside each colored box represents the median dropout rate for a given year (i.e. the 2007 median dropout rate is between 5 percent and 6 percent). The width of each box is determined by the spread of the middle 50 percent, with the box centering on its mean rate. The dots to the side of the outer bar represent the outliers. The box plot mirrors the statewide trend previously outlined in this chapter.

Ultimately, a district by district assessment of the lower bound dropout rates in Texas allows TEA and researchers to identify problem areas, with one caveat—differences among schools could skew district-level data. For instance, if one school within a district performs significantly better or worse than others, those numbers could affect dropout rates for the entire district.

**Figure 3.11: Upper Bound Dropout Rate Fluctuations  
District 2004 to 2007**



### Texas House and Senate District Levels

Dropout rates were also broken down by Texas House and Senate districts. Descriptions and maps similar to those previously included in this section can be found for both Texas House and State Senate district levels in Appendices C and D. The overall trends noted in both the statewide and school district level analyses are identical to those found at the state legislative levels. When viewing the maps at different levels, it is important to note that higher school district dropout rates are not necessarily indicative of high House or Senate district dropout rates. This is because the TEA data used to calculate each rate was gathered from student level data for each breakdown. Thus, school district, House, and Senate dropout rates represent the actual number of dropouts within a given boundary.

The data used to create the House and Senate maps were purchased from TEA, which converted individual data to these legislative level aggregates. Due to time and financial constraints, this study focused primarily on the most current and available years (2000-2007). The year 2000 was chosen as a starting point because we wanted to capture years prior to the implementation of NCLB and after 1999, when the educational policy environment in Texas changed. The year 2007 was chosen because it was the most recent year available. Thus, the range of 2000 to 2007 allows us to straddle the effect of NCLB by providing periods of time both before and after its implementation, and also allows us to focus on the period after the major educational reforms of 1999.

## Implications

In an effort to see the effects of the continuation of this trend, we projected the upper and lower bound rates for the class of 2012. As demonstrated in Chapter 2, we found an artificial spike in the number of enrolled 9<sup>th</sup> graders in the state of Texas. Due to this interesting pattern in the data, we used the number of 7<sup>th</sup> graders in the class of 2012's cohort to predict the number of dropouts. Current demographic trends show that the number of minorities in the state is increasing every year. We assumed that every ethnic subpopulation from the class of 2012 would drop out at the same rate as their corresponding subpopulation from the class of 2007. When applying the demographic dropout rates from the class of 2007 to the cohort of 2012, we found that, if nothing changes between now and their graduation, the class of 2012, whose cohort consists of over 300,000 students, would have between 40,519 and 73,692 dropouts—or around 12.2 percent to 22.2 percent.

Furthermore, when everything is kept constant, we concluded that the Texas school system would lose between 8,393 and 14,038 African Americans, 417 and 912 Asian/Pacific Islanders, 24,893 and 45,978 Hispanics, 115 and 195 Native Americans, and between 6,701 and 12,569 Whites to dropping out in 2012. Similar to the trend outlined earlier in this chapter, both Hispanic and African American populations show the highest dropout projections. However, the latest figures indicate that the number of Hispanic dropouts will be nearly three times greater than the number of dropouts for any other ethnicity by 2012. If something is not done about the growing dropout rate, the repercussions could be potentially devastating to the state as a whole, especially if the fastest growing racial/ethnic population in Texas is being left behind.

## Chapter 4: Economic Impact

Each year, tens of thousands of students drop out of school in Texas. The economic implications are striking and worrisome. Compared with high school graduates, dropouts are less likely to be employed, earn less when they are employed, pay less in taxes, receive more in direct welfare payments and are more likely to be incarcerated. In this chapter, we estimate the economic implications of each of these factors for the State of Texas.

Our analysis focuses on personal income, gross state product (GSP), potential loss of tax revenue, welfare, and crime related costs. We use data from the U.S. Census to predict the effect of a high school diploma on the probability of employment, the average hourly wage, total annual hours worked and the amount of welfare received by an individual. We estimate the cost of incarceration using academic research on the effects of educational attainment and incarceration costs involved.

Our analysis is based on a human capital model of education. The human capital model suggests that schooling gives students skills that enhance their productivity. Thus, students who do not drop out will have higher skills and a correspondingly higher potential wage (Weis 2005). Although we recognize that there are other characteristics of high school graduates that are important to have—such as possessing socialization skills, being a good citizen and having a good quality of life—we cannot reliably measure those benefits of graduation, and therefore focus only on labor market benefits.

As an alternative to the human capital model, some scholars believe that education acts as a signaling model for workers. This means a person's education signals to an employer the individual's innate ability to perform the job. In return, "students will choose a length of schooling to 'signal' their ability to employers, and employers will demand a minimum level of schooling from applicants in order to 'screen' their workers" (Weis 1995, 133-134). This model suggests that a high school diploma signals to potential employers certain characteristics that a person has, such as their IQ, work ethic, ability to get to work and other important qualities about a person. The signaling model further suggests that forcing students to go to school will not increase a person's wage or skill in the workforce. If the signaling model is accurate, then inducing students to remain in school will have little impact on the economy other than the cost of educating those students for an additional year or two.

It is more than likely that education is a combination of both the Signaling Model and the Human Capital Model. We believe schooling does teach students necessary skills for the workforce, but also acknowledge that there are differences in characteristics that cannot be fully measured, between those who choose to drop out of high school and those who graduate. This occurrence cannot fully be measured because it is impossible to completely disentangle the effects of a high school diploma and the innate characteristics of a person, regardless of their education. Because we cannot fully attribute wage difference to educational attainment, the wage difference between high school dropouts and graduates overstates the gains from lowering the dropout rate. On the other hand, the potential gain in attaining a high school diploma is also understated because our analysis only considers the wage difference for those who chose to graduate high school rather



than dropping out. It does not, however, account for the potential increase in wages for those who achieve beyond a high school diploma.

The rest of this chapter will explain the methodology we used to perform the analysis. This includes where and how we extracted the data, the regressions used, the predictions made, the results and their implications. The results were then combined with the previously estimated number of dropouts to demonstrate the lower bound and upper bound cost of dropouts to the state. Acknowledging that there is also a cost to the state if these students were to stay in school, we compared the cost of dropouts to the amount it would have cost to educate these students had they continued.

## The Data

To estimate the economic impact dropouts have on Texas, we needed to predict the effect that attaining a high school diploma would have on annual earnings, the potential lost tax revenue due to the difference in annual earnings, and the effect a diploma has on the amount of welfare payments received by an individual. We used the individual responses from the 2000 U.S. Census (5-Percent Sample)<sup>11</sup> and 2001-2007 American Community Survey (ACS).<sup>12</sup> The ACS is an annual survey distributed by the Census Bureau, similar to the long form of the Census, but using a smaller sample size.<sup>13</sup> Both data sources contained information on the earnings, hours worked, weeks worked, employment status, educational attainment, occupation, location, and demographic characteristics of individuals needed to conduct this analysis. Because the purpose of this study is to serve as an informative tool for Texas policymakers, we restricted the data to include only those observations of individuals residing within Texas to produce the most accurate snapshot of the dropout issue within the state. Our predictions were made using the 2000 Census data, but we replicated our predictions using the ACS data for the purpose of checking the continued reliability and trends of the 2000 data. See Appendix E, Tables E.10 and E.11 for ACS data output. The results provided by the ACS data demonstrated that the results from the Census were not time sensitive and that the trends and results continued through 2007. After determining its reliability, we used the Census data to make our predictions because of its much larger sample size.

## Methods

GSP is “the sum of incomes earned by labor and capital and the costs incurred in the production of goods and services” (Broda and Coakley 2008, 109). GSP includes the wages and salaries of workers, income earned by small businesses, corporations, and business taxes (Broda and Coakley 2008). Using this definition of GSP, we determined the impact of one dropout, as well as one cohort, on the State of Texas by calculating the present value of the potential loss of

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<sup>11</sup> The 2000 U.S. Census 5-Percent sample represents 5 percent of the U.S. population

<sup>12</sup> Extracted from the Integrated Public Use Microdata Series (IPUMS), a system designed to collect and distribute Census data for economic and social research (Minnesota Population Center)

<sup>13</sup> The 2001-2004 ACS surveys accounted for approximately 0.4 percent of the population, while the 2005-2007 ACS surveys accounted for about 1 percent. While increasing in sample size, these are still small samples compared to the 5 percent random sample of the population provided by the 2000 Census.

annual income that could have been earned by an individual had they earned a high school diploma.

To begin estimating the annual earnings differences between those who drop out of high school and those who attain a high school diploma, we created a series of dependent variables needed to calculate the predicted annual earnings of an individual. These new variables included the probability an individual is employed, hourly wage, and the total annual hours worked. In addition to finding the impact on the economy as a result of earnings differences, we also wanted to determine if attaining a high school diploma affected the amount of welfare received by an individual.

- Probability of employment: We used an individual’s response to the employment status question from the Census to create an indicator variable representing the probability of employment.<sup>14</sup>
- Total hours: Based off an individual’s responses to the approximate number of weeks they work in a year and the approximate number of hours they worked per week, we generated the total number of hours worked annually per individual.

Total Hours: Weeks worked in a year times hours worked per week

- Hourly wage: This variable represents a person’s hourly wage based on their annual income and total hours worked in a year.<sup>15</sup>

Hourly Wage:

$$\frac{\text{Annual Wage and Salary Income}}{\text{Total Hours}}$$

- Welfare received: This variable represents the amount in welfare an individual reported receiving annually.<sup>16</sup>

These variables allowed us to calculate the difference in earnings and amount of welfare received between a high school dropout and graduate. By establishing these estimates, we were able to estimate more accurately the economic impact dropouts have on the state. It is important to note that when referring to a high school graduate in this report, we are referring to an individual who graduated from high school or received a GED, but went no further in educational attainment. In other words, a high school graduate in our analysis does not include those who went on to receive any college hours.

Using the four dependent variables mentioned previously in this section we conducted four different regression analyses, estimating the effects of the many indicator variables. To provide

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<sup>14</sup> The traditional definition of being unemployed includes only those who do not have a job, but are seeking employment. Therefore, those who responded as “not in the labor force” were not included in this particular estimate.

<sup>15</sup> For purpose of the analysis, we generated a variable that calculated the natural log of hourly wage as to account for the nonlinear nature of hourly wages.

<sup>16</sup> The data obtained was coded so that amounts received greater than \$12,300 were expressed as the state means of values above \$12,300.

a more precise snapshot, we separated the results of our estimates and predictions by gender, race, ethnicity, and location. We used the same calculations, but specified which subpopulation to use for each estimate. For example, to compare males and females, we did the calculations once using only the males, and then again with only females. As explained previously in this section, the four estimates calculated include the probability of being employed, hourly wage earned, total annual hours worked, and the amount of welfare received that year.

Before conducting these estimates with the purpose of analyzing the effect of a high school diploma, many others had to be accounted and controlled for to isolate the effect of a high school diploma. The explanatory variables controlled for within the estimates included:

- Gender
- Age<sup>17</sup>
- Number of children ages 0-18<sup>18</sup>
- Number of children under age 5<sup>19</sup>
- Ethnicity<sup>20</sup>
- Race
- Location<sup>21</sup>
- Educational Attainment<sup>22</sup>
- Industry\*<sup>23</sup>
- Occupation\*<sup>24</sup>

*\*Industry and Occupation were used as fixed effects only in the estimate for hourly wages.*

## Results

This section is broken down into the four different regressions and the results predicted for those of a high school graduate and a dropout. Each of these sections will be further broken down into the results for: all observations, gender, race, ethnicity, and location. To calculate the predictions, we first predicted for those without a diploma who were 18 or older, and then used the model to assume these same individuals did in fact receive a diploma, but did not receive any college hours, to show the impact graduating high school would have on a person's probability of being employed. By using the same population we were able to see the effect of a diploma, while keeping all other characteristics of those individuals the same. Table 4.1 compares the demographic characteristics of the typical high school dropout in Texas with those of the typical high school graduate in the state.

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<sup>17</sup> In our estimates we included a variable (age squared) that accounted for the fact age is not linear. Over time the effect of a person's age will change.

<sup>18</sup> Number of an individual's *own* children living in the same household

<sup>19</sup> Number of an individual's *own* children under the age of 5 living in the same household

<sup>20</sup> Hispanic origins include those of Puerto Rican, Cuban, Mexican, and other Hispanic origins.

<sup>21</sup> Where a person works, whether in an urban or rural area, could possibly have a large impact on their income regardless of other characteristics or even educational attainment.

<sup>22</sup> Because the purpose is to compare a high school graduate with a dropout, variables had to be created to account for these "levels" of attainment as well as the many other levels of education.

<sup>23</sup> Analysis includes indicators for major industry types, such as agriculture, mining, and public administration.

<sup>24</sup> Occupation: Indicator variables for the over 700 occupations were absorbed into the analysis.

Table 4.1: Demographic Characteristics

Variable	High School Dropouts		High School Graduates	
	Mean	Std. Dev.	Mean	Std. Dev.
Annual Wage and Salary	\$14,592	20,784	\$21,361	23,550
Employed	0.89	0.31	0.94	0.23
Hourly wage	\$11.67	25.78	\$13.95	25.99
Hours worked per year	1604	941.97	1861.96	842.15
Female	0.38	0.48	0.46	0.50
Age	38.31	14.35	38.86	13.38
Number of Children	1.13	1.38	0.92	1.15
Number of Children under age 5	0.23	0.56	0.19	0.49
Welfare Received Annually	51.15	539.48	24.53	394.30
Hispanic	0.53	0.50	0.23	0.42
Non-Hispanic White	0.30	0.46	0.60	0.49
Black	0.08	0.27	0.11	0.32
American Indian or Alaskan Native	0.01	0.08	0.01	0.08
Chinese	0.00	0.04	0.00	0.04
Japanese	0.00	0.01	0.00	0.02
Other Asian or Pacific Islander	0.02	0.13	0.01	0.11
Two Major Races	0.03	0.16	0.02	0.13
Three or more Major Races	0.00	0.02	0.00	0.03

*Integrated Public Use Microdata Series and authors' calculations*

## Employment

To find the probability of employment we used a probit analysis, so we could observe the percentage point change in the probability of being employed dependent upon each of the explanatory variables. After estimating the different effects, we predicted the probability of being employed for those 18 or older with a diploma and for those without. Table 4.1 summarizes the results while Appendix E presents the underlying regression estimates and standards errors.

## All Observations

First we conducted the estimates with everybody included to observe the overall effects of a high school diploma.<sup>25</sup> The predicted probability of employment for a high school dropout was 0.89, and for a high school graduate it was 0.93. In other words, in Texas, having a high school

<sup>25</sup> See Appendix E: Table E.1

diploma had a 4 percentage point positive impact on the probability of an individual being employed. In fact, the probability of a person being employed slightly increased as educational attainment increased to the level of a bachelor's degree. However, the probability began to slightly decrease for those with a master's, professional, and doctorate degree. Being female had a slight negative effect of 1 percentage point on the probability of being employed, while being black had a negative 4 percentage point impact.

### *Gender*

Next, we split the sample and analyzed the outcomes for men and women separately.<sup>26</sup> The results from these estimates predicted a 0.87 probability for dropouts, and a .92 probability for graduates. It is important to note that only those individuals who were considered a part of the labor force were included in this particular estimate. Therefore, a high school diploma for a female meant she was 5 percentage points more likely to be employed than without. For males however, there was a 0.91 probability of being employed without a diploma, and a 0.94 probability of being employed if they graduated high school. Males were slightly more likely to be employed than females, but having a high school diploma had a larger effect on a female's likelihood of being employed compared to that of the males 3 percentage point impact.

The other large difference between males and females in this regard was how having children of their own living in the same residence affected their probability of employment. For females, there was only a very slight positive impact of 0.4 percentage points per child, while for males there was a positive 1.5 percentage point increase per child.<sup>27</sup> We assume this is because women are more likely to stay at home to care for a child and thus never enter the labor force to begin with.

### *Ethnicity and Race*

For this estimate we divided the sample into four distinct ethnic groups—Hispanic whites, non-Hispanic whites, blacks and others—and analyzed each group separately.<sup>28</sup> First, we analyzed only those who were white and of Hispanic origin.<sup>29</sup> The results showed that the probability of being employed for whites of Hispanic origin that dropped out was 0.89, and 0.93 for those who graduated—a 4 percentage point difference in the probability of being employed. This was the same as the results for graduates versus dropouts when all observations were accounted for, so the white Hispanics were about average when compared to the rest of the population in terms of employment. Non-Hispanics who dropped out had a 0.91 probability of being employed while graduates had a 0.95 probability, so even though their overall probability of being employed was greater, the impact of a high school diploma remained the same at a 4 percentage point positive impact. Being female had a larger impact on those who were Hispanic than for non-Hispanics. Specifically, being female had a negative 2.5 percentage point impact for those who were Hispanic, and only a negative 0.6 percentage point impact on non-Hispanics.

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<sup>26</sup> See Appendix E: Tables E.2 and E.3

<sup>27</sup> Just as with age, the effect of the number of children is nonlinear and will eventually cause a slight decrease.

<sup>28</sup> See Appendix E: Tables E.4 and E.5

<sup>29</sup> The Hispanic whites category includes all individuals who answered “white” or “other race” and indicated they were of Hispanic origin. We could not separately analyze those who were of different races and Hispanic, such as Hispanic blacks, because the sample number would be too small.

A high school diploma had the largest impact on those who were black,<sup>30</sup> with a 6 percentage point increase in the probability of being employed for those graduating high school.<sup>31</sup> The probability of a black dropout being employed was only 0.84, but this number jumped to 0.90 with a high school diploma. Compared to many of the other categories, being female had very little effect (negative 1 percentage point) on the probability of being employed. However, as educational attainment increased for this race, so did their probability of being employed, and at a higher margin than any other category. For example, within this category, somebody with a bachelor's degree was 7 percentage points more likely than a high school dropout to be employed. To put this in perspective, in our first estimate, which included everybody from all races, a person with a bachelor's degree was only 4 percentage points more likely to be employed compared to a high school dropout.

The all others category included all those who were not included in the “white Hispanic”, “white non-Hispanic”, and “black” categories.<sup>32</sup> Again, the sample size would have been too small to separate the races further. This category included Pacific Islanders, Native Americans/ Alaskan Natives, and Asians. Even with all others included in one category, this subgroup is drastically smaller than the others. Because of this some of the effects will not be as accurate. Those in this category had an average probability of being employed at 0.89 for dropouts and .93 for graduates. Therefore, just as when all observations were included, a high school diploma had a 4 percentage point positive effect on the probability of having a job. When we analyzed the effects of the other variables for “all others”, we found very little variation from “the norm”. In other words, being female had a small negative effect, having a child had a small positive effect and higher educational attainment increased the probability of being employed slightly.

### *Location*

An individual may have a different probability of being employed based simply on their location. We again split the sample and conducted the estimate two more times, first with those who lived in a metropolitan area, and then with those who lived in rural areas.<sup>33</sup> Those who lived in metropolitan areas were average in terms of employment, with 0.89 for dropouts and .93 for graduates. This outcome was not surprising with 80 percent of the Texas population living in urban areas. However, those who lived in rural areas are just 0.01 above the average for both dropouts and graduates, with rates of 0.90 and 0.94, respectively. However, the difference in the probability of being employed between those with and those without high school diplomas was 4 percentage points in both rural and metropolitan areas. Again, there was little deviation from the average when we analyzed the effects of the other variables.

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<sup>30</sup> TEA refers to this race as African-American, while the census data refers to it as “black”. The census does this so as to account for blacks from all origins, instead of just those from Africa.

<sup>34</sup> See Appendix E: Table E.6

<sup>32</sup> See Appendix E: Table E.7

<sup>33</sup> See Appendix E: Tables E.8 and E.9

Table 4.2: Probability of Employment

	No diploma	HS Diploma	Difference
All	0.89	0.93	0.04
Female	0.87	0.92	0.05
Males	0.91	0.94	0.03
White Hispanic Origin	0.89	0.93	0.04
Nonhispanic	0.91	0.95	0.04
Black	0.84	0.9	0.06
Everybody else	0.89	0.93	0.04
Met. Area	0.89	0.93	0.04
Rural	0.90	0.94	0.04

*Integrated Public Use Microdata Series and authors' calculations*

### Hourly Wage

The model used to estimate the effects on a person's hourly wage was an ordinary least squares regression with fixed effects for occupations and major industry groups. This particular estimate only accounted for people who were employed with positive wages. See Table 4.3

### All Observations

When all observations were included, attaining a high school diploma affected an individual's hourly wage by 10 percentage points.<sup>34</sup> This means by graduating high school a person increased their hourly earnings on average by 10 percent over their working life. For the purpose of this study it was important to show the effects of a high school diploma without assuming a person continued further education. However, it is important to recognize that by obtaining some college hours, an individual increased their hourly earnings by an additional 6 percent (16 percent higher than if they had no high school diploma). Having an associate's degree raised hourly wages up another 6 percent from those with some college, and a bachelor's degree increased hourly wages an additional 17 percent (37 percent higher hourly wages than those who dropped out of high school). There were again increases in hourly wage at the master's and professional degree levels, and it finally reached a total of a 62 percent increase for those with doctorate degrees compared to dropouts.

### Gender

We again split the sample and estimated the effects for only the males, and then again with only the females.<sup>35</sup> A high school diploma had a 3 percentage point greater effect on hourly wage for males than it did for females. A female graduate made about 8 percent more an hour, given they were employed, than a female dropout. Male graduates earned about 11 percent more than male dropouts.

<sup>34</sup> See Appendix E: Table E.1

<sup>35</sup> See Appendix E: Tables E.2 and E.3

The same trend continued as for “all observations” when higher educational attainment levels were analyzed for males and females. In short, the higher the level of educational attainment, the greater the hourly wage for both males and females. One possible explanation for the 3 percentage point difference for males and females may be attributed to children. Evidence for this was demonstrated in the effect the number of own children (ages 0-18) an individual lived with has for males versus females. For example, with one child at home, a female earned 1 percent less an hour than if there were no children, but males earned almost 7 percent more an hour with one child at home. However, something interesting along those same lines, was that for females who had a child under the age of 5 at home, their hourly wage increased by 5 percent, while for males it only increased by 1 percent. What this means is that not only do children have an opposite effect for males and females, but the age of the children also affect males and females hourly earnings differently. This serves as evidence that women with young children at home only work in the labor market when the wage premium is large enough to justify not staying at home.

### *Ethnicity and Race*

Having a high school diploma had a 4 percentage point larger increase in hourly wages for Hispanic whites than it did for non-Hispanic whites.<sup>36</sup> Specifically, a Hispanic white with a high school diploma made 11 percent more an hour than one without a diploma, while a non-Hispanic white with a diploma only earned approximately 7 percent more an hour than a non-Hispanic white dropout. The number of children at home had a positive effect on hourly wage for both ethnicities, but approximately 1 percentage point higher for those of non-Hispanic origin. Being female had a drastic negative effect for both ethnicities; a 14 percent decrease for white Hispanics and a 19 percent decrease for non-Hispanic whites. Also, when analyzing the number of children under the age of 5, those of non-Hispanic origin had an increase of approximately 4 percent an hour while those of Hispanic origin had about a 2 percent increase. Again, other trends followed those of “all observations” including those of educational attainment.

Similar to the non-Hispanic whites, those of the black race also had a 7 percentage point increase in hourly wages by attaining a high school diploma.<sup>37</sup> However, being a black female, while still a negative impact, made only an 8 percentage point difference in hourly wages. This number was still rather large, but dimmed in comparison to the effect of being a white female, both Hispanic and non-Hispanic. However, this could simply reflect that there was more stay at home moms among whites. The trend continued once more for increased hourly wages as educational attainment increased, but for blacks, they were consistently a few percentage points lower in hourly wage differences than the other subpopulations analyzed. This does not mean necessarily they were being paid less, but rather that the educational attainment levels had a smaller effect on their hourly wages. This may also be attributed to the fact that other than the “all others” category, the black category had much fewer observations than the others.

As previously mentioned, the all others subgroup had the least amount of observations and was therefore influenced by outliers more so than the other categories. Table 4.3 shows that for the most part, this category was similar to the others in terms of hourly wages. A high school

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<sup>36</sup> See Appendix E: Tables E.4 and E.5

<sup>37</sup> See Appendix E: Table E.6



diploma increased hourly wages about 7 percentage points for this category of individuals just as with blacks and non-Hispanic whites.<sup>38</sup> Being female had a negative impact of 12 percentage points on wages, generally in the middle of the other categories. The number of children at home had a 2 percentage point increase in hourly wages per child, while the number of children under age five had a positive 4 percentage point impact. Similar to those in the black category, educational attainment has increasing positive effects, but was much less than the average. This was more than likely due to the smaller number of observations available.

### Location

With such a large percentage living in metropolitan areas, the results for this subgroup almost mirrored the results from when all observations were included.<sup>39</sup> Having a high school diploma had only slightly a greater impact for those living in metropolitan areas versus rural. Those residing in metropolitan areas with a high school diploma tended to earn 10 percent more than those who dropped out of high school, and those in rural areas tended to earn 9 percent more than dropouts. In terms of hourly wage, these two categories of individuals, those residing in metropolitan and rural areas, followed the same trends as for “all observations” very closely.

Table 4.3 Hourly Wages and Percentage Difference

	No diploma	HS Diploma	Percentage Difference Diploma
All	10.30	11.40	.10
Female	9.16	9.93	.08
Males	11.53	12.90	.11
White Hispanic origin	9.13	10.21	.11
Non Hispanic	11.22	12.04	.07
Black	10.57	11.38	.07
Everybody else	10.66	11.39	.07
Met. Area	10.57	11.73	.10
Rural	9.70	10.62	.09

*Integrated Public Use Microdata Series and authors' calculations*

### Total Annual Hours

For this estimate we used a tobit model. This specific estimate included both those employed and unemployed, and a tobit model allowed us to account for the many zeros that would be present due to those unemployed. However, those not in the labor force were excluded from this regression. See Table 4.4.

### All Observations

When analyzing the effect of a high school diploma on hours worked for all observations, we found that those with a high school diploma worked approximately 211 more hours annually than those who dropped out of high school, all other things being equal.<sup>40</sup> Females worked about 380 hours less each year than males, and on average a person would work about 100 hours more

<sup>38</sup> See Appendix E: Table E.7

<sup>39</sup> See Appendix E: Tables E.8 and E.9

<sup>40</sup> See Appendix E: Table E.1

each year they age.<sup>41</sup> Also, for each child under the age of 18 an individual had living at home with them, they would work an additional 30 hours per year.<sup>42</sup>

### *Gender*

A male high school dropout worked about 181 hours less than a male high school graduate, while a female dropout worked approximately 253 hours less than a female graduate.<sup>43</sup> A high school diploma had a larger effect for females in terms of the number of hours worked annually than for males. This may be because if a female has children at home, it negatively affects hours worked, while the opposite is true for men. However, there is a circular argument of whether the lack of a high school diploma may lead to having children and, therefore, fewer hours, or if having children leads to the lack of a high school diploma.

### *Ethnicity and Race*

As discussed in the previous sections we kept only those who were white and of Hispanic origin, or who answered to “other race” and claimed to be of Hispanic origin for our next regression. The results showed that those who were white and of Hispanic origin who dropped out of high school worked about 215 hours less annually than those who graduated high school.<sup>44</sup> Non-Hispanic dropouts on the other hand worked only 189 less hours a year than those who graduated high school.<sup>45</sup> Essentially, a high school diploma had the same effect on both non-Hispanic and Hispanic whites. While the Hispanics as a whole tended to work more annually than the non-Hispanics, increased educational attainment led to an increase in hours worked for both ethnicities. The characteristic that had the most noticeable difference in impact between the two groups, however, was that of the number of children at home. Hispanics worked an extra 56 hours per child, while non-Hispanics only worked an extra 7 hours.

When compared to the differences in hours worked between dropouts and graduates for the other subgroups, blacks demonstrated the largest difference in hours.<sup>46</sup> Black high school graduates worked 292 more hours a year than high school dropouts. Although being female had a much smaller effect for blacks than for the other races and ethnicities, black females tended to work only 200 hours less a year than black males, compared to the 400 hours less white (both Hispanic and non-Hispanic) females worked compared to white males. Also, having a child at home increased the number of annual hours worked for blacks by just over 100 hours, a higher amount than for any other subgroup.

High school dropouts in the all others subgroup worked 171 hours less each year than high school graduates.<sup>47</sup> The most noticeable impact on hours worked for this group was that of a professional degree. Those with a professional degree worked 618 hours more a year than high school dropouts, a much larger difference than for any other subgroup. However, this may be

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<sup>41</sup> As mentioned in the “methods” portion of this chapter, age is not a linear function, and we account for the fact at a certain age a person’s annual working hours will plateau and then begin to eventually decrease.

<sup>42</sup> Just as with age, eventually the number of children will not increase the number of hours worked, but instead even begin to decrease the total annual hours worked.

<sup>43</sup> See Appendix E: Tables E.2 and E.3

<sup>44</sup> See Appendix E: Table E.4

<sup>45</sup> See Appendix E: Table E.5

<sup>46</sup> See Appendix E: Table E.6

<sup>47</sup> See Appendix E: Table E.7

skewed because of the small number of observations within this estimate, but is still statistically significant. With the exception of the professional degree impact, this subgroup was similar to the others.

### Location

Again, to make predictions for those in both types of locations, we separated the data by those who lived in metropolitan areas and those who lived in rural areas. Those who lived in a metropolitan area with a high school diploma worked 211 hours more annually than those who dropped out, and those who lived in a rural area with a high school diploma worked 206 hours more than those without.<sup>48</sup> In other words, a high school diploma had relatively the same impact on annual hours worked for those who lived in a metropolitan area when compared to those who lived in a rural area. The largest difference found between these areas was the impact of children. If an individual lived in a metropolitan area and had a child who resided with them, we estimated they worked an additional 21 hours that year, while an individual in a rural area worked an additional 57 hours.

Table 4.4: Total Annual Hours Worked

	No diploma	HS Diploma	Difference
All	1338.00	1549.43	211.43
Female	1075.93	1328.81	252.88
Males	1587.49	1768.26	180.77
White Hispanic origin.	1419.96	1634.39	214.43
Non-Hispanic	1286.9	1475.95	189.05
Black	1030.76	1322.11	291.35
Everybody else	1433.86	1605.34	171.48
Met. Area	1370.23	1581.77	211.54
Rural	1264.21	1470.76	206.55

*Integrated Public Use Microdata Series and authors' calculations*

### Welfare

For our final estimate, we calculated the effects a high school diploma, as well as the many other explanatory variables, had on the amount of welfare received. Again, just as for the total annual hours estimate, we used a tobit model so we could control for the many zeros present, this time representing all those who did not receive any welfare. See Table 4.5.

### All Observations

When we estimated the difference in welfare received by high school dropouts and graduates with all observations included, we found that on average, high school dropouts received \$1,714 more annually in welfare than high school graduates.<sup>49</sup> Educational attainment beyond a high school diploma was also a strong indicator of the amount of welfare received, being lowest for those with a professional degree.

<sup>48</sup> See Appendix E: Tables E.8 and E.9

<sup>49</sup> See Appendix E: Table E.1

Females received on average \$1,987 more than males. Individuals with children living with them received \$608 dollars more per child, and \$1,035 more per child under the age of five. When we analyzed race in this specific estimation, blacks received more than any other race; compared to whites, blacks on average received \$2,641 more per year.

### *Gender*

Next, we analyzed the difference a high school diploma had on the amount of welfare received for males and then for females.<sup>50</sup> A male high school dropout received \$1,706 more in welfare than a male high school graduate, while a female high school dropout received \$1,684 more in welfare than a female high school graduate. There was not much difference in the amount of welfare received when gender was taken into account. These numbers were consistent with the average amount of welfare received when we estimated with all observations. Although when further educational attainment was analyzed, while it was consistent with a decrease in welfare received, there was a large difference between males and females with professional degrees. Males with this type of degree received on average \$7,035 less in welfare annually than males without a high school diploma, while females only earned \$4,351 less than females without a high school diploma.

The biggest difference between males and females in regards to the amount of welfare was the impact children made on the amount received. For example, females with one child (any age) residing with them received an average of \$755 more than with no children, but a male only received \$27 more annually per child. However, interestingly, this was opposite when analyzing the effect of children under the age of five. Females received an increase of \$825 if the children were under five, but males received an additional \$1,492 for a child under the age of five and living in the same residence.

### *Ethnicity and Race*

The results showed that those who were white and of Hispanic origin and were high school dropouts obtained \$1,157 more in welfare than those of the same group who graduated from high school.<sup>51</sup> Non-Hispanic high school dropouts, on the other hand, received \$2,569 more in welfare than non-Hispanics who graduated from high school.<sup>52</sup> Having a high school diploma had the largest impact on the non-Hispanic whites than any other subgroup analyzed. Unlike most of the other subgroups discussed, the effect of being female had about the same impact on both groups. The effect of the number of children residing with an individual was relatively the same for both groups, but the effect of the number of children under the age of five was much greater for non-Hispanics. Hispanics received an average of \$855 per child under five, while non-Hispanics received \$1,385. Again, increased educational attainment led to a decrease in welfare amounts received.

Black high school dropouts received \$1,650 more in welfare than black high school graduates.<sup>53</sup> Being female within this subgroup had a larger impact than in any other, with a black female receiving on average \$3,290 more annually than a black male. The black subgroup, other than the female impact, was very similar to the average in regards to the effects on welfare.

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<sup>50</sup> See Appendix E: Tables E.2 and E.3

<sup>51</sup> See Appendix E: Table E.4

<sup>52</sup> See Appendix E: Table E.5

<sup>53</sup> See Appendix E: Table E.6

On average, people of other ethnicities who dropped out of high school received \$1,452 more in welfare benefits than those who graduated.<sup>54</sup> Similar to those in the black subgroup, most of the impacts were very similar to the “the norm”. The trends continued for this subgroup in terms of gender, children, and educational attainment.

### Location

After again separating the sample by location, we found that high school dropouts who lived in metropolitan areas received \$1,729 more in welfare than high school graduates.<sup>55</sup> Similarly, those who lived in rural areas and are dropouts obtained \$1,699 more in welfare compared to those with a high school diploma.<sup>56</sup> This analysis demonstrated the impact of a high school diploma was relatively the same in regards to welfare, regardless of how populated of an area an individual resided in. The impact on welfare with the biggest difference between an urban area and a metropolitan area was the effect of being in the Hispanic category. As discussed earlier, for this study, those in the Hispanic category are those who are white of Hispanic origin, or those who indicated “other race” and of Hispanic origin. Those in a rural area received on average \$1,606 annually, while those within the Hispanic category in metropolitan areas only received about \$590.

Table 4.5: Welfare difference between high school dropouts and high school graduates

All	\$1,714.07
Female	\$1,684.94
Males	\$1,706.70
White Hispanic origin	\$1,157.39
Non Hispanic	\$2,569.46
Black	\$1,650.54
Everybody Else	\$1,452.62
Met. Area	\$1,729.23
Rural	\$1,699.15

*Integrated Public Use Microdata Series and authors' calculations*

### Benefits of Educating Potential Dropouts through Graduation<sup>57</sup>

The differences in these predictions allowed us to calculate and compare the difference having a high school diploma makes on a person’s future income. These numbers combined with the estimated number of dropouts from the class of 2012 demonstrate just a part of the economic impact dropouts have on the state of Texas. These predictions were based on of the population of those who were 18 or older and did not have a high school diploma. As explained previously, to determine the effect obtaining a diploma would have, we first predicted the outcome with dropouts and used the model to predict each outcome assuming that each dropout had a diploma

<sup>54</sup> See Appendix E: Table E.7

<sup>55</sup> See Appendix E: Table E.8

<sup>56</sup> See Appendix E: Table E.9

<sup>57</sup> All monetary values in this section have been converted to 2009 dollars using the CPI

after all. This allowed us to see the effect of a high school diploma keeping all other characteristics exactly the same by using the same population. To clarify, our analysis incorporated all dropouts and graduates, but to make our predictions, we used only the population of dropouts and determined for that specific population how the outcomes would change if they were to have obtained a high school diploma. We did this to further control for the effects personal characteristics and other variables may have on the outcomes. The regressions used to generate these predictions show the effects the different indicator variables have on each of the dependent variables (employment, hourly wage, hours worked, welfare received).

In addition to these factors, we examined the effects of educational attainment on crime and incarceration. To analyze the incarceration factor, we used academic literature based on previous studies involving the effect of educational attainment on crime and incarceration rates. We wanted to determine if a high school diploma has an effect on the probability of being incarcerated, and if so, what the economic impact would be.

Having calculated the estimated number of dropouts for the class of 2012 as well as the variables needed to calculate earned annual incomes, we need to discuss what these numbers and results mean for the State of Texas. Applying the lower and upper bound dropout rates to the class of 2012, we see that, given nothing changes, the number of dropouts will be between 40,519 and 73,692 students. The results from our predictions show that by multiplying an individual's predicted hourly wage, given they have a job, by their predicted number of annual hours worked, the average dropout will lose \$4,935 per year due to a lack of a high school diploma.<sup>58</sup> Males on average will lose \$5,479, while females will lose \$4,593. Whites on average will lose approximately \$4,253 per year, Blacks \$5,293, Hispanics \$4,747, and all others combined will lose \$3,805. One dropout's present value loss of earned income over the course of their working life is \$127,202 on average. Again broken down into race and ethnicity, this means the present value loss for one white dropout is \$109,623, black dropout \$136,429, Hispanic dropout \$122,356, and all others combined \$98,076. We multiplied this number by the lower and upper bound number of dropouts in each ethnic group from the cohort, and found that the dropouts from the class of 2012 will all together lose between \$5.0 billion and \$9.0 billion over the course of their working lives.<sup>59</sup> The following table shows the cost of one dropout's annual loss in earned income, as well as the present value cost of each ethnic and racial group from the class of 2012 in potential loss in earnings over the course of their working lives.

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<sup>58</sup> All monetary numbers in this section have been adjusted for inflation to current 2009 dollars. This adjustment was done using the Bureau of Labor Statistics' Consumer Price Index (CPI). <http://www.bls.gov/CPI/>

<sup>59</sup> The amount "\$5.0 to \$9.0 billion" is the present value of earnings x \$4,935 per year over the course of their working lives. The present value was determined using a discount rate of 3 percent based off the discount rates reported for 2008 by the Fed. (<http://www.newyorkfed.org/markets/statistics/dlyrates/fedrate.html>) For the purpose of this study, we defined "working lives" as the time a person is in the labor force between the ages of 18 and 65.

Table 4.6: Potential Loss of Earned Income by Race and Ethnicity

Race/Ethnicity	One Dropout's Annual Loss	Lower Bound Present Value	Upper Bound Present Value
Whites	\$4,253	\$735 million	\$1,378 million
Blacks	\$5,293	\$1,145 million	\$1,915 million
Hispanics	\$4,747	\$3,046 million	\$5,626 million
All Others	\$3,805	\$52 million	\$109 million
Total	\$4,935*	\$4,978 million	\$9,028 million

*Texas Education Agency, Integrated Public Use Microdata and authors' calculations;*

*\*Weighted average of annual loss of potential earned income from one dropout*

## GSP

As discussed above, dropouts earn approximately \$4,935 less each year than high school graduates. After we determined the average per race and ethnic group, we found the total decrease lost annually in potential earned wages to be approximately between \$193 million and \$350 million dollars. This annual decrease in wages also directly leads to an equivalent decrease to the GSP for Texas. While this is relatively small when compared to the \$1.24 trillion of the total GSP, this amount is also that lost from only one cohort of dropouts.<sup>60</sup> Unless something changes the dropout trend in Texas, the GSP will continue to decrease by this number, or greater, each consecutive year. Put into perspective, this is equivalent to losing the gross domestic product of San Angelo, Texas, every 10 to 20 years (Bureau of Economic Analysis).

## Tax Implications

To determine the impact high school dropouts have on Texas' tax revenue, we compared the average salary of a high school dropout to the average salary of a high school graduate and then calculated an estimate of how much in state sales tax an individual with their income would pay annually. Our analysis predicts that the average dropout earns \$17,517 annually, while the average high school graduate with similar demographics earns \$22,453 each year.<sup>61</sup> The Texas tax incidence report from the State Comptroller's website reports that those earning less than \$27,088 a year spend approximately 5.4 percent of their income towards state sales taxes (Combs 2009, 47). Therefore, a high school graduate pays about \$267 more than a high school dropout annually in state sales tax. Given between 40,519 and 73,692 dropouts from the class of 2012, this is an estimated potential loss of between \$10.8 million and \$19.7 million per year in state sales tax revenue. Looking at the big picture, this means the dropouts from just the cohort of 2012 will have a present value potential tax revenue loss between \$279 million and \$507 million over the duration of their working lives.

<sup>60</sup> GSP total retrieved from [www.texasahead.org](http://www.texasahead.org) April 20, 2009.

<sup>61</sup> As noted previously, in this study the term "high school graduate" refers to an individual who graduated high school, but did not go on to accumulate any college hours.

## Welfare

The cost of welfare for the state of Texas is important when considering the overall economic impact of having a high school diploma versus dropping out. When comparing the amount of welfare received on average for dropouts and high school graduates, we determined that high school dropouts received \$2,117<sup>62</sup> more per year. This means that the State of Texas will spend between \$86 million and \$156 million more per year on welfare for high school dropouts than high school graduates, which is a present value of between \$404 million and \$736 million, assuming recipients remain on welfare for five years.<sup>63</sup>

As discussed in the *results* portion of this paper, other factors such as an individual's number of children also strongly affect the amount of welfare a person receives, but this too can be attributed to their level of educational attainment. For example, as shown by the results of our predictions, increased educational attainment produces an increase in hourly wages. Therefore, female graduates will typically have fewer children and work more than dropouts because the amount in potential wages makes working worth their time. Because of this, a high school diploma's impact on the amount of welfare received potentially has an even larger impact on the Texas economy.

## Incarceration

The link between lower levels of education and crime is well documented in the education literature. Throughout this literature, the most pivotal piece examining this connection between educational attainment and incarceration is *The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-reports* by Lochner and Moretti (2003). This article specifically looks at the relationship between social return of more education and fewer dropouts. It examines how many fewer crimes would be committed and how much money (tax payer and victim) would be saved if the graduation rate were increased.

One of the major areas examined by the authors is the difference between whites and blacks in regard to the incarceration rate. They found that a 1 percentage point increase in the graduation rate, whites would reduce their probability for incarceration by 0.76 percentage points, while blacks would reduce their rate by 3.4 percentage points. (The authors did not separately analyze the impact on Hispanics.) Moreover, if the black dropout rate were lowered to that of whites, 25 percent of the difference between the incarceration rates between the two races would be eradicated (Lochner and Moretti 2003).

The next important aspects examined are the types of crimes that would be prevented if the graduation rate were increased. Lochner and Moretti found that if the graduation rate was increased by 10 percentage points, arrest rates in general would decrease by about 7 percent (also pointed out that since there are more arrests than crimes, the total crimes reduced would be higher than 7 percent), property crimes would be reduced by 6 percent, violent crimes would go down by 8 percent, murders and assaults down by 20 percent, and motor vehicle crimes down by 13 percent (2003).

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<sup>62</sup> Amount in 2009 dollars converted using CPI

<sup>63</sup> Temporary Assistance for Needy Families (TANF) limits the amount of time an individual can receive welfare to five years.



Lochner and Moretti found that 100,000 fewer crimes in the United States would have been committed in 1990 had the graduation rate been 1 percent higher. They estimated that this reduction in crimes corresponds to a conservative \$1.4 billion savings to society if those 100,000 crimes had not been committed. That is roughly \$2,100 of social benefit for every additional male graduate (Lochner and Moretti 2003).

We used Lochner and Moretti as a model with which to calculate the crime related costs for Texas. Applying the lower and upper bound predicted number of dropouts from 2012, we calculated what the total percentage increase of the graduation rate would be for the state if these students were to graduate. The Census Bureau estimated that there were 17,601,203 Texans over the age of 18 in 2008, and according to the ACS for 2007, 19.2 percent of the Texas population over 18 had no diploma (U.S. Census Bureau). If an additional 40,519 students were to graduate, there would be a .33 percentage point increase in the share of the Texas population with a diploma, and if all 73,692 of the upper bound estimate were to graduate, there would be a .57 percentage point increase. The Texas data obtained from the Federal Bureau of Investigation's Uniform Crime Reports (UCR) provided us with the number of arrests for the different types of crimes, and using the estimates provided by Lochner and Moretti, we calculated the total number of predicted crimes that actually occurred based off the number of arrests (Crime In the United States 2007). According to Lochner and Moretti, a 1 percentage point increase in the graduation rate has a direct impact on the number of crimes committed.<sup>64</sup> We applied these numbers to the Texas data of crimes committed in 2007 to predict the total change in crimes that would occur if these potential dropouts instead were to graduate.

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<sup>64</sup> Lochner and Moretti Table 11 pg 176

Table 4.7: Change in Arrests and Crimes due to Increased Graduation Rate

	Estimated Percentage Change in Arrests		Estimated change in arrests		Estimated change in crimes	
	(1)	(2)	(3)	(4)	(5)	(6)
	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound
<b>Violent Crimes</b>						
Murder	-0.71%	-1.22%	-10	-17	-10	-17
Rape	0.35%	0.60%	30	51	135	229
Robbery	0.04%	0.06%	14	24	96	164
Assault	-0.73%	-1.24%	-536	-910	-2,551	-4,331
<b>Property Crimes</b>						
Burglary	-0.08%	-0.14%	-183	-320	-2,654	-4,640
Larceny/theft	-0.09%	-0.15%	-590	-994	-10,443	-17,594
Motor vehicle theft	-0.42%	-0.72%	-394	-676	-4,137	-7,098
<b>Total</b>	.15%	.26%	1,669	2,842	19,564	33,287

Lochner and Moretti, FBI UCR 2007 and authors' calculations

Note: Lower bound and upper bound refer to the .33 percentage point and .57 percentage point increase in the graduation rate if the predicted number of dropouts from the class of 2012 were to graduate. The percentages in columns 1 and 2 were calculated by multiplying the increase in graduation rates by the percentage change predictions made by Lochner and Moretti based on a 1 percentage point graduation rate increase.

Table 4.7 shows the annual total decrease in crimes that would occur if the predicted dropouts from the class of 2012 were to graduate. Somewhere between 19,000 and 33,000 fewer crimes would be committed, leading to an annual social benefit between \$74 million and \$126 million dollars. This final estimate was determined using data from the UCR, calculation methods from Lochner and Moretti and the annual cost per inmate in the state of Texas.<sup>65</sup> See Appendix E Table 12 for a detailed list of savings and costs<sup>66</sup> per crime. We realize it is unrealistic to assume we can decrease the dropout rate to zero, but the methods used by Lochner and Moretti allowed us to calculate an annual range of potential loss in social benefits if the dropout trend in Texas does not change.

### Cost to Educate Dropouts

While the cost and economic impact of dropouts have been discussed, it is also important to discuss how much it would cost to educate the dropouts if they remained in school. TEA reports that it costs \$7,826 per year to educate one student (Texas Education Agency 2008). This means that it would cost Texas between \$317 million and \$577 million per year to educate all of the dropouts for the class of 2012 for one additional year. The three most recent dropout reports from TEA state that the highest number of dropouts comes from the senior class (Texas Education Agency 2008b). However, so as not to get too low of an estimate for the impact educating those who drop out would have on the state, we assumed an average of two years of additional schooling per dropout. The present value of educating all the potential dropouts for an

<sup>65</sup> U.S. Department of Justice 2001 State Prison Expenditures reported the state of Texas spent \$13,801 per inmate. This converts to \$17,056 in 2009 dollars.

<sup>66</sup> Rape and Robbery incidents increase with an increase in the graduation rate.

additional two years is \$15,424 per dropout. This means an approximate cost to the state between \$625 million and \$1.14 billion.

## Conclusion

**Table 4.8: Money Saved By Educating Predicted Dropouts through Graduation**

	Lower Bound	Upper Bound
Present Value of Potential Earned Income	\$4,978 million	\$9,028 million
Present Value of Decreased Welfare Costs	\$405 million	\$736 million
Present Value of Decreased Incarceration/Crime Costs*	\$595 million	\$1,014 million
<b>Present Value of Cost to Educate Dropouts</b>	<b>-\$625 million</b>	<b>-\$1,137 million</b>
<b>Total</b>	<b>\$5,353 million</b>	<b>\$9,641 million</b>

*Present value of incarceration/crime related costs was based off a 9 year estimated incarceration sentence. According to Lochner and Moretti, more than half of current prison terms are for more than 9 years.*

While it is expensive to educate these students, it is important to remember the big picture numbers mentioned above, as well as the unquantifiable aspects such as quality of life for these students and quality of the labor force for the state. In the long term it is more beneficial for the state to educate these students than to have them dropout. This is made evident when comparing the cost to educate the students (between \$624 million and \$1.14 billion) to the potential loss in GSP (between \$5.0 billion and \$9.0 billion), the increased welfare payments (between \$404 million and \$736 million), and the potential increase in crime related costs (between \$595 million and \$1.0 billion) all from just one cohort of students. The total of the predicted cost of dropouts from the cohort of the senior class of 2012 is between \$6.0 billion and \$10.7 billion. When we take the money “saved” by the state by not educating these students, and subtract the total combined costs, we get a final loss between \$5.4 billion and \$9.6 billion. Therefore, with the state of Texas losing this vast amount from only one cohort, it is essential that policy makers begin making this issue a priority in an attempt to reverse the current trends and their implications on the Texas economy.

## Chapter 5: Program Analysis

A question that persistently plagues policymakers and educators is how to address dropout prevention. Recent years have seen an increase in programs designed to address the disparities in college attendance and completion rates between low-income students and their more affluent peers (Terenzini et al., 2005, p. 1). Each year, millions of dollars are poured into prevention and intervention programs. However, the question remains—do these programs work? A significant hurdle for policymakers and educators to overcome is determining which prevention approaches are effective and how to best incorporate components from successful programs. There has been an increase in spending on these programs, but relatively little empirical research conducted to ascertain program impacts. To that effect, the research team reviewed current evaluation studies on prevention and intervention programs to determine whether sufficient evidence of program efficacy exists.

Various policy centers, consultant groups and other stakeholders in education have recently conducted a number of large state and national level studies on dropout prevention programs. These studies have been carried out to identify best and promising practices in dropout prevention. In addition to a review of these studies, this report examines evaluative research on well-known and politically viable programs available in Texas or with the potential for success in Texas. The research team assessed the strengths and weaknesses of available research, analyzing validity, relevance and credibility.

### Best Practices Evidence

Two recent broad studies set out to identify best programs and practices in dropout prevention, as well as associated risk factors. First, the National Dropout Prevention Center/Network (NDPC/N) and Communities In Schools (CIS) collaborated to produce a “comprehensive study of the dropout crisis in the United States” (Hammond et al. 2007, p. 1). Their study, entitled “Dropout Risk Factors and Exemplary Programs” was intended to add to the cache of evidence-based research on dropout risk factors and prevention efforts, not to singularly highlight CIS achievements. Second, as part of House Bill 2237, ICF International, a research and consulting firm<sup>67</sup>, also in conjunction with the NDPC/N, conducted a study to identify best programs and practices in dropout prevention. Their study, “Best Practices in Dropout Prevention” aims to identify programs that have high potential for successful replication in Texas. The report identifies successful programs and provides information on which best practices are most common to these programs. While they admit it was a bold undertaking, ICF wanted to go beyond merely identifying best practices to find out “why they work, how they work, and in what situations [these programs] work” (Porowski et al., 2008, p. ES-1).

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<sup>67</sup> ICF International was created in 1969 and serves government entities of all levels, major corporations, and multilateral institutions by providing consulting services and technology solutions.

## Design

Researchers for both studies began with a thorough literature review of dropout research to identify risk factors, programs to review, and standards by which to measure them. They examined studies based on relevance, research base, and source. From the literature review, NDPC/N and CIS identified four trends that can lead to a student dropping out of school: individual factors, family influences, school factors, and community aspects. Risk factors were then classified into one of these four trends. Researchers then determined best practices and exemplary programs in dropout prevention, based on risk factors. Each program was classified into one of four tiers of evidence-based research, using the Center for the Study and Prevention of Violence's Matrix of Prevention Programs. An expert panel, consisting of 12 federal and private agencies and independent researchers, reviewed the tiered results and then ranked programs based on their "evidence of deterrent effect with a strong research design, sustained effect, and multiple site replications" (Center for the Study and Prevention of Violence). Exemplary programs were those receiving top ranking by at least two entities; from an initial list of more than 300 programs, 50 were defined as exemplary.

ICF interviewed key TEA senior stakeholders<sup>68</sup> to gain a more accurate picture of the state's "dropout landscape" (Porowski et al., 2008, p. 165). They used this information and the literature review to compile a list of prevention programs to review. Once the list of programs was identified, ICF sorted them into three tiers based on available evidence. Programs with the strongest evidence, having undergone multiple rigorous studies, were classified as Tier 1. Tier 2 consisted of programs that have been tested at least once; programs that have met selection criteria but not been empirically examined fell into Tier 3. This tiered classification system accounts not only for the rigor and number of studies conducted, but also incorporates the number of outcomes and magnitude of results and effects.

## Findings

CIS and NDPC/N researchers concluded that no one risk factor can predict with certainty whether or not a student will drop out. As their study is viewed as a work in progress and not a finished product, complete findings were not presented. It did result in a proposed list of recommendations for CIS affiliates regarding selection and implementation of prevention practices and strategies. For a complete list of internal CIS recommendations, see Appendix F.1.

ICF asserts dropout prevention programs that take a multifaceted approach are the most effective and, subsequently, identifies 15 strategies (see Appendix F.2) that provide the foundation for best programs. They also argue that identifying best programs is not about recognizing programs that have statistical significance, but those that have meaningful effects. Meaningful effects were defined by ICF as effect sizes greater than 0.2 standard deviations between treatment and control groups. Controlling for validity and relevance through rating and coding processes, best

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<sup>68</sup> Senior stakeholders interviewed were: Lizzette Reynolds (Deputy Commissioner of TEA's Statewide Policy and Programs), Barbara Knaggs (Associate Commissioner of the Department of State Initiatives), Jan Lindsey (Senior Director of College and Career Readiness Initiatives), Nellie Reyes (Senior Director of Programs for At-Risk Youth), Dr. Jim Van Overschelde (Director of Educational Research and Policy group), Ertha Patrick (Manager of the Best Practices Clearinghouse), and Chris Caesar (Program Manager and leader for the Best Practices project).

programs are identified as those that have meaningful effect and that incorporate multiple intervention strategies. Best practices were identified as the most common strategies used by effective programs.

### Best Practices

The preparation for identifying best practices and programs in dropout prevention was comprehensive. The study's researchers conducted an exhaustive review of more than 500 pieces of relevant literature, providing a solid background from which to frame their research. Researchers made genuine efforts to discern what prevention approaches work and would be effective in Texas. Since program approaches can vary widely, researchers made every effort to compare an assortment of programs to each other using effect sizes. By evaluating effect sizes, investigators were able to "describe the magnitude of the difference between two groups" (Polowski et al. 2008, p. 20). Effect sizes were calculated by dividing the difference in means of the groups by the pooled standard deviation (Polowski et al. 2008, p. 20). Comparing vastly different programs can be a significant stumbling block for many research teams; ICF and NDPC/N's efforts to address this challenge speaks to their resourcefulness.

Despite these strengths, the "Best Practices in Dropout Prevention" study has substantial limitations. The study's structure made interpreting the design, methods, and results challenging and caused the reader to persistently weave back and forth from one aspect of the study to another. Efforts were made to define analysis parameters but were never clearly stated, leaving the reader to wonder if the methods discussed were actually implemented or merely laid out for informational purposes. While the results for CIS of Texas largely corroborate with results from ICF's "Evaluation of Communities In Schools (CIS) of Texas," the evidence provided is weak and lacking in robust quantitative backing. This report relies heavily on providing *meaningful effects* to support its claims, asserting that statistical significance is not practical or fundamental (Polowski et al. 2008, p. 20). While the quality and meaningfulness of effects is important in understanding the full impact of a program, nothing can truly supplant the clout quantitative analysis brings. The little quantitative data present are used primarily to provide descriptive statistics and to calculate meaningful effects. The lack of substantive quantitative analysis is puzzling given that ICF incorporated it so well in their evaluation of CIS of Texas. The reader is left to wonder why they felt it was inappropriate in this study. To gain a comprehensive understanding, researchers must blend quantitative data with qualitative effects.

### Existing Programs

The following chapter will discuss current dropout prevention and intervention efforts both within the state as well as across the nation. Evaluative research on these programs will be judged against the previously reviewed best practices and evidence standards. Our analysis of dropout prevention and intervention programs will focus on program efficacy rather than cost-effectiveness. Our analysis will also show that there is a lack of substantive literature regarding the efficacy of the following programs.

## Communities in Schools

The mission of Communities In Schools (CIS) of Texas “is to help young people of Texas stay in school, successfully learn, and prepare for life by coordinating the connection of needed community resources in the school setting” (TEA, 2006a). CIS of Texas is the state organization of the larger national Communities In Schools. The program strives to meet the needs of potential dropouts by connecting students and families with community service providers. CIS aims to engage parents through parenting classes, home visits and hands on parent/student activities. Organizationally, CIS enters into agreements with states to create state level organizations. These state CIS partners operate as independent entities to provide local service teams made up of educators, volunteers and mentors to work with children and at-risk youth. Local programs are governed by independent boards of directors.

Founded in 1977, CIS is the nation’s largest dropout prevention program. Nationally, CIS serves more than 2 million youth annually in 27 states and the District of Columbia (Communities In Schools, 2009). CIS of Texas is the largest state program in the nation and is also the largest dropout prevention program in Texas. CIS of Texas strives to improve high school dropout rates of at-risk children and youth for over 30 years. CIS was first introduced to the state of Texas in 1979 when its first field office opened in Houston. Presently, Texas is home to 28 affiliates located in 55 counties throughout the state. TEA feels CIS of Texas has made a strong impact in the state by partnering “with communities, schools, students, parents and local organizations to change the lives of children and families” (Clawson et al., 2008, p. ES-1). TEA has partnered with CIS to provide this essential dropout prevention program and has invested more than 20 million dollars annually to support this ever growing endowment in the state’s economic future (TEA, 2009). Funds are awarded to the 28 affiliates based on an annual needs assessment. It is important to note that local affiliates do not operate solely on TEA-allotted money; they are responsible for raising supplemental funds. Local affiliate boards of directors use CIS policies and requirements to determine which campuses within each affiliate’s jurisdiction will receive CIS of Texas services. In addition to financial audits, campuses must serve an at-risk population equal to at least 10 percent of the school’s average daily attendance numbers to qualify (Communities In Schools, 2006).

### Evaluation of Communities In Schools (CIS) of Texas

ICF and the NDPC/N researchers identified CIS of Texas as one of three “Texas programs which demonstrated consistent, positive, and meaningful effect across more than one outcome” and has proven successful in Texas (Polowski et al. 2008, p. 6). CIS of Texas is identified as successful because it uses a multipronged approach, providing a wide array of services to reach many different at-risk students rather than targeting one subgroup of dropouts. Specifically, CIS of Texas incorporates nine of NDPC/N’s 15 strategies used by evidence-based dropout prevention programs, including all four NDPC/N basic core strategies. Additionally, out of 13 programs providing data, CIS of Texas was one of only six programs to report “positive effects on high school graduation” (Polowski et al. 2008, p. 79) and the only program of the four identified best programs to report meaningful effects. These results demonstrate that CIS of Texas shows success in getting students to graduate from high school.

ICF International also conducted a comprehensive evaluation of CIS of Texas. Commissioned by the TEA, their study, “Evaluation of Communities In Schools (CIS) of Texas” assesses CIS from a student level, school level, and affiliate level. An affiliate refers to the local CIS programs administered around the state.<sup>69</sup> ICF conducted the evaluation to examine the program’s effectiveness, particularly regarding three objectives: “the degree to which CIS of Texas programs meet student needs, the impact of CIS of Texas programs on at-risk students, [and]...successful implementation” (Clawson et al., 2008, p. 2).

In their evaluation, ICF used multiple sources of primary and secondary data, including stakeholder surveys, focus groups, and interviews (Clawson et al., 2008). Quantitative data were pulled from TEA and the National Center for Education Statistics (NCES). TEA data was collected using the CIS Tracking Management System (CISTMS), which is the student identifier tracking system for CIS; the Public Education Information Management System (PEIMS), a compilation of public education information collected by TEA; the Academic Excellence Indicator System (AEIS); and the Texas Assessment of Knowledge and Skills (TAKS), providing academic skills knowledge. ICF also used NCES’s Common Core of Data (CCD), a bank of annual public school, district, and state agency data. ICF conducted evaluations on student, school and affiliate levels.

### *Student-Level Study*

Student level evaluations relied on a two-part method that examined the impacts of CIS within a test group (case-managed students) and the impacts between test and control groups (case-managed and non-case-managed students). The case-managed student study was described as “examin(ing) trends in outcomes for case-managed students over time and...the relationship between service types, dosage, and outcomes” (Clawson et al., 2008, p. 8). Using this design, ICF examined the impact CIS of Texas has on at-risk students as well as what program attributes affect impacts. This design also lends itself to identifying which students are impacted the most.

Students selected to participate in the case-managed student analysis were enrolled in grades 4, 7, and 10 during the 2004-05 school year and were first-time participants in the CIS program. This sample allowed the evaluators to track students over the following four years and examine both the immediate and long-term outcomes for case-managed students (Clawson et al., 2008, p. 8). ICF justified that “this time period is necessary to highlight the potential benefits and need for the continuation of CIS services across grade levels and in particular, the continuation of services to case-managed students during transition when existing challenges are often compounded” (Clawson et al., 2008, p. 8).

ICF’s evaluation team used a quasi-experimental design for the second phase of data collection to compare CIS case-managed students with comparable students from the same school and grade level who are currently not receiving services from CIS. Researchers paired CIS case-managed students to non-case-managed students, which allowed for experiment group (case-managed students) and control group (non-case-managed students) to be compared with a student with relatively similar characteristics. ICF explained that “students were exact matched on the following variables: age, sex, race/ethnicity, the TEA at-risk category, English language proficiency, grade level, scale score on reading TAKS, and disciplinary actions. Additionally,

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<sup>69</sup> In Texas, 28 affiliates operate in 100 school districts.



students were also matched, using propensity score matching, on TAKS math scores, met math TAKS standards, free meals, and reduced price lunch status” (Clawson et al., 2008, p. 9).

Given the variables, which matched the control group to the experiment group, no statistically significant differences between the two groups existed on any key variable baseline. It is important to note that not all student characteristics could be compared across the board, including a student’s attitude toward school, or a student’s peer associations which may influence one’s behavioral patterns and potentially skewed results. Also, ICF’s evaluation team did not request information regarding whether or not any current participants had received guidance or counseling from CIS services prior to being enrolled in this study, which again could alter key outcomes. ICF clarified the purpose of between-student results as “show[ing] the extent to which providing case-managed services to students that are referred to the program...can help keep these students in school and performing as well as students they were once similar to on many academic and behavior measures” (Clawson et al., 2008, p. 9).

Overall, this experimental design was implemented to demonstrate whether or not students who received CIS services perform better in school and stay on track with their peers. Findings suggest CIS intervention leads to fewer suspensions and an increased likelihood that CIS-managed students will stay in school. Based on TAKS reading scores and performance in English and Language Arts classes, ICF concluded that case management improves CIS students’ performance to levels similar to their non-CIS peers. While these results are encouraging, the study failed to account for math performance. ICF asserts “it was not possible to exactly match students on both math and reading scores [as it] would have resulted in a significant drop in sample size” (Clawson et al., 2008, p. 9).

### *School-Level Study*

Similar to the study conducted above, a quasi-experimental design was created to review the school-level impact of incorporating the CIS program into a school system, with outcomes from both CIS and non-CIS participating schools being evaluated. The analysis “examined the overall difference between schools that implemented the CIS model and schools that did not but were comparable on several characteristics across a range of outcomes over a four-year period” (Clawson et al., 2008, p. 9). An algorithm was created to match CIS schools to comparable non-CIS schools, providing for the best basis for comparison analyses.

### *Affiliate-Level Study*

Five CIS affiliates participated in the affiliate level study<sup>70</sup>, conducted through case studies and intended to provide detailed information about the CIS of Texas network of affiliates. The five affiliates selected to participate were intended to provide adequate representation of CIS of Texas, based on factors such as location within the state, affiliate age and size, and target population. During these case studies, ICF research teams visited elementary, middle and high schools within the affiliate’s territory. Interviews were conducted with stakeholders within and outside of CIS and researchers held focus groups with students and parents. A total of 522 stakeholders participated in the case study analysis (Clawson et al., 2008, p. 12).

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<sup>70</sup> The five participating affiliates and their locations were: CIS El Paso (El Paso), CIS of Northeast Texas (Mount Pleasant), CIS Houston (Houston), CIS of North Texas (Louisville), CIS of Big Country (Abilene).

While researchers chose only five of CIS of Texas' 28 affiliates to partake in the case study portion of the affiliate level study, stakeholders from all 28 affiliates and feeder schools were surveyed, including principals, school counselors, case managers, program directors and affiliate executive directors. Participants were asked about how their programs work, what successes they have had, what challenges to success are, and how CIS can improve. ICF invited 1,741 stakeholders to take surveys; response rates varied from 48 percent to 100 percent. Executive directors posted a 100 percent, 78 percent of CIS program directors responded, and 73 percent of CIS case managers responded. Meanwhile, non-CIS stakeholders posted much lower rates: 54 percent of principals responded and only 48 percent of school counselors replied (Clawson et al., 2008, p. 13).

### *Analysis*

In analyzing study results, ICF employed a number of different statistical methods, ranging from basic descriptive analyses to inferential statistics to calculating effect sizes. The type of data used and evidence collected determined which methods of analysis researchers employed. Researchers used basic descriptive statistics (means, percentages, standard deviations, and frequencies) for all variables, depicting changes over time with line graphs. Inferential statistics (t-tests and repeated measures) were used to detect differences between sample groups, such as case-managed and non-case-managed students. Effect sizes were used to complement statistical analyses, where appropriate.

### *Findings*

ICF categorizes its findings into four general areas—overarching findings, implementation (related to the fidelity with which CIS programs are implemented by affiliates and necessary ingredients for successful implementation), service delivery (the capacity and degree to which student and family needs are addressed through services), and impact (the impact CIS has on students). Overarching findings were ascertained from case study site visits to affiliates, qualitative survey responses from key stakeholders, and quantitative student data, primarily from CISTMS. Implementation findings were primarily drawn from student level qualitative data and stakeholder surveys. CISTMS data, combined with some stakeholder surveys, are comprised the service delivery findings. Finally, impact findings were based on quantitative data from CISTMS and PEIMS. Three of ICF's 15 findings are highlighted below (for a full listing, see Appendix F.5).

- The amount and type of case-managed services students received positively influence the likelihood of a student staying in school.
- CIS students who had a mentor reported more positive outcomes relative to CIS students who did not.
- General supportive guidance (i.e., having an “adult advocate”—the core of the CIS model) is positively linked to several outcomes (e.g., stay in school) (Clawson et al.2008, p. ES-4).

Literature repeatedly suggests that an involved, caring adult presence in a student's life positively impacts that student's life (Dynarski et al., 2008). Mentoring relationships are based on trust and, for at-risk students, can fill a void in their lives. Increased interaction can lead to higher school engagement, higher grades, fewer episodes of truancy, and reduced behavior problems (McLearn, Colasanto and Schoen, 1998). Mentor relationships can also improve

student confidence, further positively affecting academic and behavioral outcomes (Dynarski et al., 2008). The above findings directly relate to the connection between student outcomes and supportive relationships. Report analyses use quantitative data to demonstrate the impacts supportive guidance and individual attention have on academic and behavioral outcomes; for most measures, results are positive.

### *Critique*

Although this report was commissioned by TEA to evaluate a TEA-administered program, there is little suspicion that this association colors the results. The evaluation was conducted by a well-known, highly credible national evaluation and consulting firm. Given its reputation and use of independent researchers, it is unlikely ICF would allow TEA's intimacy with CIS to influence its final report. In their evaluation of CIS of Texas, ICF combines secondary data gathered from experts (TEA, NCES) with independently collected original data, minimizing concerns that data may be skewed to favor state agencies. The use of control groups and mix of data sources yields internal validity. ICF makes use of both objective quantitative data and more subjective qualitative data from stakeholders. This blend provides another dimension of thorough, well-roundedness to the study. Furthermore, researchers employ multiple statistical analyses for each level of the study and type of data used. Rigorous analysis brings credibility to the results. Given the thorough and objective nature of this study, from data collection and participant selection through analysis and reporting of outcomes, readers can have confidence in the results.

Despite the strengths of ICF's evaluation, however, there is still room for improvement. The study gathered data from only five of CIS of Texas's 28 affiliates, less than 20 percent of the total direct program stakeholders. With such a small sample, it is difficult to determine how accurate the broader implications of the study will be for the entire program, not to mention for the rest of the state. Furthermore, there is no mention in the study literature of how these affiliates were chosen, only that the selection was intended to provide a broad representation of the statewide network. Another concern is the length of the evaluation—the study took place over one school year. While this allows for preliminary conclusions, it creates only a snapshot of program effectiveness. For more comprehensive and externally valid results, ICF needs to collect and analyze longitudinal data. In effect, evaluators need to answer whether or not CIS of Texas sustains these same results over time. Moreover, the extent to which affiliates faithfully implement the CIS model may impact these results. One aim of the ICF evaluation was to determine whether or not program affiliates do implement services with fidelity, a fair question given the independence each affiliate enjoys. Their findings assert that all 28 Texas affiliates do adhere to the CIS model (Clawson et al., 2008, p. ES-5). However, given that only 5 of the 28 affiliates fully participated in the evaluation, there can be little confidence in this conclusion.

Overall, ICF uses a good mix of data, incorporating qualitative and quantitative figures. This blend allows for painting a more complete picture of program efficacy; while numbers are necessary to demonstrate improvement and success rates, they cannot tell the whole story. Qualitative information reveals more difficult-to-measure outcomes, such as interest and engagement, attitudes, and relationship qualities. ICF's evaluation has the makings of a strong, compelling depiction of CIS of Texas's efficacy. However, more comprehensive study is needed to be conclusive.

## Gaining Early Awareness and Readiness Program (GEAR UP)

The Gaining Early Awareness and Readiness Program (GEAR UP) is “a discretionary grant program designed to significantly increase the number of low-income students who are prepared to enter and succeed in postsecondary education” (U.S. Department of Education, 2008), by providing students with the skills and tools they need to become college-ready and successful in their education careers. Signed into Public Law (105-244) on October 7, 1998 by President Clinton as part of the Higher Education Amendments, GEAR UP is the nation’s leading federal and privately funded program. The six-year program awards competitive grants to states (which are required to offer both early intervention services and college scholarships) and to education/community partnerships (which are required to provide early intervention services and may elect to offer a scholarship component). The maximum award for partnership organizations is \$800 per student; maximum funding amounts for state program is determined by total available funding.

A unique aspect of GEAR UP is its target audience. Unlike many other programs that focus intervention on select students in a cohort, or only on high school students, GEAR UP provides services to an entire cohort. Services begin no later than 7<sup>th</sup> grade and continue for six years.

Under the direction of Texas Governor Rick Perry, the Texas Education Agency’s (TEA) Office of College and Career Readiness Initiatives applied for and was awarded the Texas State GEAR UP grant. The six-year federal program (2006 – 2012) strives to provide youth from low-income communities with the skills and tools they need to become college-ready and successful in their postsecondary education careers. For example, GEAR UP toolkits are provided to educators, parents, and students with multimedia information resources focusing on postsecondary preparation and tools to help students access, attend, and succeed in postsecondary education (Texas GEAR UP, 2009). To date, Texas GEAR UP has 22 partnership grants, which work to support the program by providing networking opportunities and resources to help strengthen GEAR UP partnerships. These partnerships include College Board, Fathers Active in Communities and Education (FACE), and the National Hispanic Institute (NHI), Texas A&M University – Kingsville, Texas A&M University – Corpus Christi and the Texas Center for Educational Research (Texas GEAR UP, 2009).

### GEAR UP Evaluation(s) Analysis

The research team conducted a thorough literature search of relevant studies that assess outreach programs and low-income student predictors for college attendance. Four major evaluations of GEAR UP include “The Dream Deferred: Increasing the College Preparedness of At-Risk Students” and “ACT: Using EXPLORE and PLAN Data to Evaluate GEAR UP Programs”, 2004-2005 Austin ISD GEAR UP Impact Lives Project, and 2005-2006 Austin ISD GEAR UP Impacting Lives Project. Each evaluation uses varied methodologies to best determine the actual impact GEAR UP is having on its student participants.

#### *The Dream Deferred*

The Dream Deferred Project conducted an evaluation of GEAR UP programs in California to assess the impacts of a comprehensive intervention program. In evaluating GEAR UP, researchers derived two primary, comparative research questions: “Do students served by GEAR UP programs and activities appear to be (1) more aware of what will be needed for college

admission and (2) better prepared to meet those needs than are same-grade students in similar schools that do not have GEAR UP programs?” (Terenzini et al., 2005, 8-9). To assess the impacts GEAR UP has on student and parent college awareness and readiness, researchers pulled data from GEAR UP’s Annual Performance Report for Partnerships (APR) and the California Department of Education’s (CDE) Academic Performance Index (API) ratings and Standardized Testing and Reporting (STAR) and School Characteristic Index (SCI) databases. STAR provides grade-level data on student performance on the Stanford-9 tests, administered annually. Subjects tested include math, language arts, reading, and spelling. The API provides a rating for each school, based on student test performance. Test scores collected from STAR are used as measures of student college readiness. SCI uses composite data of school demographic characteristics to create a list of “similar schools” (Terenzini et al., 2005, 6) for every public school in California. Similar schools are those that are comparable in size, makeup, and demographics to other schools. Dream Deferred Project researchers compiled a list of 100 similar schools in order to determine non-GEAR UP “peer” schools for each GEAR UP school, based on SCI and API data (Terenzini et al., 2005, 6).

Using control measures when appropriate to account for differences among students not related to GEAR UP treatment (family income, percentage of limited English proficiency students, percentage of first generation students, etc.), researchers conducted multiple analyses of GEAR UP. They used a time-series study to examine the impact of GEAR UP treatment, comparing pre-treatment data on students with post-treatment results from the same students. Researchers also examined pre and post-treatment parent awareness levels. Results suggest treatment has statistically significant and positive effects on students’ college intentions; nearly double the impact is seen for parental treatment (Terenzini et al., 2005, ii).

The second question (Are GEAR UP students better prepared for college admissions than their non-GEAR UP peers?) was addressed through analyses using CDE data, particularly students’ reading and math skills, as measured through test scores. Researchers controlled for pre-test scores (in the baseline 6<sup>th</sup> grade year) and conducted two analyses, once for 7<sup>th</sup> grade cohort data and again with 8<sup>th</sup> grade data. Results were aggregated for the two years. They showed no statistically significant effects on reading scores. Math scores analyses provided a different story. GEAR UP students gained ground on their non-GEAR UP peers and, in some cases, exceeded them. However, there was no other significant difference in scores overall. Researchers argue these results show “moderate-to-strong support” for comprehensive intervention programs (Terenzini et al., 2005, ii). Comprehensive programs may be able to increase student awareness and readiness for college and increase math and reading proficiencies; however, the preliminary data does not support this argument.

### *Critique*

The Dream Deferred Project provides an array of quantitative analysis for the GEAR UP program. Based on the California results, the program encourages low-income students to consider college in their future and helps prepare students for college. However, it is premature to make assumptions about a national program based on one study using only one state’s data. Middle school data analysis, reviewing only the first two years of the program, is not necessarily the most revealing when determining students’ progress towards college readiness, especially when these students are participating in a 6-year preparatory GEAR UP program. The study did show that students’ retention rates increased compared to the control groups. The data do not,

however, provide evidence that GEAR UP, at this limited stage in the program, does in fact increase students' chances of graduating and/or attending post-secondary institutions. Additionally, the Dream Deferred research makes the assumption that standardized test scores are an adequate measure of college readiness, with specific concentration on math skill acquisition on the California statewide Standard-9 test. The project concentrated on determining the level of math progress of GEAR UP participants because, "of all the components of curriculum intensity and quality, none has such an obvious and powerful relationship to ultimate completion of degrees as the highest level of mathematics one studies in high school" (Adelman, 1999, p.16). Other measures of academic performance are not included in the California assessment, which is the basis of comparative research. Specifically, the study focused on only two years of data, both from cohort middle school years and therefore actual cohort outcome measurements could not occur. Analyzing high school data through longitudinal studies of cohorts will provide more accurate representations of program impacts. To gain a clearer picture of GEAR UP's success, further and more comprehensive research is needed.

### ***ACT: Using EXPLORE and PLAN Data to Evaluate GEAR UP Programs***

The National Council for Community and Education Partnerships (NCCEP) and ACT., Inc. (American College Testing Program) collaborated in an effort to collect the data necessary to assess students' academic progress, types and level of intensity of courses students intend to take and their commitment to obtain post-secondary education (ACT and NCCEP, p.1). A portion of the comprehensive longitudinal study was dedicated to studying the effectiveness of the federal GEAR UP program. Specifically, the study examined the academic preparation, course taking-patterns, and college-readiness of GEAR UP students and non-GEAR UP students at grade levels 8 and 10. The preliminary analysis suggests GEAR UP has a positive effect on students when considering the aforementioned measures. According to NCCEP and ACT, Inc., the intention of this report is to help answer the question surrounding how a state or partnership can ascertain whether or not its GEAR UP program is having the desired effect; the best indicators of GEAR UP's success are the number of students who enroll in college and increases in retention rates at participating schools.

This study compared changes in academic readiness and college intent for a sample of students from participating GEAR UP schools to a comparable sample from non-GEAR UP schools. Assessment data was collected from "ACT'S EXPLORE and PLAN programs to measure student's academic readiness and college intent at grade 8 and grade 10" (ACT and NCCEP, ES i). The EXPLORE Composite score is "the mean of four multiple choice tests in English, mathematics, reading, and science" (ACT and NCCEP, p. 4). Each administered exam, and the composite, range from 1 to 25, and measures the students' curriculum-related knowledge and cognitive skills important for future education and careers (ACT website, 2001). The purpose of the PLAN is to measure student development in the same way as the EXPLORE Composite Score, "with the main difference being that the two tests focus on skills attained at different times in the students' educational experience (ACT website, 1999). The study used ACT's EPASTM (Educational Planning and Assessment System), which consists of EXPLORE, an assessment typically given in 8<sup>th</sup> grade, and PLAN, an assessment typically given in 10<sup>th</sup> grade. Both assessments "are ideally suited for measuring the level of change between 8<sup>th</sup> and 10<sup>th</sup> grade. Both tests are intended to measure skills required for postsecondary success, and both

have indicators of plans for postsecondary education” (ACT and NCCEP, p. 1). This allows for a student’s change in EXPLORE and PLAN Composite Score to adequately indicate academic growth.

By using EXPLORE and PLAN data, researchers were able to identify the level of change that occurred for specific cohorts of students between 8<sup>th</sup> and 10<sup>th</sup> grade. ACT and NCCEP researchers made efforts to match non-GEAR UP and GEAR UP schools as closely as possible using the following characteristics: the mean EXPLORE composite score, the grade level in which EXPLORE was administered, a control for public vs. private schools, enrollment size, the number of EXPLORE-tested students, and indicators for community type (urban, rural, or suburban). ACT and NCCEP indicate that the primary “criteria for matching schools was to keep the difference in mean EXPLORE Composite score within one point” (2007, p. 2). This form of compatibility matching allows researchers to eliminate most of the differences in school environments – meaning students attending the non-GEAR UP school are considered the control group and did not come in contact with the GEAR UP program, yet experienced a similar school environment.

Researchers studied the following outcome variables to focus attention on levels of college readiness and college intent of GEAR UP students and their matched counterparts: changes in EXPLORE and PLAN Composite Readiness, changes in meeting EXPLORE and PLAN college readiness standards for each subject area, changes in meeting EXPLORE and PLAN college readiness standards for each subject area, and plans for taking core high school curriculum at grade 10 and changes in plans for college from 8 to grade 10 (ACT and NCCEP, 2007, p. 4).

### Findings

The authors’ analyses indicate positive findings for the GEAR UP program, though the effect sizes were generally small and the significant results were not consistent for the two cohorts studied (ACT and NCCEP, 2007, p. 23). However, as the authors discuss, research design limitations must be taken into account when considering the small, yet positive findings for the GEAR UP program. Basically, the research as presented should not be deemed conclusive of any positive or negative net effect on the student participants’ college readiness or college attendance rates. Limitations with the research design include the lack of information regarding the number of students who participated in the GEAR UP program, who are currently enrolled in college and degree completion rates. A second limitation of the study included the fact that the participating schools did not provide a record identifying which students received intervention, as well as the lack of information on the intensity of each student’s intervention treatment. Third, the information collected does not include students who may have moved or transferred schools, and who may have or may not have received GEAR UP program support. ACT and NCCEP program evaluators suggest that another study be conducted in four years, once study participants have graduated from high school, allowing for the success of the program to be measured by the number of participants enrolled in college, retention and degree completion rates.

### Critique

This study lacked the ability to determine if GEAR UP vs. non-GEAR UP students are actually better off due to the lack of a true control group, as well as which interventions worked well and which ones did not because of a lack of detailed data stating exactly which interventions were

used, for how long and at what level of intensity. The study was unable to perfectly match non-GEAR UP schools to GEAR UP schools in the analysis because of demographic makeup. GEAR UP schools are the most impoverished, a distinction non-GEAR UP schools do not share. Many of the schools used as control groups served similar levels but not exact levels of impoverished students as GEAR UP site schools. Therefore, an adequate control group could never be located and the true effects or lack of effects of the GEAR UP program cannot be effectively measured. The use of regression modeling, however, was used to try and overcome this discrepancy. If the data set used to analyze the success of the program included measures of intervention involvement for each student, researchers could better assess the effects of GEAR UP. To help eliminate the number of limitations discussed in the previous section, future researchers need to consider the type of intervention program student's receive, and to what degree intervention is implemented, track students and their academic progress over time in order to measure level of improvement, and finally track and measure the level of student involvement with GEAR UP programs.

While there is validity in evaluating programs yearly, the GEAR UP program poses a unique set of challenges to such a format. First, the purpose of this program is to increase college readiness as well as increase the number of students from populations that disproportionately drop-out of high school or not go on to post-secondary education to do just the opposite, graduate high school and obtain post-secondary education. Therefore, program evaluations that make recommendations without the end results of the program (i.e. before the time they are expected to graduate from high school and attend college) are not providing the necessary information needed for a thorough, effective assessment. In other words, studying the effects of GEAR UP on middle school students and high school students that are not in their last year of study does not measure the actual success of the program's intentions. Also, using student responses as it relates to their future plans as a measure of student outcomes or overall program success does not provide the same level of measurement validity as would a post- GEAR UP completion survey that asks students if they have or have not enrolled in college. Also, this evaluation failed to mention the location of the student participants/schools which were reviewed.

#### ***GEAR UP Austin: Impacting Lives Project, 2004-2005 and 2005-2006.***

Nearly \$2 million worth of funding each year over the life of the six year GEAR UP grant from the Department of Education as well as matching funding from project partners make (totaling \$13,475,284 over six years for the Department of Education \$13,554,059 of matching funds local GEAR UP partners). The GEAR UP Austin: Impacting Lives Project at Akins, Crockett, Johnson (LBJ), Johnston, Lanier, McCallum, Reagan, and Travis high schools possible. The Austin program evaluation used a mixed methodology approach including qualitative (ex. Content analysis techniques utilized to identify themes during interview sessions with participants) and quantitative (ex. HLM was utilized to precisely pin point program outcomes and to identify influential variables) and the results garnered from collected data was triangulated in order for the study to ensure secure and accurate results. Doing so ensured that a high level of validity and credibility could be achieved. It is important to note that the data sources for student analysis were obtained from the district's comprehensive database that included TAKS scores, identifier information etc. as well as information gathered from focus groups and parents, staff and administrators interviews and follow-up surveys.



By the 2005-2006 school year GEAR UP had been in place for 6 years in the aforementioned high schools in the Austin, TX area. The data suggest that the program's impact was positive, specifically:

- When compared to non-GEARUP participants GEAR UP participants in GEAR UP schools took more advanced level courses, applied to more post-secondary institutions and took the necessary college entrance examines (SAT and/or ACT)
- The TAKS performance comparison between the GEAR UP student participants and the non-GEAR UP student participants had mixed results, especially in the area of math and science, the English/Language Arts and Social Studies and across year comparisons test score comparisons however were not significantly different.
- Highly involved GEAR UP students consistently performed better on all of the major areas used to calculate the student engagement rating (advanced course enrollment, TAKS performance, grade level promotion, and avoiding significant discipline issues).
- GEAR UP student and GEAR UP staff relationships were considered important factors in student engagement, moving them closer to achieving the programs' goals of student academic and college preparation.
- Student participants and their parents were educated about the steps needed to properly prepare for post-secondary education and were investing their energy in making arrangements to actually attend college (Austin, 2005 and 2006).

SBC Foundation funded the study of the Austin ISD GEAR UP Austin: Impacting Lives Project. The 2004-2005 evaluation was conducted by the Austin Independent School District's (AISD) Department of Program Evaluation in conjunction with the contracted assistance from Academic Information Management (AIM), Inc. of Austin, Texas, whose principal partners include Dr. David Stamman and is Ms. Pamela Romero. The comprehensive evaluation methods utilized by Austin ISD research staff, accompanied by the research design consultation assistance and recommendations by AIM Inc. allowed for thorough investigation of the impact of GEAR UP on student achievement of set program goals. The evaluation was paid for by a \$37, 975 grant provided by the \$5 million SBC Foundation (The philanthropic arm of SBC Communications Inc.) donation to the National Council on Community and Education Partnerships (NCCEP). A portion of the SBC grant was dedicated to increasing the accuracy and level of excellence of the evaluation of GEAR UP programs. The evaluation entailed Hierarchical Linear Modeling (HLM) data analysis software, HLM training for AISD evaluators leading the GEAR UP evaluation report and hosting of a report debriefing meeting. It is important to note that the 2005-2006 evaluation was conducted by the AISD Department of Program Evaluation without the assistance of AIM Inc.

The results of the evaluation indicate that the GEAR UP program was effective for students who actually fit the characteristics of low-income and first-generation. More specifically, GEAR UP participants, especially those who attended GEAR UP high schools, whose mother's were not college educated and who did not, after initially enrolling in GEAR UP as either 7<sup>th</sup> or 8<sup>th</sup> graders ( at a GEAR UP school), attended a non-GEAR UP high school ( i.e. a high school that did not have the highest low-income student population). The results show that students who had moderate to high participation in GEAR UP compared to GEAR UP students who had low

participation or students attending GEAR UP high schools who were not GEAR UP participants in fact applied to post-secondary institutions, took college entrance exams and enrolled in college at a higher rate. However, despite the six year GEAR UP participation, even for those students who participated at a moderate to high rate there still exists an academic achievement gap that reflected in the consistently below average ACT and SAT scores. GEAR UP's efforts to create a college going culture and mindset were shown to be effective; however proper academic achievement is the result of quality instruction and academic resources. The supplemental resources provided by the GEAR UP program cannot supplant this.

In the 2004-2005 evaluation (five years into the six year grant and one year before the expected graduation of the cohort investigated), the evaluators recommended that the district institutionalize many if not most of the GEAR UP program features, secure outside funding just in case the federal funding was not renewed. The 2005-2006 evaluation recommendations mirrored the 2004-2005 evaluations, but were more substantiated due to the GEAR UP grant not being renewed and the fact that the cohort being investigated graduation had actually occurred. Several components of the GEAR UP program were recommended for continuation to better serve first-generation college bound students, including (1) case management approach for one on one student advising, (2) student academic needs should continue to be investigated and support services aimed at accommodating these needs should be implemented, (3) increased intensive professional development for instructors in order to increase their effectiveness in the classroom, and (4) sustaining and further developing community and business partnerships to better serve low-income first-generation college students. The research team conducted a brief follow-up interview with Austin ISD Program Evaluation Office to determine why the district no longer utilizes the GEAR UP program model. Our Research team was able to obtain an interview with the AISD Department of Program Evaluation's Administrative Supervisor, Dr. Karen L. Alderete-Looby, and was informed that: GEAR UP is expensive to facilitate as it relates to staffing, especially with the cohort format utilized, and The program is very time consuming due to the case management approach utilized. The following program logistical highlights were also mentioned in the interview: The program is designed to be really efficient, and staff were committed and well suited resulting in little staff turn-over after a few years.

### Critique

The Austin Impacting Lives evaluations were very comprehensive, incorporating testing, pre and post graduation survey analysis as well as college record and tracking students that stayed and those that exited GEAR UP schools. The analysis generated were very thorough and provided answers to all questions that one may have about the students who stayed, participated in varying levels, and those that moved away. Most impressive is that the evaluation did not use the students' survey describing their intention as fact, but instead looked at the actual number of college entrance exams taken, the number of transcripts sent off and even surveyed the colleges to determine if students actually enrolled. This comprehensive approach garnered the type of evidence that GEAR UP is effective in both students who are from a household with a mother who obtained their 4-year degree and for those students from a household where their mother has not obtained their 4-year degree. These results suggest that a 6-year college going culture program, with individual and group focused activities can in fact make an impact no matter the educational background of student's parents.

### ***Overall Critique – GEAR-UP Program Evaluations Reviewed***

Of the GEAR UP program evaluations reviewed, the Austin Impacting Lives program was most comprehensive, allowing for the longest longitudinal data collection and analysis. It incorporated a multi-dimensional evaluation model, including six hypotheses to test and five more to investigate in future analysis. The California study (The Dream Deferred Project) and the 8<sup>th</sup> and 10<sup>th</sup> grade (ACT and NCCEP) evaluations were unable to determine if GEAR UP had the intended impacts, possibly because they focused only on middle school students. Only the last, 2005-2006, Austin Impacting Lives GEAR UP evaluation was based on a completed cohort. Also, the specific aim of GEAR UP is not dropout prevention, but rather, creating a viable pipeline to college in populations/schools where such a pipeline does not exist or is not effectively serving its student populations.

GEAR UP inadvertently decreased dropout rates because it targeted schools with traditionally high rates, and the program's primary goal – fostering a college-going culture – inadvertently curbing dropouts. Also, the Austin program evaluation was more closely modeled to include evaluation features common place in the state of Texas, the state where our overall dropout analysis concentrates. However, despite efforts in each evaluation to account for the differences embodied by the schools selected as comparison groups, no true control group was able to be selected. Because the fundamental GEAR UP school selection criteria is narrowly defined is essentially stated as the school with the most impoverished student population. If these schools selected are the most impoverished then there is not another school that holds that particular title and therefore no school can actually serve as a true control group.

### **Abriendo Puertas**

Abriendo Puertas is a parent-involvement initiative aimed at keeping students in high school and encouraging them to pursue a college education. The program, sponsored in part by the College of Agriculture and Life Sciences (COALS) of Texas A&M University, uses a variation of the World Health Organization's (WHO) volunteer outreach model of promoters, or *promoter*s in Spanish (Abriendo Puertas, 2008a). Dr. Hector Aldape and Dr. Ida Acuña-Garza<sup>71</sup> founded Abriendo Puertas in 2003, with the goal of reducing the high school dropout rate among Hispanic students in the Rio Grande Valley using curriculum and outreach methods based on Dr. Acuña-Patrick's volunteer outreach research.

During the late 1980s, Dr. Acuña-Patrick conducted field research of Expanded Nutrition Program (ENP) participants in Hidalgo County, Texas. The ENP, administered by the Texas AgriLife Extension Service, provides food and nutrition education to residents in areas where resources may be poor or access is difficult. The program uses trained volunteers to teach participants “basic nutrition, food safety, shopping on a budget, and food preparation skills...using hands-on activities and practical, easy-to-understand materials” (Texas AgriLife Extension Service, 2009). Dr. Acuña-Patrick's research led her to a number of conclusions

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<sup>71</sup> Dr. Ida H. Acuña-Garza conducted most of her research under the name Dr. Ida H. Acuña-Patrick.

regarding life in border region colonias<sup>72</sup>, including participants' "desire for their children to obtain an education" beyond the education level of their parents (Acuña-Patrick, 1990, p. 37). Despite the challenges and hardships many valley residents faced, education for their children was the most important family value and concern cited in surveys (Acuña-Patrick, 1990, p. 41).

Dr. Acuña-Patrick's research also substantiated that these primarily immigrant populations developed close-knit communities of neighbors helping neighbors. Survey respondents frequently alluded to a lack of services (e.g. police protection, safe playgrounds for children, lack of adequate transportation) leading the community to look out for one another (Acuña-Patrick, 1990). Colonia residents expressed strong desires to better their communities, particularly through learning opportunities. Primary interests included vocational or job skill training, English classes, and strategies to keep their children in school and "achieve success in a career" (Acuña-Patrick, 1990, p. 47). Based on her research and the strong family network culture among residents, Dr. Acuña-Patrick recommended resident involvement in all stages of any program designed to improve valley life. Specifically, she advises that "the culture in the colonia and the impact of the extended family network will serve to give stability and direction to programming in the colonias" (Acuña-Patrick, 1990, p. 57). This concept became the backbone of Abriendo Puertas.

### **Program Design**

The mission of Abriendo Puertas is to "educate parents so that they 1) communicate in a positive manner with their children; 2) support their children through the high school graduation process; and 3) support their children as they pursue a higher education degree, whether at the vocational, two-year, or four-year university level" (Abriendo Puertas, 2008b, p. 5). They do this by using trained parent volunteers to reach out to other local parents, teaching them Abriendo Puertas curriculum and giving them the tools to help their children succeed in school (Abriendo Puertas, 2008b). The premise behind the Master Volunteer program is to train local volunteers in a particular subject area (in the case of Abriendo Puertas, education) (Texas AgriLife Extension Service, 2008). Volunteers then instruct participants in program curriculum and act as advocates on behalf of participants. Using volunteers alleviates strain on program staff, allowing them to focus on teaching more advanced curriculum and developing program resources (Texas AgriLife Extension Service, 2008). Additionally, since volunteers are similar in cultural demographics to a target population, they hold significant credibility with and can reach populations typically isolated from program staff (Fedder et al., 2003).

### **Curriculum**

Abriendo Puertas' curriculum is divided into three lessons, each focusing on different aspects and skills necessary for successful parent-child interaction regarding educational achievement. Each lesson concludes with an activity to help solidify concepts and objectives. Lesson 1—Opening Doors...for Your Child's Future—emphasizes the importance of learning how to communicate with your child during the different stages of adolescence: pre-adolescence, middle adolescence, and late adolescence. Parents learn the characteristics and developmental aspects of each stage, so they may better understand and communicate with their teenager. This lesson

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<sup>72</sup> The Center for Housing and Urban Development of the College of Architecture at Texas A&M University Colonias Program defines colonias as "unincorporated communities along the U.S./Mexico border, generally characterized by lack of physical infrastructure such as sewers, running water, storm drainage and paved streets" (OAG).

introduces key concepts for parent involvement in their child's education, including basic awareness of educational dreams and visions, goal-setting, and ideas for how to get involved (Acuña-Garza and Aldape, 2004a).

The second lesson—Making the Grade: Helping Your Child Succeed in School—reinforces parent responsibility in their child's success. Main concepts include ensuring school attendance, discussion of basic study skills, and graduation requirements (Acuña-Garza and Aldape, 2004b). This lesson also stresses the importance of a high school diploma in today's society, supplemented with information and goals from the National Center on Educational Outcomes. Parents are taught the significance of organization in keeping their child on track and are encouraged to create a calendar for school assignments, deadlines, and goals. Lesson 2 continues to reinforce the importance of parent involvement in their child's education.

Preparing for College, the third lesson in the series, discusses all aspects of getting from high school to college. Topics include college entrance exams, admission requirements, and financing a college education. Significant time is devoted to financial aid information. A campus tour, to introduce college and campus life, is also available during this lesson. This tour gives students the opportunity to network and begin building relationships to help them transition to college life (Acuña-Garza and Aldape, 2004c).

### **Evaluation Research**

To date, no evaluative research of program efficacy has been conducted. While Abriendo Puertas incorporates an evaluation component in the program design, it consists of attendance numbers for meetings, presentations, and qualitative follow-up surveys from program participants. These data are useful for internal assessment, but only formal evaluative research would address the program's impact on educational attainment and success in the Rio Grande Valley. The program curriculum is grounded in substantial, robust research and has been effective in other areas, particularly health education (WHO, 2004, Fedder et al., 2003, Gonzalez, 2002, and Burke, 2001). One primary difference between prior volunteer outreach modeled programs and Abriendo Puertas exists: prior programs have focused on peers teaching peers about personal behaviors and actions; Abriendo Puertas shifts the focus from the parent's actions and behaviors to teaching participants how to support their children. The emphasis is no longer solely on changing an individual's behavior patterns, but on participants' active roles in changing behavior patterns of others.

### **Remaining Gaps and Questions**

The Abriendo Puertas program manual makes multiple references to research results to support claims of program efficacy. While it is evident that research supports the volunteer outreach model as an effective approach in other fields (WHO, 2004, Fedder et al., 2003, Gonzalez, 2002, Burke, 2001, and May et al., 1991), evidence is needed to show similar effectiveness for Abriendo Puertas. Furthermore, occasional inconsistencies in program materials, such as the number of students reached or the numbers of parents who become volunteers and continue with the program, raise questions that formal evaluation could answer. This program has received a number of accolades, including being identified by the Department of Education as a promising practice. However, the research team could find no evidentiary basis for this distinction. It is clear Abriendo Puertas staff is passionate about the subject matter. Given the strong research base behind the WHO program model and evidence of success in health related fields, by logical

extension it should also be successful in education. However, there is no substitute for the credibility that objective research would provide.

## National Guard Youth ChalleNGe

The National Guard Youth ChalleNGe Program is a federally funded, state run initiative aimed at turning high school dropouts into productive members of society. The mission of the National Guard Youth ChalleNGe Program is, “to intervene in and reclaim the lives of at-risk youth and produce program graduates with the values, skills, education, and self-discipline necessary to succeed as adults” (AOC Solutions, Inc., 2007, p. 3). The ChalleNGe program targets 16 – 18 year olds who are high school dropouts, drug-free, unemployed, and currently not involved in any legal matters (i.e. probation, parole, indicted or charged with a crime, felony or capital offense convictions) (AOC Solutions, Inc., 2007, p. 3).

While Communities In Schools, GEAR UP, and Abriendo Puertas are programs aimed at dropout prevention, the Youth ChalleNGe program is more dropout intervention in nature. Though not explicitly a program meant to address the nation’s dropout issue, the Youth ChalleNGe program places great emphasis on educational excellence as one of several components. Educational excellence through the program means raising math and reading scores, as well as obtaining a GED (AOC Solutions, Inc., 2007). It should be noted that raising test scores or obtaining a GED is not required for completing the program, though the expectation is that students will do so.

In 1993, the National Defense Authorization Act established the ChalleNGe program as a pilot program to measure the effectiveness of military style training to help high school dropouts improve their lives (GAO, 2005). The ChalleNGe program was permanently authorized by Congress in 1998, and today operates 33 sites in 27 states, the District of Columbia, and Puerto Rico (AOC Solutions, Inc., 2007). The Assistant Secretary of Defense for Reserve Affairs is authorized by the Under Secretary of Defense for Personnel and Readiness to provide management oversight for the ChalleNGe program, including policy and funding issues. Meanwhile, the National Guard Bureau (NGB) is responsible for the day-to-day operations within each state (GAO, 2005).

The ChalleNGe program is based on a residential model, which allows participants admitted to the program to live on campus for 22 weeks (NGYP, 2009). This first phase of the program is referred to as the Residential Phase. The first two weeks of the Residential Phase are called the Pre-ChalleNGe phase, which acquaints cadets to the rigors of military training, as well as helps administrators determine which students are most likely to complete the program. Those determined capable of completing the program progress to the Residential Phase where they are exposed to program curriculum which includes academic excellence, physical fitness, job skills, service to the community, health and hygiene, responsible citizenship, leadership/followership, and life coping skills (AOC Solutions, Inc., 2007). The program is provided at no cost to participating students and lasts 17 months. Program curriculum is designed to strengthen the cadet’s education and life skills in ways with which traditional high schools struggled. After cadets complete the program, the Post-Residential Phase begins as each student is paired with a

mentor who guides him or her through a transition back into society (AOC Solutions, Inc., 2007).

### Current Evaluation Efforts

Currently, the National Guard Bureau contracts with AOC Solutions, Inc. to provide program evaluation on a yearly basis (AOC Solutions, Inc., 2007). AOC Solutions, Inc. is an independent firm specializing in financial management and program assessment services for government agencies. AOC Solutions conducts outcome-based operational evaluations as well as management reviews for all the ChalleNGe programs across the country. Such reports allow researchers to compare statistical changes from year to year, however, they are also more costly when compared to ad hoc evaluations. These evaluations report yearly statistics for two graduating classes, including numbers of applicants, enrollees, and graduates; academic credentials earned; and cadet hours of community service. Reports also provide information on placement of cadets after successful completion of the program. Table 5.1 shows the national statistics reported by AOC Solutions, Inc. since the start up of the ChalleNGe program in 1993.

**Table 5.1 ChalleNGe Statistics to Date (National)**

Category	Number
Applicants	196,659
Enrollees	93,791
Graduates	73,984
Academic Credentials	47,679
Hours of Service to Communities (valued at \$34,851,267)	5,318,021

*Source: AOC Solutions, Inc., 2007*

AOC Solutions, Inc. uses the web-based Data Management and Reporting System (DMARS) and Budget Management and Reporting System (BMARS) to examine data recorded by ChalleNGe program administrators (AOC Solutions, Inc., 2007). DMARS, developed by AOC Solutions, Inc. for use by the NGB, serves as the central database for ChalleNGe program data. BMARS, on the other hand, provides the NGB with the ability to view real-time fiscal data from each program site (AOC Solutions, Inc., 2007). AOC Solutions, Inc. reviews data from DMARS on a weekly and monthly basis, in addition to random checks of documents during site visits (GAO, 2005).

### Evaluation Research/Publications

Current evaluation efforts explore the issue of military style training as a means of providing alternative education for at-risk youth. One organization that has looked into what knowledge can be gleaned from the Youth ChalleNGe experience is the Center on Children & Families (Price, 2007). In 2007, the Center on Children & Families published a report entitled,

“Demilitarizing What the Pentagon Knows About Developing Young People: A New Paradigm for Educating Students Who Are Struggling in School and in Life,” which attempts to demonstrate the validity of the ChalleNGe model. The author also describes certain lessons taken from the ChalleNGe program, which can be applied to other circumstances to help school administrators reach out to at-risk youth.

Literature also suggests that the psychological well-being of teen dropouts is an important determinant in whether or not applicants will successfully complete any military style program. Robert Weis, Thomas E. Crockett, and Sasha Vieth co-authored an article in 2004, “Using MMPI-A Profiles to Predict Success in a Military-Style Residential Treatment Program for Adolescents with Academic and Conduct Problems,” which argues that pre-screening applicants will allow these military-style programs to have higher success rates. The study followed cadets at a Wisconsin Youth ChalleNGe campus in 1998 from before they entered the program until after they had completed the residential phase. Using the Minnesota Multiphasic Personality Inventory-Adolescent (MMPI-A) test, the researchers concluded that psychological evaluations were an important predictor of a cadet’s successful completion of the ChalleNGe program.

#### ***Center on Children & Families Report***

The Center on Children & Families (CCF), working in partnership with the Brookings Institution, developed the study “Demilitarizing What the Pentagon Knows About Developing Young People: A New Paradigm for Educating Students Who Are Struggling in School and in Life” (Price, 2007). The author acknowledges the report is limited to determining whether certain approaches might be correlated with a reduction in the number of dropouts, rather than providing conclusive evidence that such a program is effective (Price, 2007). This main purpose for the report is to offer alternative strategies to the traditional education system for lowering the number of dropout.



## Design

In conducting the study, the Center examines five different methods in which military style training is used:

1. Basic training,
2. Pre-military development program,
3. JROTC programs and career academies,
4. The Youth ChalleNGe program,
5. Public military academies (Price, 2007).

## Findings

This study identifies five promising ideas worth testing: offer reading and math immersion programs, establish quasi-military public middle and high schools, create quasi-military public boarding schools, establish quasi-military alternatives to incarceration, and help public schools implement the key attributes (Price, 2007). These ideas were chosen because of their educational value for dropout prevention, as well as the ability to extend the benefits of military-style training to other sectors of education. The author also recommends utilizing the resources of the National Guard because of its domestic and national defense responsibilities. Since the National Guard already operates a number of after school programs, the study contends the Guard already has the facilities, knowledge, and personnel to implement any or all of the promising ideas stated above (Price, 2007). Since this report does not explicitly evaluate any type of military-style program, effectiveness of the ChalleNGe program is difficult to determine based on this report alone.

## Critique

The study is qualitative in nature, relying on testimonials, personal interviews, and reviews of existing programs and literature in search of common themes that cut across the various military-style programs. The author acknowledges that the study is based on “sketchy statistics...partial studies...anecdotes and journalistic observations” (Price, 2007, p. 5). Basic research design elements, such as use of control and experimental groups, are lacking in this study. Despite the lack of quantitative analysis, the study touches on a number of important research questions. The attributes worth emulating and problematic characteristics provide a starting point for other researchers to evaluate how the Youth ChalleNGe program is implemented or can be improved through these areas. Also, the study draws attention to military-style education and training, areas which show promise but that require more conclusive evidence to determine the program’s effectiveness.

## *Government Accountability Office Report*

The GAO's report seeks to address the fiscal constraints facing the ChalleNGe program using data provided by AOC Solutions, Inc. and the NGB. Management and oversight of the ChalleNGe program is another area that is presently being examined by outside evaluators. GAO published its evaluation of the ChalleNGe program in 2005 "Defense Management: Actions Are Needed to Improve the Management and Oversight of the National Guard Youth Challenge Program" as an effort to inform Congress, the Department of Defense, and the NGB about potential problems facing the ChalleNGe program and remedies to address them. This report focuses on the program's history, methods used to determine program costs, and general oversight of the ChalleNGe program (GAO, 2005).

### Design

The GAO undertook a comprehensive approach in obtaining data necessary for its evaluation of the ChalleNGe program. The report contains interviews from Department of Defense officials as well as those from the Departments of Labor, Education, and Justice (GAO, 2005). AOC Solutions, Inc., the National Guard Youth Foundation, and officials from selected states were also interviewed during the course of the study. In addition to interviews, GAO reviewed annual program reports, the data management system used by the NGB, resource management reviews, and other audits (GAO, 2005). The report also provides hypothetical examples of what program costs might look like if the amount of funding per student changes, both for increase/decrease and if current funding remains constant.

### Results

The GAO's main conclusion was that NGB's request to increase its funding for the ChalleNGe program was not based on any solid analyses (GAO, 2005). The lack of performance goals for the ChalleNGe program also prevents the NGB from having a more complete system of oversight for determining program progress. Audits of program sites were also a problem as they were not conducted when required and results were not shared with NGB staff. (GAO, 2005). The lack of a more robust auditing system further hampers NGB in determining how effective the ChalleNGe program truly is.

### Critique

The report stated that while the NGB has mechanisms in place to oversee the ChalleNGe program, lack of a complete oversight framework inhibits measuring the effectiveness of the program (GAO, 2005). A complete oversight framework is one in which there are clearly defined performance goals and measures, along with a system to track completed audits and responses to those audits (GAO, 2005). Audits of each state's program are required once every three years by U.S. property and fiscal officers. However, these audits are not always conducted when required, and when they are done, they are not shared with the NGB for review (GAO, 2005). Another criticism by GAO is the lack of performance goals for each state which operates a ChalleNGe program (GAO, 2005). While NGB requires each state to report outcome measures, such as GED attainment and number of students completing the program, there are no performance goals against which to compare those outcome measures. This prevents NGB and the Department of Defense from accurately gauging the progress the ChalleNGe program makes. While GAO adequately addresses the administrative aspects of the program, one thing that was not mentioned was whether or not the ChalleNGe program is increasing the number of cadets

that complete the program. This is an important point that might further validate the NGB's case for increasing funding for the program.

The GAO report is fairly comprehensive, focusing on the NGB's concern over the program's funding. GAO effectively addresses the NGB's stated cost per cadet for running the ChalleNGe program by reviewing current costs for the program per cadet and comparing those to projected costs for future cadets. The report also examines the program's oversight and how it affects evaluative efforts for the program, a topic not regularly covered in literature pertaining to the Youth ChalleNGe program. The results of the report call for NGB to improve its system of oversight, as evidenced by the lack of performance goals and scheduled audits. It should also be noted that the report is intended as a means for NGB, as well as the Department of Defense (DoD), to reexamine the ways in which they administer the program rather than concluding whether the Youth ChalleNGe program is effective or not.

### **Gaps and Remaining Questions in National Guard Youth ChalleNGe Program**

As the GAO report demonstrated, the NGB lacks a system of performance goals to which the ChalleNGe program must adhere (GAO, 2005). This is important because performance goals provide outside evaluators a more objective method for conducting program evaluation. Another area that deserves further attention is the sustainability of the ChalleNGe program. Currently, the program is funded on a 60-40 formula, with 60 percent coming from the federal government and 40 percent coming from the states (GAO, 2005). As states struggle to come up with the required 40 percent, the question of whether the ChalleNGe program is sustainable must be further examined.

Literature pertaining to the National Guard Youth ChalleNGe program also suffers from a lack of quantitative analysis. Despite recording statistics such as number of youth enrolled and number of cadets completing the program, current literature does not offer much in the way of using control and experimental groups to determine whether the program is achieving its goals of turning at risk youth into productive members of society. This finding also ties into the performance goals mentioned earlier as such measures not only allow the NGB and DoD to determine the success of the program, but also allow for more critical and independent analysis of the Youth ChalleNGe program.

### **The Mayor's 100 Teens - El Paso, TX**

The Mayor's 100 Teens program was originally started in Colorado Springs, Colorado in 1997 as a way to call attention to youth making a difference in their communities (City of Colorado Springs, 2009). In 2006, the Mayor's Office for the City of El Paso formally adopted the program to recognize high school students, who demonstrated public service and other significant achievements within their community (City of El Paso, 2009). Every year the program accepts nominations for up to a maximum of 100 students, who have completed the 9<sup>th</sup>, 10<sup>th</sup>, and 11<sup>th</sup> grades (America's Promise Alliance, 2009). Nominations for students are made by members of the community and are based on overcoming adversity, service to others, significant achievements, and leadership. Despite being a city government initiative, funding for the

program is provided by private donations from local business and citizens. By providing public, city-wide recognition of select teens within El Paso, the hope is that other teens will be inspired to pursue higher levels of public service and achievements.

## Research

Since its inception in 2006, there is little in the way of evaluative research for the Mayor's 100 Teens program in El Paso. Similarly, there appears to be no available research to determine the effectiveness of the Colorado Springs program. Publications pertaining to the program are difficult to obtain publicly, which may be due in part to the recent implementation of the El Paso program. Because the program is geared towards recognition of high achievement students rather than addressing the issue of high school dropouts, there are no current plans to conduct reviews of the effectiveness of the program as it relates to lowering the city's dropout rate. America's Promise Alliance cited the Mayor's 100 Teens program as an evidence-based program, yet there is no evidence we could find to support this claim (America's Promise Alliance, 2009). Such a program will require independent evaluations to determine whether it is effective as a means to address the dropout issue for the City of El Paso, as well as the state in general.

## *expectation: Graduation*

*expectation:* Graduation was a city-wide summit coordinated by the Mayor's office of the City of Houston in 2004 (City of Houston, 2009a). The summit brought together students, parents, and leaders from business, government, and educational institutions to increase awareness of Houston's dropout problem. These stakeholders worked together to discuss and develop strategies to best combat this problem. As a result of the *expectation: Graduation* summit, the Houston Independent School District developed dropout prevention and recovery programs, including "Reach Out to Dropouts" (ROTD) and SOS (Summer Opportunity Sessions) as well as an E-mentoring program with Communities in Schools (City of Houston, 2009a).

ROTD contacts students who have been identified as not returning to school during the beginning of the new academic year (HISD, 2008a). It is made possible by collaborative efforts between HISD, Mayor Bill White's office and Houston A+ Academy, a Houston area education reform non-profit organization. Students are contacted at their home through one-day door-to-door campaigns by local leaders and trained volunteers and asked to return to school. The program also connects students to resources essential to successfully returning to and graduating from high school (HISD, 2008a). Houston ISD has hired graduation recovery specialists responsible for tracking students who have dropped out in order to provide these students the assistance necessary to graduate. As a result of this effort, 5,500 students have been reported as re-enrolled dropouts; 500 of these students have graduated from high school (City of Houston, 2009b).

Another well known *expectation: Graduation* initiative is the SOS summer program (City of Houston, 2009a). SOS resulted from the Hamilton Project research at the Brookings

Institution, conducted by Princeton University economists Molly Fifer and Alan B. Krueger. The research suggests that, during summer vacation, students in poverty lose up to one third of knowledge learned during the school year, and as a result, disproportionately fall behind in academic progress when compared to students from economically-advantaged backgrounds (The Brookings Institute, 2006). The Office of the City of Houston's Mayor, in conjunction with HISD, facilitates SOS with the goal of establishing preventative, early-outreach efforts to reduce the negative academic effects of summer vacation on low-income elementary school aged children (City of Houston, 2009c). Students who participated in the program saw a 17 percent increase in science scores and a 14 percent increase in math scores, on the Stanford and Aprenda math and science tests, when compared to the same students' test scores at the beginning of the 4-week program (City of Houston, 2009c).

## Research

Programs resulting from *expectation*: Graduation are relatively new. Consequently, there is a lack of evidentiary research. The SOS summer program is the one exception due to the fact that it was developed as a near replication of the program model produced from Fifer and Krueger's Hamilton Project research as an effort to combat student skills atrophy during summer vacation. The SOS program implemented through HISD is set up similarly to the original program model recommended by the Hamilton Project, with the exception of three points (HISD, 2007). First, the Hamilton Project program model recommends that \$1,600 be spent per child; the HISD SOS program spends \$1,533 per student (HISD 2007). Second, the Hamilton project model recommends students attend a 6 week enrichment program whereas the HISD SOS program is held over a 4 week period (HISD, 2008b). Finally, the Hamilton Program model targets students in the 5<sup>th</sup> grade; the HISD program initially targeted students in the 2<sup>nd</sup> grade and has expanded to include additional elementary grade levels (HISD, 2008b).

Trade-offs occur with the HISD SOS model when compared to the Hamilton Project model. When considering the grade levels targeted, HISD has committed itself to earlier intervention than the Hamilton Project model and in doing so places itself in a position to better shape students' fundamental learning culture. However, the decrease in the amount of weeks the HISD SOS program is conducted when compared to the Hamilton Project model minimizes the amount of face time the program facilitators and the associated curriculum have with the participants. If the problem with summer vacations for low-income students is the lack of academic acquisition of an extended period, which is approximately two - three months why would a one month program minimize the effects of this loss, thereby cutting the loss of class time by one thirds versus the original program cutting the loss of class time by one half. Finally, the variation in the amount of funding spent on each student does not raise cause for alarm. In fact, a four week program that is only \$63 dollars less or 96 percent of the cost of the original 6 week program appears to maximize the program objectives in a limited amount of time. The cost variation may, in fact, be indicative of decreased staff wages because of a shorter program, meal, or utility costs. The payoffs for this early outreach investment has the potential to be rather impressive, if the indications of the Hamilton Model are in fact applicable to the students' serviced by HISD's SOS program.

## It's About Our Community (IAOC)

In the fall of 2005, Texas State Senator Royce West met with concerned citizens, local superintendents, business leaders, and law enforcement representatives to address the fears of increasing youth violence in Dallas, TX, schools and communities. During these initial meetings, “participants searched for a holistic approach to shore up the collective efforts of law enforcement and to both protect and nurture [our] young people” (DeSoto ISD, 2009). Following the conclusion of these meetings, Senator West started the It’s About Our Community (IAOC) Initiative. The goal of this initiative is to “engage students and their families in making a direct impact on the safety of their communities and schools through summer opportunities for students, aged 16-18 years” (America’s Promise Alliance, 2009).

Presently, IAOC students are selected from four Dallas high schools (Adamson, Carter, Madison and North Dallas). The youth selected to take part in the program are encouraged to actively participate in continuous learning opportunities, visit institutions of higher learning, talk with college students and attend specialized training sessions. Summer programs offered by IAOC provide students with the chance to engage in job readiness training, academic endeavors, job shadowing, and summer employment (DeSoto ISD, 2009). Students under the age of 16 are encouraged to sign student affirmations pledging to help make their home, school, and community a safer place. The affirmation is a commitment statement the student signs with a community or business partner, faith-based organization, parent, or their school (elementary grade pledge or secondary student). The student affirmation states that students will do their part to help ensure growth and positive outcomes for local area youth (Duncanville ISD, 2008). Students who adhere to the affirmation are eligible to participate in the joint school/community job fair for summer employment consideration between their junior and senior years of high school. The affirmation serves as a form of accountability for both community participants and students and supports a continuous emphasis be placed on decreasing youth violence. Currently, there is no mechanism in place to measure the number of students who follow through on their commitment to the signed affirmation. The community, including “District staff, parents, businesses, churches, and other[s]” helps students fulfill these promises (Dallas ISD, 2009).

### Research

IAOC was selected by America’s Promise Alliance as a best practice in evidence-based dropout prevention programs; however, we do not know what evidence was used to evaluate this program. Presently, there is no available research that relates IAOC practices to dropout prevention literature and methods. Moreover, since the program’s inception in 2005, no apparent qualitative or quantitative research has been collected to determine its success rate in relation to dropout prevention. In spite of this information, during the 2006 – 07 school year 2,093 students signed affirmations, and of those students 131 were hired by local business partners (West, 2007).

## Check & Connect

The Check & Connect program aims to prevent students from dropping out of school by promoting engagement in school and learning activities. Check & Connect was born out of efforts by the Institute on Community Integration at the University of Minnesota involving researchers, teachers and education administrators, parents, and students (U.S. Department of Education, 2006). It was designed to reach out to “urban middle school students with learning and behavioral problems” (Check & Connect, 2008), supporting educational engagement, and lowering dropout rates. The program aims to have demonstrated impacts on truancy, dropout rates, school completion, academic credit accrual, and literacy (Check & Connect, 2008). Students are referred to the program because they exhibit “alterable warning signs” of disengagement and may show learning or behavioral problems (Check & Connect, 2008). Warning signs often manifest themselves through attendance problems, such as tardiness, excessive absences, and skipping classes.

Check & Connect focuses on the two components of “Check” which incorporates strategies to engage students, and “Connect” encompassing efforts to connect students with resources necessary for their educational success. There are six key features to the Check & Connect model:

- Relationship Building,
- Routine Monitoring of Alterable Indicators,
- Individualized and Timely Intervention,
- Long Term Commitment,
- Persistence Plus,
- Problem-Solving, and
- Affiliation with School and Learning  
(Check & Connect, 2008).

Alterable indicators are those which can be influenced and reversed by school and family involvement. A long term commitment refers to the minimum two-year time period a monitor is assigned to a student, which allows for tracking students across programs and schools. The attention to problem solving is designed to teach and develop constructive conflict resolution skills and learn to look for solutions, rather than assign blame for a problem. Students are encouraged to participate in school and related activities to forge a stronger affiliation with school and learning.

Once identified or referred to the program, students are paired with a mentor, often called a monitor, who regularly “checks” their academic progress and levels of engagement. Monitors serve as mentors, advocates, and service coordinators for students to “keep education a salient issue for disengaged students and their teachers and families” (Check & Connect, 2008). They work with families and students long term, for at least two years, and strive to maintain the ability to follow highly mobile students across programs and schools. Monitors use information gleaned from checking on their students to develop appropriate efforts to connect students with school and school-related activities.

The role of the monitor was designed after a common theme in dropout prevention literature: fostering the role of a supportive and caring adult in a child's life. The monitor acts as a bridge for school outreach services to students and families. He or she tries to better understand the challenges to school and educational access, engagement, and success students and families face, coordinating solutions to these obstacles. One participant described his monitor as "the person who stay[ed] on my back about coming to school" (Check & Connect, 2008).

## Research

Extensive evaluative research on Check & Connect has been conducted, to varying degrees. Researchers affiliated with the program have been conducting longitudinal studies since 1990, at the elementary, middle and high school levels. Six previous studies have been undertaken—the first in 1990—and two are currently taking place, begun in the fall of 2002 and in 2003 (Check & Connect, 2008). Four of these studies passed relevancy screens set by the What Works Clearinghouse (WWC), with two meeting evidence standards or evidence standards with reservations (U.S. Department of Education, 2006). Relevancy screens are used to determine whether or not a study is truly relevant to the topic in question. The Check & Connect studies that did not pass relevancy tests either did not examine appropriate grade levels or applicable dropout prevention outcomes. Studies that meet evidence standards conducted randomized controlled or regression discontinuity tests, providing the strongest level of validity; evidence standards with reservations refers to design flaw-free quasi-experiments and randomized controlled studies that had few problems, mostly with attrition, randomization, or disruption (Dynarski et al., 2008). Studies may also fail to meet evidence standards and typically do so because they lack an adequate control group.

Multiple other studies have been undertaken by researchers not affiliated with Check & Connect, including the *Dropout Risk Factors and Exemplary Programs* by the NDPC/N and CIS and the U.S. Department of Education and WWC's *IES Practice Guide: Dropout Prevention* report. Check & Connect was identified as an exemplary program in the NDPC/N and CIS report. The Institute of Education Sciences' (IES) practice guide examined recommendations for creating and administering effective dropout prevention programs based on literature reviews and best practices research. Check & Connect incorporates five of the six IES recommendations for successful dropout prevention programs. Furthermore, the National High School Center recommends Check & Connect as an effective, evidence-based program and points out that it is one of only eight programs included in the What Works Clearinghouse (Kennelly and Monrad, 2007). While Check & Connect does not currently operate in Texas, the breadth of research available on program efficacy makes it a program that should not be ignored by stakeholders in Texas education.

## Conclusion

While it is not feasible to suggest discontinuing program funding to conduct more efficacy research, current program evaluation efforts are not robust enough to adequately determine which prevention approaches are effective. Copious amounts of money and resources have been allotted to efficacy research, yet researchers have not devoted enough time and attention to studies to provide definitive conclusions. One or two years of data on a limited number of cohorts suggests, but does not translate to, proof of effective dropout prevention.



Furthermore, it is imperative that studies are as independent as possible, rather than relying on the same three national centers or firms to conduct all evaluations. True collaborative efforts need to be undertaken to honestly assess what approaches keep students enrolled through high school graduation. Several programs show promise, based on evaluative research to date (e.g. Check & Connect, CIS, GEAR UP); however, many programs are being implemented with little or no evaluative research in place. To be certain that current results are not anomalies and studies are externally valid and relevant, more longitudinal research is needed.

Programs demonstrating most effective evidence base research deserve to receive additional funding. Based on preliminary results, CIS of Texas has the potential to be a flagship dropout prevention program for the state, given its strong national reputation. The evidence suggests that program structure keeps students in school and meets at-risk student's needs. A potential concern is a lack of checks and balances to ensure that each affiliate is accurately implementing the CIS model. A multiyear longitudinal study needs to be conducted to be more convincing and prove the validity of the CIS program.

The National Guard's Youth ChalleNGe continues to grow and strengthen itself in terms of enrollment and completion rates. The program is gaining strength across the nation as more students are made aware of its benefits and long term impacts on their lives. A unique aspect of Youth ChalleNGe is its targeting of dropouts and expelled students, as opposed to students labeled at-risk and still in school. However, the lack of performance measurements and absence of comparison to other military-style programs leaves limited ability to judge its effectiveness. Evaluative studies suggest the National Guard needs to develop performance measurements before any substantive efficacy evidence will be available. Considering its self-selected population and ultimate recruitment goals, this program may not be a viable option for the state of Texas.

Check and Connect does not currently operate in Texas; however, efficiency studies provide strong evidence of its effectiveness in its operational areas. It is one of few programs that have been evaluated multiple times, mostly over periods of several years. Each evaluation shows positive performance in at least one area of dropout prevention. Additionally, the NDPC/N and ICF researchers identified Check and Connect as potentially viable in Texas. Given Check and Connect's success in Minnesota, Texas should consider implementing the program as part of its overall dropout prevention strategy.

GEAR UP grants are designed to help a school district implement the program for the initial six years. During that time, the district should be able to secure funding to continue the program. Six years is adequate time to acquire other grants and backing; if districts are unable or unwilling to put forth the effort, it sends the signal that they are not truly dedicated to making the program work for its students or that they have reason to believe it will not be effective.

While the research model for Abriendo Puertas has strong evidence of effectiveness in health related fields, no evidentiary basis exists on which to recommend funding. Unfortunately, Abriendo Puertas has had no evaluation conducted to determine whether or not it is an effective approach for education related topics such as dropout prevention. It sounds like the program should be effective. However, Abriendo Puertas needs to engage in preliminary program evaluation before we can recommend that it receive any state funding.

It is important to remember that there is no one perfect solution to the dropout problem. Multiple attempts have been made to define and clarify best practices for dropout prevention and standards of evidence for program efficacy. However, despite noble efforts to conduct evaluative research, limited evidence of effectiveness is available to decision makers and stakeholders. To determine which approaches are best suited for Texas, policymakers need to consider program efficacy and the availability of persuasive research.

## Chapter 6: Concluding Thoughts and Recommendations

Our client, the United Ways of Texas, posed three questions, or areas of interest, for the research team. First, they wished to see an analysis of the differing ways a dropout could be measured across the country, as well as, an investigation of what the true rate (or range of rates) is for the state of Texas. Second, the United Ways of Texas wanted an examination of the economic impact of the range of dropout rates on the Gross State Product (GSP) of Texas. Finally, we were asked to evaluate the dropout prevention programs that are currently trying to address the problem.

The team answered the first question by finding that dropout rates vary throughout the country and are influenced by differences in definitions and measurement methods. In Texas, the dropout rates are high and trends show they are increasing. For example, when examining the lower and upper bound dropout rates from 2005 to 2007, we found that the rate increased to an upper and lower bound rate of 17.4 percent and 8.8 percent in 2006, and further jumped to 20.0 percent and 11.4 percent in 2007. A demographic breakdown by gender also follows this general trend. Our analysis of the dropout trends indicate that for the past twelve years, males have dropped out at a higher rate than females. The data further reveals that over time the dropout gap between males and females has narrowed. In regard to the race/ethnicity breakdown of the dropout rate, we found that Hispanics have the highest dropout rate, followed by African Americans, Native Americans, Whites, and Asian/Pacific Islanders had the lowest dropout rate. Interestingly, while some of the recent increase in the dropout rate is associated with a definitional change, we have found that the dropout rate started rising before the definition changed. This suggests that this recent increase in the dropout rate is real and possibly lasting, not a spike solely associated with a definitional change.

What does this mean, financially? We found a substantial monetary gain from educating students who would drop out, despite the amount it costs to keep them in school. We estimate there will be a \$193 to \$350 million annual loss in GSP due to the potential loss in hourly wages, for the 2012 cohort of dropouts. This means that over the course of their working lives, this cohort of dropouts will lose between \$5.0 and \$9.0 billion in potential wages. We also found that this one cohort will cause a lifetime potential loss in Texas sales tax revenue between \$279 to \$507 million, and increase Texas welfare and incarceration outlays by a total of \$1.1 to \$1.8 billion. According to the Texas Education Agency, the cost to educate one student each year is approximately \$7,900. This means it would cost the state between \$0.6 and \$1.13 billion, assuming the potential dropouts would require on average two more years of schooling to graduate. Even after taking the cost of schooling into account, the total economic impact is still predicted to be a final lifetime loss of between *\$5.4 and \$9.6 billion*.

How can Texas avoid this bleak picture? Most current evaluation efforts are not robust enough to accurately determine what dropout prevention efforts work and do not work. However, after we examined the many different intervention programs, we were able to draw some overreaching conclusions. First, through a literature review, we concluded that no one risk factor can predict with absolute certainty whether or not a student will drop out from high school. Next, we determined that early intervention assumes that intervention strategies, taken at the first indication of being at risk of dropping out, are more effective at preventing dropouts than waiting

until students reach the high school level. Based on preliminary results, CIS of Texas has the potential to be a leading dropout prevention program for the state, given its strong national reputation. Also, due to Check and Connect's success in Minnesota, Texas should consider implementing this or a similar prevention program as part of its overall dropout prevention strategy.

In regard to policy implications, we believe that our findings show that the dropout rate in Texas is a significant problem that requires action from the Texas Legislature, as well as non-profit organizations devoted to the issue. Although the research team has proven that there needs to be further and more intense research done on the current solutions to the dropout problem, we have also shown that there are programs out there that do have scientific backing and can improve on the present dropout trends.

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