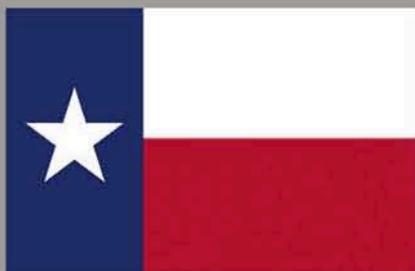


SCHOOL CHOICE

ISSUES

IN THE STATE



School Choice for Texas:

Many agree with the concept. Some disagree. And some simply want more information. As the public debate continues to grow louder about how best to provide a quality education to all Texas children, it is critical to know the facts about school choice, and to have an understanding of how school choice programs have had an impact on communities, parents and students around the country. All of this analysis is done with one goal in mind: The best possible education for all of Texas's children.

The High Cost of Failing to Reform Public Education in Texas

Prepared By:

Brian J. Gottlob

Senior Fellow

Milton and Rose D. Friedman Foundation

February 2007

Revised January 2008

OUR CHALLENGE TO YOU

Our research adheres to the highest standards of scientific rigor. We know that one reason the school choice movement has achieved such great success is because the empirical evidence really does show that school choice works. More and more people are dropping their opposition to school choice as they become familiar with the large body of high-quality scientific studies that supports it. Having racked up a steady record of success through good science, why would we sabotage our credibility with junk science?

This is our answer to those who say we can't produce credible research because we aren't neutral about school choice. Some people think that good science can only be produced by researchers who have no opinions about the things they study. Like robots, these neutral researchers are supposed to carry out their analyses without actually thinking or caring about the subjects they study.

But what's the point of doing science in the first place if we're never allowed to come to any conclusions? Why would we want to stay neutral when some policies are solidly proven to work, and others are proven to fail?

That's why it's foolish to dismiss all the studies showing that school choice works on grounds that they were conducted by researchers who think that school choice works. If we take that approach, we would have to dismiss all the studies showing that smoking causes cancer, because all of them were conducted by researchers who think that smoking causes cancer. We would end up rejecting all science across the board.

The sensible approach is to accept studies that follow sound scientific methods, and reject those that don't. Science produces reliable empirical information, not because scientists are devoid of opinions and motives, but because the rigorous procedural rules of science prevent the researchers' opinions and motives from determining their results. If research adheres to scientific standards, its results can be relied upon no matter who conducted it. If not, then the biases of the researcher do become relevant, because lack of scientific rigor opens the door for those biases to affect the results.

So if you're skeptical about our research on school choice, this is our challenge to you: prove us wrong. Judge our work by scientific standards and see how it measures up. If you can find anything in our work that doesn't follow sound empirical methods, by all means say so. We welcome any and all scientific critique of our work. But if you can't find anything scientifically wrong with it, don't complain that our findings can't be true just because we're not neutral. That may make a good sound bite, but what lurks behind it is a flat rejection of science.

The High Cost of Failing to Reform Public Education in Texas

Prepared By:
Brian J. Gottlob
Senior Fellow

Milton and Rose D. Friedman Foundation

February 2007



Executive Summary

Research has documented a crisis in Texas high school graduation rates. Only 67 percent of Texas students graduate from high school, and some large urban districts have graduation rates of 50 percent or lower.

This study documents the public costs of high school dropouts in Texas and examines how school choice could provide large public benefits by increasing graduation rates in Texas public schools. It calculates the annual cost of high school dropouts in Texas caused by reduced tax revenue, increased Medicaid costs and increased incarceration costs. It then examines how competition from private schools already raises public school graduation rates and calculates the dollar value of the public benefits that would follow from increasing Texas's public school graduation rates by enacting even a modest school choice program.

Key findings include:

Texas spends more on dropouts each year after they leave school than it spent when they were in school

- More than 119,000 Texas students in the class of 2005 failed to graduate from high school. The state's overall graduation rate is about 67 percent. Only Mississippi has a higher percentage of its adult population lacking a high school diploma.
- The annual public costs associated with just one year's class of dropouts is \$377 million, or about \$3,168 per dropout.
- Over an expected lifetime of 50 years, one year's class of dropouts will cost Texas taxpayers \$19 billion.
- The figures above include costs from only three sources: lost revenue from taxes and fees, increased Medicaid costs and increased incarceration costs. Since dropouts also incur many other public costs, the true public cost of dropouts is larger than \$3,168 per dropout per year.
- Just the state portion of school funding in Texas (not including local and federal funding sources) is about \$3,004 per pupil. This means the state is spending more on dropouts each year after they leave school than it spent when they were in school.

School choice improves public school graduation rates and produces millions in public savings

- School districts with more students in private schools have higher public school graduation rates. All Texas children would benefit from increased competition from private schools.
- The beneficial effect of private school competition on public schools is large enough that even a modest school choice program, one that increased private school enrollment by fewer than 5 percentage points, would reduce the number of Texas public school dropouts by 8,720 to 17,440 students per year, saving Texans between \$27 million and \$53 million in tax revenue, Medicaid costs and incarceration costs every year.
- The total savings from preventing these students from dropping out, over an expected lifetime of 50 years, would be between \$1.4 billion and \$2.8 billion.

About the Author

Brian J. Gottlob (bgottlob@poleconresearch.com) is the Principal of PoEcon Research. For 17 years Gottlob has analyzed economic, demographic, labor market industry and public policy trends for private sector, government and not-for-profit organizations. He has extensive experience in developing econometric models and has completed studies on range of economic, tax policy, energy, education, and health care issues in the States of New Hampshire, Virginia, Ohio, New Mexico, New York, Texas, Oregon, Michigan, Georgia, Mississippi, West Virginia and Illinois. Gottlob is a Senior Fellow at the Milton and Rose D. Friedman Foundation. He has been an instructor at the Whittemore School of Business and Economics at the University New Hampshire, a member of the Advisory Board of the New England Economic Partnership (NEEP) and a member of the National Association of Business Economics. Prior to founding PoEcon, Gottlob was a Vice President for Fiscal and Economic Policy at the Business and Industry Association of New Hampshire. He has an undergraduate degree in economics from the State University of New York and a graduate degree in public policy analysis from the University of New Hampshire.

About the Milton and Rose D. Friedman Foundation



The Milton and Rose D. Friedman Foundation, dubbed “the nation’s leading voucher advocates” by the Wall Street Journal, is a non-profit organization established in 1996. The origins of the foundation lie in the Friedmans’ long-standing concern about the serious deficiencies in America’s elementary and secondary public schools. The best way to improve the quality of education, they believe, is to enable all parents with the freedom to choose the schools that their children attend. The Friedman Foundation builds upon this vision, clarifies its meaning to the public and amplifies the national call for true education reform through school choice.

About the National Center for Policy Analysis



The National Center for Policy Analysis (NCPA) is a nonprofit, nonpartisan public policy research organization, established in 1983. The NCPA’s goal is to develop and promote private alternatives to government regulation and control, solving problems by relying on the strength of the competitive, entrepreneurial private sector. Topics include reforms in health care, taxes, Social Security, welfare, retirement security, education and environmental regulation.

About Hispanic Council for Reform and Educational Options



Hispanic Council for Reform and Educational Options (CREO) was founded to address the crisis in Latino education by empowering Latino families with parental choice in education. By creating coalitions with parents, schools, faith-based organizations, advocates and like-minded groups, Hispanic CREO has been able to educate, inform and mobilize Latino parents on the issues surrounding school choice.

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Introduction

Across the nation, attention increasingly is being focused on high dropout rates in public high schools. In Texas, recent reports by the Editorial Projects in Education Center and The Civil Rights Project at Harvard University, and ongoing work by the Intercultural Development Research Association and others, have documented the long-standing crisis in high school graduation rates in Texas.¹

The individual consequences of not completing high school are large and well-documented, but there also are substantial public or societal costs when individuals do not graduate from high school. Public costs result when individuals who do not graduate from high school contribute less to society and consume more public services. Lower rates of labor-force participation, higher rates of unemployment among those who are in the labor force and lower wages and salaries for those employed all are consequences of the failure of many individuals to obtain a high school diploma. When individuals attain higher levels of education, there are associated public benefits in the form of lower use of public-assistance programs, better health, lower rates of incarceration and overall lower social-service expenditures. At the same time, higher educational attainment increases productivity, employment, economic growth, income and tax revenues.

Most school districts and states dramatically understate the number of students who leave school before obtaining a high school diploma. At the same time, few efforts have been made to calculate the costs of dropouts beyond the individual or private consequences that result from failure to obtain a high school diploma. Consequently, we have an incomplete assessment of the costs to society of high school dropouts and the public consequences of a failure to make reforms to public education that address the problem.

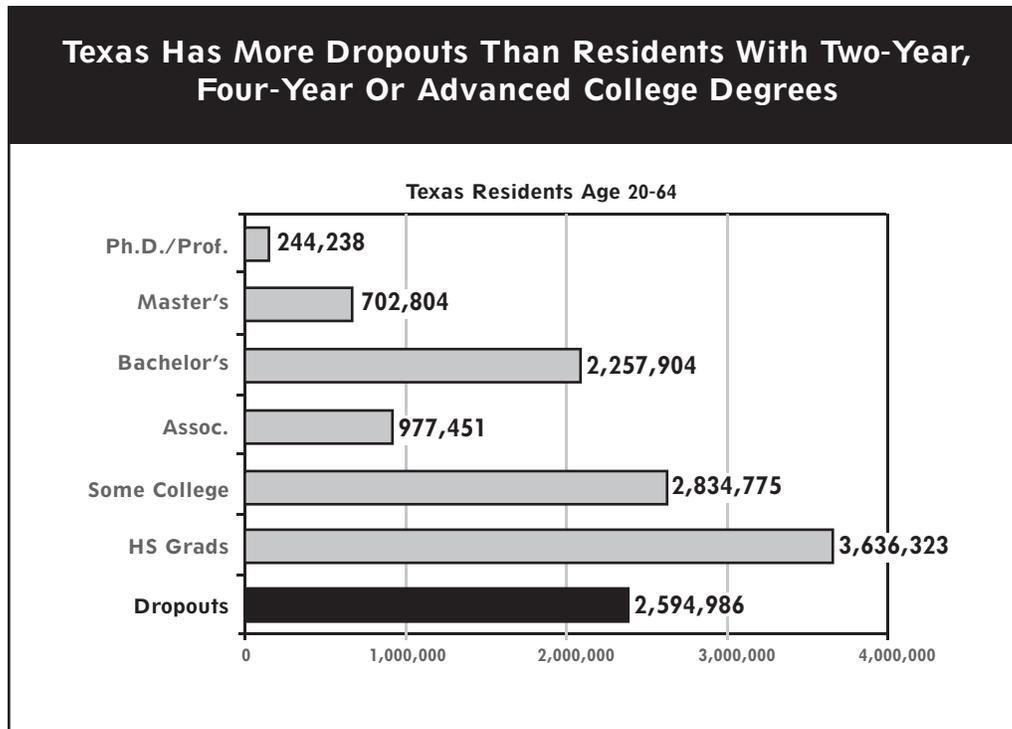
An understanding of public costs and benefits is fundamental to debates about education reform, but they rarely are documented. Over the past two decades, citizens have supported higher spending on public schools and myriad reform initiatives because of the large private and public benefits they expect from improved educational outcomes.

This study addresses several critical education-reform issues. First, in estimating some of the public costs associated with a failure to graduate from high school, we provide perspective on the urgency of reform for Texas citizens and policymakers who may have little interest in education policy. Second, by documenting the costs associated with dropouts and calculating the likely impact that school choice will have on high school graduation rates, we clarify how school choice benefits are allocated. As evidence mounts that school choice increases the achievement of participating students, opponents of choice have increasingly argued that the benefits to those students are outweighed by the public costs of choice. In response to this, a fundamental premise of the school choice movement is that increased competition will improve the quality of public schools and benefit students who remain in the public schools as well as those who participate in choice programs. In this study we expand the public-benefit calculation to include all citizens of Texas, not just those with children in schools.

The Size of the Dropout Problem in Texas

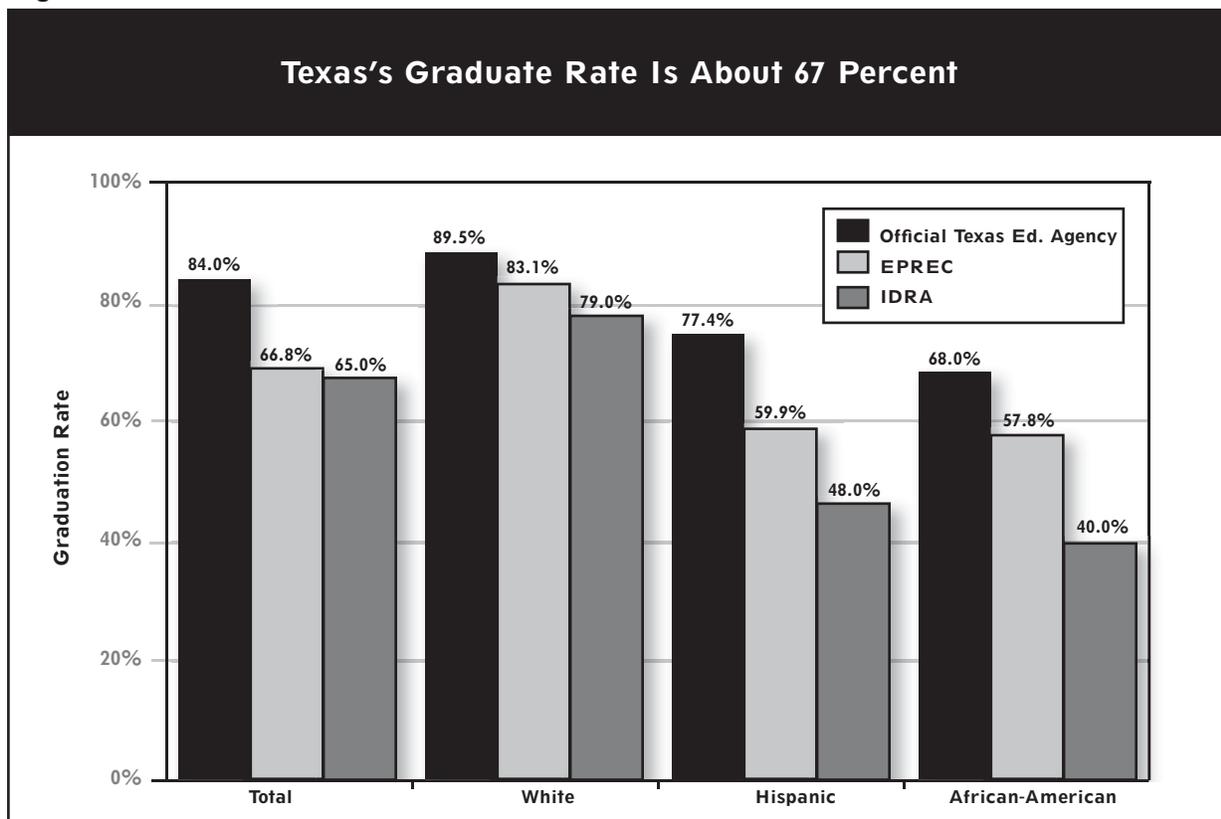
High school graduation is an important predictor of an individual's future economic success. It also is a key indicator of the performance of school districts that sends a clear signal about the need for, or results of, education reform. Texas has the second highest percentage of its adult population lacking a high school diploma, after Mississippi. Figure 1 shows the number of Texas residents aged 20-64 by educational attainment.² The figure indicates that 2,594,986 adults ages 20 to 64 do not have a high school diploma.

Figure 1



Source: PolEcon analysis of U.S. Census Bureau's Current Population Survey March 2003-2005 Supplement data for Texas

Figure 2



Most states and school districts significantly understate the problem of students failing to graduate from high school. Independent estimates by the Editorial Projects in Education Research Center, the Urban Institute, the National Center for Education Statistics of the U.S. Department of Education and the Intercultural Development Research Association, as well as our own review of annual enrollment and graduation data, indicate that the number of dropouts is much higher in Texas than reported.³ Few if any states have had more independent reviews of their graduation data than Texas. These independent reviews all find similar errors in the official reported dropout and graduation data. The independent estimates of high school dropouts in Texas place the state's overall graduation rate at 65 percent to 75 percent, rather than the 81 percent reported by the Texas Education Agency for 2004-05.⁴ Using the most detailed and thorough alternative estimates of dropout rates, those produced by the Editorial Projects in Education Research Center, we estimate that about 119,140 students in Texas left high school before obtaining a high school diploma, rather than the 66,000 implied by the official reported state graduation rate.

Texas has a serious credibility gap when it comes to its graduation rate reports, largely because of news that student dropout data were shredded and claims that Houston had a 1.5 percent dropout rate. The problem of underreporting dropouts is especially acute for minority students and among the state's largest school districts. The purpose of more accurate reporting of high school graduation and dropout rates is not to criticize the state's education agency but to more realistically assess the extent of the dropout problem and to increase public support for confronting it.

The Graduation Crisis in Texas Cities

The crisis in high school graduation rates in Texas is especially acute in the state's largest cities, where graduation rates are exceptionally low. According to a recent report by the Editorial Projects in Education Research Group (EPERG), an independent research organization affiliated with the publishers of Education Week:

"To put this crisis in perspective, the number of non-graduates is about double the combined number of students entering 9th grade in the state's seven largest school districts. Seventy percent of all non-graduates were members of minority racial and ethnic groups, indicating that minority students are disproportionately affected by this graduation crisis."⁵

The EPERC calculated graduation rates for each school district in Texas using a method known as the "cumulative promotion index."⁶ The Intercultural Development Research Association also calculated surrogate graduation rates for each Texas county using a similar methodology to develop what it calls an "attrition rate." Figure 3 highlights the differences in graduation rates in six large school districts as calculated by the Texas Education Agency and the EPERC. Rates were for all racial groups combined, although each organization calculates a separate graduation rate for white, African-American and Hispanic students. The cumulative promotion index method has been used extensively in research by Christopher Swanson, director of the EPERC, and in several highly regarded studies in education policy he conducted while at the Urban Institute.

Dropouts Cost Texas Taxpayers Millions Every Year

For the 2,594,986 Texas residents ages 20 to 64 who lack at least a high school diploma, the consequences of dropping out are clear. Understanding that the same consequences face the more than 119,000 young people who did not graduate from high school in Texas in 2005 provides an indication of the public cost and benefits at stake for each year Texas fails to reform public education. Here we document the individual or private consequences of dropping out; later in this study we calculate some of the public or social costs.

Figure 3

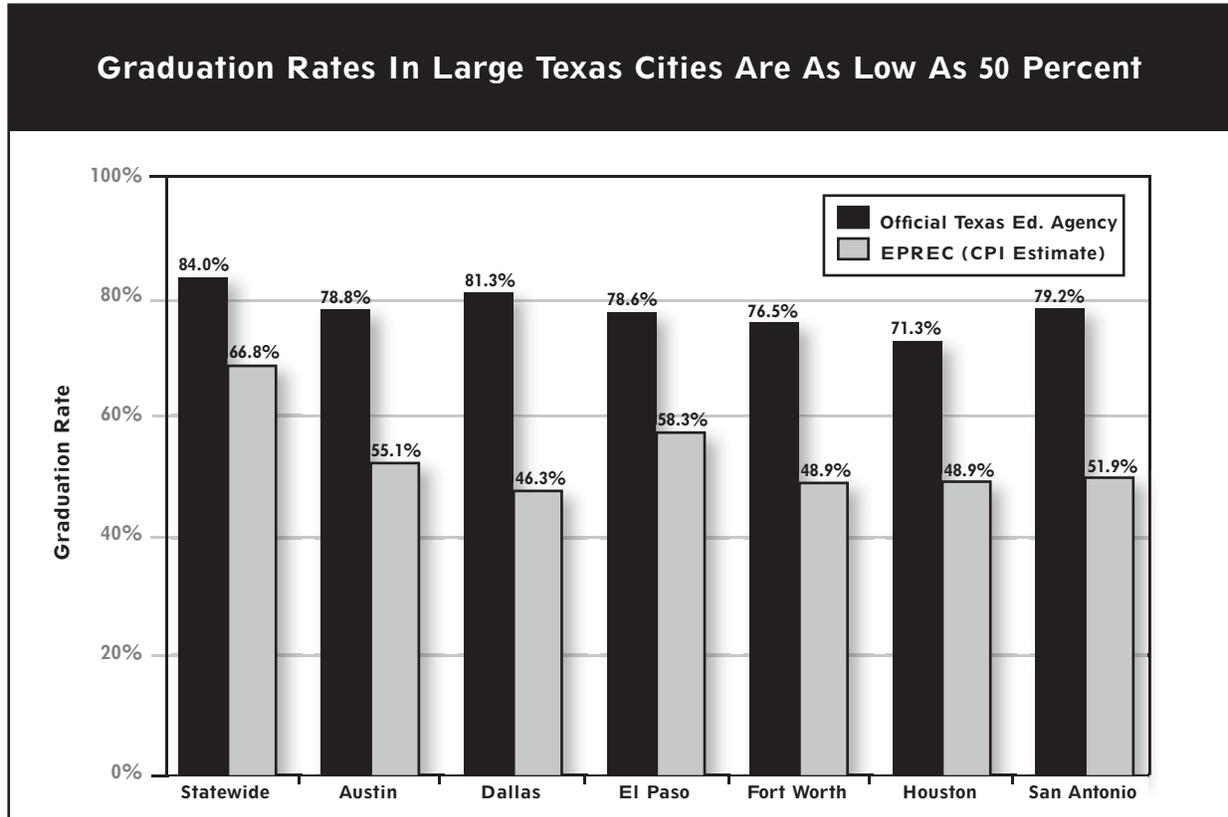


Table 1

Texas Dropouts Have Much Worse Life Outcomes

	Dropouts	HS Grads	Some College	Assoc. Degree	Bachelor's Degree	Master's Degree	Ph.D./ Prof.
% In Labor Force	64.8%	77.7%	74.5%	80.8%	86.5%	84.6%	91.9%
Unemployment Rate	7.4%	5.5%	5.4%	2.3%	2.9%	2.3%	0.9%
Annual Earnings—Wages & Other Income (Age 20-64) ⁷	\$12,699	\$21,912	\$24,610	\$29,402	\$47,578	\$60,588	\$104,872
% on Medicaid or with Child on Medicaid	34.9%	19.7%	14.3%	13.5%	5.8%	5.1%	1.2%
Incarceration Rates (Males Only)*							
White	0.93%	0.39%	0.27%		0.08%		ALL
Hispanic	2.00%	1.2%	NA		NA		COLLEGE
African-Americans	4.11%	2.35%	2.15%		0.75%		GRADS
							COMBINED

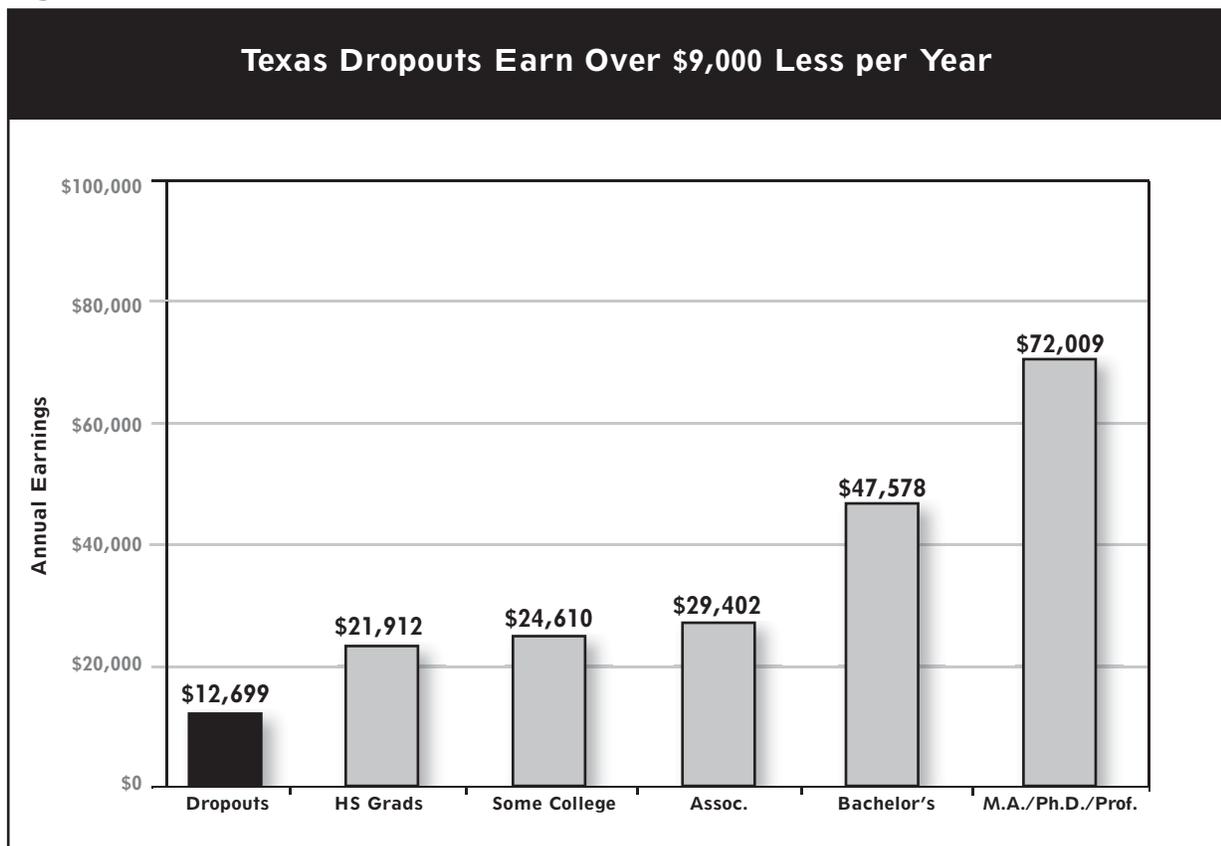
Source: U.S. Census Bureau, Current Population Survey, March Supplement 2003-2005 and PolEcon calculations.
 * Incarceration rates from U.S. Census Bureau as reported in E. Moretti (2005)⁸ and PolEcon. calculations.

Table 1 shows how a few measures of social costs are affected by educational attainment in Texas. The table shows that Texas residents without a high school diploma are less likely to be in the labor force and are much more likely to be unemployed than high school graduates. Dropouts are much more likely to receive or to have a child who receives Medicaid benefits. Finally, dropouts are more likely to be incarcerated than are those with higher levels of educational attainment.

Dropouts Reduce Annual Earnings in Texas by \$24 Billion

The average annual earnings of dropouts are far lower than those of people who have received a high school diploma. Figure 4 shows the labor-market consequences of dropping out in terms of annual earnings in 2005. The chart shows that dropouts earn, on average, about \$9,213 less than high school graduates.

Figure 4



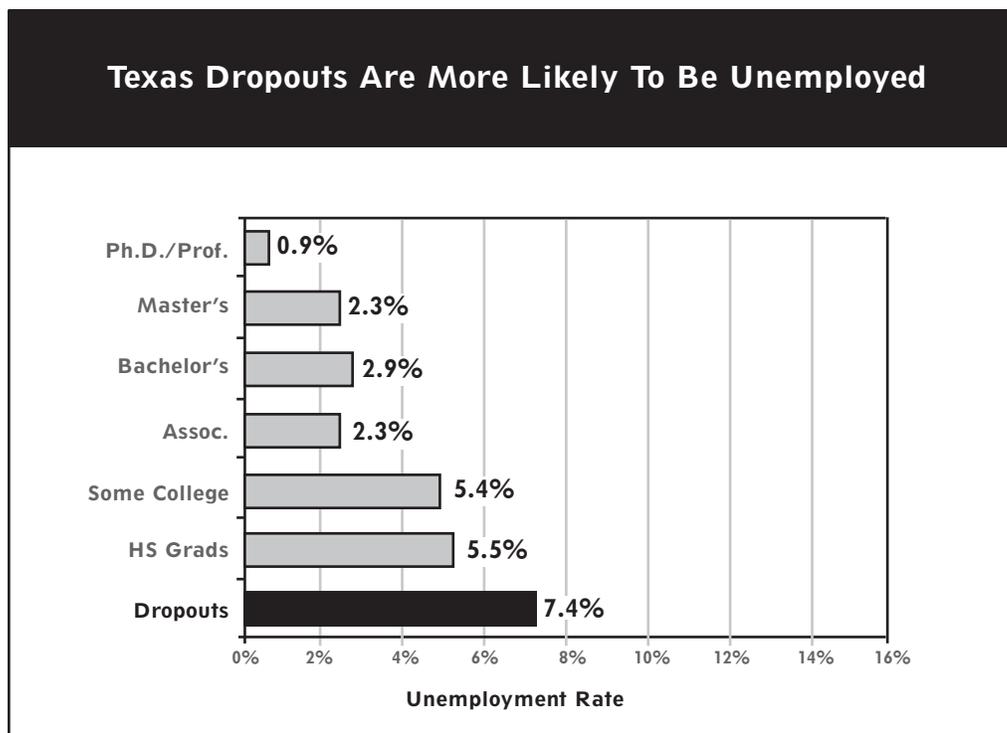
Source: PolEcon analysis of U.S. Census Bureau's Current Population Survey 2003-05 March Supplement data for Texas

The wage and salary differential illustrated in Figure 4 is a result of lower-paying jobs, lower labor-force participation and lower employment rates of dropouts compared to graduates. As Figure 5 shows, dropouts have much higher unemployment rates than do individuals with at least a high school diploma. The average unemployment rate for Texas high school dropouts is over 7 percent.

Figure 4 depicts the simple relationship between education and earnings. However, because earnings also are a function of other factors, including age, experience and gender, we used regression analysis to more accurately estimate the relationship between education and earnings independent of the influences of those factors. We used a subset of Texas respondents to the March 2003-05 Current Population Survey (CPS) that included individuals aged 20-64 who have completed at least the ninth grade but who had not attended a postsecondary institution to determine the impact on earnings of a high school diploma and of each additional year of schooling completed. We found that, when the

impacts of age and sex were removed, working high school graduates earned \$10,011 more on average than working high school dropouts.

Figure 4



Source: PoEcon analysis of U.S. Census Bureau's Current Population Survey March Supplement 2003-2005 data for Texas

The difference in annual earnings that we found between dropouts and high school graduates implies that, if all of Texas's residents of working age had obtained at least a high school diploma, total earnings in Texas in 2005 would have been \$24 billion higher.⁹

Lower Earnings of Dropouts Reduce Texas Employment by More than 302,000 Jobs

If even a small fraction of Texas's 2,594,986 working-age dropouts had graduated from high school, the increase in earnings would be substantial. A more productive workforce would result in increased spending on goods and services, which would produce large "multiplier" effects.

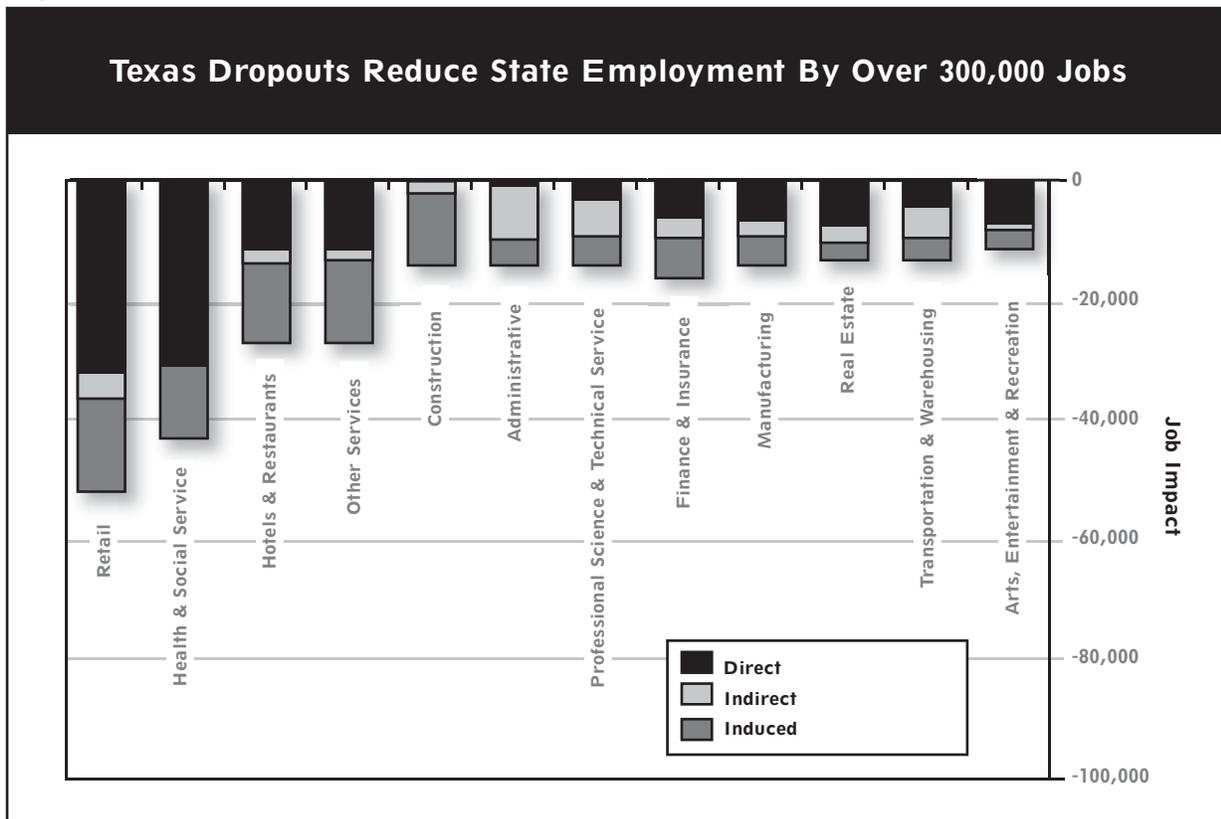
The reduced earnings of Texas residents who lack a high school diploma result in significant impacts on the Texas economy. Higher-quality, well-paying jobs require more productive workers and higher levels of educational attainment. Texas's high percentage of dropouts reduces the productivity of the Texas economy. In addition, the \$24 billion in lower annual earnings attributable to dropouts reduce spending by Texas residents by about \$19 billion.

We used the IMPLAN economic modeling system to construct an economic model of the Texas economy to estimate the employment impacts of the reduced earnings of Texas dropouts.¹⁰ We modeled the impacts as a reduction of \$19 billion in disposable income of Texas households in the \$15,000 to \$25,000 income range (a conservative estimate equal to 80 percent of the total lowered earnings due to dropouts). The reduced earnings of dropouts, from direct expenditures and as a result of indirect and induced multiplier effects, result in about 302,892 fewer full- and part-time jobs or about 3 percent of total Texas employment. Figure 6 highlights some of the larger employment reductions in broad employment sectors that are attributable to the lower earnings and resulting expenditures of dropouts.

Table 2

Texas Dropouts Earn a Total of \$24 Billion Less per Year				
Education Level	Population	Average Earnings	Total Earnings	No Dropouts (All Become HS Grads)
Dropouts	2,594,986	\$12,699	\$32,953,727,214	\$0
HS Grads	3,636,323	\$21,912	\$79,680,564,105	\$136,542,935,332
Some College	2,834,775	\$24,610	\$69,764,946,660	\$69,764,946,660
Associate's Degree	977,451	\$29,402	\$28,738,916,557	\$28,738,916,557
Bachelor's Degree	2,257,904	\$47,578	\$107,426,782,302	\$107,426,782,302
M.A./Ph.D./Prof.	947,043	\$72,009	\$68,195,335,274	\$68,195,335,274
Total	13,248,482	\$29,473	\$386,760,272,113	\$410,668,916,125
			Difference	\$23,908,644,012

Figure 6



Dropouts Decrease Texas Tax Revenue by \$2 Billion Each Year

The higher income of high school graduates relative to dropouts is a substantial private benefit to individuals graduating from high school, but it also produces public benefits to Texas taxpayers. Better-educated individuals increase the productivity of the economy. Along with increasing the earnings of Texas residents, an increase in graduation rates would provide additional tax and fee revenues for state and local governments in Texas.

We used data on the average earnings of working-age Texas dropouts and high school graduates from the 2003-05 March CPS Supplement to calculate the total economic impact of dropouts in Texas with the IMPLAN economic modeling system. As with our estimate of the employment impacts related to the lower earnings of dropouts, we modeled the revenue impact as a reduction in disposable income (at 80 percent of reduced earnings) among Texas households in the \$15,000-\$25,000 income range. The resulting reduction in economic activity produces lower revenues for state and local governments in Texas of an estimated \$2 billion, or about \$727 for every Texas adult without a high school diploma.¹¹

The estimated impact on Texas state and local government revenues is presented in Table 3. The table shows that the lower earnings of Texas’s working-age dropouts result in state sales tax revenues \$827 million lower than they would be if all residents had attained a least a high school diploma. Business property and franchise taxes show the next largest revenue decline at \$820 million.

Table 3

Dropouts Decrease Texas Tax Revenue by \$2 Billion Each Year	
State/Local Government	
Corporate Profits	\$0
Dividends	-\$635,875
Business Tax: Motor Vehicle License	-\$12,051,128
Business Tax: Property, Franchise & Other	-\$819,819,380
Business Tax: State & Local Charges/Fees	-\$82,426,143
Business Tax: Severance Taxes	-\$59,549,143
Sales Tax	-\$826,744,146
Personal Tax: Estate and Gift Tax	\$0
Personal Tax: Income Tax	\$0
Personal Tax: Motor Vehicle License	-\$18,895,066
Personal Tax: Non Taxes (Fines, Fees, etc)	-\$52,420,883
Personal Tax: Other Taxes	-\$3,535,605
Personal Tax: Property Taxes	-\$9,867,137
Total	-\$1,886,554,822

Dropouts are About Twice as Likely to Rely on Medicaid

Individuals who fail to obtain at least a high school diploma are at a much greater risk of reliance on safety-net program such as Medicaid, Temporary Assistance to Needy Families, housing assistance and food stamps. The probability of being a beneficiary of one or more public-assistance programs increases dramatically for individuals who do not have at least a high school diploma.

We focused on Medicaid to illustrate the impact of high school graduation on social safety-net expenditures in Texas. Medicaid is the largest and most costly safety-net program in Texas and across the country. Medicaid expenditures in Texas exceeded \$17 billion in 2005, of which more than \$7 billion were from state sources of revenue (not federal matching funds). Combined state and federal funds for Medicaid account for 27 percent of the total budget of the state of Texas in 2005, higher than the national average of 23 percent.¹²

The cost of Medicaid, which provides health care for lower-income individuals, is shared by the state and federal governments, with the state of Texas paying just under 40 percent of the cost in 2005.¹³ About 17 percent of the Texas population, or about 3.6 million residents of all ages, was enrolled in one or Medicaid benefit programs in 2003, placing the state in the middle of all states for the percentage of population enrolled in Medicaid.¹⁴ However, 49 percent of all births in Texas were to mothers receiving Medicaid benefits, significantly higher than the 41 percent average for all states, according to the most recent available data from the Vital Statistics Reports of the National Centers for Disease Control.

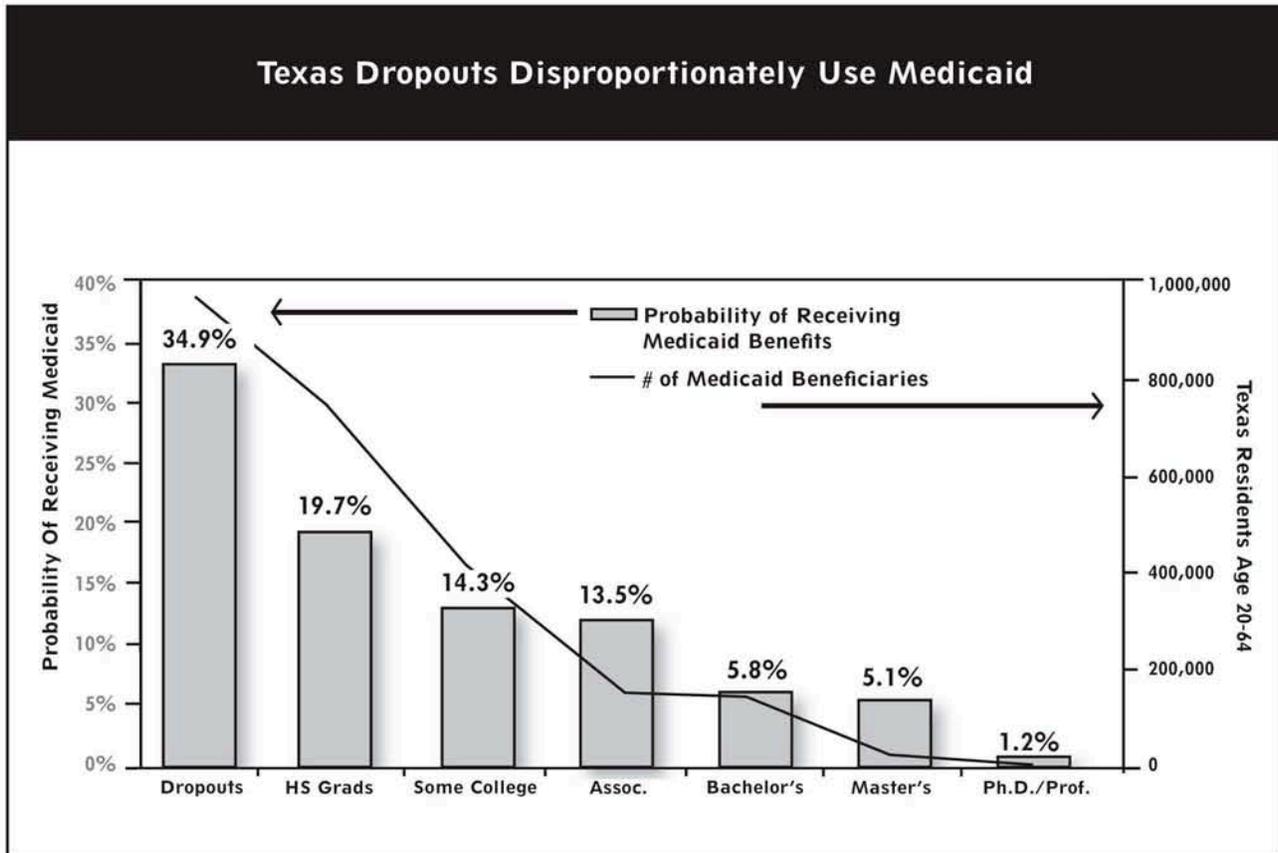
The probability that an individual in Texas will be a Medicaid beneficiary is strongly related to his or her educational attainment. As Figure 7 shows, individuals in Texas who do not have at least a high school diploma (17 percent of the working-age population) represent the largest category of Medicaid beneficiaries. Figure 7 shows that, based on the March 2003-05 CPS, the probability that a high school dropout or a dependent child in Texas receives Medicaid benefits is about 35 percent. The probability drops to 20 percent for high school graduates and continues to decline as educational attainment increases.

The CPS is known to underestimate the number and percentage of public-assistance recipients because of limitations on the individuals included in its samples.¹⁶ It does highlight the relationship between educational attainment and public-assistance costs. It will, however, produce a low estimate of the cost of dropouts and the impacts of educational reform on public costs and benefits.

Dropouts Increase Texas's State Medicaid Costs by \$321 Million Each Year

To estimate the Medicaid cost of dropouts, we compared the probability that a Texas high school dropout, or the dependent child of a dropout, would be on Medicaid to the probability for high school graduates (about 35 percent compared to 20 percent), and multiplied the difference in the number of expected Medicaid recipients by the average cost per Medicaid recipient (not including elderly and disabled recipients or administrative costs).¹⁷ We first multiplied the estimated number of dropouts on Medicaid (from the CPS) by the average cost per Medicaid recipient. We then estimated the number of dropouts who would be on Medicaid if, instead of leaving school, they had all obtained high school diplomas. Table 4 presents estimated dropout-related Medicaid costs. We estimated that, if all Texas dropouts had received a high school diploma, there would be 395,986 fewer Medicaid recipients, saving the Medicaid program about \$820 million annually, including \$321 million for the state of Texas. Because the CPS is known to underestimate the number of Medicaid recipients in the population, as noted above, these figures likely underestimate the actual cost of Medicaid related to dropouts in Texas.

Figure 7



Source: PolEcon analysis of U.S. Census Bureau's Current Population Survey March 2003-05 data for Texas

Table 4

Higher Medicaid Use by Dropouts Costs Texas \$321 Million Each Year

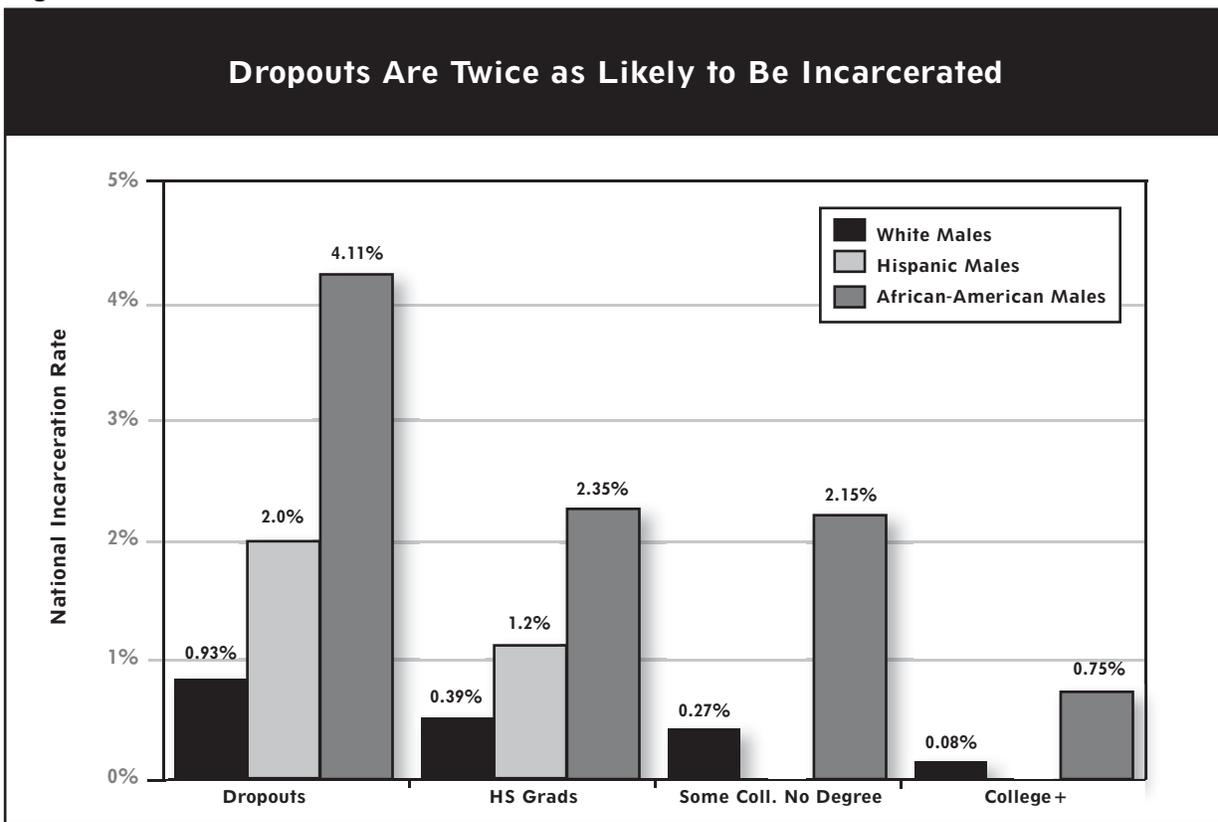
	Population	% On or w/ Child on Medicaid	# On or w/ Child on Medicaid	Total Cost = Recipients x Average Cost	State Share of Costs	# on Medicaid if All Graduated	Total Cost = Recipients x Average Cost	State Share of Medicaid Costs	
Dropouts	2,594,986	34.9%	906,419	\$3,055,540,070	\$1,195,632,829	0	\$0	\$0	
HS Grads	3,636,323	19.7%	715,264	\$2,411,156,460	\$943,485,523	1,225,698	\$4,131,827,935	\$1,616,784,271	
Some College	2,834,775	14.3%	405,050	\$1,365,421,865	\$534,289,576	405,050	\$1,365,421,865	\$534,289,576	
Associate's Degree	977,451	13.5%	131,934	\$444,747,934	\$174,029,867	131,934	\$444,747,934	\$174,029,867	
Bachelor's Degree	2,257,904	5.8%	131,213	\$442,319,972	\$173,079,805	131,213	\$442,319,972	\$173,079,805	
Master's	702,805	5.1%	35,533	\$119,781,002	\$46,870,306	35,533	\$119,781,002	\$46,870,306	
Ph.D./Prof.	244,238	1.2%	3,001	\$10,115,683	\$3,958,267	3,001	\$10,115,683	\$3,958,267	
Total	13,248,482		2,328,414	\$7,849,082,987	\$3,071,346,173	1,932,428	\$6,514,214,392	\$2,549,012,091	
	Annual Medicaid Cost of Dropouts						395,986	\$1,334,868,596	\$522,334,081

Texas Dropouts are Twice as Likely to be Incarcerated; Each Class of Dropouts Costs an Extra \$12 Million in Incarceration Costs Every Year

Texas spent almost \$4 billion on its correctional system in 2005, of which over \$3 billion came from state general funds.¹⁸ Only Rhode Island spends a larger share of its annual budget on corrections than does Texas. The cost to house each prisoner (not including administrative cost of the prison system) averaged nearly \$18,000 a year in 2005.¹⁹

Although the chances that any one individual will be incarcerated are small, the probability is more than twice as high for a Texas high school dropout as it is for a Texas high school graduate. Our estimates of the incarceration costs associated with dropouts rely on differences in the probability that individuals with different levels of educational attainment will be incarcerated in any one year. Because males account for the vast majority of incarceration costs, we calculated the impact of dropouts on incarceration costs using only male high school dropouts in Texas. Figure 8 shows the probability of white, African-American and Hispanic male dropouts being incarcerated at some point during their lifetimes.

Figure 8



Source: U.S. Census Bureau as reported in Moretti, E., "Does Education Reduce Incarceration Rates?"; PolEcon analysis of Census data

In calculating the impact on earnings and Medicaid, we relied on individual responses by Texas residents to monthly CPS surveys. For incarceration costs we had no direct individual measures of educational attainment, criminal activity and incarceration in Texas. Instead, we relied on the research of others for our estimates of the impact of dropouts on incarceration rates.²⁰ We used those estimates to determine the likely number of Texas dropouts from each graduating class cohort who can be expected to be incarcerated during any year during their working-age lifetimes. Then we used data on the type of crimes and the average length of sentences from the Texas Department of Criminal Justice to calculate a "weighted average sentence," which is applied to each projected incarceration. The weighted average

sentence was adjusted based on a weighted “percentage of sentence served,” using statistics for each class of crime and sentence.²¹ The weighted average sentence served per incarceration was converted to days and multiplied by the daily cost of incarceration to arrive at an average cost per incarceration. This was then multiplied by the number of incarcerations to determine the incarceration costs for that year’s dropouts.

In addition, we multiplied the costs by 0.6 to account for recidivism or the tendency of prisoners to be repeat offenders and to be imprisoned more than one time during their lives, as well as for longer terms in subsequent incarcerations. Adding the total cost of the first incarcerations to the cost of the recidivism gave us a total cost of incarceration for one year’s worth of dropouts.

Table 5

Each Class of Texas Dropouts Increases Annual Incarceration Costs by \$12 Million					
	2001	2002	2003	2004	2005
Total Graduates	215,316	225,067	225,067	244,165	239,716
Dropouts	107,013	111,860	111,860	121,351	119,140
Graduation Rate (All Races Combined)	66.8%				
African-American Male: 53.1% Female: 66.0%					
Hispanic Male: 52.6% Female: 62.4%					
White Male: 71.9% Female: 76.7%					
Cohort African-American Dropouts	18,942	20,104	25,975	22,234	21,965
African American Male Dropouts	11,935	12,666	16,366	14,009	13,839
Cohort Hispanic Dropouts	50,812	54,368	58,975	62,360	61,742
Hispanic Male Dropouts	30,813	32,970	35,763	37,816	37,441
Cohort White Dropouts	36,545	37,462	38,939	38,832	37,737
White Male Dropouts	21,577	22,119	22,991	22,928	22,281
Expected Incarcerations	1,307	1,392	1,609	1,552	1,532
African-American	491	521	673	576	569
Hispanic	616	659	715	756	749
White	201	212	221	220	214
Expected Incarcerations w/out Dropouts					
African-American	280	298	385	329	325
Hispanic	370	396	429	454	449
White	84	86	90	89	87
Reduction in Incarcerations					
African-American	210	223	288	247	244
Hispanic	247	264	286	303	300
White	117	126	131	131	127
Total Incarceration Reduction	573	613	705	680	670
One Year Incarceration Costs of Dropouts (\$millions)	\$9.06	\$9.84	\$11.69	\$11.47	\$11.69
Total Costs For Initial Incarcerations (\$millions)	\$72.51	\$78.75	\$93.49	\$91.72	\$93.49
Recidivism Cost @ 0.6 Initial Costa (\$millions)	\$43.50	\$47.25	\$56.09	\$55.03	\$56.10
Community Supervision Costs (\$millions)	\$0.84	\$0.89	\$1.03	\$0.99	\$0.98
Total Incarceration Costs of Dropouts (\$millions)	\$116.85	\$126.89	\$150.61	\$147.75	\$150.57
Incarceration Cost per Dropout	\$1,092	\$1,134	\$1,273	\$1,218	\$1,264

Table 5 presents our estimates of the impact that dropouts have on annual incarceration costs. We calculated the expected number of incarcerations in any year for one graduating class based on the annual number of dropouts that year in the state of Texas. We then calculated the expected number of incarcerations in any year that would occur if all high school students graduated each year. The incarceration cost of dropouts is the difference between the number of incarcerations and associated costs if there were no dropouts from the graduation class that year in Texas compared

to the expected number of incarcerations associated with the actual number of dropouts. The table shows that, in each year from 2001, the graduating class is likely to produce 1,300 to 1,600 individuals who will be incarcerated in any one year during their lifetimes. Using the 2005 figures, the cost of one year of dropouts is likely to be almost \$12 million in 2005 dollars each year over the lifetime of the dropouts. Eliminating dropouts in Texas would reduce the number of incarcerations of a graduating class by about 44 percent. We also divided the cost of one year of dropouts by the total number of dropouts to arrive at an average incarceration cost per dropout. Our cost calculations did not include any costs for policing, prosecuting, or any administrative or capital costs of the prison system, nor did we factor in the costs of crime to victims, property loss or any of the other benefits associated with lower levels of crime.

Texas Spends More Each Year on Dropouts After They Leave School than It Spends in State Aid When They Are Enrolled in School

Not every dropout creates state expenditures for Medicaid and incarceration. Some dropouts cost the state tens of thousands of dollars annually, while others may cost the state only some limited reductions in state tax revenue. Still others may cost nothing. To account for these differences, we spread the cost of one year’s class of dropouts across the entire population of new dropouts in that year to arrive at an average cost per dropout.

The total cost of additional dropouts each year, averaged over the annual population of new dropouts, suggests that on average the state of Texas will continue to pay more for each dropout after he leaves school as it does in state education aid while he attended school. The annual costs of lost tax revenue, increased Medicaid use, and increased incarcerations associated with just one year’s class of dropouts (an estimated 119,140 in 2005) is at least \$377 million. These annual costs average about \$3,168 per dropout. Average state education aid (excluding local and federal funding sources) is about \$3,004 per pupil.

Thus, the state of Texas spends more on dropouts after they leave school than it did in state aid and other expenditures when they were in school. What’s more, because there are many other costs associated with dropouts not documented here, and because reduced earnings patterns follow graduates their entire lives and incarceration and Medicaid are multi-year costs, it is reasonable to conclude that the public costs of Texas dropouts is substantially greater than our calculations indicate.

More important, the state will continue to incur the cost of each dropout for decades. Citizens of the state of Texas continue to pay for the state educational system’s failures well into the future. Over their expected lifetimes of an additional 50 years, the public cost of one year’s class of dropouts is \$18.9 billion, or almost \$8.9 billion in discounted “present value” terms (discounting at 3.5 percent each year).

Table 6

Each Dropout Costs Texas an Additional \$3,168 Each Year	
Lost State Tax Revenue	\$727
Incarceration Costs	\$1,264
Medicaid Costs	\$1,177
Annual Public Cost per Dropout	\$3,168

The Costs of Dropouts Are Concentrated in Texas’s Large Urban Districts

We used graduation rate estimates for Texas cities produced by the EPERC using the cumulative promotion index method to calculate the public costs associated with dropouts in six Texas cities. We applied the same methods in calculating social costs of dropouts in Texas cities that we used in our analysis of statewide data. We used the most recent (2005) enrollment, demographic and financial data available to determine both the social costs associated with dropouts as well as the impact that heightened competition from private schools would have on graduation rates and associated public costs.

The six Texas school districts examined here account for about 14 percent of all public school students enrolled in Texas schools, but nearly 25 percent of all dropouts and about 27 percent of incarcerations of high school dropouts in the state. The large enrollments and high dropout rates of these districts make each a likely target for activities to combat Texas’s dropout problem. Table 7 highlights our estimates of the number of dropouts in each district in 2005, along with the estimated number of incarcerations associated with them and their costs, along with projected reductions in incarcerations.

Table 7

Dropouts and Incarceration Costs in Six Large Urban Texas Districts						
	Austin	Dallas	El Paso	Fort Worth	Houston	San Antonio
Total Graduates	3,746	6,832	3,202	3,608	8,476	2,520
Dropouts	3,053	7,924	2,386	3,770	8,857	2,335
Graduation Rate (All Races Combined)	55.1%	46.3%	57.3%	48.9%	48.9%	51.9%
<u>Cohort African-American Dropouts</u>	638	2,808	95	1,283	2,867	259
African American Male Dropouts	364	1,601	54	731	1,634	148
<u>Cohort Hispanic Dropouts</u>	1,950	4,441	1,956	1,807	5,457	2,552
Hispanic Male Dropouts	1,111	2,531	1,115	1,030	3,110	1,454
<u>Cohort White Dropouts</u>	482	506	277	631	542	109
White Male Dropouts	275	288	158	360	309	62
<u>Expected Incarcerations</u>						
African-American	15	66	2	30	67	6
Hispanic	22	51	22	21	62	29
White	3	3	2	3	3	1
Total Incarcerations	40	119	26	54	132	36
<u>Expected Incarcerations w/out Dropouts</u>	65	173	50	78	198	65
African-American	9	38	1	17	38	3
Hispanic	13	30	13	12	37	17
White	1	1	1	1	1	0
<u>Reduction in Incarcerations</u>						
African-American	6	28	1	13	29	3
Hispanic	9	20	9	8	25	12
White	2	2	1	2	2	0
Total Reduction in Incarcerations	17	50	11	23	55	15
One Year Incarceration Costs of Dropouts	\$301,628	\$873,093	\$187,755	\$403,906	\$966,286	\$254,386
Total Costs For Initial Incarcerations (\$millions)	\$2.41	\$6.98	\$1.50	\$3.23	\$7.73	\$2.04
Recidivism Cost @ 0.6 Initial Costa (\$millions)	\$1.45	\$4.19	\$0.90	\$1.94	\$4.64	\$1.22
Total Incarceration Costs of Dropouts (\$millions)	\$3.89	\$11.25	\$2.42	\$5.20	\$12.45	\$3.28
Incarceration Cost per Dropout	\$1,273	\$1,420	\$1,014	\$1,380	\$1,406	\$1,403

Table 8

Public Costs of Dropouts in Six Large Urban Districts						
	Austin	Dallas	El Paso	Fort Worth	Houston	San Antonio
Dropouts	3,053	7,924	2,386	3,770	8,857	2,335
<u>Private Costs</u>						
Lost Earnings	\$29,806,911	\$77,374,100	\$23,299,631	\$36,815,697	\$86,488,317	\$22,805,139
<u>Public Costs</u>						
Tax Revenue	\$2,219,202	\$5,760,704	\$1,734,718	\$2,741,025	\$6,439,281	\$1,697,902
Medicaid	\$3,592,849	\$9,326,477	\$2,808,478	\$4,437,670	\$10,425,081	\$2,748,873
Incarceration	\$3,886,094	\$11,248,683	\$2,418,986	\$5,203,817	\$12,449,357	\$3,277,436
Total Annual Public Costs	\$9,698,145	\$26,335,863	\$6,962,182	\$12,382,512	\$29,313,720	\$7,724,211

As with our statewide analysis, incarceration costs attributable to dropouts are the difference between the number of incarcerations with and without dropouts. Simply multiplying the number of probable incarcerations of dropouts by the cost of incarcerations would produce an inaccurate estimate of the costs, because even if all dropouts did graduate, there still would be a significant number of incarcerations attributable to each graduating class. The true cost, then, is the difference between the current number of incarcerations and the number that would occur if all students graduated from high school.

We employed a similar procedure (using the difference between costs associated with current number of dropouts and the costs if all students had graduated), to calculate Medicaid costs, reduced earnings and reduced tax revenue attributable to dropouts annually in each of the six schools districts. Results are presented in Table 8, which shows that annual costs attributable to dropouts in the six cities range from a high of over \$29 million in Houston to almost \$8 million in the much smaller San Antonio Independent School District.

The Public Benefits of School Choice in Texas

Advocates of competition in education generally believe not only that children who participate in school choice programs would benefit, but that overall productivity of public schools would increase as well in response to a school choice program. Nevertheless, most research on school choice initiatives focuses on the individual effects on students participating in school choice programs. A more complete characterization of the effects of school choice, however, would include both the general or system-wide impacts as well. As we have highlighted, the public or social costs associated with high school dropouts in Texas are large. If competition from private schools is associated with higher graduation rates in public schools, then increasing competition via school choice programs not only will produce benefits to public and private school children, but it will be an effective way to increase the productivity of public schools and confer large social benefits by reducing the number of high school dropouts.

Private School Competition Improves Public School Graduation Rates

Assessing the impact of competition from private schools on nearby public-school graduation rates requires sophisticated statistical methods. Few studies have employed methods rigorous enough to sufficiently control for confounding influences and thus estimate the true relationship. The main difficulty is that private schools typically do not appear randomly, but rather, the demand for private schools arises partly in response to public school quality.

In mathematical terminology, the number of private-school students and public-school quality are “simultaneously determined.” Studies that look at the simple relationship between the percentage of private-school students in an area and school quality could thus draw the inaccurate conclusion that a high percentage of private-school students in a district results in lower public-school quality.

Some studies have employed adequate methods, and they provide a growing body of evidence that competition from private schools improves achievement in neighboring public schools. Hoxby provides a review of this evidence.²² Perhaps the best-designed study was conducted by Dees.²³ The Dees study used data from all U.S. counties from the National Center for Education Statistics’ Common Core of Data, and found that most studies of the relationship between competition and public school graduation rates “dramatically underestimate the effect of competition from private schools on the rate of high school completion in public schools.” Dees’s results indicate that an increase in the percentage of students enrolled in private schools equal to one standard deviation (or about 4.6 percentage points of total enrollment in Texas) is associated with a 1.7-percentage-point decline in the public school dropout rate overall, and a 3.4-percentage-point decline in public school districts where at least 20 percent of students are non-white.

Overall, the percentage of Texas students who are in private schools is just under 7 percent, relatively low compared to other states, with larger cities having somewhat higher percentages (as is the norm throughout the country).²⁴ Texas’s relatively low private school enrollment is likely a function of the high percentage of its students who are non-white. Minority students traditionally have much lower rates of private school enrollment than do white students. However, there are large differences in the percentage of students enrolled in private schools across Texas’s nearly 1,033 school districts, with a range from zero to more than 40 percent in some small districts.²⁵

Uncertainty about the accuracy of district-reported graduation rates in Texas make an analysis of the relationship between competition in education (as measured by the percentage of children enrolled in private schools) and public school graduation rates problematic. For our analysis of the public benefits of competition from private schools, we used a range of estimates produced by our research in other states and by research conducted nationally by university economists. We estimate that private school enrollment causes public school graduation rates to increase by 2.4 percentage points to 4.8 percentage points for every one standard deviation increase in private school enrollment. These estimates fall between the national results obtained by Dees and the results of research in specific states, and are moderate compared to our results obtained using data in other states.²⁶

Even a Modest School Choice Program Would Reduce Texas Dropouts by up to 17,400 Each Year, Saving up to \$55 Million Annually

In this section we analyze the impact of educational reform that would increase enrollments in private schools by allowing Texas children to attend the public or private school of their choice using public funds.

Based on the finding (detailed in the previous section) that an increase in private-school enrollments will improve Texas public-school graduation rates due to improved competitive incentives, we calculated that increasing the percentage of Texas children enrolled in private schools by 4.6 points would mean:

- About 182,214 additional students enrolled in private schools.
- Between 8,720 and 17,400 fewer dropouts from Texas public schools each year, due to the positive incentives provided by competition from private schools.
- Increased tax revenues and reduced Medicaid and incarceration costs of \$27 million to \$55 million as a result of the reduction in public school dropouts. What’s more, because dropouts use other social services and incur other costs not included in these three measurements, the total public benefits are likely to be 50 percent to 100 percent higher than these figures.

■ Total public benefits of between \$1.4 billion and \$2.8 billion over an expected lifetime of 50 years for each class of reduced dropouts, since differentials in earnings, public assistance and incarceration rates between dropouts and graduates are lifelong patterns. The “present value” of these 50 years of benefits, discounted at 3.5 percent each year, is \$648 million to \$1.3 billion. The total value of the lifetime public benefit of each dropout prevented in Texas’s public schools is about \$158,400, or a present value of \$74,307.

Table 9 presents our calculations of the public benefits that would result from even a modest school choice program in Texas. Changing the size of a program to provide school choice to a larger percentage of Texas’s school-age children and introducing more competition into Texas’s education system would increase the magnitude of these impacts but not the basic conclusion that the potential public benefit of reducing the number of dropouts, in just three areas of public interest (tax revenue, Medicaid costs and incarceration costs), would be \$3,168 annually and \$158,400 (with a present value of \$74,307) over the working lifetime of each dropout.

Table 9

The Public Benefits of a School Choice Program in Texas			
Total Public Enrollment Grades 1-12			3,961,170
Cohort of Potential Graduates			358,856
Current Annual Dropouts			119,140
Increase in % of Texas Students in Private Schools			4.6%
Annual Dropout Reduction	Low Impact Estimate		- 8,720
	High Impact Estimate		-17,440
Annual Public Benefits From Increase in School Competition (see Table 6 for details)	Low Impact Estimate		\$27,284,561
	High Impact Estimate		\$55,251,237
Lifetime Public Benefit of 4.6% Increase in Competition	Low Impact Estimate		\$1,364,228,062
	High Impact Estimate		\$2,762,561,826
Lifetime Benefits Discounted to Present Value (at 3.5% per Year)	Low Impact Estimate		\$647,975,945
	High Impact Estimate		\$1,295,951,891
Average Lifetime Public Benefit of Reducing Each Dropout			\$158,400
Average Lifetime Benefits Discounted to Present Value (at 3.5% per Year)			\$74,307

Private School Competition Would be Especially Beneficial in Texas’s Cities

We also calculated the public benefits that a modest school choice program would bring to six of Texas’s large urban districts. School choice would be especially effective in improving public school graduation rates in these cities, for two reasons.

First, as we have seen, school districts in Texas average fewer than 7 percent of children in grades 1-12 enrolled in private schools, with a standard deviation of 4.6 percentage points. However, an examination of larger school districts indicates that, among districts with at least 10,000 students, the variation in the percentage of private school students is smaller, with a standard deviation equal to 2.4 percentage points. This indicates that a school choice program that increased private school enrollment in large districts by a full 4.6 percentage points would improve public school

graduation rates by far more than just 2.4 to 4.8 percentage points – because it would represent an increase in private school enrollment of almost two standard deviations rather than just one.

However, to keep our analysis conservative, we have not included this effect in our calculations below. Instead, we continue to treat an increase in private school enrollment of 4.6 percentage points as an increase of only one standard deviation.

Second, research has shown that the effects of increased competition in education on public high school graduation rates are greatest in districts with a larger percentage of minority students.²⁷ Each of the six Texas cities have enrollments that are predominately minority, ranging from 97 percent non-white in San Antonio to 72 percent non-white in Austin.²⁸ To represent this effect, we have used the higher of our two estimates of the impact of private school competition on public school graduation rates.

Table 10 presents the public benefits of increased competition in education from a modest school choice program that increased private school enrollments by 4.6 percent in each city. Houston and Dallas would realize annual public benefits of \$2.4 and \$2.8 million or more per year respectively, at the same time as dropouts are reduced by more than 700 students each year in both districts. Other cities would see benefits ranging down to about \$780,000 per year in San Antonio.

Table 10

The Public Benefits of a School Choice Program in Six Large Urban Texas Districts						
	Austin	Dallas	El Paso	Fort Worth	Houston	San Antonio
Total Public School Enrollment	81,003	160,969	63,674	80,208	209,879	56,371
Cohort of Potential Graduates	6,799	14,756	5,588	7,378	17,333	4,855
Graduates	3,746	6,832	3,202	3,608	8,476	2,520
Dropouts	3,053	7,924	2,386	3,770	8,857	2,335
Increase in Competition (% of Students in Private Schools)	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%
Impact on Dropout Rate	-330	-717	-272	-359	-842	-236
Annual Public Benefits of 4.6% Increase In School Competition (\$millions)	\$1.05	\$2.38	\$0.79	\$1.18	\$2.79	\$0.78
Lifetime Public Benefits of Reduced Dropouts in one Graduating Class (\$millions)	\$52.5	\$119.2	\$39.6	\$58.9	\$139.4	\$39.0
Lifetime Benefits (\$millions) Discounted to Present value (at 3.5% per Year)	\$24.6	\$55.9	\$18.6	\$27.6	\$65.4	\$18.3
Average Lifetime Public Benefit for Each Dropout Reduced	\$158,850	\$166,200	\$145,900	\$164,200	\$165,500	\$165,366
Average Lifetime Benefits Discounted to Present Value (at 3.5% per Year)	\$74,518	\$77,966	\$68,443	\$77,028	\$77,638	\$77,575

Conclusions

This study highlights the public costs of the failure of individuals to graduate from high school in Texas. Our analysis of costs and benefits associated with dropouts included just a few of the largest state programs where the impact of educational attainment on public costs is likely to be most significant. Most important, this study used objective empirical methods to document the public cost and benefit implications of education policies that often are debated solely on the basis of their impact on individuals.

Each student who fails to graduate from high school in Texas creates large public costs. While this fact has been intuitively understood for some time, this study empirically assessed the cost effectiveness of policies that seek to improve the performance of Texas's public schools. We concluded that introducing more competition into K-12 education in Texas would significantly improve public high school graduation rates, that the impact of competition provides a compelling and cost-effective method for improving the productivity of public schools and that this would bring about a large reduction in the public costs associated with dropouts.

These results indicated that school choice programs, rather than benefiting individuals at the expense of the public, provide large public benefits that probably exceed the benefits realized by students participating in the program.

Endnotes

- ¹ Editorial Projects in Education Research Center, "High School Graduation in Texas: Independent Research To Understand and Combat the Graduation Crisis," October 2006; the Civil Rights Project at Harvard University, "Confronting the Graduation Rate Crisis in Texas," October 2006.
- ² U.S. Census Bureau, Current Population Survey, March 2005 Supplement. The CPS is known to understate dropout numbers because it does not sample populations in institutions (such as prisons) and because it does not distinguish between those who obtain a GED and those who graduate from high school with a diploma. Because research suggests that the labor market outcomes of a GED student are more similar to those of a dropout than a high school graduate, the distinction is important. Since the CPS counts GED recipients as high school graduates, its data will cause us to underestimate the public costs of Texas's high school dropouts.
- ³ Education Policy Center of the Urban Institute, "Who Graduates? Who Doesn't?: A Statistical Portrait of Public High School Graduation, Class of 2001," 2003; National Center for Education Statistics of the U.S. Department of Education, "The Averaged Freshman Graduation Rate for Public High Schools from the Common Core of Data, School Years 2001-2002 and 2002-2003," October 2005; the Intercultural Research Association, "Texas Public School Attrition Study, 2005-06," 2006.
- ⁴ Texas Education Agency, "Pocket Edition, Texas Public Education Statistics, 2005-2006."
- ⁵ Editorial Projects in Education Research Center, "High School Graduation in Texas: Independent Research to Understand and Combat the Graduation Crisis," October 2006.
- ⁶ The Cumulative Promotion Index method for calculating graduation rates was used to examine the high school pipeline. It is a widely accepted method used to estimate the numbers of students who fall off track for earning a diploma at various points between the ninth grade and the expected time of graduation.
- ⁷ For the earnings calculations here, we limited the age range to 20-64 because labor force participation drops significantly after this age, as do wage and salary earnings, while Social Security income increases among all categories of educational attainment.
- ⁸ Moretti, E., "Does Education Reduce Participation in Criminal Activities?" University of California at Berkeley, working paper, 2005.
- ⁹ This estimate is appropriate to illustrate the earnings impact of educational attainment, but it does not consider the "equilibrium effects" that would occur in the Texas labor market if all dropouts actually did graduate - that is, the ways in which the larger economy would change as a result of such a dramatic rise in high school graduation rates.
- ¹⁰ IMPLAN Professional Modeling System, Version 2.1, Minnesota IMPLAN Group Inc., Stillwater, Minn.
- ¹¹ The estimates produced by the IMPLAN system are calculated within a social-accounting matrix using ratios of tax revenues to economic activity, but they provide a reasonable estimate that is likely to be within a few percentage points of the true revenue cost associated with the earnings differential between graduates and dropouts.
- ¹² National Association of State Budget Officers, "State Expenditure Report, 2005," November 2006.
- ¹³ The Medicaid matching rate for Texas was 39.13 percent in 2005, 39.34 percent in 2006 and 39.22 percent in 2007 for most but not all Medicaid services.
- ¹⁴ Centers for Medicare and Medicaid Services, U.S. Department of Health and Human Services, MSIS state summary data. Note that some of these beneficiaries are double counted or more.
- ¹⁵ Centers for Disease Control and Prevention, National Vital Statistics Reports, Vol. 51, No. 11, June 25, 2003.
- ¹⁶ Callahan, C., et.al. "A Longitudinal Model of Health Insurance, An Update: Employer Sponsored Insurance, Medicaid, and the Uninsured," U.S. Department of Health and Human Services, working paper, 2005.
- ¹⁷ We did not include the average cost of disabled Medicaid recipients in calculating a weighted average cost per Medicaid beneficiary because the need for these services is unrelated to educational attainment. These are among the highest-cost Medicaid beneficiaries and the effect of excluding them is to lower our calculation of the weighted average cost per Medicaid recipient. We treated elderly recipients similarly, and they also are among the highest-cost Medicaid recipients, although the cost of these services is somewhat related to educational attainment. The result is a lower average cost per Medicaid beneficiary than if all beneficiaries were included.
- ¹⁸ National Association of State Budget Officers, "State Expenditure Report 2005," November 2006.
- ¹⁹ PolEcon analysis of Texas Department of Criminal Justice data.
- ²⁰ Lochner, L. and Moretti, E., "The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self Reports," National Bureau of Economic Research Working Paper #8605, 2001.
- ²¹ Data on length of sentences and percentage of sentence served were calculated using data in the "Texas Department of Criminal Justice Statistical Report, 2005."
- ²² Hoxby, C., "School Choice and School Competition: Evidence from the United States," Swedish Economic Policy Review 10 (2003).
- ²³ Dees, T., "Competition and Quality of Public Schools," Economics of Education Review 17:419-427 (1998).
- ²⁴ The exact percentage depends on whose measurement of private school enrollment one uses. We used data from U.S. Census Bureau, 2000 Census.
- ²⁵ U.S. Census Bureau 2000 Census, Public Use Microdata files.
- ²⁶ The states are Missouri, Indiana, New Hampshire and North Carolina.
- ²⁷ Dees (1998) notes that earlier findings by Hoxby (1995) underestimates the impact of competition on the graduation rates of black students: "In school districts whose boundaries encompass relatively high proportions of non-white students, the high school completion rate is still quite responsive to private school competition. These results suggest that educational benefits of competition may not be limited to only those who can chose among schooling options." The parameter estimates of the effects of competition on minority student graduation rates indicate that graduations rates are about twice as responsive to competition in districts that have at least 20 percent minority enrollment.
- ²⁸ Texas Education Agency, demographic profiles of school districts.

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