

**A Cost-Benefit Analysis of Texas House Bill 1403:
An Act Relating to the Eligibility of Undocumented Students to
Qualify as In-State Residents for the Purposes of Higher
Education Tuition**

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Abstract

With the passage of House Bill 1403 in 2001, Texas became the first state to pass legislation allowing undocumented students to qualify for in-state tuition at public colleges and universities. However, allowing students who do not legally reside in the United States to pay resident tuition is a highly controversial and politically charged issue that is the source of ongoing debate. Almost invariably, during each legislative session there are calls to overturn the in-state resident tuition policy. Therefore, the purpose of this research is to conduct a cost-benefit analysis of Texas HB 1403 to determine if the policy is socially beneficial. Because roughly 80 percent of the undocumented population in the U.S. is Hispanic, the analysis focuses specifically on the costs and benefits of the provision of this incentive to Hispanic students.

This study considers three costs and three benefits of the policy. The costs include lost tuition revenue, increased financial aid and admissions administrative costs, and opportunity costs of lost income during enrollment. The benefits of the policy are increased wages, reduced incarceration costs, and a reduction in public healthcare spending. The cost-benefit analysis found that the policy is socially beneficial for the state. Thus, this paper recommends that Texas's in-state resident tuition policy be upheld.

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Chapter One

Introduction

Texas was the last state to provide a free public education to undocumented children. In 1975, the state enacted Texas Education Code, Section 21.031. This law withheld funds from school districts for students that were not legally admitted to the United States and allowed public independent school districts to charge undocumented students tuition or deny them the right to enroll in school (Olivas 2004, 2-3). The way in which public schools addressed undocumented students was left to the discretion of each independent school district (ISD). A random survey was administered by the Gulf Coast Legal Foundation in 1980 to identify how districts were implementing this section of the Texas Education Code (Olivas 2004, 3). The survey found that some districts allowed undocumented students to attend school without charge. Others would enroll these children for a fee. For example, Houston ISD, with more than 200,000 students, allowed undocumented children to attend school, but charged parents tuition of \$1,000 annually for each child. Still other districts, including Dallas ISD, the state's second largest district at the time, reported that they excluded undocumented children from enrolling (Olivas 2004, 3).

In a seemingly radical change of policy, twenty-six years later Texas became the first state to pass legislation allowing undocumented students to pay resident, or in-state, tuition at colleges and universities and qualify for state financial aid. This change in policy, however, did not occur in a political vacuum. The evolution of Texas's stance on

education for undocumented students has to be evaluated in the context of advances in civil rights and shifts in demographics that occurred between 1975 and 2001.

In 1982, the United States Supreme Court ruled in the *Plyler v. Doe* decision that Texas Education Code, Section 21.031, withholding funds from school districts for students that were not legally admitted to the United States and granting them the authority to deny educational services to these children, violated the Equal Protection Clause of the Fourteenth Amendment of the Constitution (Belanger 2001, 70). This ruling allowed undocumented children to receive the same free public primary and secondary education available to all Texas children. However, despite the progress brought about by *Plyler v. Doe*, equal opportunity still ended for many of these students after grade 12.

In 1987 the Attorney General of Texas issued an opinion stating that only individuals who had been granted permission by Congress or the courts to reside in the United States would be eligible to pay resident tuition at public colleges and universities. A restrictive interpretation of this opinion allowed only four types of visa to qualify for in-state tuition (Belanger 2001, 66). This left the majority of undocumented students, many of which had been schooled in Texas and received an education that emphasized career and college readiness, without the means to pursue costly post-secondary education.

Limiting opportunities for undocumented students to participate in post-secondary studies has implications for both educational and economic outcomes within the state. Research has shown that the inability to attend college or university may also contribute to lower high school completion rates for undocumented students (Kaushal 2008, 783). This limitation is reflected in graduation statistics. An estimated 49 percent of

undocumented youth do not complete high school, compared to 21 percent of legal immigrants and 11 percent of native-born students (Flores 2010a, 437).

Furthermore, because of their undocumented status, once these students leave school they are unable to participate in the mainstream workforce. Undocumented immigrants, due to their lack of legal work status, often work in low-wage jobs that do not require high levels of education. A 2006 report by the Texas Comptroller of Public Accounts indicated that 31 percent of undocumented immigrants work in service occupations, followed by 19 percent in construction, and 15 percent in production, installation, and repair (Texas Comptroller of Public Accounts 2006, 3). The lack of work and educational opportunities lowers the potential for achieving a return on the investment the state makes in providing undocumented students with free public education in kindergarten through grade 12.

The exclusion of these students from participation in higher education and the legal workforce is particularly significant for the state of Texas due to its relatively large number of undocumented residents. The Pew Hispanic Center estimated that there were 11.1 million undocumented immigrants in the United States in 2005 (Texas Comptroller of Public Accounts 2006, 3). About 14 percent of all undocumented immigrants in the U.S. reside in Texas (Texas Comptroller of Public Accounts 2006, 3). The state Comptroller estimated that there were about 135,000 undocumented students in Texas public schools during school year 2004–05, or about 3 percent of total enrollment (Texas Comptroller of Public Accounts 2006, 4).

The number of undocumented immigrants also contributes to the state's growing Hispanic population. A report issued by the RAND Institute on Education and Training

states that Hispanic youth are the fastest growing segment of the population in the United States and Hispanics account for more than a quarter of all new entrants into the workforce (Sorensen et al. 1995, 1). Furthermore, “the age structure among Hispanics is pyramid-like, with nearly 40 percent below the age of 19, compared with 29 percent for the total population. Given this structure, the Hispanic share of the labor force is likely to increase even more” (Sorensen et al. 1995, 1). Traditionally, education has been the means for achieving upward economic, social, and occupational mobility. However, Hispanics complete college at much lower rates than members of other ethnic groups and have higher high school dropout rates (Sorensen et al. 1995, 1). In short, “the educational achievement of Hispanics has not kept pace with their increasing share of the population and the labor force” (Sorensen et al. 1995, 1).

In 1997, the Texas State Demographer released population projections. Hispanics, who are the state’s fastest-growing ethnic group, were estimated to comprise 39 percent of the state’s population by 2015 (Belanger 2001, 66). However, mirroring nationwide trends, Hispanics were also the group with the lowest enrollment and graduation rates from post-secondary institutions (Belanger 2001, 66). According to the 1997 book entitled *The Texas Challenge: Population Change and the Future of Texas*, if low Hispanic participation in higher education is not addressed, “Texas’s workforce will not be able to compete, the poverty rate will increase by three percent and average household incomes will decline by \$3,000 in 2030” (Belanger 2001, 66). These projections presented legislators with a policy dilemma.

The policy problem centered on the viability of leaving a large, growing segment of the state’s future workforce marginalized with regard to participation in post-

secondary education. The ramifications of maintaining low levels of educational attainment among Hispanics, both documented and undocumented, had been made clear and policymakers were left to make a decision: They could choose to maintain the status quo or they could try to find solutions that would encourage increased participation in higher education.

One response came from the Texas Higher Education Coordinating Board (Coordinating Board). In October 2000, the Coordinating Board adopted a new higher education plan called *Closing the Gaps*. The goal of the plan is to close the educational gaps within Texas and between Texas and other leading states by focusing on participation, success, excellence, and research (Texas Higher Education Coordinating Board 2012, 1). The plan also seeks to increase the number of degrees and certificates from high quality programs by 50 percent by the year 2015. Part of this goal entails carrying out “the state’s Uniform Recruitment and Retention Strategy and other efforts aimed at making college and university enrollment and graduation reflect the population of Texas” (Texas Higher Education Coordinating Board 2000, 2).

A second response to the new demographic reality of the state came from Rick Noriega, a former member of the state House of Representatives. In 2001, during the 77th legislative session, Representative Noriega introduced House Bill 1403 (HB 1403) related to the eligibility of undocumented students to qualify as in-state residents for the purposes of higher education tuition. The bill was supported by a broad bipartisan base and passed the Texas legislature with only one dissenting vote (Belanger 2001, 67). The bill was codified in Texas Education Code, Section 54.052(j) (Texas Higher Education Coordinating Board 2008, 1).

The bill's passage "granted certain non-immigrant students, including undocumented students, access to in-state tuition rates at Texas public institutions of higher education and state financial aid" (Texas Higher Education Coordinating Board 2008, 1). The statute allowed individuals who were not permanent residents or U.S. citizens to be classified as state residents for higher education purposes if the students had: 1) resided in Texas with a parent/guardian while attending a high school in the state; 2) graduated from high school or obtained a GED in Texas; 3) lived in Texas during the three years leading to graduation or receipt of a GED; and 4) provided their institution with a signed affidavit indicating their intent to apply for permanent resident status as soon as they are able to do so (Texas Higher Education Coordinating Board 2008, 1).

Shortly after the bill was passed, its constitutionality was called into question. Due to legal concerns, the 79th legislature amended the provisions of HB 1403 with the passage of Senate Bill 1528 (SB 1528) in 2005. The bill was codified as Texas Education Code, Section 54.052 through 54.056 (Texas Higher Education Coordinating Board 2008, 1). SB 1528 amended the residency requirements of HB 1403 so that they applied to all persons who had lived in the state for a significant part of their lives (Texas Higher Education Coordinating Board 2008, 1). Under the provisions of SB 1528, certain international students can establish a claim to residency for the purpose of higher education. However, the revised statutes also allow "U.S. citizens or permanent residents to establish an independent claim to residency based on graduation from high school or the completion of its equivalent after residing in the state for at least 36 months" (Texas Higher Education Coordinating Board 2008, 2).

To qualify for resident tuition under the provisions of SB 1528, students must have: 1) resided in Texas during the three years leading up to high school graduation or the receipt of a GED; and 2) lived in Texas during the year prior to enrollment in a post-secondary institution. This can overlap with the three-year period indicated in the first requirement (Texas Higher Education Coordinating Board 2008, 1-2). If a student seeking to qualify for resident tuition is not a U.S. citizen or permanent resident, she or he is required to sign an affidavit indicating an intent to apply for permanent resident status as soon as she or he is able to do so (Texas Higher Education Coordinating Board 2008, 1-2). **Table 1.1** compares the requirements for establishing a claim to Texas residency under HB 1403 and SB 1528.

Table 1.1: Requirements for Establishing a Claim to Texas Residency	
HB 1403	SB 1528
<p>Students must have:</p> <ul style="list-style-type: none"> resided in Texas with a parent/guardian while attending a high school in the state; graduated from high school or obtained a GED in Texas; lived in Texas during the three years leading to graduation or receipt of a GED and; provided their institution with a signed affidavit indicating their intent to apply for permanent resident status as soon as they are able to do so. 	<p>Students must have:</p> <ul style="list-style-type: none"> resided in Texas during the three years leading up to high school graduation or the receipt of a GED; lived in Texas during the year prior to enrollment in a post-secondary institution. (This can overlap with the three-year period listed above.) Students seeking to qualify for resident tuition that are not U.S. citizens or permanent residents are required to sign an affidavit indicating an intent to apply for permanent resident status as soon as they are able to do so.
Source: Texas Higher Education Coordinating Board, 2008.	

With the passage of HB 1403 in 2001, Texas became the first state to pass legislation allowing undocumented students to qualify for in-state tuition at public colleges and universities. Since Texas passed HB 1403, 11 other states have passed

similar in-state resident tuition legislation (National Conference of State Legislatures 2011, 1). States that have passed such laws are listed in **Table 1.2**.

Table 1.2: States with Laws Regarding In-State Tuition for Undocumented Students			
States that Allow Undocumented Students to Qualify for Resident Tuition		States that Ban Resident Tuition for Undocumented Students	
State	Bill Number	State	Bill Number
Texas	HB 1403/SB 1528	Arizona	Proposition 300
California	AB 540	Colorado	HB 1023
Utah	HB 144	Georgia	SB 492
New York	SB 7784	South Carolina	HB 4400
Washington	HB 1079	Indiana	H 1402
Oklahoma*	SB 596	Oklahoma	HB 1804
Illinois	HB 60		
Kansas	HB 2145		
New Mexico	SB 582		
Nebraska	LB 239		
Wisconsin	A 75		
Maryland	S 167/H 470		
Connecticut	H 6390		
*Oklahoma overturned its in-state resident tuition policy with the passage of HB 1804 in 2008. Source: National Conference of State Legislatures, 2011.			

However, allowing undocumented students to pay resident tuition at public colleges and universities is a highly controversial and politically divisive policy. Oklahoma, for example, passed legislation granting in-state tuition to undocumented students in 2003 (Blume 2011, 42). However, in 2008, it passed HB 1804 “which ended its in-state tuition benefit, including financial aid, for students without lawful presence in the United States” (National Conference of State Legislatures 2011, 1). Five additional states have passed bills that prohibit undocumented students from receiving in-state tuition benefits (National Conference of State Legislatures 2011, 1). States with legislation banning undocumented students from paying resident tuition are shown in **Table 1.2**.

In-state resident tuition policies remain politically controversial. And, with immigration being a catalyst for heated debates both at the national and state levels, it seems likely that they will remain so. It is not the intent of this paper to provide partisan arguments for or against HB 1403. This study seeks to examine Texas's in-state resident tuition policy through an unbiased lens by objectively determining whether the policy is socially beneficial. Accordingly, the purpose of this research is to conduct a cost-benefit analysis of the law to determine whether the social benefits of the policy are greater than the costs.

In 2010, Texas had an estimated unauthorized immigrant population of 1.65 million (Pew Hispanic Center 2011, 15). The Pew Hispanic Center estimates that 58 percent of undocumented immigrants are from Mexico. Immigrants from other Latin American countries account for an additional 23 percent of the undocumented population (Pew Hispanic Center 2011, 11). Due to the large number of undocumented Hispanics in Texas, the analysis focuses specifically on the costs and benefits of allowing undocumented Hispanic students to pay resident tuition.

Chapter Two

Literature Review

Introduction

This chapter will provide a brief review of the foundational concepts upon which cost-benefit analyses are based. These principles will serve as the lens through which the Texas in-state resident tuition policy (ISRT) for undocumented students, commonly referred to as HB 1403, is examined throughout this research. In addition, a review of the literature pertaining to ISRT policies will be conducted in order to identify both the costs and the benefits that must be considered when conducting an analysis of this program.

Research Purpose

The purpose of this research is to conduct a cost benefit analysis of HB 1403, Texas's in-state resident tuition policy for undocumented students. The analysis will be focused specifically on the costs and benefits of provision of this incentive to Hispanic students. The literature reviewed for this study uses both the terms Hispanic and Latino. Therefore, this paper uses both terms interchangeably to refer to "a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race" (U.S. Census Bureau 2011b, 2). **Table 2.1** presents the conceptual framework. The conceptual framework (Shields, 1998, Shields and Tajalli, 2006) outlines the major factors considered in this research.

Table 2.1: Conceptual Framework linked to the Literature	
Costs:	Scholarly support:
<ul style="list-style-type: none"> - The cost of foregone tuition revenue - Administrative costs - Opportunity costs 	Belanger (2001), Blume (2011), Chen et al. (2009), Dougherty et al. (2010), Frum (2007), Galambos and Schreiber (1978), Kaushal (2008), Kobach (2007), Lesli and Rhodes (1995), Mikesell (2011), Olivas (2009)
Benefits:	Scholarly support:
<ul style="list-style-type: none"> - Increased wages - Reduction in healthcare spending - Reduced corrections costs <u>Intangible Benefits</u> <ul style="list-style-type: none"> - More educated workforce draws businesses to the State 	Barrow and Rouse (2006), (Chen et al. 2009, 79), Cutler and Lleras-Muney (2006), Flores (2010), Ford and Schroeder (2011), Galambos and Schreiber (1978), Kaushal (2008), Levin et al. (2007), Lochner (2004), Lochner and Moretti (2004), Mathur (1999), Moretti (2004), Mikesell (2011), Robles (2008), U.S. Census Bureau (2002), Vernez et al. (1999), Vernez and Mizell, (2002)
Factors Excluded from Analysis:	Scholarly support:
<ul style="list-style-type: none"> - Cost of secondary education - Cost of State-based financial aid - Additional tax payments 	Frum (2007), Galambos and Schreiber (1978), Hedge (2011), Mikesell (2011)

The Theory of Cost-Benefit Analysis

Cost-benefit analyses are conducted in order to determine if a given policy or program is profitable to society. Essentially, cost-benefit analysis deals with the social profitability of alternative uses of government funds and provides information on those that are desirable or undesirable from the viewpoint of society (Galambos and Schreiber 1978, 62). In addition, “cost-benefit analysis is concerned with achieving economic efficiency in the use of resources, regardless of who derives the benefits and who bears the costs” (Galambos and Schreiber 1978, 73).

This characteristic of cost-benefit analysis makes it particularly suitable for examining controversial legislation such as in-state resident tuition policies for undocumented students. This is due, in part, to the fact that opponents of these programs question their validity based on arguments regarding who in society bears the cost and who receives the benefit. Additionally, cost-benefit analysis strengthens the political

argument of underrepresented potential beneficiaries (Mikesell 2011, 309). In addition, “a display of costs and benefits makes it more difficult for the underrepresented to be ignored in political bargaining” (Mikesell 2011, 309). However, for the results to be persuasive in defending or influencing policy decisions, the cost-benefit analysis must be conducted in accordance with sound methodological practices.

Galambos and Schreiber have identified four steps that should be followed to ensure that a cost-benefit analysis is conducted properly. The first step involves identifying the costs and benefits that will result from a particular policy. The identification of benefits is also referred to as categorizing objectives (Mikesell 2011, 309). The relationship between the policy and each objective “must be traceable to establish a sound foundation for the analysis” (Mikesell 2011, 310). Thus, the benefits considered must be the direct result of the policy itself and cannot be attributable to any other policy, program, or external factor. If this condition is not met, the benefit should be excluded from the analysis. Offsetting benefits, also known as transfers, should also be excluded from cost-benefit analyses. It is not appropriate to include transfers in an analysis because “they result from the transfer of activity from one place to another with no extra benefit guaranteed” (Galambos and Schreiber 1978, 71).

Similarly, only the costs or lost revenue that result from the implementation of a policy should be considered in a cost-benefit analysis. For example, although required by general accounting principles, it may not be necessary to attribute an apportioned share of operation and maintenance costs to a program. This should only be done if these costs will be different as a result of the program’s implementation (Mikesell 2011, 310). As with benefits, there must be a direct, traceable relationship between the policy and the

resultant costs to justify their inclusion in a cost-benefit analysis. Following these theoretical guidelines will help ensure that only relevant costs and benefits are considered in the analysis.

After determining the costs and benefits that result from a policy, the next step is to measure these costs and benefits in dollars so that both are expressed in common denominator units (Galambos and Schreiber 1978, 62). Monetization permits comparison of project costs to project returns and helps determine whether the undertaking increases the wellbeing of the region (Mikesell 2011, 312). However, it is usually not possible to calculate the exact monetary value of benefits and costs. Thus, “the analyst must estimate for the life of the project both the physical changes from the project and the value of the changes” (Mikesell 2011, 311). After the effects of a policy have been estimated, they can be given a monetary value.

However, many policies will have some costs and benefits that cannot be quantified or expressed in dollar amounts. These are known as intangibles. Although they cannot be included in calculations, intangible costs and benefits should be reported in the cost-benefit analysis so they can be considered by decision makers (Galambos and Schreiber 1978, 73).

Once the value of all quantifiable costs and benefits has been measured in dollars, time must be factored into the evaluation. This third step is necessary because public projects create a flow of costs and returns that span many years (Mikesell 2011, 316). Consequently, “both streams must be converted to present value for comparison; discounting is necessary” (Mikesell 2011, 316). The following equation is used to calculate the present value of the social costs or benefits of a program:

$$\text{Present Value (PV)} = \frac{\text{Future Value (FV)}}{(1 + r)^n}$$

where r represents the discount rate and n equals the number of years in the future over which the costs or benefits will occur (Galambos and Schreiber 1978, 68).

As seen in the equation above, calculating the present value of the social benefits and costs of a policy requires using a discount rate. However, there is no specific discount rate that is appropriate for all analyses (Galambos and Schreiber 1978, 74). The analyst must select the discount based upon the nature of the policy or program being considered. The choice of a discount rate for this research will be discussed in the Methodology chapter of this paper.

After a discount rate is chosen and the present values of benefits and costs are calculated, the final step of the analysis can be performed. This step determines whether the policy yields large enough net social benefits to justify expenditures. In order to make this determination, the net present value (NPV) of the program is calculated by subtracting the present value of social costs from the present value of social benefits. In order to be economically efficient, the NPV must be greater than zero (Mikesell 2011, 318).

The Impact of ISRT Policies on Undocumented Enrollment Rates

The first step of conducting a cost-benefit analysis is to identify the benefits and costs that result from a particular policy. As noted above, for a cost or benefit to be included, it must be clearly established that it is a direct result of the implementation of

the policy in question (Mikesell 2011, 310). In order to meet this criterion, this section of the paper establishes that observed increases in the enrollment of undocumented students in post-secondary institutions is a result of the enactment of ISRT policies.

In theory, lowering tuition rates for undocumented students should lead to increased enrollment in post-secondary education. Based on human capital theory, the primary effect of ISRT policies is to provide a price reduction to the subset of undocumented students (Flores 2010b, 247). Thus, “a student who is low income and undocumented may initially see the monetary costs of investing in a college education as enormous but may also expect that the benefits of receiving U.S. wages for doing college level work will far outweigh the immediate direct and opportunity costs of attending college” (Flores 2010b, 247). However, some states, including Texas, also permit these students to qualify for state financial aid. “Since undocumented students do not qualify for any form of federal financial aid, this benefit might be an additional incentive for these students to enroll in post-secondary institutions in states that offer financial aid” (Flores 2010b, 246). Thus, by lowering the opportunity cost threshold for undocumented students, states that have enacted ISRT policies hope to increase their participation in post-secondary education.

Recent increases in the matriculation rate of undocumented students seem to indicate that these programs are achieving their objective. However, while trends suggest an increase in undocumented student enrollment due to the passage of the ISRT policies, without further analysis it is not clear whether this growth is the result of in-state resident tuition legislation (Flores 2010b, 244). Therefore, to accurately estimate the costs and benefits of implementing ISRT policies for undocumented students, it is first necessary to

determine whether these programs are effective in increasing matriculation rates for students within this population. It is also necessary to determine the percentage by which undocumented student enrollment has increased to establish whether the effect of the policies is significant. While ISRT policies should, theoretically, significantly increase enrollment rates for undocumented students, these policies also present them with a very real risk; the students must reveal themselves as illegal.

In-state resident tuition policies and increases in undocumented enrollment is the logical basis for a cost-benefit analysis. Thus, it is necessary to demonstrate that these enrollment increases are the sole result of the enactment of ISRT policies and cannot be attributed to any other policy that may be in effect simultaneously. Literature analyzing the effects of in-state resident tuition policies is reviewed in the next section to determine whether increases in matriculation rates among undocumented students can be attributed to these laws.

ISRT Policies and Enrollment

A recent study examines whether undocumented Latinos living in states that have ISRT policies are more likely to enroll in college than their counterparts in states without similar legislation (Flores 2010b, 246). Estimated college participation rates for undocumented students in Texas, California, Utah, New York, Washington, Oklahoma, Illinois, Kansas and New Mexico after ISRT policies were enacted were compared with those of similar students living in states without such laws. Data from the Merged Outgoing Rotation Group (MORG) files, a subset of the Current Population Survey (CPS), were used in this analysis. Since data for persons without legal immigration status

are not available, Foreign-born noncitizen (FBNC) Latinos were used as a proxy for undocumented immigrants. This was done because FBNC Latinos represent the population most likely to include undocumented residents likely to benefit from the policy. The sample was also limited according to the restrictions set forth in each state policy (Flores 2010b, 250-51). Using states without ISRT policies as a control group, it was found that FBNC Latinos are 1.54 times more likely to enroll in college after the enactment of in-state resident tuition policies compared to FBNC Latinos in the rest of the United States (Flores 2010b, 260). These results are significant not only because they demonstrate that ISRT policies positively impact undocumented student enrollment when compared with a control group, but also because they indicate that these policies are effective across states with different demographic characteristics.

Similar research examined the effect of ISRT policies on enrollment rates using noncitizen Mexican youth as a proxy for undocumented students. Noncitizen Mexican youth were chosen as the study sample because they have a high likelihood of being undocumented and are eligible for resident tuition in states with ISRT policies (Kaushal 2008, 771). The research found that offering in-state tuition to undocumented students results in a “statistically significant 2.5 percentage point increase in college enrollment among noncitizen Mexican youth” (Kaushal 2008, 783). In addition, this study found that ISRT policies are associated with a 14 percent increase in the proportion of noncitizen Mexican youth with a high school diploma, a 37 percent increase in the proportion with some college education, and a 33 percent increase in the proportion with an associate’s degree or higher (Kaushal 2008, 783). Thus, this study indicates that in-state resident

tuition policies nationwide have a significant positive effect on the participation of undocumented Hispanics in higher education.

With regard to Texas, research specifically analyzing the effects of HB 1403 compared Texas to other southwestern states that lack ISRT legislation. The study used data from the CPS-MORG data set along with information from the Texas Higher Education Coordinating Board regarding students admitted under the provisions of HB 1403 (Flores 2010b, 436). FBNC Latinos in Texas were used as the treatment group and FBNC Latinos in other states with a large Hispanic immigrant population but no ISRT policy were used as the control group (Flores 2010b, 441). The sample of FBNC Latinos was restricted in accordance with the provisions of HB 1403 and also controlled for the possible effects of other state policies that could affect college participation among undocumented Latino students. Data clustered at the state level indicated that HB 1403 has a significant effect on the enrollment rate of FBNC Latinos in all age-range samples (ages 18-24). According to this study, undocumented students in Texas are estimated to be 2.33 times more likely to enroll in a post-secondary institution than they would have been without the ISRT policy (Flores 2010b, 446).

In-state resident tuition policies do have a significant positive effect upon enrollment rates of undocumented Hispanic students in colleges and universities (Flores 2010a, Flores 2010b, Kaushal 2008). In addition, these studies clearly demonstrate that increased participation in post-secondary education among this group can be attributed to the enactment of these laws and has not been the result of other policies aimed at increasing overall enrollment rates. The magnitude of the impact of these programs can be used to estimate the number of additional undocumented students who have enrolled

in post-secondary education as a result of ISRT policies. This estimate can then be used to calculate the total value of costs and benefits accrued to the state as a result of the enactment of ISRT legislation.

Identifying the Costs of ISRT Policies

In order to determine the costs of in-state resident tuition policies for undocumented students, a review of the literature regarding this topic was conducted. The literature identified three primary costs associated with ISRT policies (Frum 2007, Kaushal 2008, Blume 2011, Chen et al. 2009). First, tuition revenue is lost by public colleges and universities for those undocumented students who would have enrolled without the ISRT policy. Additionally, there are increased administrative expenses associated with manually processing the additional paperwork required of undocumented students applying for admission and state financial aid. Lastly, there are opportunity costs associated with college enrollment. Time spent in the classroom could have been spent working. Therefore, it is necessary to consider the cost of forgone earnings for students who benefitted from the ISRT policy.

Lost Tuition Revenue

A cost that must be included when analyzing ISRT policies is the tuition revenue lost for each undocumented student who would have enrolled in a post-secondary institution even if ISRT legislation had not been enacted. Tuition revenue is lost for these students because they would have enrolled without the policy and paid the higher out-of-state rate. This cost is incurred because taxpayers subsidize a substantial portion of the educational costs for in-state students while out-of-state students are responsible for

paying for a much larger percentage of the total cost of their education. For example, during the 2009–10 academic year, the average out-of-state tuition and fees for undergraduate students at four-year universities in the United States were \$14,707, while average tuition and fees for in-state residents were \$6,257 (Dougherty et al 2010, 124). Thus, in-state resident students paid an average of \$8,450 per year less than their out-of-state, nonresident counterparts.

The large disparity between resident and nonresident tuition can lead to sizeable costs for states with ISRT policies. For example, taxpayers in California pay an excess of \$100 million annually to subsidize post-secondary education for undocumented students (Kobach 2007, 499). Washington State calculated the financial impact of its policy to be less than \$50,000 per year, while researchers at the University of Illinois-Chicago estimated that Illinois would lose \$46 million in tuition revenue annually (Frum 2007, 97). However, the Illinois calculations were based on the assumption that all undocumented students eligible for resident tuition would matriculate and that all of these students would have otherwise attended university paying nonresident tuition (Frum 2007, 97).

The research cited above demonstrates that ISRT policies can result in considerable lost revenue for public colleges and universities. The magnitude of this loss can be estimated. To do this, the number of undocumented students who would have enrolled without the ISRT policy has to be determined. This number is then multiplied by the difference between the average resident tuition and the average nonresident tuition for institutions within the state.

However, the type of institution in which each of these students matriculate must also be taken into consideration when estimating tuition revenue lost as a result of ISRT policies. For example, the majority of undocumented students qualifying for in-state resident tuition enroll in less expensive community colleges (Frum 2007, 90). During school year 2001–02, the average in-state tuition and fees for students enrolled full time in a community college were \$895, while out-of state tuition for full-time students was \$2,069. During the same year, full-time students paying in-state tuition at four-year universities paid an average of \$2,189 in tuition and fees while out-of-state students paid \$6,425 (Dougherty et al 2010, 133). Thus, in calculating the lost tuition revenue, the type of institution in which a student enrolls must be considered because tuition rates vary greatly between two-year colleges and four-year universities.

Administrative Costs

Administrative costs can be expected to increase when a policy is enacted that involves processing additional paperwork and collecting and analyzing data in order to determine whether an individual qualifies to receive a benefit. As a result of the enactment of ISRT policies, additional students apply for admission to post-secondary institutions. This in itself results in a greater workload for colleges and universities as they have to process more applications.

Furthermore, in many states undocumented students are required to submit supplemental forms with their applications. In Texas, for example, students who wish to receive in-state tuition benefits under HB 1403 are required to complete a one-page affidavit in which they indicate that they will apply for permanent resident status as soon as they are eligible to do so (Belanger 2001, 67). Consequently, additional resources are

required to process the applications of undocumented students and determine whether they qualify for in-state tuition based on the specific requirements of a state's ISRT policy. Although it seems insignificant, the additional work required to process these applications adds up, especially as the number of undocumented students applying to colleges and universities increases. The need for additional time and resources results in additional costs.

Another factor that must be considered is the time required to develop and maintain a system for identifying undocumented students who qualify for state-based financial aid (Blume 2011, 47). Typically, financial aid decisions are based on information reported by the student through the Free Application for Federal Student Aid (FAFSA). The FAFSA is processed at the national level and student information is available via computer to colleges and universities. However, completion of this form requires the student to possess a valid social security number, something undocumented youth lack. According to financial aid representatives at the University of Texas at Austin, in order to apply for state financial aid, undocumented students must print and fill out a paper copy of either the FAFSA or the Texas Application for State Financial Aid (TASFA). Financial aid consultants must then process these paper documents manually, and the information must be input into a database maintained by the Office of Student Financial Services at the university (The University of Texas Office of Student Financial Services 2012). Manual processing requires that additional time and resources be spent reviewing the applications of undocumented students, which increases workloads and leads to additional administrative costs.

In order to quantify these additional financial aid and admissions administrative costs, one must identify the reporting requirements and additional processing necessary to comply with the enabling legislation (Lesli and Rhodes 1995, 195). The additional work resulting from the policy can then be associated directly with increases in staff and/or expenditures in the affected units (Lesli and Rhodes 1995, 195). With regard to ISRT policies, it has been suggested that financial aid and admission professionals “designate a staff member, preferably one who is bilingual in the appropriate language, in their campus office to review these issues and to provide technical assistance to the applicants and parents” (Olivas 2009, 413). The University of Texas at Austin does, in fact, have a financial aid coordinator on staff that is specially trained to work with undocumented students and to facilitate processing of their financial aid applications (The University of Texas Office of Student Financial Services 2012). The additional human resources required to assist undocumented students and process their admission and financial aid applications must be included in cost calculations for ISRT policies.

However, estimating additional administrative costs is not always straight forward. Individuals who are not specifically designated to process ISRT applications may perform some tasks associated with the implementation of this policy. Therefore, the most practical way to quantify administrative costs resulting from in-state resident tuition policies is to base calculations on the total time employees spend processing ISRT applications and the wages paid to them.

Opportunity Costs

Implementing new policies almost always requires the use of resources, or program inputs. These resources, if not used for the policy under consideration, could be

put to other productive uses (Chen et al. 2009, 79). The cost associated with reallocating resources away from other possible uses is referred to as the opportunity cost. In a cost-benefit analysis it is necessary to consider opportunity costs because they measure “the value of what society must forgo to use the input to implement the concerned program” (Chen et al. 2009, 79). With regard to ISRT policies, undocumented students, who would most likely be working, are forgoing employment in order to study. By choosing to attend college or university, they delay their entry into the workforce. These lost earnings represent an opportunity cost equal to the income ISRT students would have earned if employed.

The three primary costs associated with ISRT policies are increased administrative expenditures, lost tuition revenue, and income forgone by undocumented students while attending school. The magnitude of these costs is driven by several factors. Factors that affect administrative costs include the number of undocumented students applying for admission and state financial aid, the additional time required to process each application, and the number of schools each student applies to. The amount of tuition revenue lost depends on the number of ISRT beneficiaries that participate in post-secondary studies, the type of institution in which they enroll, and the difference between resident and non-resident tuition. Lastly, the magnitude of the opportunity cost of foregone earnings depends on the number of ISRT beneficiaries and the average annual income they would have earned had joined the workforce.

Determining the Benefits of ISRT Policies

Increased Earnings

One of the primary benefits of increased educational attainment for undocumented students is higher average earnings. According to human capital theory, education increases an individual's skill level and results in higher productivity. This, in turn, is reflected in higher wages (Barrow and Rouse 2006, 16). For this reason, it is appropriate to consider additional earnings when conducting a cost-benefit analysis of ISRT policies.

The positive relationship between level of education and earnings has been clearly established in the literature. For example, the U.S. Census Bureau found that the average annual earnings for a high school graduate are \$25,900 while those of a college graduate are \$45,400 (U.S. Census Bureau 2002, 2). This difference in annual income leads to higher total earnings for individuals with a bachelor's degree over their life course.

The Census Bureau calculated synthetic estimates of work-life earnings for individuals of varying levels of education. These estimates represent how much individuals with the same degree of educational attainment can expect to earn over a forty-year work life. According to this study, individuals who complete high school can expect to earn \$1.2 million dollars throughout their working life. Those who complete some college will earn about \$1.5 million and those who obtain an associate's degree can expect to earn \$1.6 million. However, individuals who have a bachelor's degree should earn, on average, \$2.1 million (U.S. Census Bureau 2002, 4). These findings confirm that greater levels of educational attainment do, in fact, result in greater income. Furthermore, they indicate that ISRT policies, which allow more students to attend post-secondary

institutions, provide a benefit because they result in an increase in the lifetime earnings potential for participants.

However, the expected earnings for individuals with varying degrees of education differ according to race. For example, “work-life earnings are lower for Blacks and Hispanics than White non-Hispanics of the same educational attainment level” (U.S. Census Bureau 2002, 7). According to a study by the U.S. Census Bureau, White full-time, year-round workers with a high school education will earn an average of \$200,000 more over their working life than Black and Hispanic high school graduates. Whites with bachelor’s degrees can expect to earn \$500,000 more than their Black and Hispanic counterparts (U.S. Census Bureau 2002, 7). This disparity in synthetic estimates of lifetime earnings is particularly relevant for a cost-benefit analysis of ISRT policies due to the fact that they typically target ethnic minorities. This fact must be taken into consideration in order to avoid overestimating the benefits of these policies.

Thus, calculations of increased income should be based on race-specific estimates of lifetime earnings. Furthermore, since an income disparity also exists between junior college and university graduates, a cost benefit analysis of in-state resident tuition policies should also calculate benefits for students that enroll in two-year and four-year post-secondary institutions separately. Calculating benefits in this manner will provide the most accurate estimate of increased income over the life course for ISRT beneficiaries.

Reduced Incarceration Costs

Another benefit of the increased levels of education attributable to ISRT policies is a reduction in incarceration costs. This results from the fact that greater educational

attainment increases an individual's level of human capital. The skills acquired through education are gained through costly time investments and result in increased returns from work (Lochner 2004, 814). Since individuals with more education receive higher wages, "human capital (as determined by past investments and initial endowments) discourages crime by raising the direct opportunity costs of time and the indirect costs through potential lost opportunities associated with prison" (Lochner 2004, 818). Thus, according to human capital theory, the amount of crime an individual commits decreases as she or he achieves higher levels of educational attainment because education increases the opportunity costs of criminal activity.

In addition to increases in human capital, higher educational levels also result in a greater accumulation of social capital. Education provides increased access to positive role models and reinforces conforming behavior. It also allows individuals to create social relationships with conventional peers and fosters a commitment to traditional goals (Ford and Schroeder 2011, 36). As a result, a stake-in conformity develops that inhibits criminal behavior due to the risk it represents to conventional aspirations (Ford and Schroeder 2011, 36). This greater attachment to conventional peers and goals, along with the increased opportunity cost for delinquency, results in a negative relationship between educational attainment and crime.

The inverse relationship between crime and level of education has been clearly established in the literature. For example, ordinary least squares estimates conducted using Census data found that more schooling significantly reduces the probability of incarceration (Lochner and Moretti 2004, 157). It has been shown that "one extra year of schooling results in a 0.10-percentage-point reduction in the probability of incarceration

for whites, and a 0.37-percentage-point reduction for blacks” (Lochner and Moretti 2004, 157). The effect of education on arrests is similar. Studies have demonstrated that a one-year increase in average educational level reduces arrest rates by 11 percent (Lochner and Moretti 2004, 157). Increased educational attainment leads to a decrease in both arrest and incarceration rates. This does not necessarily indicate, however, that a more highly educated individual commits less crime.

In order to determine whether more education leads to a reduction in criminal behavior Lochner analyzed data collected by the National Longitudinal Survey of Youth (Lochner 2004, 825). Information provided by respondents regarding participation in violent crimes and theft as well as the amount of income they received as a result of crime was disaggregated. Almost 30 percent of men between the ages of 20 and 23 with less than 10 years of education reported earning some income from crime. In addition, “Among high school graduates, only 24 percent of those not continuing on in school earned some income from crime whereas 17 percent of those continuing to college did” (Lochner 2004, 825). Thus, students pursuing post-secondary education are seven percent less likely to participate in criminal activity than those who discontinue studies after high school.

The findings of these studies indicate that the increase in educational attainment that results from in-state resident tuition policies reduces the likelihood that an individual will participate in criminal activity. Additional years of education also lead to a reduction in arrest and incarceration rates. Therefore, ISRT policies benefit society by reducing arrest and incarceration rates and, consequently, the amount of money that has to be spent on corrections. The magnitude of this benefit can be calculated utilizing the percent

decrease in incarceration rates, the average length of incarceration, and the average annual corrections costs per inmate.

Reduced Public Healthcare Expenditures

In-state resident tuition policies and the increase in education they allow for also benefit society by directly reducing public healthcare expenditures (Levin et al, 2007, Vernez and Mizell 2002, Vernez et al 1999). When determining public healthcare expenditures, one has to consider both the Medicaid and Medicare programs. It has been shown that individuals with greater levels of educational attainment enroll in Medicaid at a much lower rate than those who have completed fewer years of schooling (Levin et al. 2007, 11). Since Medicaid is a means-tested program, the negative relationship between educational attainment and enrollment rates can be explained by the fact that increased schooling leads to increased wages. Individuals with more education typically receive incomes that are too high to allow them to qualify for Medicaid.

For individuals under 65, Medicare eligibility is based upon disability. Persons under the age of 65 must be completely disabled or incapacitated to receive Medicare benefits. As a result, the per-enrollee costs for disabled Medicare recipients under the age of 65 are roughly three times those of non-disabled enrollees. Thus, if education reduces the occurrence of debilitating illness, it can also contribute to lower Medicare spending on individuals under 65 years of age (Levin et al 2007, 10).

A causal link between education and overall health has been established in the literature. For example, the National Bureau of Economic Research analyzed the relationship between health and education and found that individuals with more schooling are less likely to suffer from a wide array of illnesses including hypertension,

diabetes, anxiety, and depression (Cutler and Lleras-Muney 2006, 3-4). Furthermore, individuals with greater educational attainment missed fewer days of work due to illness and had fewer functional limitations (Cutler and Lleras-Muney 2006, 3-4). Additionally, “among those with chronic conditions such as diabetes and hypertension, the more educated are more likely to have their condition under control” (Cutler and Lleras-Muney 2006, 3-4). These findings demonstrate that increased educational attainment contributes to lower incidents of chronic disease. Furthermore, they indicate that when individuals with long-term illness are more highly educated, they tend to control their symptoms better and are less likely to become debilitated by their illness. The positive relationship between health and education should, therefore, result in lower Medicare expenditures for individuals under the age of 65 as they complete more years of schooling.

Education’s role in improving health throughout the course of an individual’s life results in significant reductions in Medicare and Medicaid spending. For example, on average, a Hispanic female who does not complete high school receives \$73,700 in Medicaid and Medicare benefits over the course of her lifetime up to age 65 (Levin et al 2007, 12). The amount of public healthcare received by a Hispanic female high-school graduate decreases substantially to \$29,900. Hispanic females with some college utilize an average of \$19,600 in Medicaid and Medicare services, while the cost per college graduate is \$4,400 until age 65 (Levin et al 2007, 12). Thus, the combined effect of improved health and increased wages that results from greater educational attainment leads to significant reductions in public healthcare spending.

These findings demonstrate that in-state resident tuition policies are socially beneficial with regard to public health expenditures for two reasons. First, they contribute

to better overall health, which leads to reductions in Medicare spending for adults under the age of 65 because they are less likely to be completely incapacitated. In addition, the increased income that is earned as a result of greater educational attainment leads to reductions in spending for means-tested programs such as Medicaid.

Intangible Benefits

Spill Over Effects Within the Local Economy

Increased educational attainment not only leads to higher wages and reductions in corrections and public health expenditures, it also leads to growth and spillovers within the local economy (Moretti 2004, Mathur 1999, Rauch 1991). Economic development is a positive change in employment trends or per capita income that is self-sustained (Mathur 1999, 204). In order for economic growth to occur, an area must invest in human resources and human capital (Mathur 1999, 205). The accumulation of human capital within a region has been shown to increase the productivity of both labor and capital (Mathur 1999, 203). As previously discussed, increases in productivity lead to higher wages. However, research has shown that high concentrations of human capital within a locality also lead to a trickle-down effect that produces higher incomes for workers at all educational levels.

This increase in wages across the educational spectrum is the result of two factors. First, the productivity of workers with less education rises when the number of more highly educated workers increases due to imperfect substitution. Second, human capital spillovers further raise their productivity (Moretti 2004, 179). On the microeconomic level, the “foundation of this external effect of human capital is the sharing of knowledge and skills between workers that occurs through both formal and informal interaction”

(Rauch 1991, 1). Thus, education not only provides a private return, it also provides a social return in the form of increased the productivity and wages for all workers.

The monetary return to the local economy that results from the accumulation of human capital has been documented in the literature. Each additional year of average education within a Standard Metropolitan Statistical Area raises total factor productivity by 2.8 percent (Rauch 1991, 20). This increase in productivity is reflected in higher earnings. The literature indicates that, “even after controlling for the private return to education, wages are higher in cities where the labor force is better educated” (Moretti 2004,184). For example, a one percent increase in the number of college graduates in a city raises average wages 0.6 to 1.2 percent beyond the private return (Moretti 2004, 177). More specifically, the wages of high-school dropouts increase by 1.9 percent, while those of high-school graduates and individuals with some college increase by 1.6 and 1.2 percent respectively (Moretti 2004, 201). These studies are significant because they demonstrate that increased educational attainment generates spillover effects that result in increased wages for workers with various degrees of education.

However, since it is not possible to determine whether undocumented students who have received in-state tuition benefits tend to concentrate in specific cities, the magnitude of this spillover benefit to society cannot be calculated. It is an intangible benefit. Nevertheless, it warrants mentioning in a cost-benefit analysis of ISRT policies because of the potential implications for states such as Texas, in which there is a sizeable population of young, undocumented individuals concentrated in larger cities. This benefit has not been considered in similar analyses.

The social benefits of in-state resident tuition policies are many. The most obvious benefit is the greater earnings potential ISRT policies confer upon beneficiaries. However, increased educational attainment also benefits society by reducing corrections costs and lowering expenditures for public health programs. An additional benefit of ISRT laws is the spillover effects they generate in cities in which large numbers of college graduates settle. This accumulation of human capital leads to increased wages for workers of varying educational levels.

Factors Excluded from Analysis

In conducting a cost benefit analysis, it is essential to include only those costs and benefits that are directly attributable to the program being implemented. A review of the literature pertaining to in-state resident tuition policies uncovered references to many perceived costs and benefits of these programs that are not suitable for inclusion in a cost-benefit analysis. These unrelated costs and benefits will be identified and the reasons for which they are excluded from this analysis will be discussed.

Increased Tax Revenues

Many studies that examine the effects of in-state resident tuition policies cite increased tax revenues as being one of their primary benefits. For example, a cost-benefit analysis of California's ISRT policy includes the additional taxes paid each year as a result of increased earnings when calculating the benefits of the policy (Hedge 2011, 3). However, this study uses additional income earned each year by ISRT beneficiaries to estimate the benefits of the policy. This measure was chosen because increased earnings reflect socially beneficial increases in productivity that result from greater educational

attainment. Including both additional taxes and the gains in income upon which they are based will result in an overestimation of benefits. Taxes in this case would be considered a transfer item because “the increased taxes to the public sector are offset by decreased income (take-home pay) to spend in the private sector” (Galambos and Schreiber 1978, 71). Therefore, they will not be included in this analysis.

The Costs of Public Education

Another factor considered in the cost-benefit analysis of California’s ISRT policy is the cost of providing the three years of public education required for undocumented students to qualify for in-state tuition (Hedge 2011, 3). The cost of providing K-12 education, however, is not incurred as a result of in-state resident tuition policies. In accordance with the Supreme Court decision in *Plyer v. Doe* all states, with and without ISRT policies, are required to provide free public education to all school-age children, documented or undocumented. Since this cost does not meet Mikesell’s causality requirement, it will not be included in this analysis.

Financial Aid to Undocumented Students

An additional expenditure that is typically considered when discussing the costs of ISRT legislation is the amount of financial aid awarded to qualifying undocumented students. For example, one article examining in-state resident tuition policies claims, “At the state level, costs depend on the number of undocumented students who actually participate, the difference between resident and non-resident tuition, and whether students are eligible for state-based scholarship programs” (Frum 2007, 96-97). However, in states such as Texas the amount of financial aid available to students is limited. Therefore, scholarships provided to undocumented students do not represent an additional cost to the

state but a transfer that is offset by the loss of funds to other potential recipients. Thus, the amount of scholarship money awarded to undocumented students will not be included in this cost-benefit analysis because it is an offsetting cost (Galambos and Schreiber 1978, 71).

Conclusion

The literature regarding in-state resident tuition policies documents the many benefits associated with such programs. ISRT policies represent a public investment in human capital. This investment has been shown to result in higher wages for individuals and to produce spillover benefits that increase earnings in cities in which highly educated workers are concentrated. Furthermore, because educated individuals possess more human and social capital, they face higher opportunity costs for committing crime. An investment in education, therefore, results in lower expenditures for corrections. Education also contributes to better health. This, along with increased incomes, contributes to a negative relationship between educational attainment and dependence on Medicaid and Medicare. Thus, the literature demonstrates that increased private earnings, economic spillovers at the local level, and decreased Medicare, Medicaid and corrections expenditures are benefits that are attributable to in-state resident tuition policies.

The literature also identifies three primary costs that directly result from the implementation of ISRT policies. Increasing the number of students applying for admission and financial aid leads to increased administrative costs for colleges and universities. Tuition revenue is lost for undocumented students that would have enrolled regardless of the enactment of the ISRT policy. And, ISRT beneficiaries delay joining the

workforce to participate in higher education. As a result, the earnings forgone by these students represent an opportunity cost associated with the policy.

However, if in-state resident tuition policies are to be considered socially beneficial, the social costs of the program must be less than the social benefits they provide. In order to determine the net social benefits of these policies, the costs and benefits outlined above must be operationalized. The subsequent chapter will discuss the methods used to monetize the costs and benefits of in-state resident tuition policies.

Chapter Three

Research Methodology

Introduction

In order to estimate the costs and benefits of ISRT policies, it is necessary to look at subgroups within the total population. Data from the Texas Higher Education Coordinating Board (Coordinating Board) do not provide information regarding the race or ethnicity of students qualifying for in-state tuition under the provisions of HB 1403. However, it is estimated that 80 percent of undocumented immigrants in the United States are Hispanic (Blume 2011, 39). Therefore, this study uses data specific to the Hispanic population, such as lifetime earnings and public healthcare spending, to more accurately estimate costs and benefits.

Students qualifying for in-state tuition under the provisions of HB 1403/SB 1528 are divided into two categories: section 2 and section 4 students. Section 4 students already have a pending resident status with Immigration. Section 2 students are undocumented and must sign an affidavit stating that they will apply for permanent resident status (Williams and Albrecht n.d., 11). This study considers only section 2 students because they are at the center of the political debate surrounding ISRT policies. Opponents of in-state resident tuition policies often claim that allowing these students to pay resident tuition is not socially desirable because they are illegal.

The Coordinating Board provided data on the total number of students that qualified for in-state resident tuition under section 2 of HB 1403 in fiscal year 2010 (FY 2010) by institution type (public universities, two-year colleges, and public health-related

institutions). Since these students must sign an affidavit indicating that they intend to apply for permanent resident status, they are referred to as affidavit students in the Coordinating Board's overview of eligibility requirements (Texas Higher Education Coordinating Board 2011, 2). This study uses the number of affidavit students enrolled in Texas public universities and two-year colleges in FY 2010 as the basis for estimating costs and benefits associated with HB 1403.

Since there is a large difference in the cost and benefits of attending a four-year university versus a two-year college, affidavit students will be divided into two categories when making calculations: those attending two-year institutions, including community colleges and technical and state colleges, and those attending public universities. Students attending public health institutions are excluded from this analysis because information about the type of degree or certification they are working towards and the number of years required to complete their educational program is not available.

However, it is not always appropriate to use the total number of affidavit students that enrolled in two-year colleges and four-year universities in FY 2010 to estimate costs and benefits. Affidavit students include students that enrolled in post-secondary institutions as a result of HB 1403 as well as undocumented students who would have enrolled regardless of the law and paid out-of-state tuition. In calculating the costs and benefits of HB 1403, it is often necessary to further divide affidavit students into these two categories. For clarity, students that enrolled in colleges and universities as a result of the in-state resident tuition policy will be referred to as ISRT students in this paper. The term non-ISRT students will be used for undocumented students who would have participated in higher education in the absence of the policy.

The increased likelihood of enrollment for undocumented students will be used to determine the number of non-ISRT students. A study of the effect of HB 1403 on the matriculation rate of foreign-born noncitizen (FBNC) Latinos in Texas estimated that it increased enrollment rates for undocumented students by 233 percent. In other words, undocumented students are 2.33 times more likely to enroll in school because HB 1403 was enacted (Flores 2010b, 446). An additional study that analyzed the effect of ISRT policies across states found that undocumented students were 1.54 times more likely to enroll in college in states with resident tuition policies than in those without them (Flores 2010a, 260). Measures of the increased likelihood of enrollment estimated in these studies (2.33 and 1.54) will be referred to as policy effects. This research will use both measures of the effect of ISRT policies in order to generate lower- and upper-bound estimates of net benefits.

Estimates of non-ISRT students will be calculated using the following formula:

$$A = X(1 + M)$$

where A is equal to the number of affidavit students enrolling in a certain type of post-secondary institution in FY 2010, X is equal to the number of non-ISRT students, and M equals the magnitude of the policy effect. The number of non-ISRT students enrolled will be calculated independently for each type of institution using policy effects of 1.54 and 2.33. Dividing the number of affidavit students enrolled by the policy effect plus one according to the equation above will provide estimates of non-ISRT enrollment. For each institution type, the result will then be subtracted from the total number of affidavit

students to estimate the number of ISRT students enrolled. The estimates of ISRT students, who are attending colleges and universities as a result of HB 1403, will be used to calculate the benefits of the legislation.

Assumptions

It is necessary to make a number of assumptions to estimate the costs and benefits of HB 1403. This is due to the fact that exact data about all aspects of affidavit students and policy implementation at the post-secondary level are not available. However, while conducting cost-benefit analyses often requires that assumptions be made, doing so can affect the accuracy of results. The assumptions made in this research are stated below along with any implications they may have for the results of the analysis.

As noted above, this study uses the number of affidavit students enrolled in Texas public universities and two-year colleges in FY 2010 as the basis for estimating costs and benefits associated with HB 1403. Data obtained from the Coordinating Board only provide the total number of affidavit students enrolled in public colleges and universities in FY 2010. The data do not specify when the students began their studies or what year of study each affidavit student was in. Therefore, in order to estimate the costs and benefits attributable to the affidavit students enrolled in public colleges and universities in FY 2010, these students will be considered a cohort who first enrolled in post-secondary institutions in academic year 2009–10. This academic year is used because it most closely corresponds with FY 2010.

Studies indicate that foreign-born noncitizen Latinos graduate from post-secondary institutions at the same rate as U.S.-born Latinos (Flores 2010b, 271). Ideally,

the completion rate of Hispanics would be used to estimate the number of affidavit students that will graduate from the colleges and universities in which they were enrolled in FY 2010. However, even if the number of students who will not complete their course of study is calculated, it is not possible to determine at what point in their education these students will dropout. Without this information, it is not possible to adequately adjust costs and benefits to account for the length of time that these students participated in higher education. Therefore, the study assumes that students enrolled in a two-year college will complete two years of additional education. Correspondingly, it assumes that the students enrolled in a university complete four years of study. Calculations will also be based on the assumption that every student earns either an associate's or bachelor's degree. This could lead to a slight overestimation of benefits.

In addition, the Coordinating Board published information regarding the number of affidavit students that were awarded financial aid in FY 2010 (Texas Higher Education Coordinating Board 2011, 2). However, there are no data regarding the rate at which affidavit students apply for financial aid. Therefore, the study assumes that all affidavit students apply for financial aid each year they are enrolled in a post-secondary institution in order to avoid underestimating costs. However, this could lead to inflated estimates of administrative costs.

Finally, data regarding the number of affidavit students who work while in school are not available. Consequently, the study makes the assumption that ISRT students do not work while enrolled to generate estimates of the opportunity costs associated with forgoing work to pursue post-secondary education. However, it is common for students to

work at least part-time during college. Therefore, this assumption could result in an overestimation of the cost associated with forgone earnings.

Calculations of the costs and benefits of HB 1403 are based on these assumptions. This chapter outlines the methodology used to estimate each cost and benefit associated with the ISRT policy. **Table 3.1** summarizes the operationalization of benefits and costs.

Table 3.1: Conceptual Framework for Operationalizing Benefits and Costs	
Costs:	Measurement:
The cost of lost tuition revenue	<p>Students attending two-year institutions: Lost tuition revenue will be calculated by finding the difference between the average out-of-state tuition and the average in-state tuition for each type of two-year institution. The difference between out-of-state and out-of-district tuition will be used for community colleges. The difference will be multiplied by the number of non-ISRT students enrolled in each type of two-year institution.</p> <p>Students attending universities: Lost tuition revenue will be calculated by finding the difference in the average out-of-state tuition and the average in-state tuition at public universities. The difference will be multiplied by the number of non-ISRT students enrolled in public universities.</p>
Administrative costs of running and monitoring the program	The minutes spent processing an HB1403 financial aid application at the University of Texas will be divided by the number of work minutes per year to find the percentage of time spent per year processing an affidavit student's financial aid application. This percentage will be multiplied by the average annual salary of a financial aid counselor to determine the cost of processing an affidavit student's financial aid application. This same amount will be used as a proxy for the cost of processing an affidavit student's admission application.
Opportunity Cost	<p>Students attending two-year institutions The number of ISRT students enrolled in two-year colleges will be multiplied by the mean annual earnings for Hispanic high school graduates between the ages of 18 and 24 to determine the total annual earnings lost.</p> <p>Students attending universities: The estimated number of ISRT students enrolled in four-year universities will be multiplied by the mean annual earnings for Hispanic high school graduates between the ages of 18 and 24 to determine the total annual earnings lost for four-year students.</p>

Benefits:	Measurement:
Increased wages	<p>Students attending two-year institutions: The difference in average annual income for Hispanic high school graduates and Hispanics with associate's degrees will be calculated for 10-year periods until the age of 65 to estimate increased earnings over the work life.</p> <p>Students attending universities: The difference in average annual income for Hispanic high school graduates and Hispanics with bachelor's degrees will be calculated for 10-year periods until the age of 65 to estimate increased earnings over the work life.</p>
Reduction in incarceration costs	<p>Students attending two-year institutions: The average incarceration rate for Hispanic males and females will be reduced by 0.2 percent and multiplied by the number of ISRT students enrolled in two-year institutions in order to estimate benefits.</p> <p>Students attending universities: The average incarceration rate for Hispanic males and females will be reduced by 0.4 percent and multiplied by the number of ISRT students enrolled in four-year universities in order to estimate benefits.</p>
Reduction in public healthcare spending	<p>Students attending two-year institutions: The difference between the average amount of public healthcare received by Hispanic high school graduates and individuals with some college will be used to estimate benefits.</p> <p>Students attending universities: The difference between the average amount of public healthcare received by Hispanic high school graduates and college graduates will be used to estimate benefits.</p>

Operationalization of Costs

Calculation of Lost Tuition Revenue

Post secondary institutions receive tuition money from students as well as formula funding appropriations from the state to provide services to students. Ideally, both the state appropriation per full-time student equivalent and the difference between resident and nonresident tuition per student would be used to calculate the costs incurred in educating affidavit students. However, higher education funding is complex. Had the FY 2010 ISRT students not enrolled, the state appropriation per student might have been different. Thus, it cannot be said with certainty that state higher education appropriations

increased as a result of the enrollment of this student population. Therefore, the most reliable method for calculating the additional education-related costs incurred as a result of HB 1403 is to calculate the revenue lost by allowing non-ISRT students to pay lower tuition.

Out-of-state students pay tuition that is significantly higher than that paid by state residents. Before HB 1403 was passed, undocumented students had to pay the higher out-of-state tuition rates for public colleges and universities. This discouraged many of these students from participating in post-secondary education. Nevertheless, some undocumented students still attended public colleges and universities paying the higher tuition; as noted above, these students are referred to as non-ISRT students in this study. The passage of HB 1403 allowed these non-ISRT students to pay reduced tuition. Therefore, colleges and universities lost revenue for each of these students. The magnitude of the tuition revenue lost can be calculated using estimates of the number of non-ISRT students and the difference between resident and non-resident tuition at each type of institution.

Data obtained from the Coordinating Board provide the total number of affidavit students that enrolled in four-year universities and all types of two-year colleges, including community, state, and technical colleges in FY 2010. Estimates of the revenue lost for non-ISRT students enrolled in public technical colleges and state colleges will be calculated using the same process. The average resident tuition will be subtracted from the average non-resident tuition for academic years 2009–10 and 2010–11 to determine the revenue lost per non-ISRT student. To calculate the total tuition revenue lost during each year of study, the tuition lost per non-ISRT student each year will be multiplied by

estimates of the number of non-ISRT affidavit students attending each type of institution calculated at policy effects 1.54 and 2.33.

Community colleges use different criteria to determine how much tuition a student must pay. State residents that live within a community college's taxing district pay in-district tuition, which is the least expensive. State residents that live outside of a community college's taxing district pay out-of-district tuition, which is higher. However, students that are not residents of the state pay out-of-state, or nonresident tuition, which is the most costly. The number of affidavit students paying in-district versus out-of-district tuition is unknown. Since out-of district tuition is more expensive, this amount will be used in calculating lost tuition revenue to avoid over estimating costs. To determine the revenue lost for each non-ISRT student that enrolled in a community college in FY 2010, the average out-of-district tuition will be subtracted from the average non-resident tuition for academic years 2009–10 and 2010–11. To calculate the total tuition revenue lost during each year of study, the annual tuition lost per student will be multiplied by estimates of the number of non-ISRT affidavit students attending community colleges calculated at policy effects 1.54 and 2.33.

For four-year universities, the average resident tuition will be subtracted from the average non-resident tuition for each academic year from 2009–10 to 2012–13 to determine the revenue lost per non-ISRT student during each of these years. To calculate the total tuition revenue lost during each year of study, the annual tuition lost per student will be multiplied by estimates of the number of non-ISRT affidavit students attending public universities calculated at policy effects 1.54 and 2.33.

Calculation of Additional Administrative Costs

Colleges and universities incur additional administrative costs because HB 1403 results in a greater workload for admissions and financial aid staff. As a result of HB 1403, ISRT students apply for admission and financial aid that would not have done so otherwise. In addition, non-ISRT students who would have attended a college or university and paid out-of-state tuition now qualify for Texas resident tuition and state financial aid. Thus, calculations of additional administrative costs will be based on the total number of affidavit students.

Due to the special circumstances of these individuals, affidavit students must complete additional paperwork that has to be processed by hand. For example, each student must complete an affidavit stating that they will apply for permanent resident status as soon as they are able to do so. In addition, affidavit students applying for financial aid cannot use the online FAFSA application because they lack social security numbers. Consequently, they must fill out a paper copy of the FAFSA or the TAFSA and submit it to colleges and universities (The University of Texas Office of Student Financial Services 2012).

The additional paperwork required of affidavit students results in a greater administrative workload for post-secondary institutions. Therefore, the law represents an unfunded mandate for colleges and universities, which have to devote additional resources to processing these applications. In order to conduct a complete cost-benefit analysis of this legislation, it is necessary to quantify and monetize the additional time spent by these institutions processing both the financial aid and admissions applications of undocumented students.

Data regarding the average time required to process admissions and financial aid applications for undocumented students are not reported by post-secondary institutions. Therefore, the study uses information obtained through interviews with representatives from the Office of Student Financial Services at The University of Texas at Austin to generate estimates. Staff from the Office of Student Financial Services reported that during the peak processing period, the financial aid counselor trained in working with affidavit students is assisted in processing their applications by two additional financial aid counselors, one administrative assistant, and a work study student. However, all of these individuals have responsibilities and perform many tasks that are not associated with HB 1403 (The University of Texas at Austin Office of Student Financial Services 2012). Therefore, their full pay cannot be used to monetize costs. In addition, each of these individuals works on specific steps involved in processing one affidavit student application in order to expedite the process. However, if turnaround time for processing applications was not a concern, this work could be completed entirely by the counselor trained in working with affidavit students. Therefore, the average salary of one financial aid counselor will be used as the basis for estimating the administrative costs associated with HB 1403.

Since applications for admissions and financial aid are submitted only once per year, the number of minutes spent processing the financial aid application of an affidavit student will be divided by the total number of minutes worked by the financial aid counselor in a year. This will determine the percentage of time spent annually processing one affidavit student financial aid application. The percentage will then be multiplied by the financial aid counselor's salary. This will give an estimate of the money spent by an

institution in one year to process the financial aid application of an affidavit student. Since data regarding additional time required to process admissions applications could not be obtained, additional financial aid costs per student will be used as a proxy.

Before beginning post-secondary study, most students apply to more than one college or university. Therefore, to calculate more reliable estimates of additional administrative expenditures attributable to HB 1403 during the FY 2010 cohort's first year of enrollment, the cost of processing each affidavit student's financial aid and admissions applications will be multiplied by the average number of colleges and universities entering college freshmen apply to. This will yield an estimate of the additional administrative costs for financial aid and admissions per affidavit student during their first year of enrollment. To calculate the total additional costs incurred during the FY 2010 cohort's first year of enrollment, the total number of affidavit students will multiply admissions and financial aid expenses per student. The total number of affidavit students is used because both ISRT and non-ISRT students must fill out additional paperwork.

Since students apply for admissions only once, the additional administrative costs incurred during the second year of enrollment will be based solely on financial aid expenditures. In addition, by the second year of enrollment, students have already chosen the college or university they will attend. As a result, submission of applications to multiple institutions does not have to be considered. Therefore, to determine total additional administrative costs during this year, the number of affidavit students will be multiplied by the financial aid processing cost per student. For years three and four, students in the FY 2010 cohort that enrolled in two-year colleges will have already

graduated. Therefore, additional administrative costs for each of these years will be calculated by multiplying the financial aid processing cost per student by the number of affidavit students enrolled in public universities.

Calculation of Lost Earnings

Students that would not have participated in higher education in the absence of HB 1403, referred to as ISRT students, would have probably joined the workforce and started earning income. Therefore, cost calculations will be based on the number of ISRT students enrolled in two-year and four-year institutions. Estimates of the opportunity cost of earnings forgone by ISRT students during their enrollment will be calculated at policy effects 1.54 and 2.33. Calculations will use the 2010 mean annual earnings for Hispanic high school graduates between the ages of 18 and 24 as reported in the U.S. Census Bureau Current Population Survey, 2011 Annual Social and Economic Supplement.

For estimates based on an effect of 1.54, ISRT students will be divided into two groups: those enrolled in two-year colleges and those in four-year universities. The number of ISRT students enrolled in two-year colleges will be multiplied by the mean annual earnings for Hispanic high school graduates between the ages of 18 and 24 to determine the total annual earnings lost. The estimated number of ISRT students enrolled in four-year universities will then be multiplied by the mean annual earnings for Hispanic high school graduates between the ages of 18 and 24 to determine the total annual earnings lost for four-year students.

To generate estimates based on an effect of 2.33, ISRT students will again be divided into two groups: those enrolled in two-year colleges and those in four-year universities. The estimated number of ISRT students enrolled in two-year colleges will be

multiplied by the mean annual earnings for Hispanic high school graduates between the ages of 18 and 24 to determine the total annual earnings lost for two-year students. Next, the number of four-year students will be multiplied by the mean annual earnings for Hispanic high school graduates between the ages of 18 and 24 to determine the income lost each year this group of students was enrolled in college.

Operationalization of Benefits

Calculation of Additional Wages Earned

Education is a form of human capital investment. Research has demonstrated that an increase in an individual's educational attainment leads to increased wages. Therefore, a reliable cost-benefit analysis of HB 1403, which results in more education for more young adults, must include estimates of the additional wages that will be earned as a result of the increased investment in education. In order to generate this estimate, ISRT students will again be divided into two groups: those attending two-year colleges and those attending four-year universities. The number of non-ISRT students will be excluded from these calculations because these students would have enrolled in a post-secondary institution regardless of whether HB 1403 had been passed. Consequently, the benefits that result from their participation in higher education cannot be attributed to the ISRT policy.

The average annual earnings for Hispanic high school graduates will be used to estimate the additional wages earned by ISRT students who complete two-year and four-year programs of study. The data required for these calculations will be obtained from the U.S. Census Bureau Current Population Survey, 2011 Annual Social and Economic

Supplement. Calculations of increased earnings in this study are based on mean earnings in 2010.

Average annual earnings for Hispanics with high school diplomas will be used as a baseline for calculating additional income earned by individuals with associate's degrees. Mean increased earnings will be calculated for five different age ranges. The average earnings of a Hispanic high school graduate during five ten-year age ranges will be subtracted from the mean earnings of Hispanics with an associate's degree in the corresponding age range. This will provide an estimate of the additional income earned by Hispanics with an associate's degree during each year included in the age range.

This process will be used to find the average additional earnings for Hispanics with associate's degrees in the following age ranges: 18 to 24 years, 25 to 34 years, 35 to 44 years, 45 to 54 years, and 55 to 64 years. After the increased annual earnings for each age range is calculated, the additional income earned per person will be multiplied by the number of ISRT students enrolled in a two-year college estimated at policy effects 1.54 and 2.33. This will generate estimates of the total additional income earned each year by two-year students in the FY 2010 cohort. Adding the additional income for each year during the work life gives the total additional income earned by these students.

Average annual earnings for Hispanics with high school diplomas will also be used as a baseline for calculating the additional income earned by Hispanics with bachelor's degrees. The average earnings of a Hispanic high school graduate during five ten-year age ranges will be subtracted from the mean earnings of Hispanics with a bachelor's degree in the corresponding age range. This provides an estimate of the

additional income earned by Hispanics with a bachelor's degree during each year included in the age range.

This process will be used to find the average additional earnings for Hispanics with bachelor's degrees in the following age ranges: 18 to 24 years, 25 to 34 years, 35 to 44 years, 45 to 54 years, and 55 to 64 years. After the increased annual earnings for each age range is calculated, the additional income earned per person will be multiplied by the number of ISRT students enrolled in four-year universities estimated at policy effects 1.54 and 2.33. This will generate estimates of the total additional income earned each year by four-year students in the FY 2010 cohort. Adding the additional income for each year during the work life gives the total additional income earned by these students.

Calculation of Reduced Incarceration Costs

The incarceration rate for Hispanics age 18 and up will be used to estimate the number of ISRT students that will avoid incarceration as a result of being able to participate in post-secondary education. Lochner and Moretti found that an additional year of education results in a 0.10 percent reduction in the probability of incarceration for Whites, and a 0.37 percent reduction for Blacks (Lochner and Moretti 2004, 157). Since the reduction in the incarceration rate for Hispanics was not included in the study, the rate for Whites will be used to make a more conservative estimate. The number of students who avoid incarceration will be estimated independently for ISRT students enrolled in two-year colleges and four-year universities. The number of non-ISRT students will be excluded from these calculations because these students would have enrolled in a post-secondary institution regardless of whether HB 1403 had been passed. Consequently, the

benefits that result from their participation in higher education cannot be attributed to the ISRT policy.

To estimate the number of ISRT students who will avoid incarceration as a result of HB 1403, the number of students who would have been incarcerated if the legislation were not enacted must be calculated. This is done by multiplying the number of ISRT students that enrolled in a two-year college in FY 2010, calculated at policy effects of 1.54 and 2.33, by the incarceration rate for Hispanics. The number of two-year ISRT students in the FY 2010 cohort that will avoid incarceration as a result of the bill can then be calculated.

Since each additional year of education results in a 0.10 percent reduction in incarceration rates, the Hispanic incarceration rate will be reduced by 0.20 to reflect the impact of two additional years of education. The number of ISRT students who enrolled in a two-year college in FY 2010, calculated at policy effects 1.54 and 2.33, will be multiplied by the reduced incarceration rate to estimate the number of students who will be incarcerated despite completing two additional years of education. This number will be subtracted from the number of students who would have been incarcerated if HB 1403 were not in effect. This provides an estimate of the number of two-year ISRT students in the FY 2010 cohort who will avoid incarceration as a result of being able to participate in post-secondary education.

It is necessary to monetize the estimated reduction in incarcerations. To do this the number of two-year ISRT students in the FY 2010 cohort who will avoid incarceration as a result of HB 1403 will be multiplied by the average annual cost of

incarceration per inmate. The savings will be discounted over the average time served by offenders in Texas for all crime types (violent, property, and drug).

To estimate the number of ISRT students in the FY 2010 cohort who will avoid incarceration as a result of enrolling in a four-year institution, the number of students who would have been incarcerated if the legislation were not enacted must be calculated. Multiplying the number of ISRT students who enrolled in a four-year university in FY 2010, calculated at policy effects 1.54 and 2.33, by the incarceration rate for Hispanics does this. The number of four-year ISRT students in the FY 2010 cohort that will avoid incarceration as a result of the ISRT policy can then be calculated.

Since each additional year of education results in a 0.10 percent reduction in incarceration rates, the Hispanic incarceration rate will be reduced by 0.40 to reflect the impact of four additional years of education. The number of ISRT students who enrolled in a four-year university in FY 2010, estimated at policy effects 1.54 and 2.33, will be multiplied by the reduced incarceration rate to estimate the number of students who will be incarcerated despite completing four additional years of education. This number will be subtracted from the number of students who would have been incarcerated without HB 1403. This will provide an estimate of the number of the four-year ISRT students in the FY 2010 cohort who will avoid incarceration as a result of the ISRT policy.

It is necessary to monetize the estimated reduction in incarcerations for these students. This will be done by multiplying the number of four-year ISRT students in the FY 2010 cohort who will avoid incarceration as a result of HB 1403 by the average annual cost of incarceration per inmate. The savings will be discounted over the average time served by offenders in Texas for all crime types.

Calculation of the Reduction in Public Healthcare Spending

Education literature has demonstrated that an inverse relationship exists between an individual's degree of educational attainment and the amount of public healthcare that she or he requires. Levin et al. calculated the total present value lifetime public healthcare costs per capita by level of education, race, and gender using a discount rate of 3.5 percent over an estimated work life of 45 years. Per capita costs include both Medicaid and Medicare spending (Levin et al. 2007, 12). So that the final cost-benefit analysis can be calculated using both discount rates of 3.5 percent and 7 percent, the future value of lifetime public healthcare costs for Hispanics by level of education will be calculated using the following formula:

$$FV(\text{Future Value}) = PV(1+r)^n$$

where *PV* is the present value, *r* represents the discount rate, and *n* equals the number of years in the future over which the costs or benefits will occur (Galambos and Schreiber 1978, 68). After calculating the future values, the per capita expenditures for Hispanic males and Hispanic females at each level of educational attainment will be averaged. The average per capita lifetime public health costs for Hispanics at each level of education will be used to determine the reduction in healthcare spending per ISRT student. The number of non-ISRT students will be excluded from these calculations because these students would have enrolled in a post-secondary institution regardless of whether HB 1403 had been passed. Consequently, the benefits that result from their participation in higher education cannot be attributed to the ISRT policy.

The public healthcare savings for each ISRT student that enrolled in a two-year college in FY 2010 will be calculated by subtracting the average future value lifetime per capita public healthcare costs for Hispanics with some college from that of Hispanic high school graduates. The difference will then be multiplied by the total number of ISRT students, calculated at policy effects 1.54 and 2.33, who enrolled in a two-year institution in FY 2010. This will give estimates of the total healthcare savings attributable to these students.

The public healthcare savings for each ISRT student that enrolled in a four-year university in FY 2010 will be calculated by subtracting the average future value lifetime per capita public healthcare costs for Hispanics with a bachelor's degree or above from that of Hispanic high school graduates. The difference will be multiplied by the total number of students who enrolled in a four-year institution in FY 2010 estimated at effects 1.54 and 2.33. This will provide estimates of the total healthcare savings attributable to these students. The present value of estimated reductions in healthcare spending for both groups of ISRT students will then be calculated using discount rates of 3.5 percent and 7 percent. A seven percent discount rate was chosen because it is the rate recommended by the Office of Management and Budget for conducting cost-benefit analyses (Office of Management and Budget 2012, 9).

Chapter Four

Findings

Calculation of the Number of ISRT and Non-ISRT Students

In FY 2010, there were 16,476 students that met the statutory requirements allowing them to qualify for in-state tuition at Texas public institutions of higher education (Texas Higher Education Coordinating Board 2011, 2). The number of affidavit students enrolled in public universities or two-year colleges was 16,431. Of these, 4,403 students enrolled in public universities. The remaining 12,028 students enrolled in two-year colleges (Texas Higher Education Coordinating Board 2011, 2). Information provided by the Coordinating Board indicated that 11,843 of these students enrolled in community colleges, 14 enrolled in state colleges, and 171 enrolled in technical colleges. This report uses these numbers as the basis for cost-benefit calculations.

However, to accurately calculate the costs and benefits of the policy, some calculations require that an estimate of the number of ISRT or non-ISRT students be used. In this study, the term ISRT student refers to a student who enrolled in a post-secondary institution as a result of the ISRT policy and who would not have done so otherwise. Non-ISRT is used to refer to students who would have enrolled even without the policy, paying out-of-state tuition. Flores's study of ISRT policies in nine states found that FBNC Latinos are 1.54 time more likely to enroll in post-secondary institutions in these states than in those without such policies (Flores 2010b, 260). This number was

used to calculate a lower-bound estimate of the effect of the policy. Estimates of the number of non-ISRT students were calculated using the following formula:

$$A = X(1+M)$$

where A is equal to the number of affidavit students enrolling a certain type of post-secondary institution in FY 2010, X is equal to the number of non-ISRT students, and M equals the magnitude of the policy effect.

Using a policy effect of 1.54, this equation was used to determine the number of ISRT and non-ISRT students that enrolled in each type of institution in FY 2010. The results are summarized in **Figure 4.1** below.

Figure 4.1: Estimate of the Effect of HB 1403 on Post-Secondary Enrollment in FY 2010 (Effect=1.54)			
	Total Number of Affidavit Students in FY 2010	Estimated Non-ISRT Enrollment	Estimated ISRT Enrollment
All Two-Year Colleges	12,028	4,735	7,293
Community Colleges	11,843	4,663	7,180
State Colleges	14	6	8
Technical Colleges	171	67	104
Four-Year Universities	4,403	1,733	2,670

A second study conducted by Flores focused specifically on the effects of HB 1403 on the enrollment rates of FBNC Latinos in Texas. The study found that the policy had an effect of 2.33 (Flores 2010a, 446). Plugged into the above equation, this number gave an upper bound estimate of the effect of the policy. Estimates of ISRT and non-ISRT student enrollment calculated at a policy effect of 2.33 are displayed in **Figure 4.2**.

Figure 4.2: Estimate of the Effect of HB 1403 on Post-Secondary Enrollment in FY 2010 (Effect=2.33)

	Total Number of Affidavit Students in FY 2010	Estimated Non-ISRT Enrollment	Estimated ISRT Enrollment
All Two-Year Colleges	12,028	3,612	8,416
Community Colleges	11,843	3,556	8,287
State Colleges	14	4	10
Technical Colleges	171	51	120
Four-Year Universities	4,403	1,322	3,081

The number of ISRT and non-ISRT students presented in Figures 4.1 and 4.2 are used to calculate the costs and benefits of HB 1403. Enrollment estimates generated using a policy effect of 1.54 are used to calculate a lower-bound estimate of net benefits. Those generated using a policy effect of 2.33 are used to calculate an upper-bound estimate of net benefits.

Calculation of Costs

Calculation of Lost Tuition Revenue

To calculate the tuition revenue lost for the FY 2010 cohort, affidavit students were first divided into two groups: those attending public universities and those attending two-year colleges. The Coordinating Board provided information regarding average tuition rates at Texas public institutions of higher education for academic years 2009–10 to 2012–13. Average resident and non-resident tuition was broken down by institution type (community colleges, state colleges, public technical colleges, and four-year universities).

The average resident tuition was subtracted from the average non-resident tuition at public universities for each academic year from 2009–10 to 2012–13 to determine the revenue lost each year per non-ISRT student. To calculate the total tuition revenue lost during each year of study, the annual tuition lost per non-ISRT student was multiplied by

estimates of the number of non-ISRT affidavit students calculated using policy effects of 1.54 and 2.33. Estimates of tuition revenue lost annually for both policy effect magnitudes can be found in **Appendix A**.

The revenue lost each year was summed to give upper- and lower-bound estimates of total tuition revenue lost at public universities for the FY 2010 cohort. Using a policy effect of 1.54, an estimated \$65,777,748 in tuition revenues was lost to public universities as a result of the reduction in tuition given to non-ISRT affidavit students. When the estimate of non-ISRT students was based on an effect of 2.33, lost tuition revenues totaled \$50,177,832.

The average resident tuition was subtracted from the average non-resident tuition at state colleges for academic years 2009–10 and 2010–11 to determine the revenue lost per non-ISRT student. To calculate the total tuition revenue lost during each year of study, the annual tuition lost per non-ISRT student was multiplied by estimates of the number of non-ISRT affidavit students calculated using policy effects of 1.54 and 2.33. Estimates of tuition revenue lost annually for both policy effect magnitudes can be found in **Appendix A**.

The revenue lost each year was summed to give upper- and lower-bound estimates of total tuition revenue lost at state colleges for the FY 2010 cohort. Using a policy effect of 1.54, an estimated \$102,690 in tuition revenues was lost as a result of the reduction in tuition given to non-ISRT affidavit students. When the estimate of non-ISRT students was based on an effect of 2.33, lost tuition revenues equaled \$68,460.

For public technical colleges, the average resident tuition was subtracted from the average non-resident tuition for academic years 2009–10 and 2010–11 to determine the

revenue lost per non-ISRT student. The total tuition revenue lost during each year of study was calculated by multiplying the annual tuition lost per non-ISRT student by estimates of the number of non-ISRT affidavit students calculated using policy effects of 1.54 and 2.33. Estimates of tuition revenue lost annually for both policy effect magnitudes can be found in **Appendix A**.

The revenue lost each year was summed to give upper- and lower-bound estimates of total tuition revenue lost at public technical colleges for the FY 2010 cohort. Using a policy effect of 1.54, an estimated \$493,991 in tuition revenues was lost as a result of the reduction in tuition given to non-ISRT affidavit students. When the estimate of non-ISRT students was based on an effect of 2.33, lost tuition revenues were \$376,023.

Community colleges base tuition on in-district, out-of-district, and out-of-state residency. The number of affidavit students paying in-district versus out-of-district tuition is unknown. Since out-of district tuition is more expensive, this amount was used in calculating lost tuition revenue to avoid over estimating costs. To determine the revenue lost for each non-ISRT student that enrolled in a community college in FY 2010, the average out-of-district tuition was subtracted from the average non-resident tuition for academic years 2009–10 and 2010–11. To calculate the total tuition revenue lost during each year of study, the annual tuition lost per non-ISRT student was multiplied by estimates of the number of non-ISRT affidavit students calculated using policy effects of 1.54 and 2.33. Estimates of tuition revenue lost annually for both policy effect magnitudes can be found in **Appendix A**.

The revenue lost each year was added to give upper- and lower-bound estimates of the total tuition revenue lost at community colleges for the FY 2010 cohort. Using a policy effect of 1.54, an estimated \$16,008,079 in tuition revenues was lost as a result of the reduction in tuition given to non-ISRT affidavit students. When the estimate of non-ISRT students was based on an effect of 2.33, lost tuition revenues totaled \$12,207,748. **Figure 4.3** summarizes the tuition revenue lost for the FY 2010 cohort by policy effect magnitude and institution type.

Figure 4.3: Tuition Revenue Lost for Non-ISRT Students in FY 2010 Cohort					
	Public Universities	State Colleges	Public Technical Colleges	Community Colleges	All Public Postsecondary Institutions
Policy Effect 1.54	\$65,777,748	\$102,690	\$493,991	\$16,008,079	\$82,382,508
Policy Effect 2.33	\$50,177,832	\$68,460	\$376,023	\$12,207,748	\$62,830,063

Based on a policy effect of 1.54, a total of \$82,382,508 in tuition revenue was lost as a result of lowering tuition rates for non-ISRT affidavit students in the FY 2010 cohort. Using a policy effect of 2.33, public colleges and universities lost \$62,830,063 in tuition revenues from non-ISRT affidavit students.

Calculation of Additional Administrative Costs

Calculating the administrative costs associated with HB 1403 requires information regarding time spent processing paperwork for affidavit students. Estimates of the additional time required to process the financial aid applications of affidavit students were obtained through interviews with financial aid staff from the Office of Student Financial Services at The University of Texas at Austin. Because affidavit students use paper applications, a financial aid counselor has to first confirm that each

student has been admitted to the university and that they have a status indicating that they are eligible for financial aid. This takes about one minute per student.

After confirming an affidavit student's eligibility and admission status, a financial aid counselor has to set up an electronic file to hold each student's information. This takes about two minutes per student. Next, all information from the paper applications has to be input into an Excel spreadsheet to keep track of student data in case the hard copy is lost. This step requires about 10 minutes per student. These files are then reviewed for any red flags or missing information. This takes about 5 minutes per student.

These estimates are very conservative. If information is missing from a student's application, the financial aid counselor must email the student and request that additional information or documentation be sent. This process may require a series of correspondences and take a substantial amount of time. However, financial aid counselors were not able to give an estimate of the additional time required to obtain missing information because it varies greatly per case and is not necessary for all affidavit students. In addition, financial aid counselors reported that a significant, although unquantifiable, amount of time is also spent assisting affidavit students with the application process and maintaining electronic databases to ensure that all information is up to date.

For each affidavit student that is awarded financial aid, a financial aid counselor creates a code for the student, determines what grade and school they are in, and creates a budget for them. This step takes 1 minute per student. For awarding aid, it takes at least another 5 minutes per student to verify their eligibility for specific awards and to award

aid. Although these additional six minutes of work only apply to students who are awarded financial aid, they will be included in the estimate of additional administrative time required to process financial aid applications for all affidavit students in order to help offset the exclusion of the time required to assist these students in the application process and to obtain data missing from some students' applications.

The information provided by financial aid staff at The University of Texas at Austin was used to calculate a conservative estimate of 25 additional minutes required to process each affidavit student's financial aid application. The number of minutes worked annually by a financial aid counselor was calculated based on a 250-day work year (Galambos and Schreiber 1978, 64). A financial aid counselor works 120,00 minutes a year. Dividing 25 by 120,000 indicated that 0.02 percent of a financial aid counselor's time is spent processing 1 affidavit application. Multiplying this percentage by the average salary of a counselor, about \$32,000, indicates that an additional \$6.67 in financial aid administrative costs are required per affidavit student. Since data regarding the additional time required to process admissions applications could not be obtained, additional financial aid costs per student will be used as a proxy.

Administrative costs for students in the FY 2010 cohort must be calculated separately for each year because the expenditures required and the number of students enrolled varies. Research indicates that the average US student applies to 3.16 colleges or universities (Smith 2011, 4). Therefore, to calculate more reliable estimates of additional administrative expenditures during the FY 2010 cohort's first year of enrollment, 3.16 will be multiplied by \$6.67, the cost of processing each affidavit student's financial aid and admissions applications. According to this calculation, it costs \$21.07 additional

dollars to process an affidavit student's financial aid applications for their first year of college or university. It also costs an additional \$21.07 to process their admissions applications.

To calculate the total additional administrative costs incurred during the first year of enrollment, the admissions and financial aid expenses will be multiplied by the total number of affidavit students. For the FY 2010 cohort's first year of post-secondary study, colleges and universities spent an estimated \$346,201 in additional financial aid administrative costs. Likewise, these institutions spent an estimated \$346,201 in additional admissions administrative costs.

Students apply for admissions only once but they must submit an application for financial aid each year they are enrolled. Therefore, the additional administrative costs incurred during the second year of enrollment for the FY 2010 cohort will be based solely on financial aid expenditures. In addition, by their second year of study students have already chosen the college or university they will attend. Consequently, submission of applications to multiple institutions does not have to be considered. Therefore, to determine additional administrative costs incurred for affidavit students during this year, the financial aid processing cost per student, \$6.67, was multiplied by the total number of affidavit students. An estimated \$109,595 in additional administrative costs was spent for the FY 2010 cohort in the 2010–11 academic year.

For years three and four, students in the FY 2010 cohort that enrolled in two-year colleges will have already graduated. Therefore, additional administrative costs for each of these years will be calculated by multiplying the financial aid processing cost per student, \$6.67, by the number of affidavit students enrolled in public universities, 4,403.

According to this calculation, \$29,368 in additional administrative costs was spent in both academic years 2011–12 and 2012–13. **Figure 4.4** shows the additional administrative costs incurred each year by public colleges and universities for the FY 2010 cohort of affidavit students. The figure uses parentheses to indicate the position of estimated admissions and financial aid administrative costs in the final cost-benefit analysis.

Figure 4.4: Calculation of Additional Administrative Costs			
Year	Additional Administrative Costs (Admissions)	Additional Administrative Costs (Financial Aid)	Total Additional Administrative Costs
2009-10	\$346,201 (E1)	\$346,201 (F1)	\$692,402
2010–11	\$0	\$109,595 (F2)	\$109,595
2011-12	\$0	\$29,368 (F3)	\$29,368
2012–13	\$0	\$29,368 (F4)	\$29,368
Total			\$860,733

During the first year of enrollment for the FY 2010 cohort, an additional \$692,402 in administrative costs is incurred. Colleges and universities spend an additional \$109,595 in year 2. Four-year university students require an additional \$29,368 in administrative expenditures in their third and fourth years of enrollment. All together, the additional administrative costs incurred for the FY 2010 cohort of affidavit students equal \$860,733.

Calculation of Earnings Forgone by ISRT Students

Estimates of earnings forgone by ISRT students during their enrollment were calculated using policy effects 1.54 and 2.33. Calculations used the 2010 mean annual earnings for Hispanic high school graduates between the ages of 18 and 24 reported in the U.S. Census Bureau Current Population Survey, 2011 Annual Social and Economic

Supplement (CPS). According to the CPS, the mean income for these individuals was \$15,373 (U.S. Census Bureau 2011a).

To estimate the loss of potential earnings using a policy effect of 1.54, ISRT students were first divided into two groups: those enrolled in two-year colleges and those in four-year universities. There were 7,293 ISRT students enrolled in two-year colleges. This number was multiplied by \$15,373 to determine the total earnings lost each year. It was found that \$112,115,289 in income was lost each year that this group of students was enrolled in college (Cost-Benefit Analysis G1-G2). Additionally, there were 2,670 ISRT students enrolled in four-year universities. The number of four-year ISRT students was also multiplied by \$15,373 to determine the total annual earnings lost for this group. Four-year students lost \$41,045,910 in income each year that they were enrolled in college (Cost-Benefit Analysis H1-H4). Consequently, using an effect of 1.54, a total of \$388,414,218 in potential earnings was lost for all ISRT students in the FY 2010 cohort of affidavit students during their enrollment.

ISRT students were again divided into two groups, those enrolled in two-year colleges and those in four-year universities, to generate estimates of potential earnings lost based on a policy effect of 2.33. There were 8,416 ISRT students enrolled in two-year colleges. This number was multiplied by \$15,373 to determine the total earnings lost annually by these students. Each year that these two-year ISRT students were enrolled in college, \$129,379,168 in earnings was lost (Cost-Benefit Analysis G1-G2). There were also 3,081 ISRT students enrolled in four-year universities. The number of four-year ISRT students was multiplied by \$15,373. Based on this calculation, \$47,364,213 in

income was lost each year that the four-year ISRT students were enrolled in college (Cost-Benefit Analysis H1-H4). As a result, using a policy effect of 2.33, a total of \$448,215,188 in potential earnings was lost for all ISRT students in the FY 2010 cohort of affidavit students during their enrollment.

Calculation of Benefits

Increased Earnings

This study bases calculations of increased earnings on information reported in the U.S. Census Bureau Current Population Survey, 2011 Annual Social and Economic Supplement. Average annual earnings for Hispanics with high school diplomas were used as a baseline for calculating additional income earned by individuals with associate's degrees. Mean increased earnings were calculated for five different age ranges. For example, in 2010 the average earnings of a Hispanic high school graduate age 18 to 24 were \$15,373 (U.S. Census Bureau 2011a). This was subtracted from the mean earnings of Hispanics 18 to 24 years old with an associate's degree. The average additional earnings for Hispanics with an associate's degree in this age range were \$4,785 a year. Thus, each year during this six-year age range, a Hispanic with an associate's degree would earn \$4,785 more than his high school graduate counterpart.

This process was also used to find the average additional annual earnings for Hispanics with associate's degrees in the following age ranges: 25 to 34 years, 35 to 44 years, 45 to 54 years, and 55 to 64 years. After the increased annual earnings for each age range were calculated, the magnitude of additional income was multiplied by the number of ISRT students enrolled in two-year colleges estimated at policy effects 1.54 and 2.33.

Total increased annual earnings calculated for ISRT students with an associate's degree are shown in **Figure 4.5**. The figure uses parentheses to indicate the position of estimated benefits in the final cost-benefit analysis.

Figure 4.5: Calculation of Additional Annual Earnings for Hispanics with an Associate's Degree							
Age Range	Mean Annual Earnings (High School Graduates)	Mean Annual Earnings (Associate's Degree)	Increased Annual Earnings	Effect 1.54 Estimated ISRT Enrollment	Effect 1.54 Total Increased Annual Earnings	Effect 2.33 Estimated ISRT Enrollment	Effect 2.33 Total Increased Annual Earnings
18 to 24 Years	\$15,373	\$20,158	\$4,785	7,293	\$34,897,005 (I3-I7)	8,416	\$40,270,560 (I3-I7)
25 to 34 Years	\$25,584	\$31,209	\$5,625	7,293	\$41,023,125 (I8-I17)	8,416	\$47,340,000 (I8-I17)
35 to 44 Years	\$30,133	\$41,405	\$11,272	7,293	\$82,206,696 (I18-I27)	8,416	\$94,865,152 (I18-I27)
45 to 54 Years	\$31,211	\$40,972	\$9,761	7,293	\$71,186,973 (I28-I37)	8,416	\$82,148,576 (I28-I37)
55 to 64 Years	\$29,721	\$34,946	\$5,225	7,293	\$38,105,925 (I38-I47)	8,416	\$43,973,600 (I38-I47)

Based on a policy effect magnitude of 1.54, the ISRT students in the FY 2010 cohort enrolled in two-year colleges will earn \$2,499,712,215 in additional income over their work life. Using a policy effect of 2.33, these individuals will earn a total of \$2,884,626,080 in additional income.

Average annual earnings for Hispanics with high school diplomas were also used as a baseline for calculating additional income earned by individuals with bachelor's degrees. Mean increased earnings were again calculated for five different age ranges. For example, in 2010 the average earnings of a Hispanic high school graduate age 18 to 24 were \$15,373. This was subtracted from the mean earnings of Hispanics 18 to 24 years old with bachelor's degrees. The average additional earnings for Hispanics with a bachelor's degree in this age range were \$8,698 a year. Thus, every year during this six-year age range, a Hispanic with a bachelor's degree earns \$8,698 more than his high school graduate counterpart.

This process was employed to find the average additional earnings for Hispanics with bachelor's degrees in the following age ranges: 25 to 34 years, 35 to 44 years, 45 to

54 years, and 55 to 64 years. Once the increased annual earnings for each age range were calculated, the magnitude of additional income was multiplied by the number of ISRT students enrolled in four-year universities estimated at policy effects 1.54 and 2.33. Total increased annual earnings calculated for ISRT students with a bachelor's degree are shown in **Figure 4.6**. The figure uses parentheses to indicate the position of estimated benefits in the final cost-benefit analysis.

Figure 4.6: Calculation of Additional Annual Earnings for Hispanics with a Bachelor's Degree							
Age Range	Mean Annual Earnings (High School Graduates)	Mean Annual Earnings (Bachelor's Degree)	Increased Annual Earnings	Effect 1.54 Estimated ISRT Enrollment	Effect 1.54 Total Increased Annual Earnings	Effect 2.33 Estimated ISRT Enrollment	Effect 2.33 Total Increased Annual Earnings
18 to 24 Years	\$15,373	\$24,071	\$8,698	2,670	\$23,223,660 (J5-J7)	3,081	\$26,798,538 (J5-J7)
25 to 34 Years	\$25,584	\$44,477	\$18,893	2,670	\$50,444,310 (J8-J17)	3,081	\$58,209,333 (J8-J17)
35 to 44 Years	\$30,133	\$56,310	\$26,177	2,670	\$69,892,590 (J18-J27)	3,081	\$80,651,337 (J18-J27)
45 to 54 Years	\$31,211	\$52,272	\$21,061	2,670	\$56,232,870 (J28-J37)	3,081	\$64,888,941 (J28-J37)
55 to 64 Years	\$29,721	\$49,100	\$19,379	2,670	\$51,741,930 (J38-J47)	3,081	\$59,706,699 (J38-J47)

Based on a policy effect magnitude of 1.54, the ISRT students in the FY 2010 cohort enrolled in four-year universities will earn \$2,352,787,980 in additional income over their work life. Using a policy effect of 2.33, these individuals will earn a total of \$2,714,958,714 in additional income.

Calculation of the Reduction in Public Healthcare Spending

Levin et al. calculated the total present value lifetime public healthcare costs per capita by level of education, race, and gender using a discount rate of 3.5 percent assuming a 45-year work life. Per capita costs include both Medicaid and Medicare spending (Levin et al. 2007, 12). This study used this information to calculate the future value of lifetime public health costs for Hispanics. After finding the future value of lifetime public health costs by level of education, the per capita expenditures for Hispanic males and females were averaged. Based on these results, \$123,437 in future value public

healthcare costs are spent for each high school graduate. Hispanics with some college receive public healthcare valued at \$85,348 over their work life, while Hispanics with a bachelor's degree or above receive \$19,750 in public healthcare. Based on spending for Hispanic high school graduates, \$38,089 are saved for each Hispanic with some college and \$103,687 are saved for each Hispanic university graduate.

The public healthcare savings for Hispanics with some college was multiplied by the number of ISRT students in the FY 2010 cohort that enrolled in two-year colleges as estimated at policy effects 1.54 and 2.33. **Figure 4.7** presents the total future value reduction in lifetime public healthcare costs for these students.

Figure 4.7: Reduction In Lifetime Public Health Costs for ISRT Students Enrolled in a Two-Year College in FY 2010						
Average Lifetime Public Health Costs for Hispanic High School Graduates	Average Lifetime Public Health Costs for Hispanics with Some College	Reduction in Public Health Costs for Students with Some College	<u>Effect 1.54</u> Estimated ISRT Enrollment	<u>Effect 1.54</u> Total Reduction in Public Health Costs	<u>Effect 2.33</u> Estimated ISRT Enrollment	<u>Effect 2.33</u> Total Reduction in Public Health Costs
\$123,437	\$85,348	\$38,089	7,293	\$277,783,837	8,416	\$320,557,902

Based on a policy effect magnitude of 1.54, these students will receive a total of \$227,783,837 less in public healthcare over their work life. This is equal to a present value reduction of \$59,073,300 based on a discount rate of 3.5 percent, or a reduction of \$13,226,258 based on a 7 percent discount rate (Cost-Benefit Analysis M48). Using a policy effect of 2.33, these individuals will receive \$320,557,902 less in public healthcare during their work life. The present value of reduced healthcare spending at this effect is \$68,169,600 when a discount rate of 3.5 percent is used and \$15,262,880 at a discount rate of 7 percent (Cost-Benefit Analysis M48).

To estimate the reduction in healthcare spending for four-year students, the public healthcare savings for Hispanics with bachelor's degrees was multiplied by the number of

ISRT students in the FY 2010 cohort that enrolled in universities as estimated at policy effects 1.54 and 2.33. **Figure 4.8** shows the total future value reduction in lifetime public healthcare costs for these students.

Figure 4.8: Reduction In Lifetime Public Health Costs for ISRT Students Enrolled in a Four-Year University in FY 2010						
Average Lifetime Public Health Costs for Hispanic High School Graduates	Average Lifetime Public Health Costs for Hispanics with Bachelor's Degrees	Reduction in Public Health Costs for Students with Bachelor's Degrees	<u>Effect 1.54</u> Estimated ISRT Enrollment	<u>Effect 1.54</u> Total Reduction in Public Health Costs	<u>Effect 2.33</u> Estimated ISRT Enrollment	<u>Effect 2.33</u> Total Reduction in Public Health Costs
\$123,437	\$19,750	\$103,687	2,670	\$276,844,306	3,081	\$319,459,666

Based on a policy effect magnitude of 1.54, the ISRT students in the FY 2010 cohort enrolled in four-year universities will receive \$276,844,306 less in public healthcare over their working life. This is equal to a present value reduction of \$58,873,500 based on a discount rate of 3.5 percent, or \$13,181,523 at a discount rate of 7 percent (Cost-Benefit Analysis N48). Using a policy effect of 2.33, these individuals will receive \$319,459,666 less in public healthcare over the course of their work life. The present value of reduced healthcare spending at this effect is \$67,936,050 when a discount rate of 3.5 percent is used and \$15,210,589 when a 7 percent discount rate is employed (Cost-Benefit Analysis N48).

Calculation of Reduced Incarceration Costs

According to the Pew Center on the States, 1 in 64 Hispanics age 18 and up was incarcerated as of midyear 2006 (Pew Center on the States 2008, 34). Thus, the incarceration rate for this population is 1.6 percent. Multiplying this rate times ISRT enrollment calculated at policy effects 1.54 and 2.33 provides an estimate of the number ISRT students that would have been incarcerated had they not benefitted from the in-state resident tuition policy. Using an effect of 1.54, it was found that 117 two-year college

ISRT students and 43 four-year university ISRT students would have been incarcerated without the policy. Calculations based on an effect of 2.33 indicated that 135 ISRT students in two-year institutions and 49 in four-year institutions would have been incarcerated without the policy.

Lochner and Moretti found that an additional year of education results in a 0.10 percent reduction in the probability of incarceration for Whites, and a 0.37 percent reduction for Blacks (Lochner and Moretti 2004, 157). Because the incarceration rate reduction for Hispanics was not included in the study, the rate for Whites will be used to make a more conservative estimate of benefits. The number of students who avoid incarceration will be estimated independently for ISRT students enrolled in two-year colleges and four-year universities

Estimates were first calculated for two-year institutions. Since each additional year of education results in a 0.10 percent reduction in incarceration rates, the Hispanic incarceration rate for two-year ISRT students is 1.4 percent, reflecting the impact of two additional years of education. Multiplying this rate times two-year college ISRT enrollment calculated at policy effects 1.54 and 2.33 provides an estimate of the number of students who will be incarcerated despite completing two additional years of education. Using an effect of 1.54, an estimated 102 two-year ISRT students in the FY 2010 cohort will be incarcerated. Thus, 15 individuals will avoid incarceration as a result of the two additional years of education afforded to them by the ISRT policy.

Calculations based on an effect of 2.33 indicated that 118 ISRT students in two-year institutions will be incarcerated, suggesting that 17 fewer persons will be incarcerated as a result of the policy.

To monetize the benefit of this decrease in incarcerations, the number of ISRT students who will avoid incarceration because of HB 1403 will be multiplied by the average annual incarceration cost per inmate. According to the Vera Institute of Justice, the average annual incarceration cost per inmate in Texas is \$21,390 (Vera Institute 2012, 1). **Figure 4.9** presents the annual reduction in incarceration costs for ISRT students enrolled in two-year colleges. The figure uses parentheses to indicate the position of estimated benefits in the final cost-benefit analysis.

Figure 4.9: Reduction In Incarceration Costs for ISRT Students in Two-Year Colleges in FY 2010					
Policy Effect	Reduction in Number of Incarcerations	Average Annual Cost Per Inmate	Annual Reduction in Incarceration Costs	Average Time Served	Total Reduction in Incarceration Costs
1.54	15	\$21,390	\$320,850 (K5-K7)	3	\$962,550
2.33	17	\$21,390	\$363,630 (K5-K7)	3	\$1,090,890

Based on a policy effect magnitude of 1.54, incarceration costs are reduced by \$320,850 annually as a result of the additional years of study obtained by two-year ISRT students. The average length of incarceration in Texas is approximately three years (Texas Department of Criminal Justice 2011, 3). When this is considered, the state saves a total of \$962,550 for these students. Using a policy effect of 2.33, incarceration costs are reduced by \$363,630 annually as a result of the ISRT policy and the total savings over three years is \$1,090,890.

Estimates of reduced incarceration costs were also calculated for four-year ISRT students. Since each additional year of education results in a 0.10 percent reduction in incarceration rates, the Hispanic incarceration rate for ISRT students enrolled in a public university is 1.2 percent, reflecting the impact of four additional years of education. Multiplying this rate times the number of four-year ISRT students in the FY 2010 cohort

calculated at policy effects 1.54 and 2.33 provides an estimate of the number of students who will be incarcerated despite completing four additional years of education. With a policy effect of 1.54, an estimated 32 four-year ISRT students will be incarcerated. Thus, 11 persons avoid incarceration as a result of the four additional years of education afforded to them by the ISRT policy. Calculations based on an effect of 2.33 indicated that 37 ISRT students that studied at four-year institutions will be incarcerated, suggesting that 12 fewer individuals will be incarcerated as a result of the policy.

To monetize the benefit of this decrease in incarcerations, the number of four-year ISRT students in the FY 2010 cohort who will avoid incarceration because of HB 1403 will be multiplied by \$21,390. **Figure 4.10** presents the annual reduction in incarceration costs for ISRT students in the FY 2010 cohort enrolled in four-year colleges. The figure uses parentheses to indicate the position of estimated benefits in the final cost-benefit analysis.

Figure 4.10: Reduction In Incarceration Costs for ISRT Students in Four-Year Universities in FY 2010					
Policy Effect	Reduction in Number of Incarcerations	Average Annual Cost Per Inmate	Annual Reduction in Incarceration Costs	Average Time Served	Total Reduction in Incarceration Costs
1.54	11	\$21,390	\$235,290 (L5-L7)	3	\$705,870
2.33	12	\$21,390	\$256,680 (L5-L7)	3	\$770,040

Based on a policy effect magnitude of 1.54, incarceration costs are reduced by \$235,290 annually as a result of the additional years of study obtained by these ISRT students.

Over the three-year average incarceration period, the state saves a total of \$705,870 for these students. Using a policy effect of 2.33, incarceration costs are reduced by \$256,680 annually as a result of the ISRT policy. The total savings over three years is \$770,040.

According to the demographic highlights published in the Texas Department of Criminal Justice's FY 2011 statistical report, the average time served in state prisons and jails is 2.8 years (Texas Department of Criminal Justice 2011, 3). Therefore, when conducting the cost-benefit analysis, annual incarceration savings will be included for three years. Information reported by the Pew Center on the States indicates that the incarceration rate among Hispanics is highest for individuals between the ages of 20 and 24 (Pew Center on the States 2008, 34). Consequently, annual savings will be included in the benefits accrued to ISRT students in the FY 2010 cohort at ages 22, 23 and 24.

Cost-Benefit Analysis Results

The costs and benefits outlined above were used to conduct a cost-benefit analysis of Texas's in-state resident tuition policy. Two separate analyses were conducted. The analyses were based on the two different estimates of the effect of ISRT policies on enrollment rates for undocumented students found in the studies conducted by Flores. A discount rate of 3.5 percent was used as the rate of return on public investment to be consistent with calculations of total present value lifetime public health costs used in this paper. In order to illustrate the sensitivity of the net present value to changes in the discount rate, present value calculations were also made using a discount rate of 7 percent. This rate was chosen because it is the rate recommended by the Office of Management and Budget for conducting cost-benefit analyses (Office of Management and Budget 2012, 9).

In the first analysis, a policy effect of 1.54 was used to estimate the costs and benefits of the ISRT policy. Using a discount rate of 3.5 percent, the present value of

costs for the FY 2010 cohort was \$456,031,060. The present value of benefits equaled \$2,328,419,697. Therefore, the net present value was \$1,872,388,637. When a discount rate of 7 percent was used, total present value costs of the program were \$441,898,971. The present value of benefits was \$1,210,359,752. Thus, the net present value was \$768,460,781. **Figure 4.11** summarizes the results of the cost-benefit analysis. The cost-benefit analyses calculated for a policy effect of 1.54 can be found in **Appendix B**.

Figure 4.11: Cost-Benefit Analysis Results				
	Policy Effect 1.54		Policy Effect 2.33	
Discount Rate	3.5%	7%	3.5%	7%
Present Value of Benefits	\$2,328,419,697	\$1,210,359,752	\$2,686,846,874	\$1,396,660,276
Present Value of Costs	\$456,031,060	\$441,898,971	\$495,316,544	\$480,301,995
Net Present Value	\$1,872,388,637	\$768,460,781	\$2,191,530,330	\$916,358,282

The second analysis used a policy effect of 2.33 to estimate the costs and benefits of the ISRT policy for the FY 2010 cohort of affidavit students. Using a discount rate of 3.5 percent, the present value of costs for the FY 2010 cohort was \$495,316,544. The present value of benefits equaled \$2,686,846,874. Therefore, the net present value equaled \$2,191,530,330. When a discount rate of 7 percent was used, total present value costs of the program were \$480,301,995 and the present value of benefits was \$1,396,660,276. Thus, the net present value was \$916,358,282. The cost-benefit analyses calculated for a policy effect magnitude of 2.33 can be found in **Appendix B**.

Chapter Five

Recommendations

The purpose of this paper was to objectively determine whether Texas's ISRT policy was cost effective. In order to achieve this, a cost-benefit analysis of the policy was conducted. Literature on the topic identified three costs that result from the policy. These include the additional administrative costs required to process the applications of affidavit students, the tuition revenue lost by colleges and universities, and the opportunity cost of potential earnings forgone by ISRT students who enroll in post-secondary institutions and postpone entering the workforce. The benefits of the policy include increased income, decreased public health spending, and reduced incarceration costs.

Estimates of the monetary values associated with these costs and benefits were calculated based on the number of affidavit students who were enrolled in Texas public institutions of higher education during FY 2010. The study assumed that these students comprised a cohort whose first year of enrollment was academic year 2009–10. Calculations of costs and benefits were based on ISRT policy effects of 1.54 and 2.33. This allowed for the calculation of lower- and upper-bound estimates of benefits. Finally, the net present value was calculated using discount rates of 3.5 percent and 7 percent to provide low- and high-end estimates of the monetary benefits of the policy.

As noted above, the study used a policy effect of 1.54 to provide a lower-bound estimate of the net present value of the ISRT policy. Using a discount rate of 7 percent, the net present value of the benefits accrued to the state due to the 16,431 affidavit

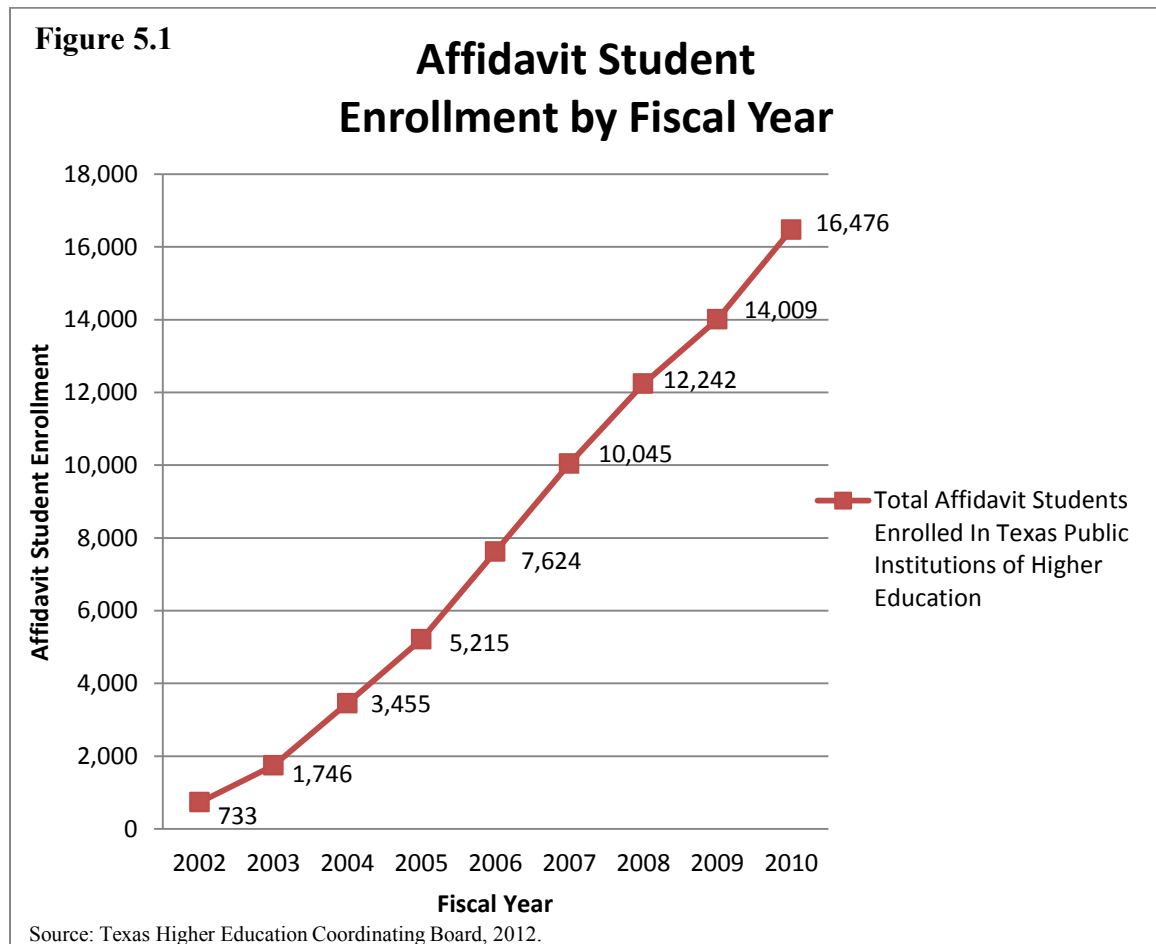
students enrolled in public colleges and universities in FY 2010 was \$768,460,781, approximately \$46,769 per affidavit student. When a discount rate of 3.5 percent was used, the net present value of benefits was \$1,872,388,637, or \$113,955 for each affidavit student.

The study also calculated costs and benefits using a policy effect of 2.33 to generate upper-bound estimates of the net present value of the policy. Using a discount rate of 7 percent, the net present value of the benefits accrued to the state due to the 16,431 affidavit students in the FY 2010 cohort was \$916,358,282, which is equal to a present value benefit to the state of \$55,770 for each affidavit student. Using a discount rate of 3.5 percent, the net present value of social benefits is \$2,191,530,330, or \$133,378 per affidavit student.

Each of the cost-benefit analyses of the policy yielded a positive net present value. The lower-bound estimate of the benefits accrued to the state is \$768,460,781, while the upper-bound estimate is \$2,191,530,330. Thus, the policy is cost efficient from the perspective of the state. Texas will have benefitted from allowing the 16,431 affidavit students in the FY 2010 cohort to pay in-state tuition. However, it should be noted that these benefits are contingent upon affidavit students actually applying for and being granted permanent resident status and earning U.S. wages that correspond with their level of education.

The number of affidavit students enrolled in public post-secondary institutions in Texas has increased each year since HB 1403 was enacted. According to information provided by the Coordinating Board, from fiscal years 2002 to 2010, over 35,000 affidavit students, students qualifying for resident tuition under section 2 of HB 1403,

have attended public institutions of higher education in Texas. **Figure 5.1** shows the number of affidavit students attending public post-secondary institutions each year since HB 1403 was passed until FY 2010.



According to Flores’s study of the effect of HB 1403, “[other] state policy initiatives active in Texas higher education that may relate to the educational performance of Latino/a foreign-born non-citizens do not appear to have significantly influenced the college enrollment of ISRT students” (Flores 2010a, 440). If this is indeed the case, the annual increases in affidavit student enrollment can be attributed to HB

1403. If this upward trend continues, the state will realize even greater financial benefits from the policy.

Allowing undocumented students to qualify for resident tuition is controversial. There is heated debate within the U.S., especially in border states, surrounding issues related to immigration. Opponents of the bill have already promised to try to overturn it during Texas's next legislative session. However, a cost-benefit analysis of HB 1403 allows the law to be examined objectively and without bias. As this research has shown, Texas's ISRT policy produces net benefits for the state. The numbers provided in this report should be used to inform the policy debate over this issue.

Consequently, this study recommends that Texas's in-state resident tuition policy be upheld. The number of affidavit students enrolled in public institutions of higher education remains small, about 1 percent of total enrollment (Texas Higher Education Coordinating Board 2011, 2). However, the State Comptroller estimated that there were approximately 135,000 undocumented children, or about 3 percent of total enrollment, in Texas public schools in school year 2004–05 (Texas Comptroller of Public Accounts 2006, 4). If allowing these students to pay in-state tuition at public colleges and universities generates benefits ranging from \$46,769 to \$133,378 per affidavit student, it is evident that any savings that might be achieved by denying these individuals an education are “wholly insubstantial in light of the costs involved to these children, the State, and the Nation” (*Plyler v. Doe* 1982, 2401-2402).

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Appendix A

Estimates of Lost Tuition Revenue (Effect=1.54)

Estimate of Tuition Revenue Lost at Community Colleges as a Result of HB 1403 (Effect=1.54)					
School Year	Average Nonresident Tuition	Average Out-of-District Tuition	Lost Tuition Revenue Per Student	Estimated Non-ISRT Enrollment	Estimate of Tuition Revenue Lost as a Result of HB 1403
2009-10	\$3,379	\$1,718	\$1,661	4,663	\$7,745,243
2010-11	\$3,649	\$1,877	\$1,772	4,663	\$8,262,836
Total			\$3,433		\$16,008,079

Estimate of Tuition Revenue Lost at State Colleges as a Result of HB 1403 (Effect=1.54)					
School Year	Average Nonresident Tuition	Average Resident Tuition	Lost Tuition Revenue Per Student	Estimated Non-ISRT Enrollment	Estimate of Tuition Revenue Lost as a Result of HB 1403
2009-10	\$10,890	\$2,580	\$8,310	6	\$49,860
2010-11	\$11,505	\$2,700	\$8,805	6	\$52,830
Total			\$17,115		\$102,690

Estimate of Tuition Revenue Lost at Public Technical Colleges as a Result of HB 1403 (Effect=1.54)					
School Year	Average Nonresident Tuition	Average Resident Tuition	Lost Tuition Revenue Per Student	Estimated Non-ISRT Enrollment	Estimate of Tuition Revenue Lost as a Result of HB 1403
2009-10	\$6,071	\$2,328	\$3,743	67	\$250,781
2010-11	\$6,330	\$2,700	\$3,630	67	\$243,210
Total			\$7,373		\$493,991

Estimate of Tuition Revenue Lost at Four-Year Universities as a Result of HB 1403 (Effect=1.54)					
School Year	Average Nonresident Tuition	Average Resident Tuition	Lost Tuition Revenue Per Student	Estimated Non-ISRT Enrollment	Estimate of Tuition Revenue Lost as a Result of HB 1403
2009-10	\$13,625	\$4,877	\$8,748	1,733	\$15,160,284
2010-11	\$14,430	\$5,079	\$9,351	1,733	\$16,205,283
2011-12	\$14,932	\$5,294	\$9,638	1,733	\$16,702,654
2012-13	\$15,663	\$5,444	\$10,219	1,733	\$17,709,527
Total			\$37,956		\$65,777,748

Estimates of Lost Tuition Revenue (Effect=2.33)

Estimate of Tuition Revenue Lost at Community Colleges as a Result of HB 1403 (Effect=2.33)					
School Year	Average Nonresident Tuition	Average Out-of-District Tuition	Lost Tuition Revenue Per Student	Estimated Non-ISRT Enrollment	Estimate of Tuition Revenue Lost as a Result of HB 1403
2009-10	\$3,379	\$1,718	\$1,661	3,556	\$5,906,516
2010-11	\$3,649	\$1,877	\$1,772	3,556	\$6,301,232
Total			\$3,433		\$12,207,748

Estimate of Tuition Revenue Lost at State Colleges as a Result of HB 1403 (Effect=2.33)					
School Year	Average Nonresident Tuition	Average Resident Tuition	Lost Tuition Revenue Per Student	Estimated Non-ISRT Enrollment	Estimate of Tuition Revenue Lost as a Result of HB 1403
2009-10	\$10,890	\$2,580	\$8,310	4	\$33,240
2010-11	\$11,505	\$2,700	\$8,805	4	\$35,220
Total			\$17,115		\$68,460

Estimate of Tuition Revenue Lost at Public Technical Colleges as a Result of HB 1403 (Effect=2.33)					
School Year	Average Nonresident Tuition	Average Resident Tuition	Lost Tuition Revenue Per Student	Estimated Non-ISRT Enrollment	Estimate of Tuition Revenue Lost as a Result of HB 1403
2009-10	\$6,071	\$2,328	\$3,743	51	\$190,893
2010-11	\$6,330	\$2,700	\$3,630	51	\$185,130
Total			\$7,373		\$376,023

Estimate of Tuition Revenue Lost at Four-Year Universities as a Result of HB 1403 (Effect=2.33)					
School Year	Average Nonresident Tuition	Average Resident Tuition	Lost Tuition Revenue Per Student	Estimated Non-ISRT Enrollment	Estimate of Tuition Revenue Lost as a Result of HB 1403
2009-10	\$13,625	\$4,877	\$8,748	1,322	\$11,564,856
2010-11	\$14,430	\$5,079	\$9,351	1,322	\$12,362,022
2011-12	\$14,932	\$5,294	\$9,638	1,322	\$12,741,436
2012-13	\$15,663	\$5,444	\$10,219	1,322	\$13,509,518
Total			\$37,956		\$50,177,832

Appendix B

Cost-Benefit Analysis of HB 1403 for Cohort Enrolled in FY 2010 (Effect=1.54)

Discount Rate=3.5%

Row	Year	Age	Costs					Benefits					P						
			A	B	C	D	E	F	G	H	I	J		K	L	M	N	O	
			Community College Tuition Lost	State College Tuition Lost	Public Technical College Tuition Lost	Public University Tuition Lost	Additional Administrative Costs (Admissions)	Additional Administrative Costs (Financial Aid)	Opportunity Costs of Lost Income (Two-Year Students)	Opportunity Costs of Lost Income (Four-Year Students)	Increased Annual Earnings (Associate's Degree)	Increased Annual Earnings (Bachelor's Degree)	Reduced Incarceration Costs (Two-Year Students)	Reduced Incarceration Costs (Four-Year Students)	Total Present Value Reduction in Public Healthcare Spending (Two-Year Students)	Total Present Value Reduction in Public Healthcare Spending (Four-Year Students)	Net Benefits	Present Value	
1	0	18	(\$7,745,243)	(\$49,860)	(\$250,781)	(\$15,160,284)	(\$346,201)	(\$346,201)	(\$112,115,288)	(\$41,045,910)							(\$177,059,769)	(\$177,059,769)	
2	1	19	(\$8,262,886)	(\$52,830)	(\$243,210)	(\$16,205,283)	(\$109,595)	(\$109,595)	(\$112,115,288)	(\$41,045,910)	\$34,897,005						(\$178,034,953)	(\$172,014,477)	
3	2	20				(\$16,702,654)	(\$29,368)	(\$29,368)		(\$41,045,910)	\$34,897,005						(\$22,880,927)	(\$21,359,590)	
4	3	21				(\$17,709,527)					\$34,897,005						(\$21,545,427)	(\$21,545,427)	
5	4	22									\$23,223,660	\$23,223,660	\$320,850	\$235,290			\$58,676,805	\$51,133,446	
6	5	23									\$23,223,660	\$23,223,660	\$320,850	\$235,290			\$58,676,805	\$49,404,295	
7	6	24									\$50,444,310	\$50,444,310					\$47,733,619		
8	7	25									\$50,444,310	\$50,444,310					\$71,892,577	\$71,892,577	
9	8	26									\$50,444,310	\$50,444,310					\$69,461,427	\$69,461,427	
10	9	27									\$50,444,310	\$50,444,310					\$67,112,490	\$67,112,490	
11	10	28									\$50,444,310	\$50,444,310					\$64,842,986	\$64,842,986	
12	11	29									\$50,444,310	\$50,444,310					\$62,650,228	\$62,650,228	
13	12	30									\$50,444,310	\$50,444,310					\$60,531,621	\$60,531,621	
14	13	31									\$50,444,310	\$50,444,310					\$58,484,658	\$58,484,658	
15	14	32									\$50,444,310	\$50,444,310					\$56,506,916	\$56,506,916	
16	15	33									\$50,444,310	\$50,444,310					\$54,596,054	\$54,596,054	
17	16	34									\$50,444,310	\$50,444,310					\$52,749,810	\$52,749,810	
18	17	35									\$69,892,590	\$69,892,590					\$52,099,286	\$52,099,286	
19	18	36									\$69,892,590	\$69,892,590					\$51,884,346	\$51,884,346	
20	19	37									\$69,892,590	\$69,892,590					\$51,099,286	\$51,099,286	
21	20	38									\$69,892,590	\$69,892,590					\$50,928,912	\$50,928,912	
22	21	39									\$69,892,590	\$69,892,590					\$50,286,912	\$50,286,912	
23	22	40									\$69,892,590	\$69,892,590					\$50,286,912	\$50,286,912	
24	23	41									\$69,892,590	\$69,892,590					\$50,286,912	\$50,286,912	
25	24	42									\$69,892,590	\$69,892,590					\$50,286,912	\$50,286,912	
26	25	43									\$69,892,590	\$69,892,590					\$50,286,912	\$50,286,912	
27	26	44									\$69,892,590	\$69,892,590					\$50,286,912	\$50,286,912	
28	27	45									\$56,232,870	\$56,232,870					\$50,332,398	\$50,332,398	
29	28	46									\$56,232,870	\$56,232,870					\$48,630,336	\$48,630,336	
30	29	47									\$56,232,870	\$56,232,870					\$46,985,832	\$46,985,832	
31	30	48									\$56,232,870	\$56,232,870					\$45,396,939	\$45,396,939	
32	31	49									\$56,232,870	\$56,232,870					\$43,861,777	\$43,861,777	
33	32	50									\$56,232,870	\$56,232,870					\$42,378,528	\$42,378,528	
34	33	51									\$56,232,870	\$56,232,870					\$40,945,438	\$40,945,438	
35	34	52									\$56,232,870	\$56,232,870					\$39,560,810	\$39,560,810	
36	35	53									\$56,232,870	\$56,232,870					\$38,223,005	\$38,223,005	
37	36	54									\$56,232,870	\$56,232,870					\$36,930,439	\$36,930,439	
38	37	55									\$51,741,930	\$51,741,930					\$25,160,240	\$25,160,240	
39	38	56									\$51,741,930	\$51,741,930					\$24,309,410	\$24,309,410	
40	39	57									\$51,741,930	\$51,741,930					\$23,487,353	\$23,487,353	
41	40	58									\$51,741,930	\$51,741,930					\$22,693,094	\$22,693,094	
42	41	59									\$51,741,930	\$51,741,930					\$21,925,695	\$21,925,695	
43	42	60									\$51,741,930	\$51,741,930					\$21,184,247	\$21,184,247	
44	43	61									\$51,741,930	\$51,741,930					\$20,467,871	\$20,467,871	
45	44	62									\$51,741,930	\$51,741,930					\$19,775,721	\$19,775,721	
46	45	63									\$51,741,930	\$51,741,930					\$19,106,977	\$19,106,977	
47	46	64									\$51,741,930	\$51,741,930					\$18,460,847	\$18,460,847	
48															\$59,073,300	\$58,873,500			
																		Net Present Value without Healthcare Savings:	\$1,754,441,887
																		2 Year Health	\$59,073,300
																		4 Year Health	\$58,873,500
																		Net Present Value:	\$1,872,388,637

Cost-Benefit Analysis of HB 1403 for Cohort Enrolled in FY 2010 (Effect=2.33)

Discount Rate=3.5%

Costs													Benefits								
Row	Year	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P				
	Age	Community College Tuition Lost	State College Tuition Lost	Public Technical College Tuition Lost	Public University Tuition Lost	Additional Administrative Costs (Admissions)	Additional Administrative Costs (Financial Aid)	Opportunity Costs of Lost Income (Two-Year Students)	Opportunity Costs of Lost Income (Four-Year Students)	Increased Annual Earnings (Associate's Degree)	Increased Annual Earnings (Bachelor's Degree)	Reduced Incarceration Costs (Two-Year Students)	Reduced Incarceration Costs (Four-Year Students)	Total Present Value Reduction in Public Healthcare Spending (Two-Year Students)	Total Present Value Reduction in Public Healthcare Spending (Four-Year Students)	Net Benefits	Present Value				
1	0	18	(\$5,906,516)	(\$33,240)	(\$190,893)	(\$11,564,856)	(\$346,201)	(\$129,379,168)	(\$47,364,213)							(\$195,131,288)	(\$195,131,288)				
2	1	19	(\$6,301,232)	(\$35,220)	(\$185,130)	(\$12,362,022)	(\$109,595)	(\$129,379,168)	(\$47,364,213)	\$40,270,560						(\$195,736,580)	(\$189,117,468)				
3	2	20				(\$12,741,436)	(\$29,368)		(\$47,364,213)							(\$19,864,457)	(\$18,543,683)				
4	3	21				(\$13,509,518)			(\$47,364,213)												
5	4	22								\$40,270,560	\$26,798,538	\$383,630	\$256,680								
6	5	23								\$40,270,560	\$26,798,538	\$383,630	\$256,680								
7	6	24								\$40,270,560	\$26,798,538	\$383,630	\$256,680								
8	7	25								\$47,340,000	\$58,209,333					\$105,549,333	\$82,960,822				
9	8	26								\$47,340,000	\$58,209,333					\$105,549,333	\$80,155,383				
10	9	27								\$47,340,000	\$58,209,333					\$105,549,333	\$77,444,815				
11	10	28								\$47,340,000	\$58,209,333					\$105,549,333	\$74,825,908				
12	11	29								\$47,340,000	\$58,209,333					\$105,549,333	\$72,295,563				
13	12	30								\$47,340,000	\$58,209,333					\$105,549,333	\$69,850,786				
14	13	31								\$47,340,000	\$58,209,333					\$105,549,333	\$67,488,682				
15	14	32								\$47,340,000	\$58,209,333					\$105,549,333	\$65,206,456				
16	15	33								\$47,340,000	\$58,209,333					\$105,549,333	\$63,001,407				
17	16	34								\$47,340,000	\$58,209,333					\$105,549,333	\$60,870,924				
18	17	35								\$94,865,152	\$80,651,337					\$175,516,489	\$97,798,451				
19	18	36								\$94,865,152	\$80,651,337					\$175,516,489	\$94,491,257				
20	19	37								\$94,865,152	\$80,651,337					\$175,516,489	\$91,295,901				
21	20	38								\$94,865,152	\$80,651,337					\$175,516,489	\$88,208,600				
22	21	39								\$94,865,152	\$80,651,337					\$175,516,489	\$85,225,700				
23	22	40								\$94,865,152	\$80,651,337					\$175,516,489	\$82,343,672				
24	23	41								\$94,865,152	\$80,651,337					\$175,516,489	\$79,559,103				
25	24	42								\$94,865,152	\$80,651,337					\$175,516,489	\$76,888,688				
26	25	43								\$94,865,152	\$80,651,337					\$175,516,489	\$74,269,274				
27	26	44								\$94,865,152	\$80,651,337					\$175,516,489	\$71,757,753				
28	27	45								\$82,148,576	\$64,888,941					\$147,037,517	\$58,081,619				
29	28	46								\$82,148,576	\$64,888,941					\$147,037,517	\$56,117,507				
30	29	47								\$82,148,576	\$64,888,941					\$147,037,517	\$54,219,813				
31	30	48								\$82,148,576	\$64,888,941					\$147,037,517	\$52,386,293				
32	31	49								\$82,148,576	\$64,888,941					\$147,037,517	\$50,614,776				
33	32	50								\$82,148,576	\$64,888,941					\$147,037,517	\$48,903,165				
34	33	51								\$82,148,576	\$64,888,941					\$147,037,517	\$47,249,435				
35	34	52								\$82,148,576	\$64,888,941					\$147,037,517	\$45,651,628				
36	35	53								\$82,148,576	\$64,888,941					\$147,037,517	\$44,107,853				
37	36	54								\$82,148,576	\$64,888,941					\$147,037,517	\$42,616,283				
38	37	55								\$43,973,600	\$59,706,699					\$103,680,299	\$29,033,761				
39	38	56								\$43,973,600	\$59,706,699					\$103,680,299	\$28,051,943				
40	39	57								\$43,973,600	\$59,706,699					\$103,680,299	\$27,103,327				
41	40	58								\$43,973,600	\$59,706,699					\$103,680,299	\$26,186,789				
42	41	59								\$43,973,600	\$59,706,699					\$103,680,299	\$25,301,245				
43	42	60								\$43,973,600	\$59,706,699					\$103,680,299	\$24,445,648				
44	43	61								\$43,973,600	\$59,706,699					\$103,680,299	\$23,618,983				
45	44	62								\$43,973,600	\$59,706,699					\$103,680,299	\$22,820,274				
46	45	63								\$43,973,600	\$59,706,699					\$103,680,299	\$22,048,574				
47	46	64								\$43,973,600	\$59,706,699					\$103,680,299	\$21,302,970				
48														\$68,169,600	\$67,936,050						
																Net Present Value without Healthcare Savings:					
																2 Year Health					
																4 Year Health					
																Net Present Value:		\$2,191,530,330			

Cost-Benefit Analysis of HB 1403 for Cohort Enrolled in FY 2010 (Effect=1.54)

Discount Rate=7%

Row	Year	Costs						Benefits									
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	Age	Community College Tuition Lost	State College Tuition Lost	Public Technical College Tuition Lost	Public University Tuition Lost	Additional Administrative Costs (Admissions)	Additional Administrative Costs (Financial Aid)	Opportunity Costs of Lost Income (Two-Year Students)	Opportunity Costs of Lost Income (Four-Year Students)	Increased Annual Earnings (Associate's Degree)	Increased Annual Earnings (Bachelor's Degree)	Reduced Incarceration Costs (Two-Year Students)	Reduced Incarceration Costs (Four-Year Students)	Total Present Value Reduction in Public Healthcare Spending (Two-Year Students)	Total Present Value Reduction in Public Healthcare Spending (Four-Year Students)	Net Benefits	Present Value
1	0	18	(\$7,745,243)	(\$49,860)	(\$50,781)	(\$15,160,284)	(\$346,201)	(\$346,201)	(\$112,115,289)	(\$41,045,910)						(\$177,059,769)	(\$177,059,769)
2	1	19	(\$8,262,836)	(\$52,830)	(\$53,210)	(\$16,205,283)	(\$109,395)	(\$109,395)	(\$112,115,289)	(\$41,045,910)						(\$178,034,953)	(\$166,387,806)
3	2	20				(\$16,702,654)	(\$39,368)	(\$39,368)		\$34,897,005						(\$22,880,927)	(\$19,985,088)
4	3	21				(\$17,709,527)	(\$29,368)	(\$29,368)	(\$41,045,910)							(\$23,887,800)	(\$19,499,560)
5	4	22								\$34,897,005	\$23,223,660	\$320,850	\$235,290			\$58,676,805	\$44,764,254
6	5	23								\$34,897,005	\$23,223,660	\$320,850	\$235,290			\$58,676,805	\$41,835,751
7	6	24								\$34,897,005	\$23,223,660	\$320,850	\$235,290			\$58,676,805	\$39,098,833
8	7	25								\$44,023,125	\$50,444,310					\$91,467,435	\$56,961,322
9	8	26								\$44,023,125	\$50,444,310					\$91,467,435	\$53,234,800
10	9	27								\$44,023,125	\$50,444,310					\$91,467,435	\$49,752,224
11	10	28								\$44,023,125	\$50,444,310					\$91,467,435	\$46,497,406
12	11	29								\$44,023,125	\$50,444,310					\$91,467,435	\$43,455,519
13	12	30								\$44,023,125	\$50,444,310					\$91,467,435	\$40,612,635
14	13	31								\$44,023,125	\$50,444,310					\$91,467,435	\$37,955,734
15	14	32								\$44,023,125	\$50,444,310					\$91,467,435	\$35,472,648
16	15	33								\$44,023,125	\$50,444,310					\$91,467,435	\$33,152,008
17	16	34								\$44,023,125	\$50,444,310					\$91,467,435	\$30,983,185
18	17	35								\$82,206,696	\$69,892,590					\$152,099,286	\$48,150,739
19	18	36								\$82,206,696	\$69,892,590					\$152,099,286	\$45,000,690
20	19	37								\$82,206,696	\$69,892,590					\$152,099,286	\$42,056,720
21	20	38								\$82,206,696	\$69,892,590					\$152,099,286	\$39,305,346
22	21	39								\$82,206,696	\$69,892,590					\$152,099,286	\$36,733,968
23	22	40								\$82,206,696	\$69,892,590					\$152,099,286	\$34,330,811
24	23	41								\$82,206,696	\$69,892,590					\$152,099,286	\$32,084,870
25	24	42								\$82,206,696	\$69,892,590					\$152,099,286	\$29,985,860
26	25	43								\$82,206,696	\$69,892,590					\$152,099,286	\$28,004,168
27	26	44								\$82,206,696	\$69,892,590					\$152,099,286	\$26,190,812
28	27	45								\$71,186,973	\$56,232,870					\$127,419,843	\$20,905,722
29	28	46								\$71,186,973	\$56,232,870					\$127,419,843	\$19,164,226
30	29	47								\$71,186,973	\$56,232,870					\$127,419,843	\$17,910,492
31	30	48								\$71,186,973	\$56,232,870					\$127,419,843	\$16,738,777
32	31	49								\$71,186,973	\$56,232,870					\$127,419,843	\$15,643,717
33	32	50								\$71,186,973	\$56,232,870					\$127,419,843	\$14,620,296
34	33	51								\$71,186,973	\$56,232,870					\$127,419,843	\$13,663,828
35	34	52								\$71,186,973	\$56,232,870					\$127,419,843	\$12,769,933
36	35	53								\$71,186,973	\$56,232,870					\$127,419,843	\$11,944,517
37	36	54								\$71,186,973	\$56,232,870					\$127,419,843	\$11,153,754
38	37	55								\$38,105,925	\$51,741,930					\$89,847,855	\$7,350,349
39	38	56								\$38,105,925	\$51,741,930					\$89,847,855	\$6,869,485
40	39	57								\$38,105,925	\$51,741,930					\$89,847,855	\$6,420,079
41	40	58								\$38,105,925	\$51,741,930					\$89,847,855	\$6,000,074
42	41	59								\$38,105,925	\$51,741,930					\$89,847,855	\$5,607,546
43	42	60								\$38,105,925	\$51,741,930					\$89,847,855	\$5,240,697
44	43	61								\$38,105,925	\$51,741,930					\$89,847,855	\$4,897,848
45	44	62								\$38,105,925	\$51,741,930					\$89,847,855	\$4,577,428
46	45	63								\$38,105,925	\$51,741,930					\$89,847,855	\$4,277,970
47	46	64								\$38,105,925	\$51,741,930					\$89,847,855	\$3,998,103
48														\$13,226,258	\$13,181,523		
Net Present Value without Healthcare Savings:																	
																2 Year Health	
																\$13,226,258	
																4 Year Health	
																\$13,181,523	
																Net Present Value:	
																\$768,460,781	

