

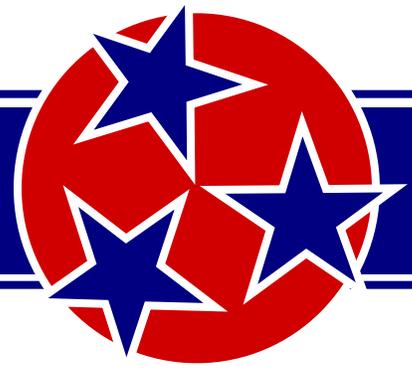
**TENNESSEE EDUCATION LOTTERY  
SCHOLARSHIP PROGRAM  
SPECIAL REPORT**

**January 2011**

**Prepared by the Tennessee Higher Education Commission**



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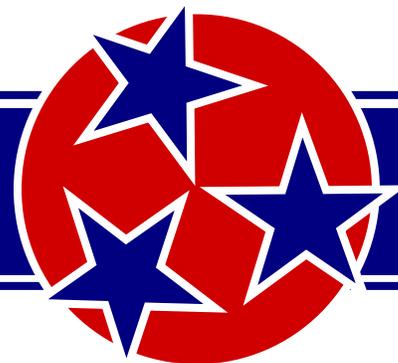
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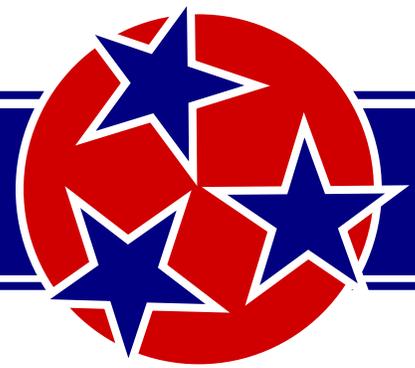
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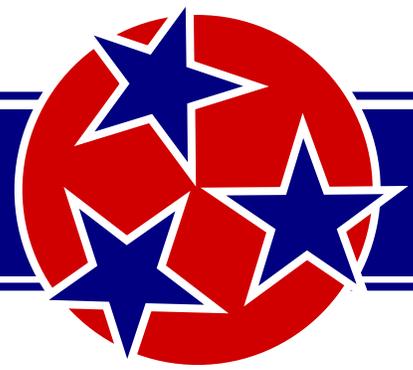
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# Introduction



This special report is prepared pursuant to T.C.A. §49-4-903(b), which directs the Tennessee Higher Education Commission (THEC) to:

“...provide assistance to the general assembly and to the Tennessee Student Assistance Corporation (TSAC) by researching and analyzing data concerning the scholarship and grant programs created under this part, including, but not limited to, student success and scholarship renewal.”

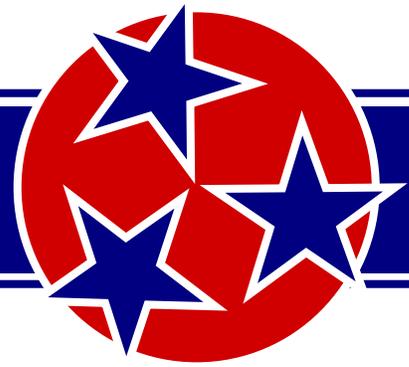
This report comes at a time when the Tennessee Education Lottery Scholarship (TELS) program is at a critical juncture. Over the past several months, the program has undergone extensive review for long-term sustainability in the face of burgeoning expenditures. Projections released by the University of Tennessee Center for Business and Economic Research in August, 2010 warned that program expenditures will continue to exceed revenues. In response, the Lottery Stabilization Task Force urged higher education leaders to provide information and analysis to inform decision making for program improvement. A number of working group meetings have taken place among state and system-level leaders and other stakeholders to fully discuss policy alternatives to enhance the effectiveness of the lottery scholarship. The discussion process has produced a wealth of data and analyses, revealing aspects of the program that were previously unknown. This report shares some of findings presented throughout the process and through independent study by THEC over the last year.

This report is divided into four chapters:

- *Impact of the Provisional Renewal Rule* provides analyses of the impact of T.C.A. §49-4-911 (a)(2), a new lottery scholarship renewal rule adopted by the 105<sup>th</sup> General Assembly in 2008. This provision became effective in the Fall 2008 semester, lowering the previous scholarship renewal criteria.
- *Impact of the Lower GPA Requirement at the 48 Hour Benchmark on College Retention* analyzes the impact of the revised scholarship renewal rule on college retention rates. The revised renewal rule, also adopted during the 105<sup>th</sup> General Assembly in 2008, lowered the minimum GPA criteria at the benchmark of 48 cumulative credit hours from 3.0 to 2.75.
- *Lottery Scholarship and Affordability* examines the extent to which the lottery scholarship has contributed to reducing student payments for the cost of higher education across different levels of family income. It also explores how unmet needs can be reduced through the TELS program.

- *The General Assembly Merit Scholarship and its Outcomes* analyzes scholarship renewal and college completion for the high-achieving students in the General Assembly Merit Scholarship (GAMS) program.

The majority of data and analyses in this report are based upon data prior to Fall 2010. Prior to Fall 2010, all headcount data were based on fourteenth day enrollment and were available near the middle of the term. Beginning in Fall 2010, THEC has started to collect end-of-term enrollment student information as specified by the Complete College Tennessee Act of 2010. The responsible organizations are presently submitting Fall 2010 data to THEC. The upcoming 2011 Lottery Scholarship Annual Report, which will be released upon the completion of the current data collection, will include data and analyses for the 2010-11 academic year.

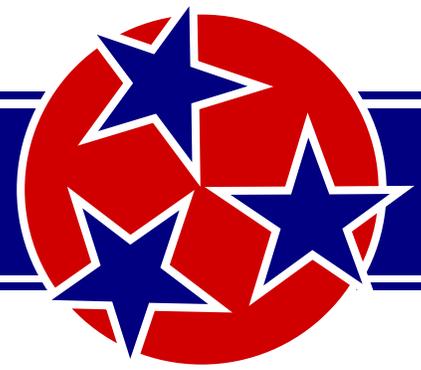


## **Chapter 1 : Impact of the Provisional Renewal Rule**

### Abstract

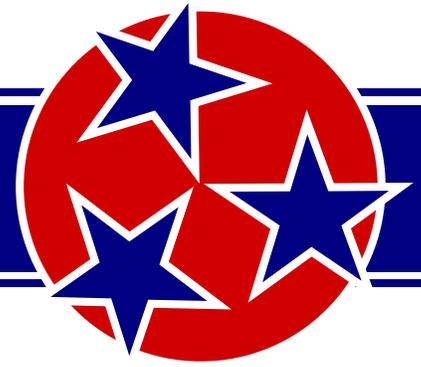
*This report provides analyses of the impact of T.C.A. §49-4-911 (a)(2), a new lottery scholarship renewal rule adopted by the 105<sup>th</sup> General Assembly in 2008. This provision became effective in the Fall 2008 semester, allowing certain students to renew a lottery scholarship if they failed to meet existing scholarship renewal criteria. This report presents a brief account of this new provision (hereafter referred to as the “provisional rule” or “provisional path”) and explains characteristics of provisional recipients as well as the rule’s impact on scholarship renewal and graduation rates.*

## Executive Summary



- During the 2008-09 academic year, the provisional renewal rule enabled 1,185 students to maintain their lottery scholarship eligibility. The state expenditure for these additional students was \$2.9 million. The expense for this provision was \$4.3 million in 2009-10.
- Of the students who received the scholarship, certain demographic groups were better represented among students on the provisional path.
  - The share of male recipients was higher among provisional recipients than non-provisional recipients, 41.0 percent to 38.5 percent;
  - The share of African American students among provisional recipients was almost double as compared to non-provisional students; and
  - Provisional scholarships have served a higher proportion of lower-income students than the traditional lottery scholarship.
- Students who met initial scholarship criteria based on either high school GPA alone *or* ACT alone were more than twice as likely to become provisional recipients as compared to those who qualified on the basis of both ACT *and* GPA.
  - 4.4 percent of students who qualified based on high school GPA *and* ACT for initial scholarship eligibility went into the provisional path, as compared to 10.6 percent of students who qualified only on the basis of high school GPA, and 9.6 percent who qualified solely on the basis of the ACT.
- A lottery scholarship recipient's chance of becoming a provisional recipient by the fourth year of college is 4.8 percent.
  - Of all Fall 2006 entering freshmen with lottery scholarships—the first cohort group that received the full benefit of the provision—4.8 percent were on the provisional path by Fall 2010.
- The fall-to-fall scholarship renewal rate for Fall 2008 provisional recipients (who started the provisional track at the 72 credit-hour benchmark) was 49 percent.
  - 23.5 percent of the provisional recipients returned to the traditional path in Fall 2009 by returning to a cumulative GPA of 3.0 or higher at the next 24 hour benchmark.

# Introduction



## Overview of T.C.A. §49-4-911 (a)(2)

T.C.A. §49-4-911 (a)(2) is a provision that was added in 2008 under the section for scholarship renewal requirements in the Tennessee Education Lottery Scholarship (TELS) program. Students' scholarship eligibility is evaluated at every 24 credit hours. Students must meet specified renewal criteria at each benchmark to maintain scholarship eligibility. Traditionally, at the first benchmark (i.e., 24 credit hours), students were required to have at least a 2.75 cumulative GPA; the GPA threshold increased to 3.0 at subsequent benchmarks.<sup>1</sup>

The newly introduced provision slightly relaxed these renewal rules at benchmarks of 72 credit hours and after<sup>2</sup>. It allows students who would have lost scholarships under the previous renewal criteria to maintain scholarships as long as they:

- have attempted at least 72 cumulative credit hours;
- have maintained a cumulative grade point average of at least 2.75;
- have earned a semester grade point average of at least 3.0 for the semester in which continuing eligibility was reviewed;
- have enrolled full-time in the semester when continuing eligibility was reviewed; and
- will enroll full-time in the subsequent semester.

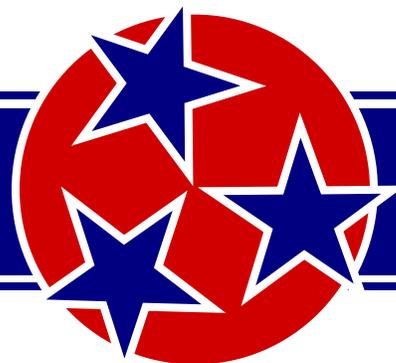
Once students become subject to the provisional rule, their scholarship eligibility will be evaluated every semester regardless of their cumulative credit hours. If their cumulative GPA recovers to 3.0 or above at a subsequent benchmark, their scholarship status will be returned to the traditional track and they will be reviewed under the regular renewal criteria from the next benchmark on.

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<sup>1</sup> These rules are applicable to HOPE, ASPIRE, and General Assembly Merit Scholarship (GAMS) only.

<sup>2</sup> The 105<sup>th</sup> General Assembly in 2008 also amended the renewal rule defined in T.C.A. §49-4-911 (a)(1), lowering the GPA threshold at the 48 hour benchmark to 2.75.

# Program Size and Recipient Demographics



## Program Size and Scope

**Table 1-1** shows the numbers of students who received lottery scholarships in the provisional path, and associated expenses, during academic years 2008-09 and 2009-10. In 2008-09, the new renewal rule enabled 1,185 students to maintain their scholarships at a cost to the State of approximately \$2.9 million. The total recipient headcount and the State's expenditure increased to 1,701 students and \$4.3 million in 2009-10.

Table 1-1 : Scholarship Recipients and Dollars Awarded Under T.C.A. §49-4-911(a)(2), AY 2008-09 and AY 2009-10

Sector	Students (Unduplicated)		Dollars		Average Amount	
	AY 2008-09	AY 2009-10	AY 2008-09	AY 2009-10	AY 2008-09	AY 2009-10
TBR 4-year	560	773	1,466,067	1,996,274	2,618	2,583
TBR 2-year	33	63	30,463	79,000	923	1,254
UT System	351	522	843,809	1,352,765	2,404	2,592
Independents	241	343	595,230	877,273	2,470	2,558
<b>Total</b>	<b>1,185</b>	<b>1,701</b>	<b>2,935,569</b>	<b>4,305,312</b>	<b>2,477</b>	<b>2,531</b>

Note: 2009-10 scholarship expenditures for students who returned to the traditional path (totaling less than \$500,000) are not included in this table.

Source: Tennessee Student Assistance Corporation (TSAC) Free Application for Federal Student Aid (FAFSA) Data

In Fall 2009, the number of provisional recipients was 884, which accounted for 6.1 percent of the total number of TELS recipients with 72 or more credit hours (**Table 1-2**). Community colleges had the highest percentage at 9.6 percent, as compared to 6.9 percent at the Tennessee Board of Regents' universities, 5.3 percent at the University of Tennessee campuses, and 5.4 percent at Tennessee private institutions.

Table 1-2 : Percentage of TELS Students who Received Scholarships in the Provisional Path, Fall 2009

Sector	Provisional Students	All TELS Recipients	%
TBR 4-year	422	6,075	6.9%
TBR 2-year	30	312	9.6%
UT System	266	5,018	5.3%
Independents	166	3,101	5.4%
<b>Total</b>	<b>884</b>	<b>14,506</b>	<b>6.1%</b>

Note: "All TELS Recipients" is limited to TELS recipients with 72 or more cumulative credit hours. Award must have been received in Fall 2009.

Sources: Tennessee Higher Education Commission Student Information System (THEC SIS) and TSAC FAFSA Data

## Demographics of Provisional Recipients

### Gender

**Table 1-3** shows the distributions of provisional and non-provisional recipients by gender and higher education sector in Fall 2009. For the Tennessee higher education total, female recipients constituted 59.0 percent of provisional recipients and 61.5 percent of non-provisional recipients. The share of male recipients was higher among provisional recipients than non-provisional recipients, 41.0 percent to 38.5 percent.

Table 1-3 : Distributions of Provisional and Non-provisional Recipients, Fall 2009, by Gender and Sector

Sector	Provisional		Non-Provisional	
	Female	Male	Female	Male
TBR 4-year	59.7%	40.3%	62.5%	37.5%
TBR 2-year	70.0%	30.0%	80.5%	19.5%
UT System	54.9%	45.1%	56.2%	43.8%
Independents	62.0%	38.0%	66.1%	33.9%
<b>Total</b>	<b>59.0%</b>	<b>41.0%</b>	<b>61.5%</b>	<b>38.5%</b>

Note: For comparison purposes, “non-provisional students” is limited to recipients who were not in the provisional track with cumulative credit hours of 72 or above.

Sources: THEC SIS and TSAC FAFSA Data

### Race/Ethnicity

**Table 1-4** shows the proportions of provisional and non-provisional recipients by race/ethnicity and sector in Fall 2009. Caucasian recipients comprised 81.6 percent of provisional recipients and 86.4 percent of non-provisional recipients. African American students represented 11.4 percent of provisional recipients and 6.1 percent of non-provisional recipients. The share of African American students among provisional recipients was almost double compared to non-provisional students.

Table 1-4 : Distributions of Provisional and Non-provisional Recipients, Fall 2009, by Race, Ethnicity, and Sector

Sector	Provisional Students			Non-Provisional		
	White	African American	Other	White	African American	Other
TBR 4-year	77.7%	14.0%	8.3%	84.3%	8.2%	7.5%
TBR 2-year	86.7%	10.0%	3.3%	89.7%	4.3%	6.0%
UT System	85.7%	10.5%	3.8%	89.5%	4.2%	6.3%
Independents	83.7%	6.6%	9.6%	85.2%	5.5%	9.3%
<b>Total</b>	<b>81.6%</b>	<b>11.4%</b>	<b>7.0%</b>	<b>86.4%</b>	<b>6.1%</b>	<b>7.4%</b>

Note: Non-provisional students are limited to recipients who were not in the provisional track with cumulative credit hours of 72 or above.

Sources: THEC SIS and TSAC FAFSA Data

*Income*

**Tables 1-5 and 1-6** compare income distributions between provisional and non-provisional recipients across different higher education sectors for Fall 2009 recipients. Scholarship recipients are broken into nine groups according to their family income level as measured by adjusted gross income, with above \$96,000 being the highest income category.

For the Tennessee higher education overall, the highest income group accounted for the largest share of scholarship recipients among both provisional and non-provisional recipients, at 30 percent and 38 percent, respectively. The income distribution for provisional students leans more toward the lower end of the income spectrum than for non-provisional students, indicating that provisional scholarships have served a higher proportion of lower-income students than has the traditional lottery scholarship.

Table 1-5 : Family Income Distribution of Provisional Recipients, Fall 2009

System	Family Income Level (Adjusted Gross Income)									Grand Total
	\$12,000 or less	12,001-24,000	24,001-36,000	36,001-48,000	48,001-60,000	60,001-72,000	72,001-84,000	84,001-96,000	above \$96,000	
TBR 4-year	13.1%	8.0%	9.4%	9.7%	9.0%	10.2%	6.8%	5.1%	28.8%	100%
TBR 2-year	28.6%	17.9%	10.7%	7.1%	0.0%	10.7%	3.6%	10.7%	10.7%	100%
UT	5.7%	8.6%	7.0%	4.5%	9.8%	6.6%	3.7%	11.1%	43.0%	100%
Independents	7.5%	9.9%	9.9%	8.7%	7.5%	9.3%	9.9%	6.2%	31.1%	100%
Grand Total	9.0%	8.0%	8.5%	7.3%	8.2%	8.2%	5.8%	7.2%	30.0%	100%

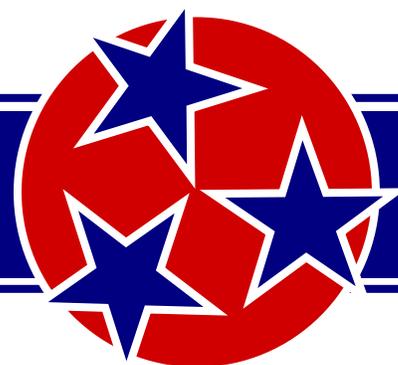
Sources: THEC SIS and TSAC FAFSA Data

Table 1-6 : Family Income Distribution of Non-provisional Recipients, Fall 2009

System	Family Income Level (Adjusted Gross Income)									Grand Total
	\$12,000 or less	12,001-24,000	24,001-36,000	36,001-48,000	48,001-60,000	60,001-72,000	72,001-84,000	84,001-96,000	above \$96,000	
TBR 4-year	6.6%	8.3%	9.7%	8.6%	8.5%	9.1%	9.3%	8.4%	31.4%	100%
TBR 2-year	18.8%	17.7%	10.7%	7.4%	10.7%	9.2%	6.3%	5.9%	13.3%	100%
UT	5.5%	5.8%	6.3%	6.2%	6.9%	6.9%	8.1%	7.5%	46.9%	100%
Independents	6.5%	7.8%	9.3%	6.7%	7.4%	7.5%	7.8%	8.1%	38.8%	100%
Grand Total	6.2%	7.5%	8.4%	7.4%	7.8%	8.1%	8.6%	8.1%	38.3%	100%

Notes: Non-provisional recipients are limited to only scholarship recipients with cumulative credit hours of 72 or above.  
Sources: THEC SIS and TSAC FAFSA Data

# Pathways to the Provisional Track



## Chances of Entering the Provisional Path

**Table 1-7** exhibits percentages of TELS recipients in the provisional path by scholarship cohort group and institutional sector, demonstrating the eventual likelihood of becoming provisional recipients for first-time TELS freshmen. The percentage values in the table refer to the numbers of students who renewed their scholarship eligibility in the provisional path at least once by Fall 2010 relative to the entire cohort headcount of TELS recipients. The scholarship cohort year represents the fall term when freshman students received lottery scholarships for the first time.

The table demonstrates that the share of TELS recipients in the provisional path gradually increased from 0.9 percent of the Fall 2004 cohort to 4.8 percent of the Fall 2006 cohort. However, Fall 2004 and 2005 cohorts were already in their fifth and fourth years when the provisional renewal rule was adopted in Fall 2008, and thus these two groups probably did not fully benefit from this change. A couple more years of data are necessary to develop stable estimates of probability for TELS freshmen to become provisional recipients.

Table 1-7 : Percentages of First-time TELS Freshmen Who Received Scholarships in the Provisional Path at Least Once by Fall 2010: Fall 2004 through Fall 2006 Cohorts

	Fall 2004 Cohort			Fall 2005 Cohort			Fall 2006 Cohort		
	FTF	Provisional	%	FTF	Provisional	%	FTF	Provisional	%
TBR 4-year	7,220	85	1.2%	7,184	256	3.6%	7,539	372	4.9%
TBR 2-year	4,384	24	0.5%	4,719	69	1.5%	5,037	130	2.6%
UT System	5,283	61	1.2%	5,345	187	3.5%	5,485	316	5.8%
Independents	3,109	16	0.5%	3,270	106	3.2%	3,428	211	6.2%
<b>Total</b>	<b>19,996</b>	<b>186</b>	<b>0.9%</b>	<b>20,518</b>	<b>618</b>	<b>3.0%</b>	<b>21,489</b>	<b>1,029</b>	<b>4.8%</b>

Sources: THEC SIS and TSAC FAFSA Data

The analysis displayed in **Table 1-8** explored the chances of becoming a provisional student from a different perspective. This approach included only students whose cumulative credit hours were at or above 72 in Fall 2009, calculating the percentage of recipients who were in the provisional path by qualification standards met for initial scholarship eligibility. This analysis excluded students without ACT or high school GPA data.

The results suggest that academic preparation before entering college makes a difference in the likelihood of becoming a provisional recipient. Table 1-8 shows that students who qualified based on high school GPA *and* ACT for initial scholarship eligibility are least likely to be in the provisional path (4.4 percent), as compared to students who qualified only on the basis of high school GPA (10.6 percent) or ACT (9.6 percent). This finding implies that students who qualified for scholarships based on either high school GPA *or* ACT alone are more than twice as likely to become provisional recipients.

Table 1-8 : Percentages of Scholarship Recipients who Were in the Provisional Path, by Academic Standards Met for Initial Scholarship Eligibility, Fall 2009

Academic Standards Met	Provisional Students	All TELS Students	Provisional %
GPA & ACT	504	10,981	4.4%
GPA Only	230	1,931	10.6%
ACT Only	103	970	9.6%
<b>Total</b>	<b>837</b>	<b>13,882</b>	<b>5.7%</b>

Note: "All TELS Students" is limited to recipients with cumulative credit hours of 72 or above in Fall 2009.  
Sources: THEC SIS and TSAC FAFSA Data

### Timing of Becoming a Provisional Recipient

Scholarship recipients can enter the provisional path not only at 72 cumulative credit hours, but subsequently at every 24 credit hours. **Table 1-9** displays the distribution of provisional students by the benchmark at which they became provisional recipients for the first time. In Fall 2009, 48.1 percent of new provisional recipients entered at the 72 hour benchmark, while approximately another one-third of new provisionals had at least 96 credit hours. The remaining 17.2 percent of recipients had accumulated 120 or more credit hours before they became provisional recipients.

Table 1-9 : Lottery Scholarship Receipt by Credit Hour Benchmark at which Recipients Went into the Provisional Path for the First Time, Fall 2009

Credit Hours	TBR 4-year		TBR 2-year		UT System		Independents		Grand Total	
72-95	132	51.8%	19	90.5%	78	46.7%	41	41.0%	251	48.1%
96-119	80	31.4%	2	9.5%	58	34.7%	43	43.0%	181	34.7%
120 and above	43	16.9%	-	0.0%	31	18.6%	16	16.0%	90	17.2%
Grand Total	255	100%	21	100%	167	100%	100	100%	522	100%

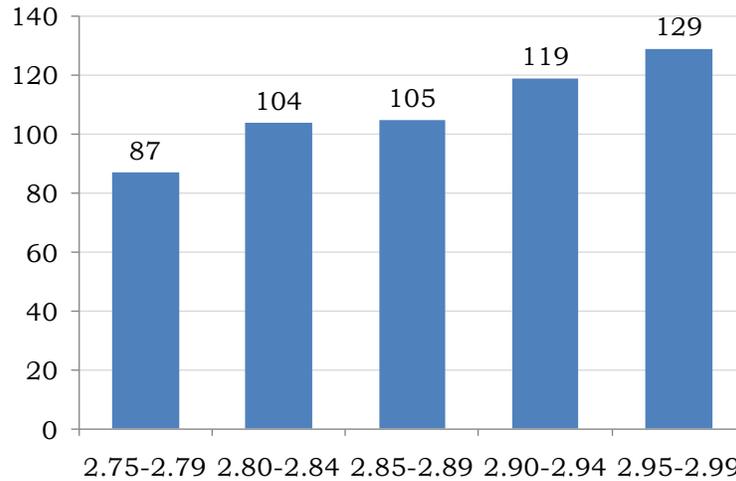
Source: TSAC FAFSA Data

### Academic Standing of Provisional Recipients before Entering the Provisional Path

The following two figures illustrate the academic standing of provisional recipients in the semester before they entered the provisional track. While **Figure 1-1** exhibits the distribution of cumulative GPA for Fall 2009 provisional recipients, **Figure 1-2** shows the distribution of their term GPAs. Both GPAs were as of the end of Spring 2009, the last semester before they entered the provisional path. Both cumulative GPAs and term GPAs are broken into five groups, with 0.05 and 0.2 grade point scales, respectively.

Figure 1-1 shows that the distribution of cumulative GPA is skewed to the higher end of the eligible cumulative GPA range, revealing that the largest number of students entered provisional status with a GPA range of 2.95-2.99. The 2.90-2.94 range forms the second largest group, followed by the 2.85-2.89 through 2.75-2.79 groups in descending order. The figure indicates that the closer a student's cumulative GPA is to 3.0, the higher chance he/she has of becoming eligible for provisional renewal.

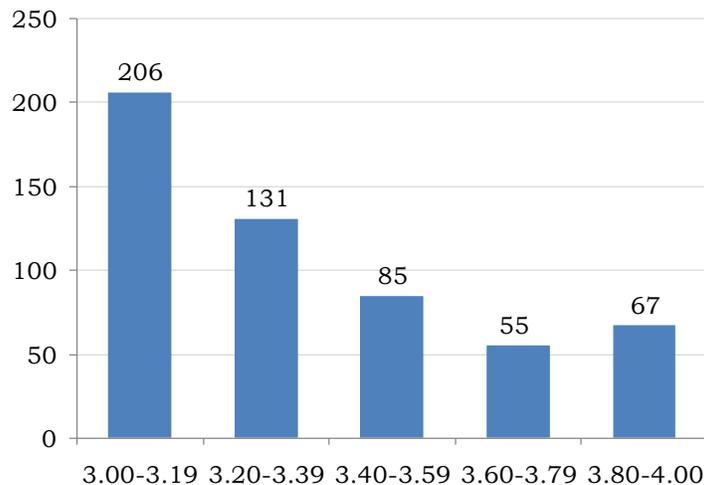
Figure 1-1: Distribution of Cumulative GPA of Fall 2009 Provisional Recipients at the End of Spring 2009



Note: Include only first-time provisional recipients in Fall 2009.  
Source: TSAC FAFSA Data

To be eligible for the provisional scholarship, students also must have at least a 3.0 *term* GPA in the semester before they enter the provisional path. Unlike Figure 1-1, the distribution in Figure 1-2 leans toward the lower end of GPA spectrum, indicating that the largest number of provisional students were in the lowest eligible range of term GPA.

Figure 1-2: Distribution of Term GPA of Fall 2009 Provisional Recipients at the End of Spring 2009



Note: Include only first-time provisional recipients in Fall 2009.  
Source: TSAC FAFSA Data

So, Figures 1-1 and 1-2 paint a picture of the new provisional recipient as someone who was most likely to have had a cumulative GPA just under 3.0 and a prior term GPA just above 3.0. Table 1-10 cross-tabulates the data presented in Figures 1-1 and 1-2, showing the distribution of provisional recipients by the combination of cumulative and term GPAs in the semester before entering the provisional path in Fall

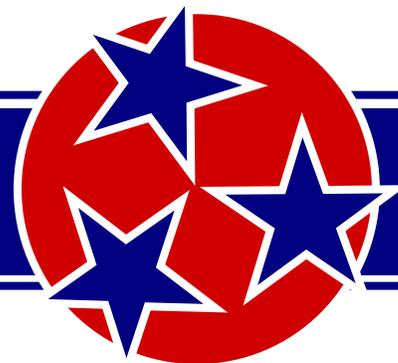
2009. This table groups scholarship recipients into four groups according to cumulative and term GPAs, presenting a closer look at students' academic standing. The dividing points for cumulative and term GPAs were at 2.875 and 3.5, respectively. The table shows that students at the higher end of cumulative GPA and the lower end of term GPA comprised the largest share among the four groups at 43.2 percent, followed by students with the low term GPA and low cumulative GPA.

Table 1-10: Distribution of Fall 2009, First-time Provisional Recipients by Cumulative GPA and Term GPA, Spring 2009

			Cumulative GPA	
			Low	High
			2.75-2.874	2.875 - 2.99
Term GPA	Low	3.0-3.49	25.4%	43.2%
	High	3.5-4.0	9.7%	21.7%

Source: TSAC FAFSA Data

# Scholarship Renewal and Graduation



## Scholarship Renewal and Graduation Rates for Provisional Recipients

Under the provisional rule, students can maintain scholarship eligibility with a minimum term GPA of 3.0 and a cumulative GPA of 2.75 while continuously enrolling full-time in subsequent semesters. Unlike the traditional path, provisional scholarship eligibility is evaluated every semester. Once a cumulative GPA of 3.0 is recovered, however, scholarship status will be transferred back to the traditional path, and scholarship eligibility will not be evaluated until the next credit hour checkpoint is reached.

**Tables 1-11, 1-12, and 1-13** show fall-to-fall scholarship renewal rates by higher education sector for Fall 2008 provisional recipients. The Fall 2008 cohort is divided into three groups based upon the benchmarks at which students entered the provisional track. Each table displays renewal and graduation rates for each student group. Table 1-11 exhibits renewal and graduation rates for students who entered the provisional path in the Fall 2008 term at the 72 credit hour benchmark. The table reveals that 49.0 percent either maintained scholarships in the following fall semester or earned a degree by the end of Spring 2009. 23.5 percent of the provisional students returned to the traditional path in Fall 2009. The cohort group from TBR universities demonstrated the best performance among the sectors, with a total of 57.1 percent either maintaining scholarships or attaining degrees.

Table 1-11: Fall-to-Fall Scholarship Renewal Rates for Provisional Recipients, Starting at the 72 Credit Hour Benchmark in Fall 2008, by Sector

Sector	Fall 2008 Provisional Cohort	Fall 2009			
		Provisonal	Traditional	Graduated	<b>Total</b>
TBR 4-year	<b>84</b>	16.7%	34.5%	6.0%	57.1%
TBR 2-year	<b>6</b>	16.7%	0.0%	33.3%	50.0%
UT System	<b>34</b>	26.5%	5.9%	5.9%	38.2%
Independents	<b>29</b>	3.4%	17.2%	17.2%	37.9%
<b>Total</b>	<b>153</b>	16.3%	23.5%	9.2%	49.0%

Note: "Graduated" includes students who graduated by the end of academic year 2008-09 (earned either associate's or bachelor's degrees).

Sources: THEC SIS and TSAC FAFSA Data

Table 1-12 presents scholarship renewal rates for students who started the provisional path in the Fall 2008 term with 96 cumulative credit hours. 64.8 percent of them either maintained scholarships by Fall 2009 or had earned a degree by the end of Spring 2009.

Table 1-12: Fall-to-Fall Scholarship Renewal Rates for Provisional Recipients, Starting at the 96 Credit Hour Benchmark in Fall 2008, by Sector

Sector	Fall 2008 Provisional Cohort	Fall 2009			
		Provisonal	Traditional	Graduated	<b>Total</b>
TBR 4-year	<b>89</b>	14.6%	6.7%	43.8%	65.2%
UT System	<b>63</b>	14.3%	7.9%	44.4%	66.7%
Independents	<b>30</b>	0.0%	0.0%	60.0%	60.0%
<b>Total</b>	<b>182</b>	12.1%	6.0%	46.7%	64.8%

Note: "Graduated" includes students who graduated by the end of academic year 2008-09 (earned either associate's or bachelor's degrees).

Sources: THEC SIS and TSAC FAFSA Data

**Table 1-13** presents scholarship renewal rates for students who started on the provisional path in Fall 2008 with cumulative credit hours of 120 or above. The table reveals that, out of 77 students in the entire cohort group, none renewed their scholarships in the following fall. However, 84.4 percent earned a degree by the end of Spring 2009. The graduation rate at independent institutions was 100 percent compared to 76.7 percent for TBR universities and 85.3 percent for UT campuses.

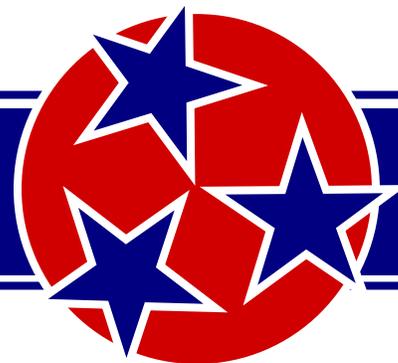
Table 1-13: Fall-to-Fall Scholarship Renewal Rates for Provisional Recipients, Starting at the 120 Credit Hour Benchmark in Fall 2008, by Sector

Sector	Fall 2008 Provisional Cohort	Fall 2009			
		Provisonal	Traditional	Graduated	<b>Total</b>
TBR 4-year	<b>30</b>	0.0%	0.0%	76.7%	76.7%
UT System	<b>34</b>	0.0%	0.0%	85.3%	85.3%
Independents	<b>13</b>	0.0%	0.0%	100.0%	100.0%
<b>Total</b>	<b>77</b>	0.0%	0.0%	84.4%	84.4%

Note: "Graduated" includes students who graduated by the end of academic year 2008-09 (earned either associate's or bachelor's degrees).

Sources: THEC SIS and TSAC FAFSA Data

## Conclusion

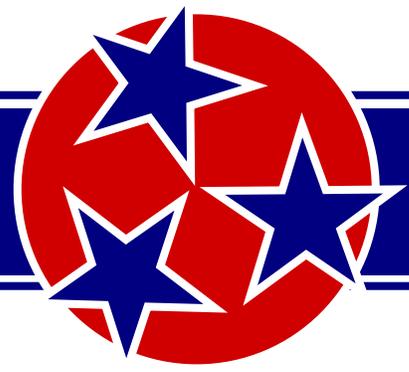


The 105<sup>th</sup> General Assembly in 2008 made two important changes in scholarship renewal criteria for the Tennessee Education Lottery Scholarship (TELS) program. One was to lower the minimum cumulative GPA at the 48 credit hour benchmark from 3.0 to 2.75, and another was to add the provisional rule, T.C.A. §49-4-911 (a)(2), to scholarship renewal criteria. This study focused on the latter amendment.

As an aid to students who made it more than halfway through their undergraduate careers with their scholarships intact, the provision had an initial implementation cost of \$2.9 million in academic year 2008-09, and approximately 1,200 students benefited from the provision. The annual expenditure for provisional students in AY 2009-10 was \$4.3 million with 1,700 students. This study found male students, African-American students, and low-income students more likely to be beneficiaries of the provision as compared to female, non-African-American, and mid-to-high income students.

The fall-to-fall scholarship renewal rate of provisional students was 49 percent for students who entered the provisional path at the 72 credit benchmark in Fall 2008. Approximately 20 percent of the students successfully returned to the traditional renewal track. For those who became provisional students at the 96 credit benchmark, the renewal rate was 18.1 percent, but an additional 46.7 percent of the provisional recipients graduated by the end of Spring 2009. While students undoubtedly have benefited from this provision, it also should be pointed out that half of provisional recipients lost scholarships within one year following receipt of the provisional scholarship. THEC will continue its research efforts in this area.



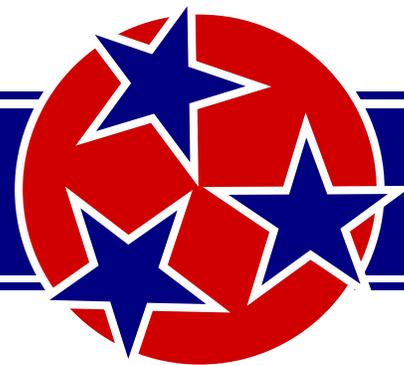


## **Chapter 2 : Impact of the Lower GPA Requirement at the 48 Hour Benchmark on College Retention**

### Abstract

*This report analyzes the impact of the revised scholarship renewal rule for the Tennessee Education Lottery Scholarship (TELS) program on college retention rates. The revised renewal rule, adopted during the 105<sup>th</sup> General Assembly in 2008, lowered the minimum GPA criteria at the benchmark of 48 cumulative credit hours from 3.0 to 2.75. This study found that the revised GPA requirement slightly improved college retention rates, enabling some students to continue their education. However, the effectiveness of the revised rule is probably not maximized in improving college retention, given that scholarships have mostly benefited students who likely would have continued their education regardless of scholarship receipt.*

## Executive Summary

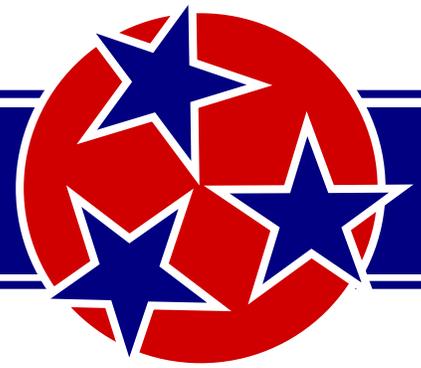


This report analyzes the impact of the revised scholarship renewal rule for the Tennessee Education Lottery Scholarship (TELS) program on college retention rates. The revised renewal rule, adopted during the 105<sup>th</sup> General Assembly in 2008, lowered the minimum GPA criteria at the benchmark of 48 cumulative credit hours from 3.0 to 2.75. This study found that the revised GPA requirement slightly improved college retention rates, enabling some students to continue their education. However, the effectiveness of the revised rule is probably not maximized in improving college retention, given that scholarships have mostly benefited students who likely would have continued their education regardless of scholarship receipt.

Over the last two academic years, 2008-09 and 2009-10, Tennessee expended an additional \$13.0 million on approximately 3,500 students (hereafter referred to as the “2.75 beneficiaries”), under the revised GPA rule. A higher proportion of male, ethnic minority, and lower income scholarship recipients renewed eligibility under the revised GPA than their counterparts. Students who qualified for initial scholarship eligibility on the basis of either ACT *or* High School GPA had a higher chance of becoming 2.75 beneficiaries as compared to students who met the initial criteria based on both ACT *and* high school GPA. The fall-to-fall scholarship renewal rate for the Fall 2008 cohort of 2.75 beneficiaries was 55.8 percent.

A binary logistic regression model revealed that the degree of impact of the lottery scholarship on college retention rates for students at the 48 credit hour benchmark varies according to student characteristics. For instance, the model estimated that the likelihood of college retention for students from mid-to-high income families attending four-year institutions, the largest constituency of 2.75 beneficiaries, increases only by 3.1 percentage points as a result of lottery scholarships. Meanwhile, the lottery scholarship improves the chance of college retention by 11 percentage points for students from low-income families at community colleges. Yet the latter group of lower income community college students comprised the smallest portion of 2.75 beneficiaries – only 3 percent. These results suggest that the GPA rule change has mostly provided financial assistance to students who are capable of continuing their education without scholarships, although the greatest retention benefit derives to low-income students at low-cost colleges.

# Introduction



## Overview of T.C.A. §49-4-911 (a)(1)

T.C.A. §49-4-911 (a)(1) defines scholarship renewal rules in the TELS program. This code mandates that scholarship continuation must be evaluated for all recipients at every 24 cumulative credit hours. It requires students to maintain a minimum GPA of 2.75 at the 24 and 48 hour benchmarks and 3.0 afterwards<sup>3</sup>. Prior to Fall 2008, the GPA threshold at the 48 hour benchmark was set at 3.0. The state legislature lowered this GPA requirement to 2.75 during the 105<sup>th</sup> General Assembly in 2008.

## Program Size and Scope

**Table 2-1** shows the numbers of 2.75 beneficiaries and associated expenses during academic years 2008-09 and 2009-10. In academic year 2008-09, the new revised rule enabled 1,607 students to maintain their scholarships at a cost to the state of approximately \$5.9 million. The total recipient headcount increased to 1,856 in the following academic year. The State's expenditure increased to \$7.0 million.

Table 2-1 : Scholarship Recipients and Dollars Awarded under the Revised GPA Rule at 48 Hour Benchmark, AY 2008-09 and AY 2009-10

	Students (Unduplicated)		Dollars	
	AY 2008-09	AY 2009-10	AY 2008-09	AY 2009-10
<b>Total</b>	<b>1,607</b>	<b>1,856</b>	<b>\$ 5,943,850</b>	<b>\$ 7,054,292</b>

Source: Tennessee Student Assistance Corporation (TSAC)

In Fall 2009, 989 recipients renewed their scholarships under the revised GPA rule, comprising 9.7 percent of all TELS recipients in the same term who had completed between 48 and 71 credit hours by the beginning of the semester (**Table 2-2**). The TBR community colleges had the highest percentage of 2.75 beneficiaries at 11.0 percent, compared to 10.9 percent at the Tennessee Board of Regents' universities, 9.4 percent at the UT campuses, and 6.9 percent at Tennessee private institutions.

<sup>3</sup> The 105<sup>th</sup> General Assembly also amended a scholarship renewal rule at the benchmark of 72 credit hours and thereafter. Another THEC report, "Impact of the Provisional Renewal Rule", has detailed explanations and analyses of this provision.

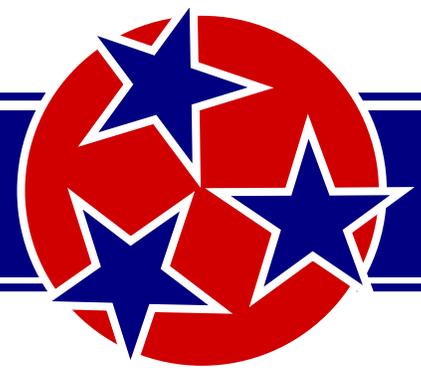
Table 2-2 : 2.75 Beneficiaries as a Percent of TELS Students who Earned Cumulative Credit Hours between 48 and 71, Fall 2009

System	2.75 Rule Beneficiaries	All TELS Recipients	%
TBR 4-year	450	4,135	10.9%
TBR 2-year	126	1,143	11.0%
UT System	290	3,100	9.4%
Independents	123	1,778	6.9%
<b>Total</b>	<b>989</b>	<b>10,156</b>	<b>9.7%</b>

Note: "All TELS Recipients" is limited to scholarship recipients with cumulative credit hours between 48 and 71 at the beginning of Fall 2009.

Sources: Tennessee Higher Education Commission Student Information System (THEC SIS) and TSAC Free Application for Federal Student Aid (FAFSA) Data

# Characteristics of Recipients



## Demographic Characteristics of 2.75 Beneficiaries

### *Gender*

**Table 2-3** shows the gender distributions of the 2.75 beneficiaries and the other recipients who renewed the scholarship with a GPA of 3.0 or above (hereafter referred to as “Regular Recipients”) by sector. For the Tennessee higher education total, the females’ share was larger than males’ for both types of recipients, 53.8 percent and 61.8 percent, respectively. Although female students formed the majority for both recipient groups, female representation among the 2.75 beneficiaries was 8.0 percentage points lower than that of regular recipients, implying that male students were more likely to benefit from this revision than females.

Table 2-3 : Gender Distributions of 2.75 Beneficiaries and Regular Recipients, Fall 2009, by Sector

System	2.75 Beneficiaries		Regular Recipients	
	Female	Male	Female	Male
TBR 4-year	52.0%	48.0%	61.8%	38.2%
TBR 2-year	67.5%	32.5%	71.7%	28.3%
UT System	48.3%	51.7%	57.6%	42.4%
Independents	59.2%	40.8%	63.1%	36.9%
<b>Total</b>	53.8%	46.2%	61.8%	38.2%

Note: “Regular Recipients” is limited to scholarship recipients who maintained the scholarship with 3.0 GPA or above and cumulative credit hours between 48 and 71 as of the beginning of Fall 2009.

Sources: THEC SIS and TSAC FAFSA Data

### *Race/Ethnicity*

**Table 2-4** shows the proportions of the 2.75 beneficiaries and the regular recipients by race/ethnicity and sector. Caucasian recipients comprised approximately 79.8 percent of the 2.75 beneficiaries and 83.9 percent of the regular recipients. African American students represented 12.0 percent of the 2.75 beneficiaries and 8.2 percent of the regular recipients. The share of African American students among the 2.75 beneficiaries was almost 1.5 times higher compared to that for the regular recipients.

Table 2-4 : Racial/Ethnic Distributions of 2.75 Beneficiaries and Regular Recipients, Fall 2009, by Sector

System	2.75 Beneficiaries			Regular Recipients		
	Caucasian	African American	Other	Caucasian	African American	Other
TBR 4-year	76.0%	14.4%	9.6%	80.7%	10.6%	8.7%
TBR 2-year	87.3%	4.0%	8.7%	84.9%	8.4%	6.8%
UT System	83.1%	10.3%	6.6%	88.1%	5.8%	6.0%
Independents	78.3%	15.0%	6.7%	83.3%	7.0%	9.7%
<b>Total</b>	<b>79.8%</b>	<b>12.0%</b>	<b>8.2%</b>	<b>83.9%</b>	<b>8.2%</b>	<b>7.8%</b>

Note: "Regular Recipients" is limited to scholarship recipients who maintained the scholarship with 3.0 GPA or above and cumulative credit hours between 48 and 71 as of the beginning of Fall 2009.

Sources: THEC SIS and TSAC FAFSA Data

*Income*

**Tables 2-5 and 2-6** compare income distributions between the 2.75 beneficiaries and the regular recipients across different higher education sectors for Fall 2009 recipients. Scholarship recipients are broken into nine groups according to their family income level as measured by adjusted gross income, with above \$96,000 being the highest income. For Tennessee higher education overall, the highest income group accounted for the largest share of scholarship recipients among both 2.75 beneficiaries and regular recipients, at 33 percent and 36 percent, respectively. For the rest of the income groups, the income distributions of both kinds of recipients draw similar trajectories.

Table 2-5 : Family Income Distribution of 2.75 Beneficiaries, Fall 2009

System	Family Income Level (Adjusted Gross Income)									Grand Total
	\$12,000 or less	12,001-24,000	24,001-36,000	36,001-48,000	48,001-60,000	60,001-72,000	72,001-84,000	84,001-96,000	above \$96,000	
TBR 4-year	7%	8%	11%	11%	7%	11%	11%	11%	24%	100%
TBR 2-year	9%	10%	11%	12%	11%	12%	10%	12%	12%	100%
UT	3%	8%	6%	7%	8%	8%	6%	8%	46%	100%
Independents	9%	10%	8%	7%	12%	6%	7%	7%	35%	100%
<b>Grand Total</b>	<b>6%</b>	<b>8%</b>	<b>9%</b>	<b>8%</b>	<b>9%</b>	<b>9%</b>	<b>9%</b>	<b>9%</b>	<b>33%</b>	<b>100%</b>

Sources: THEC SIS and TSAC FAFSA Data

Table 2-6 : Family Income Distribution of Regular Recipients, Fall 2009

System	Family Income Level (Adjusted Gross Income)									Grand Total
	\$12,000 or less	12,001-24,000	24,001-36,000	36,001-48,000	48,001-60,000	60,001-72,000	72,001-84,000	84,001-96,000	above \$96,000	
TBR 4-year	6%	8%	9%	7%	9%	9%	10%	8%	33%	100%
TBR 2-year	15%	18%	14%	9%	9%	10%	9%	4%	12%	100%
UT	5%	5%	6%	7%	7%	7%	8%	8%	47%	100%
Independents	7%	8%	10%	7%	7%	8%	8%	8%	37%	100%
<b>Grand Total</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>8%</b>	<b>8%</b>	<b>8%</b>	<b>9%</b>	<b>8%</b>	<b>36%</b>	<b>100%</b>

Note: "Regular Recipients" is limited to scholarship recipients who maintained the scholarship with 3.0 GPA or above and cumulative credit hours between 48 and 71 as of the beginning of Fall 2009.

Sources: THEC SIS and TSAC FAFSA Data

Chances of Becoming 2.75 Beneficiaries

**Table 2-7** exhibits percentages of TELS recipients (the Fall 2007 cohort) who renewed scholarships with less than a 3.0 GPA at the 48 hour benchmark by Spring 2011, showing the likelihoods of becoming 2.75 beneficiaries for each sector. The Fall 2007 cohort was chosen for this analysis because this was the first recipient group to fully benefit from the revised GPA requirement. According to the table, 7.0 percent of all first TELS freshmen were able to maintain their scholarship eligibility as a result of the lower GPA requirement.

Table 2-7 : Percentages of First-time TELS Freshmen who Renewed Scholarships Due to the Lower GPA Threshold by Fall 2010, Fall 2007 Cohort

	Fall 2007 Cohort		
	First-time TELS Freshmen	2.75 Beneficiaries	%
TBR 4-year	8,449	639	7.6%
TBR 2-year	5,852	263	4.5%
UT System	6,005	470	7.8%
Independents	3,486	291	8.3%
<b>Total</b>	<b>23,792</b>	<b>1,663</b>	<b>7.0%</b>

Sources: THEC SIS and TSAC FAFSA Data

**Table 2-8** shows the 2.75 beneficiaries as a percent of TELS recipients with cumulative credit hours between 48 and 71 in Fall 2009 by qualification standards met for initial scholarship eligibility. Students who were qualified based on high school GPA *and* ACT for initial scholarship eligibility were the least likely to become 2.75 beneficiaries (7.3 percent), as compared to students who qualified only on the basis of high school GPA (13.2 percent) or ACT (12.4 percent). The table suggests that academic preparation before entering college has some relationship with the likelihood that students will become 2.75 beneficiaries.

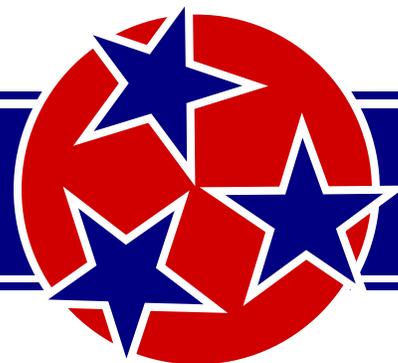
Table 2-8 : 2.75 Beneficiaries as a Percent of TELS Recipients by Academic Standards Met for Initial Scholarship Eligibility, Fall 2009

Academic Standards Met	2.75 Beneficiaries	TELS Recipients	2.75 Beneficiaries (%)
GPA & ACT	547	6,959	7.3%
GPA Only	271	1,780	13.2%
ACT Only	115	812	12.4%
<b>Total</b>	<b>933</b>	<b>9,551</b>	<b>8.9%</b>

Notes: 1) Includes only students who hit the 48 hour benchmark in the Spring 2009 with GPA less than 3.0 and received scholarships in Fall 2009; 2) "TELS Recipients" is limited to students with cumulative credit hours between 48 and 71; 3) Students with missing ACT or High School GPA were excluded from the table.

Sources: THEC SIS and TSAC FAFSA Data

# Scholarship Renewal



## Scholarship Renewal Rate

After the 48 hour benchmark, students can maintain scholarship eligibility at the 72 hour benchmark and thereafter by maintaining either: 1) a 3.0 cumulative GPA or 2) a minimum term GPA of 3.0 and a cumulative GPA of 2.75 while continuously enrolling full-time in subsequent semesters. The latter is the new provision added to scholarship renewal rules in Fall 2008. More detailed information on the provisional renewal rule is available in Chapter 1: “Impact of the Provisional Renewal Rule.”

**Table 2-9** displays fall-to-fall scholarship renewal rates, by higher education sector, for 2.75 beneficiaries in Fall 2008, showing the percentage of students who either renewed the scholarship in Fall 2009 or earned associate’s degrees by the end of Summer 2009. The table reveals that 55.8 percent of them either renewed their scholarships or obtained an associate’s degree. TBR two-year institutions had the highest renewal rate at 64.5 percent, followed by TBR four-year universities (56.2 percent), and UT campuses (51.4 percent). Tennessee independent institutions had the lowest renewal rate among the sectors at 48.4 percent.

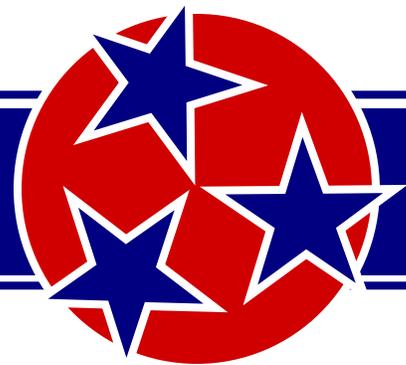
Table 2-9 : Fall-to-Fall Scholarship Renewal Rates for 2.75 Beneficiaries of Fall 2008, by Sector

System	Fall 2008 "2.75" Cohort	Fall 2009 Retained	Earned Associates	Renewal %
TBR 4-year	418	234	1	56.2%
TBR 2-year	110	47	24	64.5%
UT System	109	56	0	51.4%
Independents	91	44	0	48.4%
Total	728	381	25	55.8%

Notes: “Earned Associates” excludes students who obtained associate’s degrees and renewed the scholarship at 4-year institutions in Fall 2009. Such students were counted under “Fall 2009 Retained.”

Sources: THEC SIS and TSAC FAFSA Data

## Analysis: Impact of the Lower GPA Threshold on College Retention



One of the intended purposes of the revision in scholarship renewal rules at the 48 hour benchmark is to provide financial assistance to students who would not be able to continue their education without financial aid. By relaxing a scholarship renewal condition for students who completed almost half of their college careers with scholarships intact, the legislature hoped to give them another chance so that they would not have to leave their schools for financial reasons. The assumption underlying this decision was that lottery scholarships play an important role in student's decision-making on whether to continue their education. This section examines the extent to which this revision has improved college retention rates.

**Table 2-10** compares college retention rates by sector before and after the revised rule became effective. The Fall 2008 cohort, the control group, represents students who were able to renew scholarship status by virtue of the lower GPA threshold in Fall 2008. The Fall 2007 cohort, the comparison group, includes students who lost scholarships prior to Fall 2007 but continued enrollment with a cumulative GPA of at least 2.75. Both groups demonstrated the same general level of academic aptitude as measured by cumulative GPA, which ranges from 2.75 to 2.99. The only difference between these two student groups is that the latter group did not receive lottery scholarships whereas the former group did. The retention rates stand for the percentage of students who returned to school, including students who transferred to a different institution, in the following fall. Those who earned an associate's degree and left school before the following fall term were also counted as "retained" for the purpose of this analysis.

According to Table 2-10, retention rates were higher for scholarship recipients across all sectors as compared to non-recipients. The overall retention rate for Tennessee public higher education went up from 88 percent for the Fall 2007 cohort to 93 percent for the Fall 2008 cohort, a 5 percentage-point increase. Both Tennessee Board of Regents' universities and UT campuses increased retention rates by 4 percentage points, respectively. The college retention rate at community colleges also rose to 80 percent, a 5 percentage-point increase.

In order to ascertain whether the increase in retention rate is significant or simply a product of coincidence, a chi-square test was conducted for the Tennessee public higher education total. The test revealed a chi-square value of 12.9023 and a p-value of 0.0003 as presented below Table 2-10, meaning the rate at which this event occurs due merely to chance is 0.03%. In other words, the chi-square test indicated that the improved retention rate was not a result of chance but was caused by something else, suggesting that the lottery scholarship might have played a role in the improved college retention rates.

Table 2-10: Comparison of Fall-to-Fall College Retention Rates by Sector: Fall 2007 Cohort (2.75 Non-Beneficiaries) vs. Fall 2008 Cohort (2.75 Beneficiaries)

System	Did Not Receive Lottery Scholarships (2.75 Non-Beneficiaries)			Received Lottery Scholarships (2.75 Beneficiaries)		
	Fall 2007 Cohort	Fall 2008 Returned	Retention %	Fall 2008 Cohort	Fall 2009 Returned	Retention %
TBR 4-year	498	448	90%	531	501	94%
TBR 2-year	203	152	75%	127	102	80%
UT System	360	331	92%	191	184	96%
Total	1,061	931	88%	849	787	93%

Sources: THEC SIS and TSAC FAFSA Data

Tennessee Public Higher Education Total

Chi-square value = 12.9023

P-value = 0.0003

Notes: 1) Fall 2007 Cohort = Students who lost scholarships but continued to enroll in Fall 2007 with at least a 2.75 cumulative GPA and with cumulative credit hours between 48 and 71; 2) Fall 2008 Cohort = Scholarship recipients whose cumulative GPA was between 2.75 and 2.99 at the 48 hour benchmark.

Sources: THEC SIS and TSAC FAFSA Data

Although Table 2-10 above observes that college retention rates improved after the minimum GPA requirement was lowered to 2.75 at the 48 hour benchmark, the improvement cannot be solely attributed to lottery scholarships. Student demographics such as race, gender, and income level or institutional type also might have contributed to the increased retention, interplaying with lottery scholarships to increase retention rates. Therefore, the examination of the direct impact of lottery scholarship on college retention requires the removal of influences such as demographic and institutional factors.

To understand the extent to which non-lottery factors influence college retention, **Table 2-11** exhibits fall-to-fall retention rates for the combined Fall 2007 and 2008 cohorts by ethnicity, gender, family income, institutional type, and the receipt of Tennessee Student Assistance Award (TSAA), the state-funded need based aid program. The table reveals that institutional type and family income played statistically significant roles in college retention, showing that students from a mid-to-high family income or from four-year institutions are more likely to remain in school as compared to students from lower income families or those attending community colleges. Non-white and male students also demonstrated higher retention rates, but chi-square tests indicated that the differences are not statistically significant<sup>4</sup>, suggesting the differences could have occurred due to chance. The retention rates for both TSAA recipients and non-recipients are at 84 percent; the receipt of TSAA does not appear to make a difference in college retention either.

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<sup>4</sup>  $\alpha = 0.05$

Table 2-11: Fall-to-Fall College Retention Rates by Ethnicity, Gender, Family Income, Institutional Type, and TSAA Receipt, Fall 2007 and 2008 Cohorts Combined

	Retention Rate	Chi-Square	P-value
White	89%	2.4477	0.1177
Non-white	92%		
Female	89%	1.62	0.23
Male	91%		
\$36,000 and below	84%	25.1097	<0.0001
\$36,001 and above	92%		
2-yr	77%	72.0938	<0.0001
4-yr	92%		
Received TSAA	84%	0.0236	0.8778
Not Received TSAA	84%		

Sources: THEC SIS and TSAC FAFSA Data

Preceding Tables 2-10 and 2-11 confirm that lottery scholarship, family income, and institutional type probably exert a significant influence over college retention for students at the 48 hour benchmark. However, these tables still did not elaborate on the extent to which these factors interplay to result in college retention, and thus it is necessary to single out the impact of lottery scholarship from the influence of other factors. It is for this reason that a binary logistic regression analysis was conducted.

A goal of logistic regression is to predict the probability of a discrete outcome (Glynn et.al, 2006<sup>5</sup>), and the outcome of interest in this study is whether students returned to school the next fall. Converting a dichotomous dependent variable into a continuous variable that stands for the probability of college retention by using the logit transformation, this model calculates the likelihood of returning for each student based on their characteristics (Glynn et.al, 2006). A total of 1,916 students from the Fall 2007 and 2008 cohorts was tracked until the following fall term, coded as 0 if they did not come back to school in the next fall term and as 1 if they returned the next fall or obtained associate’s degrees prior to the fall term.

Also, the logistic regression model quantifies the impact of the lottery scholarship on the chances that the students will return, while controlling for other predicting variables, allowing researchers to estimate the direct impact of the scholarship on college retention. In this study, the logistic regression included only variables that were deemed statistically significant in preceding chi-square tests as independent variables: They are:

- Low income (Less than \$36,000 = 1; Otherwise = 0)
- Attended four-year institutions (Yes = 1; No (i.e. attended 2-year institutions) = 0)
- 2.75 beneficiaries (Yes = 1; No = 0)

**Table 2-12** shows the results of the logistic regression. According to the table, all three independent variables influence college retention at a statistically significant

<sup>5</sup> Glynn, J.G., Sauer, P.L., and Miller, T.E. (2005-06). Configural invariance of a model of student attrition. *Journal of College Student Retention: Research, Theory & Practice*, 7(3-4), 263-282

level. Students attending a four-year institution, students from mid-to-high income families, and 2.75 beneficiaries have a higher chance of returning to school in the next fall semester than their respective comparison groups, given the odds ratio presented in the table. The second portion of Table 2-12 is called a “classification table,” a conventional method to gauge the predictability of logistic regression models to show how accurately the model can predict the outcome (Greene, 2003<sup>6</sup>, and Glynn et al. 2006). The “percent of events predicted correctly” below the table represents the overall fitness of the model.

As aforementioned, the logistic regression calculates the probability of college retention for each individual student based on their income level, institution attended, and whether they received a lottery scholarship (i.e. 2.75 beneficiaries or not). The classification table compared this predicted outcome to an actual event, showing the rate at which this model predicted outcomes accurately. This analysis sets a rule by which a prediction is considered a “success” if students with at least an 80 percent chance of returning actually came back to school in the following fall term or students with less than an 80 percent chance of returning actually did not return. 1,916 events were tested and the success rate was 83 percent. A closer look at the classification table reveals that the model is good at predicting the return of students, but the precision of the model declined when it comes to the prediction of non-returning students.

Table 2-12: Results of Binary Logistic Regression  
(N=1915)

Parameter	Estimate	Standard Error	Wald Chi-Square	P-value	Odds Ratio	Interpretation
Intercept	2.35	0.17	184.05	<.0001		N/A
Attending 4-year Institution	-1.19	0.16	53.25	<.0001	0.303	"2yr" relative to "4yr"
Low Income (AGI<\$36,000)	0.66	0.16	17.24	<.0001	1.939	"High" relative to "Low"
Received lottery scholarship	-0.54	0.16	10.89	0.001	0.584	"No" relative to "Yes"

Classification Table (Probability = 0.8)

	Correct		Incorrect		Total
Returned	1,530	92%	133	8%	1,664
Not Returned	65	26%	187	74%	252
Total	1,595	83%	320	17%	1,916

Percentage of Correct Prediction 83.3%

**Table 2-13** summarizes the chances of returning based on student characteristics. TELS recipients in all demographic groups demonstrated higher likelihoods of college retention than non-TELS students. Students attending four-year institutions are expected to have more than a 85 percent chance of returning to school. The highest probability of retention—95.3 percent—was demonstrated by TELS students from mid-to-high income families. In the meantime, students attending two-year institutions display a wider variation of retention likelihoods, ranging from 64.9 percent for low-income non-TELS students to 86.0 percent for mid-to-high income TELS students.

<sup>6</sup> Greene, W.H. (2003). *Econometric Analysis*, 5<sup>th</sup> Edition.

Table 2-13: Predicted Chances for Returning in Next Fall Semester by Institution Attended, Income, and Scholarship Receipt

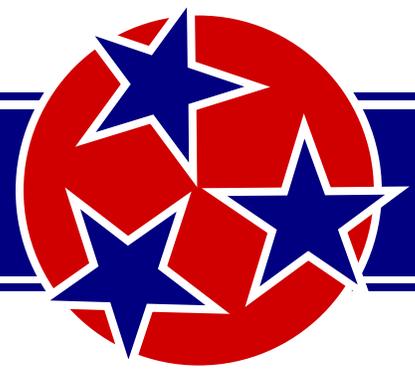
		2-yr	4-yr
with TELS	Low Income	76.0%	91.3%
	Mid-to-High Income	86.0%	95.3%
without TELS	Low Income	64.9%	85.9%
	Mid-to-High Income	78.2%	92.2%

**Table 2-14** summarizes the extent to which the likelihood of college retention increases due to the lottery scholarship for each student group. Each piece of data in the table was obtained by subtracting the average chance of college retention for non-TELS students from that of TELS students, thus displaying the degree of increase in college retention likelihood due to lottery scholarship. The retention probability improves by the greatest extent for low-income students attending two-year institutions, who demonstrate an 11.1 percentage-point increase. The second largest increase is observed for mid-to-high income students attending two-year institutions (7.8 percentage points), followed by low-income students at four-year institutions (5.3 percentage points). The chance hardly improves for mid-to-high income class students at four-year institutions, suggesting that these students would return to school regardless of whether they receive scholarships or not.

Table 2-14: Improved Chances for Returning in Next Fall Semester Due to Lottery Scholarship

		2-yr	4-yr
Impact of TELS	Low Income	11.1%	5.3%
	Mid-to-High Income	7.8%	3.1%

## Policy Implications



The analysis in the previous section reveals that the revised GPA requirement at the 48 hour benchmark has been the most effective in improving the chance for retention for low-income students attending two-year institutions. As a result of the rule change, these students improved their chance of returning to school in the next fall term by 11 percentage points. On the other hand, the revision hardly increases the probability of college retention for mid-to-high income students at four-year institutions. These results suggest that the impact of the lottery scholarship on college retention for students at the 48 hour benchmark varies according to student income and the type of institutions in which they participate.

**Table 2-15** presents the actual allocation of lottery scholarship expenditures for 2.75 beneficiaries in academic years 2008-09 and 2009-10 according to student income level and institutional type. A total of \$11.1 million was expended on the 2.75 beneficiaries over the last two years, and approximately two-thirds of the total expenditure (\$7.5 million) was for students from mid-to-high income class at four-year institutions who, according to the statistical analysis, would have been able to return anyway without lottery scholarships. Meanwhile, the State spent only \$0.3 million for low-income students at community colleges, the student population whose retention rates would be improved substantially by lottery scholarships. It is certainly true that the lower GPA requirement at the 48 credit hour benchmark has improved college retention. Nonetheless, the majority of 2.75 beneficiaries were from mid-to-high income families and attending four-year institutions, the implication being that the most salient contribution of this revision is not probably an increased college retention rate but, for most students, a reduction in the net cost of attendance.

Table 2-15: Allocation of Lottery Scholarship Expenditures for 2.75 Beneficiaries by Institution Attended and Income Level, Academic Years 2008-09 and 2009-10 Combined

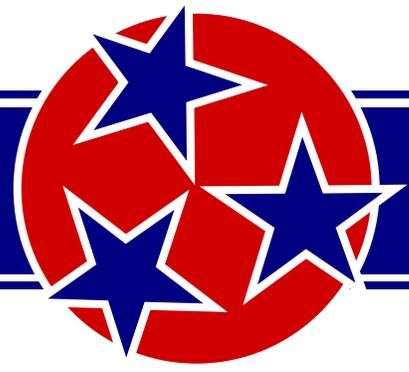
Row Labels	2-yr	4-yr	Grand Total
Low Income	\$ 325,841	\$ 2,861,923	\$ 3,187,764
Mid-to-High Income	\$ 382,755	\$ 7,546,249	\$ 7,929,004
Grand Total	\$ 708,596	\$ 10,408,172	\$ 11,116,768

Source: TSAC FAFSA Data

Since the inception of the TELS program, lottery scholarships have been instrumental to many students in pursuing their education beyond the secondary level. It needs to be noted, however, that there is a variation of “how” they have been beneficial among students. For students attending two-year institutions, particularly from low income families, receiving a lottery scholarship is a deciding factor when it comes to pursuing further education. They need financial aid to continue their education, and it could pose a formidable threat to their education if they lost scholarships in the middle of their college career. Contrarily, a lottery scholarship is a cost saving factor for mid-to-high income students attending four-year institutions. Their financial capacity would

be surely challenged once they lost scholarships, but most of these students appear to have a financial cushion to absorb the loss. It is valuable for policymakers to be cognizant of such a reality - the impact of the lottery scholarship is not the same for all students.



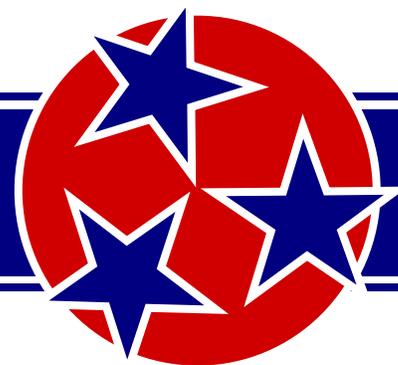


## **Chapter 3 : Lottery Scholarship and Affordability**

### Abstract

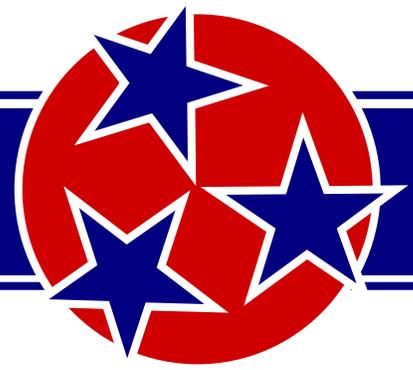
*This chapter examines the extent to which the lottery scholarship has contributed to reducing students' payment for the cost of higher education, by income level. First, the report shows average student resources by income source, income level, and institutional type. Then it discusses the effectiveness of the lottery scholarship in improving college affordability, exploring how unmet needs can be reduced through the TELS program.*

## Executive Summary



- In academic year 2009-10, the average total cost of attendance (including tuition, fees, books, supplies, and room and board) for full-time, in-state undergraduate students was \$18,946 at the Tennessee Board of Regents' (TBR) universities, compared to \$18,126 at the University of Tennessee (UT) campuses, and \$27,364 at not-for-profit, independent institutions. At the TBR community colleges, the total costs were \$8,945 for students living with family and \$14,570 for those living on their own.
- In Fall 2009, the average sum of Expected Family Contribution (EFC) and publicly funded grant aid (hereafter referred to as "total student resources") was \$7,235 at the Tennessee Board of Regents' (TBR) universities for traditional-aged, full-time undergraduate students with adjusted gross income (AGI) less than \$12,000, the lowest income group. Their remaining financial gap to pay for the total cost of attendance was \$11,261.
- The average total student resources were \$8,215 for those from the lowest income group at the University of Tennessee campuses in Fall 2009. Their unmet gap was \$9,911.
- At TBR community colleges, average total student resources were \$5,671 for students in the lowest income group in Fall 2009. Their average unmet need was \$3,274 if they lived with family, compared to \$8,899 for those living on their own.
- Average total student resources for the lowest income students at not-for-profit, independent institutions were \$8,393 in Fall 2009. Their unmet gap was \$18,971.
- Students from the most affluent families might have the financial ability to pay for the cost of attendance without the lottery scholarship. At public institutions, the average EFC of students with AGI higher than \$84,000, even without the lottery scholarship, exceeded their cost of attendance. At private institutions, students with AGI of \$96,000 or above had an average EFC high enough to pay the cost. The State dedicated approximately one-third of all TELS expenditures to awards for these students.
- In Fall 2009, approximately 45,500 traditional aged undergraduate students could not receive the Tennessee Student Assistance Award, the state's need-based grant, due to insufficient funding for that program. The estimated funding shortfall was \$86.3 million, less than the lottery scholarship expenditures that were spent for students whose EFC was sufficient to leave them with no unmet need.

## Introduction



One of the policy objectives of the Tennessee Education Lottery Scholarship (TELS) program is to supply financial aid for Tennessee students and thereby improve their financial capacity to pursue postsecondary education. In light of this mission, the lottery scholarship has made substantial contributions to many students and families. Over the course of the last six years, the lottery has provided scholarship awards to approximately 247,000 students with nearly \$1.2 billion<sup>7</sup>. In academic year 2009-10 alone, the state awarded approximately \$284 million through the program to 97,000 students. As a hybrid scholarship program that combines both merit- and need-based characteristics, TELS has reduced the cost of education for a broad range of students.

While it is clear that many students have received benefits from the lottery, it is not clear how effectively the lottery scholarship has improved affordability by reducing students' financial burden. Generally speaking, merit-based scholarships are not designed to address affordability as their primary purpose. Students receive merit awards on a need-blind basis, a mechanism that tends to benefit high-income students more than low-income students. Consequently, a larger portion of financial assistance goes to more affluent students. Given this awarding scheme of merit-aid programs, some may think affordability should not be a policy concern for the TELS program.

Although TELS is recognized primarily as a merit-based program, it is different from merit-aid programs in other states. In addition to its merit-based features, TELS has a need-based component that incentivizes low-income students to participate and succeed in college, which makes this program unique among the states. The TELS program is intended to address a wide range of higher education issues, however, improving college affordability is one of the program's primary goals; therefore much of the policy conversation about TELS centers on how the lottery has financially supported low-income and underrepresented students.

Toward that end, this chapter examines the extent to which the lottery scholarship has enhanced affordability for students in the state. First, it introduces data on how undergraduate students have financed their education through multiple resources, including: 1) the lottery scholarship, 2) Pell Grant, 3) Tennessee Student Assistance Award (TSAA), and 4) the Expected Family Contribution (EFC) derived from the Free Application for Federal Student Aid (FAFSA). Institutional dollars and other grants from private corporations or foundations are not reflected in this analysis due to the general unavailability of such data. The results were disaggregated by family income level to illustrate the average financial contribution made by each aid program, with a particular focus on the lottery scholarship. This report also discusses whether the lottery scholarship is distributed effectively and equitably to reduce students' financial burden. Finally, it explores a way to improve the spending power of the lottery scholarship against the unmet need of Tennessee students.

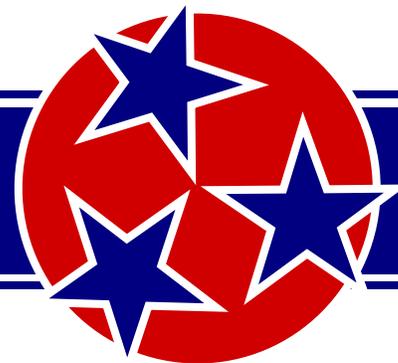
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<sup>7</sup> Source: Tennessee Student Assistant Corporation (TSAC)

It is important to note that this particular study is limited to full-time undergraduate, age 24 or less, Tennessee resident students attending one of the following institutions in academic year 2009-10: Tennessee Board of Regents' universities and community colleges, University of Tennessee campuses, or in-state, private not-for-profit institutions. Tennessee Technology Centers and private for-profit institutions are not included in this study. Also, all analyses are based upon those who filled out a FAFSA form, as these analyses drew on data from the FAFSA data file provided to THEC by the Tennessee Student Assistance Corporation (TSAC). The THEC database contained 145,631 undergraduate, resident students who met such criteria. They represented approximately 97 percent of the total number of Tennessee resident, undergraduate full-time students of the same age group in the state.

Lastly, this study repeatedly presents average award amounts such as average TELS, average TSAA, etc. In the calculation of these averages, non-recipients are treated as if they received \$0 for the aid. For instance, if a student did not receive a lottery scholarship, this individual is considered to have received \$0 of the lottery scholarship. One may argue that this methodology is misleading as it makes the average scholarship amount look smaller than the actual average amount awarded *to recipients*. However, the purpose of this analysis is to understand the macro-level impact of the lottery scholarship on student affordability, not the micro-level financial impact on TELS students alone. Because the research interest lies in the financial conditions of the overall student body, not just lottery recipients, this approach would be preferable to excluding non-recipients from the average award calculation.

## Total Student Resources and Average Cost of Attendance



### Tennessee Board of Regents' Universities

**Figure 3-1** displays the average sum of Expected Family Contribution (EFC) and gift aid received by traditional-aged students attending Tennessee Board of Regents' universities (TBR 4-year) in academic year 2009-10. The horizontal line on the figure represents the unweighted, average total cost of attendance<sup>8</sup> of the six public universities during that year, which was \$18,496. This amount represents the average cost paid by a resident full-time undergraduate student living on campus, as reported to the Integrated Postsecondary Education Data Systems (IPEDS).

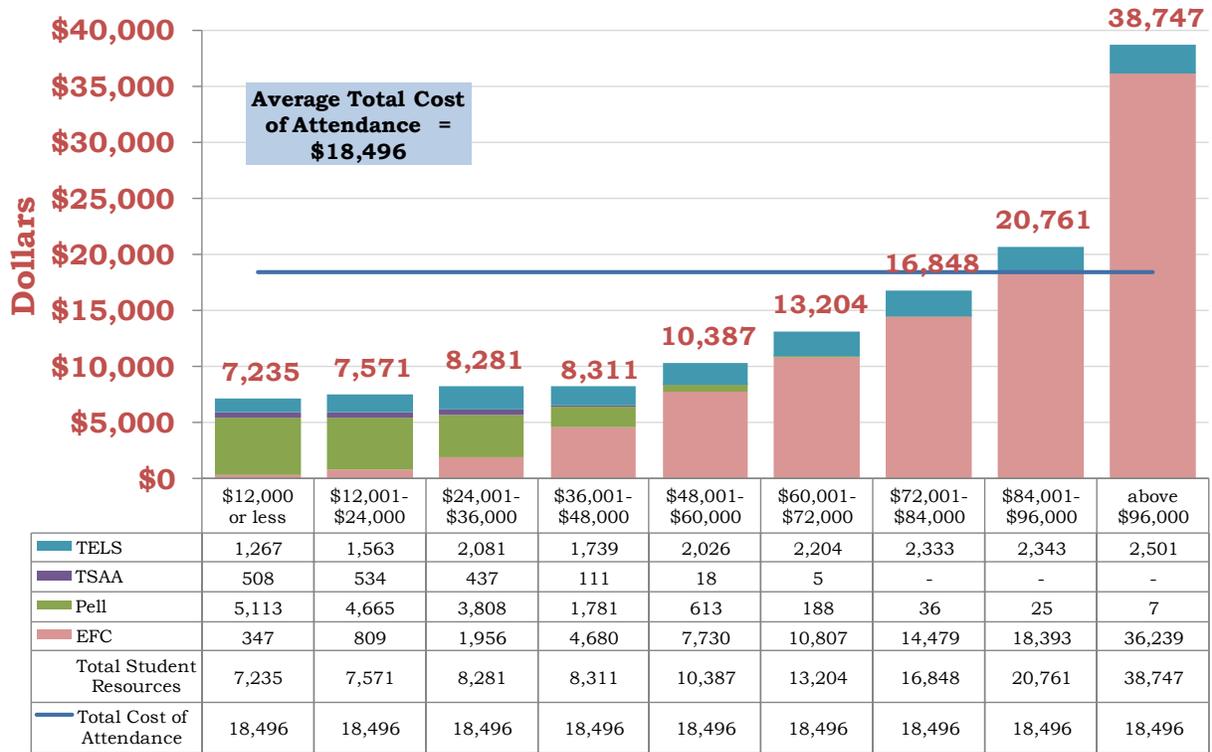
Students' financial aid portfolios vary substantially by adjusted gross income (AGI). The combined amount of all financial sources (hereafter referred to as "total student resources") including EFC was \$7,235 for students from the lowest income bracket, \$0 to \$12,000 AGI. The student total resources of this group were \$11,261 lower than the average total cost of attendance. The student total resources edge upward as AGI increases, growing rapidly after the \$48,000 - \$60,000 AGI range. The average lottery scholarship amount also rises as income level goes up, except at the \$36,000 - \$48,000 AGI range, where it dips slightly. The lowest average lottery scholarship was \$1,267 for the lowest income group, and the highest average was \$2,501 for the highest income group. This difference occurs because lower income students have less representation in the TELS program compared to higher income students.

The average amount of unmet need stays at almost the same level from the lowest AGI bracket to the \$36,000 - \$48,000 range. It starts to decline quickly after the \$48,000-\$60,000 income group, reaching negative numbers at the \$84,000-\$96,000 range. The negative figure indicates total student resources actually exceed the cost of attendance. The chart suggests that traditional students from the two highest income groups may have the financial ability to pay for the cost of attendance without the lottery scholarship.

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<sup>8</sup> Includes tuition and fees, books and supplies, on-campus room and board, and other on-campus expenses.

Figure 3-1: Average Expected Family Contribution and Undergraduate Gift Aid by Income Level, 2009-10 -- TBR Universities, Full-time Tennessee Resident Students, Age 24 or less



**Adjusted Family Income, 2009-10**

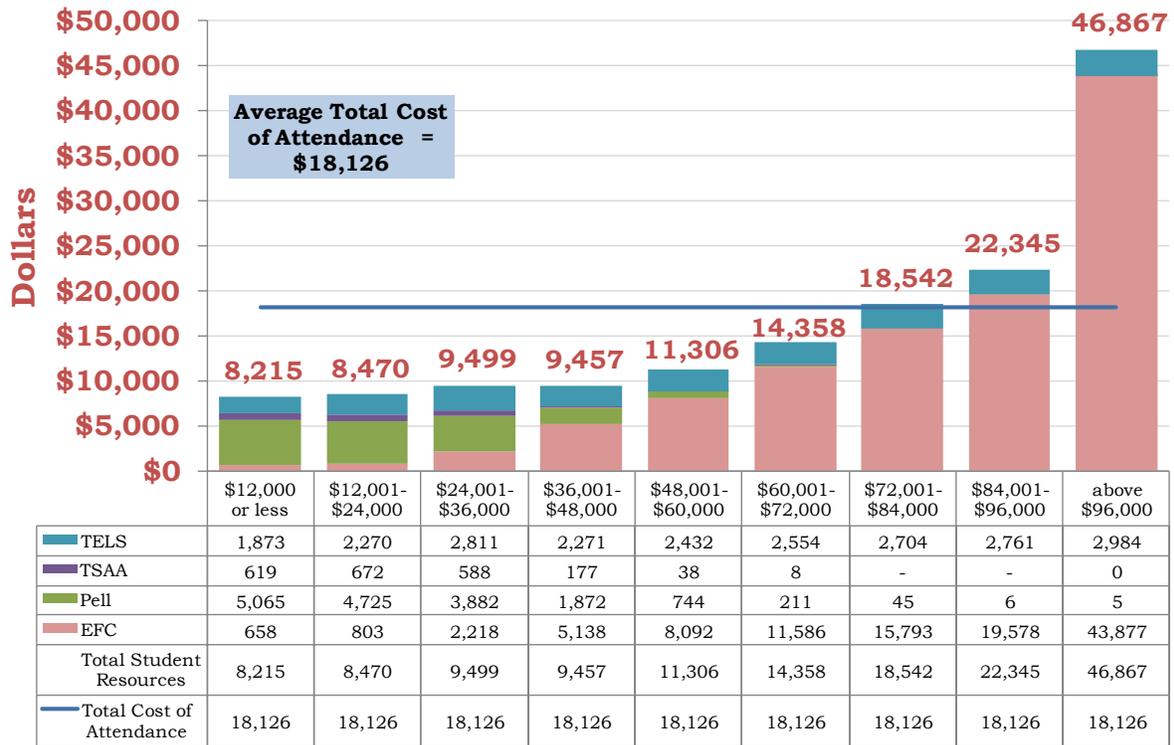
Sources: FAFSA and IPEDS

University of Tennessee Campuses

**Figure 3-2** displays the average total student resources by income level at the University of Tennessee (UT) campuses in academic year 2009-10. The horizontal line on the figure represents the unweighted, average total cost of attendance of the three institutions within the sector during that year, which was \$18,126. As is the case for the TBR universities, the total cost of attendance corresponds to the average amount paid by a resident full-time undergraduate student living on campus, as retrieved from the Integrated Postsecondary Education Data Systems (IPEDS).

This figure presents almost identical results as seen in the figure for TBR 4-year institutions. The only notable difference is that UT students had a relatively lower break-even point, which is the point at which students' EFC and other revenues meet or exceed the cost of attendance. This occurred at the income range of \$72,000 to \$84,000. This figure and the one for TBR 4-year institutions convey a similar message – that most high income students could probably pay for the total cost of attendance without the lottery scholarship.

Figure 3-2: Average Expected Family Contribution and Undergraduate Gift Aid by Income Level, 2009-10 -- UT Campuses, Full-time Tennessee Resident Students, Age 24 or less



**Adjusted Family Income, 2009-10**

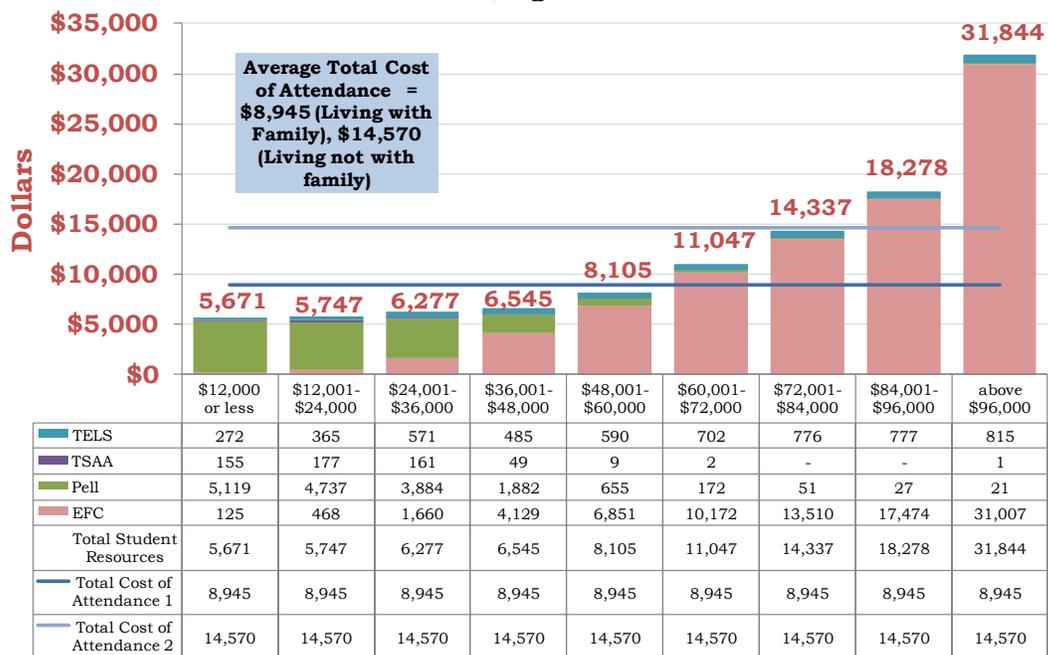
Sources: TSAC FAFSA Data and IPEDS

Tennessee Board of Regents' Community Colleges

**Figure 3-3** presents the average of total student resources by income level at TBR community colleges (TBR 2-year) in academic year 2009-10. Different from the preceding figures for public 4-year institutions, this figure displays two horizontal lines, which represent the total cost of attendance for two types of students. The line above corresponds to the average cost for students not living with family, while the other line represents the cost for those living with family, in other words, commuters from one's parents' house. The average cost of attendance was \$14,570 for the former students in 2009-10 and \$8,945 for commuters. These figures are the unweighted average costs of attendance of the 13 community colleges in Tennessee, as retrieved from IPEDS.

Students living with family had a relatively lower break-even point than students attending 4-year institutions. The figure indicates that these students should have enough financial resources to pay the cost if their family income is at or above the \$60,000-\$72,000 range. Meanwhile, those who live off-campus away from family need to have higher incomes to pay for the cost. The total cost of attendance was \$14,570 for those students, 62 percent higher than the cost for commuting students. This is because they need to pay their own living costs such as rent and utilities in addition to tuition and fees. The figure indicates that commuters would need to have at least \$72,000-\$84,000 family income to afford the cost of education without relying on other income sources such as institutional aid or loans. The break-even point for community college commuters who live on their own is similar to that of students at 4-year institutions.

Figure 3-3: Average Expected Family Contribution and Undergraduate Gift Aid by Income Level, 2009-10 -- TBR Community Colleges, Full-time Tennessee Resident Students, Age 24 or less



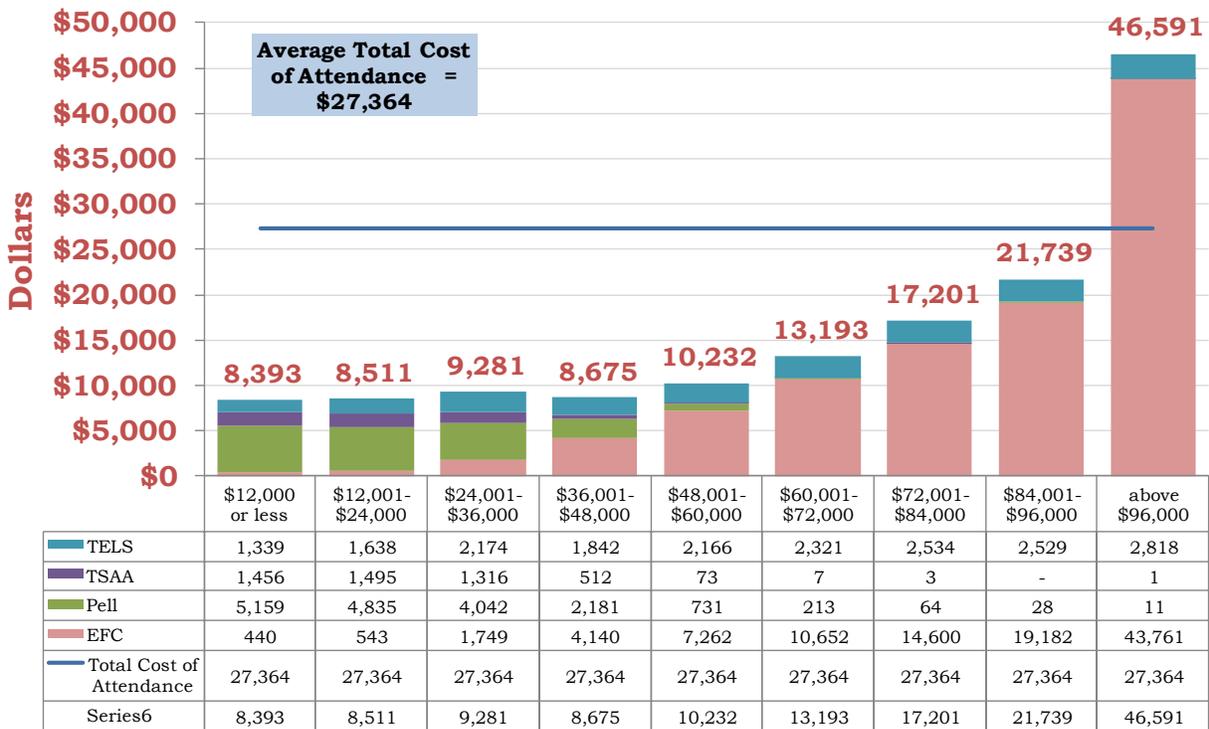
Adjusted Family Income, 2009-10

Sources: TSAC FAFSA Data and IPEDS

Tennessee Not-for-profit, Independent Institutions

Tennessee not-for-profit, independent institutions require the highest cost of attendance across the sectors. In 2009-10, the unweighted average cost of attendance was \$27,364 for on-campus, full-time students. Only students from the highest income bracket can pay the total cost of attendance entirely from their Expected Family Contribution, as **Figure 3-4** illustrates below. The average total student resources range from \$8,393 for the lowest income group to \$46,591 for the highest group. In general, students attending these institutions face higher unmet needs than those attending public institutions. The following section elaborates more on unmet need issues.

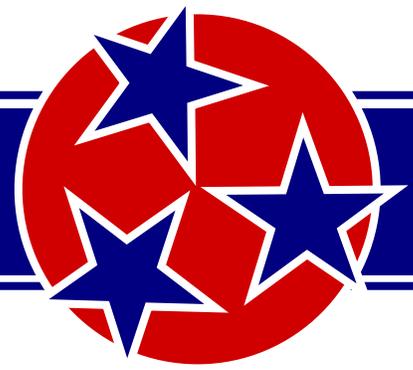
Figure 3-4: Average Expected Family Contribution and Undergraduate Gift Aid by Income Level, 2009-10 -- Tennessee Not-for-profit, Independent Institutions, Full-time Tennessee Resident Students, Age 24 or less



**Adjusted Family Income, 2009-10**

Sources: TSAC FAFSA Data and IPEDS

# Student Unmet Need



This section examines the level of unmet need among Tennessee students by family income level and institutional type. The average unmet need is derived using the following formula:

$$\text{Average Unmet Need} = \text{Average Total Cost of Attendance} - \text{Average EFC} - \text{Average TELS} - \text{Average TSAA} - \text{Average Pell}$$

As mentioned in the beginning of this chapter, non-recipients of a particular award were treated as though they received \$0 from the resource in the calculation of average.

For TBR community colleges, the average cost of attendance was set at \$11,758, the middle point between the average costs charged for students living with family and on their own. This is based upon an assumption that 50 percent of traditional full-time students commute from home. For the other sectors, the same average costs as shown in the preceding figures were used. A positive number in **Table 3-1** indicates that, on average, unmet need exists in the group. A negative figure within the parenthesis means that the unmet need is negative, implying that the average student total resources exceed the average total cost of attendance.

Unmet need varies by income level and institutional sector. Not surprisingly, the lowest income group faces the highest unmet need, which ranges from \$6,086 at TBR 2-year institutions to \$18,971 at TICUA institutions (Table 3-1). The state average of unmet need hovers between \$9,400 and \$9,800 for the four lowest income groups, then it starts to decline at the \$48,000 - \$60,000 income range and afterward. The two highest income groups have negative unmet need, meaning that their average financial capacities exceed the average cost of attendance.

Table 3-1 : Average Unmet Need Amount for Full-time Undergraduate, Tennessee Resident Students, Age 24 or less, in 2009-10

	TBR 4-yr	TBR 2-yr	UT	TICUA	Total
\$12,000 or less	11,261	6,086	9,911	18,971	<b>9,745</b>
12,001-24,000	10,925	6,010	9,656	18,853	<b>9,768</b>
24,001-36,000	10,215	5,481	8,627	18,083	<b>9,370</b>
36,001-48,000	10,185	5,212	8,669	18,689	<b>9,584</b>
48,001-60,000	8,109	3,652	6,820	17,132	<b>7,834</b>
60,001-72,000	5,292	710	3,768	14,171	<b>5,019</b>
72,001-84,000	1,648	(2,580)	(416)	10,163	<b>1,377</b>
84,001-96,000	(2,265)	(6,521)	(4,219)	5,625	<b>(2,461)</b>
above \$96,000	(20,251)	(20,086)	(28,741)	(19,227)	<b>(23,059)</b>
<b>Total</b>	<b>2,205</b>	<b>2,163</b>	<b>(7,118)</b>	<b>7,654</b>	<b>1,138</b>

To better understand unmet need in relative terms, **Table 3-2** shows the average unmet need as a percent of the average cost of attendance. The higher the percent, the higher unmet need relative to the cost. The values are coded by one of three colors according to need level. Groups with a rate of 50 percent or above are displayed in red cells, identifying the neediest group. The second neediest group is shown in yellow cells, including students who have unmet need between 0 percent and 50 percent. The green cells signify students who have financial resources exceeding the average cost of attendance.

According to the table, the neediest group includes the following students on each sector:

- TBR 4-year institutions – students with adjusted gross family income of \$48,000 or less
- TBR 2-year and UT institutions – students with adjusted gross family income of \$24,000 or less
- TICUA institutions – students with adjusted gross family income of \$72,000 or less.

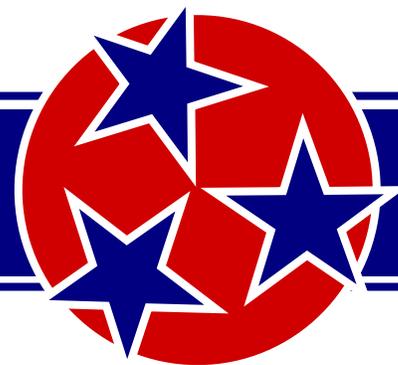
In the meantime, the following students have enough financial capacity to pay for the necessary cost of education:

- TBR 4-year institutions – students with adjusted gross family income of \$84,000 or above
- TBR 2-year and UT institutions – students with adjusted gross family income of \$72,000 or above
- TICUA institutions – students with adjusted gross family income of \$96,000 or above.

Table 3-2 : Average Unmet Need as a Percent of Average Cost of Attendance, Full-time Undergraduate, Tennessee Resident Students, Age 24 or less, in 2009-10

	TBR 4-yr	TBR 2-yr	UT	TICUA
\$12,000 or less	61%	52%	55%	69%
12,001-24,000	59%	51%	53%	69%
24,001-36,000	55%	47%	48%	66%
36,001-48,000	55%	44%	48%	68%
48,001-60,000	44%	31%	38%	63%
60,001-72,000	29%	6%	21%	52%
72,001-84,000	9%	-22%	-2%	37%
84,001-96,000	-12%	-55%	-23%	21%
above \$96,000	-109%	-171%	-159%	-70%

## Discussion: Does the Lottery Scholarship Address the Affordability Issue Effectively?



This study has discussed that the majority of students, except those from the highest income families, have unmet need after accounting for Expected Family Contribution (EFC) and publicly-available grant aid, regardless of institutional type. Although the level of unmet need varies by income and institutional type, the gaps remain relatively large for many students, especially for those from low income families. The preceding analyses also reveal that the lottery scholarship has been awarded to students whose needs are fully met without the lottery scholarship. While there are legitimate reasons for this, these observations inevitably lead to the following questions: have lottery dollars been effectively allocated to improve the affordability of Tennessee students? If not, is there any better way to allocate the limited resource to reduce students' financial burdens? This section attempts to discuss these questions, intending to bring an equity perspective into policy conversations on the state's lottery scholarship program.

According to **Table 3-3**, the statewide unmet need for full-time undergraduate students at age 24 or less amounted to approximately \$165.7 million in 2009-10. The unmet need in each group was obtained by multiplying the average unmet need by the corresponding number of students in the group. Each income group has a widely different level of collective unmet need, which ranges from \$269.9 million for the lowest income group to negative \$701.0 million for the highest income group. After combining all the sectors, only the two highest income groups had sufficient financial resources without relying on the lottery scholarship to pay the cost of attendance.

Table 3-3 : The Sum of Unmet Need by Sector and Income Level, Tennessee Resident Students, Age 24 or less, 2009-10

	TBR 4-yr	TBR 2-yr	UT	TICUA	Total
\$12,000 or less	95,516,571	76,958,434	29,781,100	67,648,884	<b>269,904,989</b>
12,001-24,000	74,301,232	49,895,951	23,965,017	48,998,708	<b>197,160,909</b>
24,001-36,000	59,133,566	32,676,446	20,609,881	41,644,235	<b>154,064,128</b>
36,001-48,000	45,515,447	19,972,939	17,423,922	32,649,709	<b>115,562,017</b>
48,001-60,000	33,109,326	12,202,481	14,179,193	27,548,012	<b>87,039,013</b>
60,001-72,000	19,919,554	2,003,468	7,498,015	21,086,591	<b>50,507,628</b>
72,001-84,000	5,834,067	(6,150,677)	(858,190)	14,075,492	<b>12,900,693</b>
84,001-96,000	(7,200,135)	(11,782,667)	(8,615,770)	7,166,229	<b>(20,432,343)</b>
above \$96,000	(214,351,620)	(78,457,842)	(309,076,718)	(99,116,774)	<b>(701,002,953)</b>
<b>Total</b>	<b>111,778,008</b>	<b>97,318,534</b>	<b>(205,093,549)</b>	<b>161,701,088</b>	<b>165,704,081</b>

Although affordability does not appear to be an issue for many high income students, the TELS program does not limit access to funding for students based upon income level. The table below displays the estimated amount of the lottery scholarships awarded to students whose EFCs are high enough to cover the cost of attendance

without financial aid (**Table 3-4**). In other words, these dollars stand for the State’s investment that might not have necessarily paid for the cost directly associated with education. In 2009-10, that investment amounted to \$90.0 million in total, accounting for approximately 32 percent of entire program expenditures (\$284 million). For the highest income group, the state spent \$76.1 million in TELS awards exceeding their necessary costs for education, and \$11.4 million and \$2.4 million for the second and third highest income groups, respectively. UT has the highest amount of such scholarships at \$38.3 million, followed by TBR 4-year universities with \$30.8 million.

Table 3-4 : The Sum of the Lottery Scholarship Paid Beyond the Total Cost of Attendance after Need Has Been Fully Met by Sector and Income Level, Tennessee Resident Students, Age 24 or less, 2009-10

	TBR 4-yr	TBR 2-yr	UT	TICUA	<b>Total</b>
\$12,000 or less	-	-	-	-	-
12,001-24,000	-	-	-	-	-
24,001-36,000	-	-	-	-	-
36,001-48,000	-	-	-	-	-
48,001-60,000	-	-	-	-	-
60,001-72,000	-	-	-	-	-
72,001-84,000	-	1,843,780	587,665	-	<b>2,431,444</b>
84,001-96,000	4,398,447	1,402,325	5,638,534	-	<b>11,439,305</b>
above \$96,000	26,406,513	3,178,542	32,078,458	14,470,626	<b>76,134,140</b>
<b>Total</b>	<b>30,804,959</b>	<b>6,424,647</b>	<b>38,304,657</b>	<b>14,470,626</b>	<b>90,004,889</b>

From a purely economic perspective, the current scholarship mechanism may not optimize the available resource to address student affordability issues, as the lottery scholarship has not completely dedicated its resources to the reduction of unmet need. \$90 million of the lottery scholarships were awarded to students whose needs were fully met without the scholarship. This amount could ease the financial burden of other students who are in need of other resources to fill the financial gap. This section explores a hypothetical scenario that may improve the overall affordability of Tennessee students by allocating the lottery scholarship differently.

One example is to reallocate the available funding to the need-based TSAA program. Tennessee had a total of 45,556 full-time, undergraduate students (age 24 or less) who were eligible for the TSAA grant but could not receive it due to shortages in program funding (**Table 3-5**). As the state’s only need-based aid subsidized by the general fund, the TSAA grant awards students whose EFC is 2,100 or less. Due to the relatively small budget of this program, however, the award is given to students on a first-come first-served basis, and thus funding usually runs out quickly and is not awarded to all eligible applicants.

Table 3-5 : Students who Could not Receive TSAA Grants despite Being Eligible by Sector and Income Level, Tennessee Resident Students, Age 24 or less, 2009-10

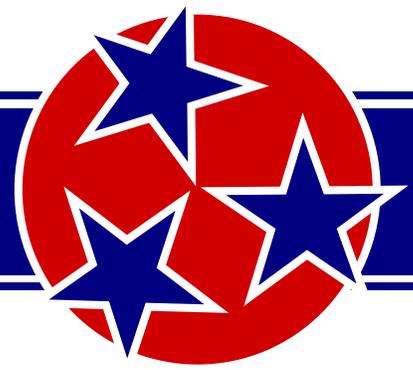
	TBR 4-yr	TBR 2-yr	UT	TICUA	Total
\$12,000 or less	6,189	10,694	2,015	2,209	<b>21,107</b>
12,001-24,000	4,145	6,137	1,406	1,408	<b>13,096</b>
24,001-36,000	2,884	3,547	1,059	1,033	<b>8,523</b>
36,001-48,000	736	760	319	336	<b>2,151</b>
48,001-60,000	142	158	84	66	<b>450</b>
60,001-72,000	44	28	17	15	<b>104</b>
72,001-84,000	10	14	6	4	<b>34</b>
84,001-96,000	17	9	3	7	<b>36</b>
above \$96,000	20	14	12	9	<b>55</b>
<b>Total</b>	<b>14,187</b>	<b>21,361</b>	<b>4,921</b>	<b>5,087</b>	<b>45,556</b>

**Table 3-6** shows the estimated shortfall of TSAA grants for traditional age students by sector and income level, assuming all received the maximum amount. Beginning in academic year 2010-2011, the maximum award was set at \$2,000 for students attending public 4-year universities and \$4,000 for those at private institutions. Public 2-year and TTC students can receive up to \$1,300 and \$1,000, respectively, according to their need. The total shortfall amounted to \$86.3 million, very close to the amount of the lottery scholarships awarded for students whose needs are already met without the scholarship. Mathematically speaking, the \$90 million of the lottery could allow the State to award TSAA grants to all full-time eligible applicants of age 24 or less.

Table 3-6 : Shortfall in TSAA Grants by Sector and Income Level, Tennessee Resident Students, Age 24 or less, 2009-10

	TBR 4-yr	TBR 2-yr	UT	TICUA	Total	Cumulative Total
\$12,000 or less	12,378,000	13,902,200	4,030,000	8,836,000	<b>39,146,200</b>	<b>39,146,200</b>
12,001-24,000	8,290,000	7,978,100	2,812,000	5,632,000	<b>24,712,100</b>	<b>63,858,300</b>
24,001-36,000	5,768,000	4,611,100	2,118,000	4,132,000	<b>16,629,100</b>	<b>80,487,400</b>
36,001-48,000	1,472,000	988,000	638,000	1,344,000	<b>4,442,000</b>	<b>84,929,400</b>
48,001-60,000	284,000	205,400	168,000	264,000	<b>921,400</b>	<b>85,850,800</b>
60,001-72,000	88,000	36,400	34,000	60,000	<b>218,400</b>	<b>86,069,200</b>
72,001-84,000	20,000	18,200	12,000	16,000	<b>66,200</b>	<b>86,135,400</b>
84,001-96,000	34,000	11,700	6,000	28,000	<b>79,700</b>	<b>86,215,100</b>
above \$96,000	40,000	18,200	24,000	36,000	<b>118,200</b>	<b>86,333,300</b>
<b>Total</b>	<b>28,374,000</b>	<b>27,769,300</b>	<b>9,842,000</b>	<b>20,348,000</b>	<b>86,333,300</b>	

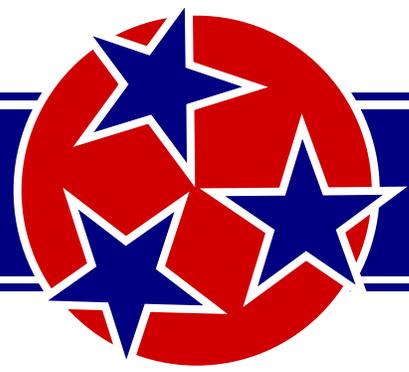
## Conclusion



This study found that the State spent approximately one-third of the entire expenditures of the Tennessee Education Lottery Scholarship program for students who appear to have the financial ability to pay for college without the lottery scholarship. In the meantime, approximately 45,500 students could not receive the state's need-based grant aid due to the lack of sufficient funding for the program. The estimated insufficient funding was \$86.3 million, less than the lottery scholarship expenditures that were spent for those whose needs were met by their own EFC alone.

Although there are inefficiencies and inequities in its allocation of dollars, the lottery scholarship has multiple missions to pursue. Because it is designed to address a wide range of policy issues, an evaluation of the entire program would require a holistic approach that examines effectiveness in light of all intended missions, not just one of the missions. As any policy has strengths and weaknesses, the lottery scholarship program's weakness is in the equity with which it addresses college affordability for all students. However, this is not a definitive statement on the effectiveness of the program, as affordability is only one of many issues that the Tennessee Education Lottery Scholarship program seeks to address.



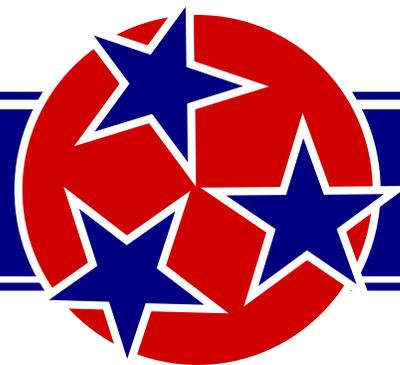


## **Chapter 4 : The General Assembly Merit Scholarship and its Outcomes**

### Abstract

*This study provides an analysis of scholarship renewal and college completion rates for the General Assembly Merit Scholarship (GAMS) program. It reports descriptive statistics of scholarship renewal and graduation, and explores the common characteristics of students who do not retain the scholarship by employing a stepwise binary logistic regression. This study also compares the current renewal standard for GAMS to that of similar programs in other Southern states and considers the impact on scholarship renewal if the State were to raise the academic standard for scholarship renewal. Lastly, it analyzes the extent to which Tennessee has successfully retained GAMS-eligible public high school graduates at in-state institutions, which is one of the missions of the Tennessee Education Lottery Scholarship program.*

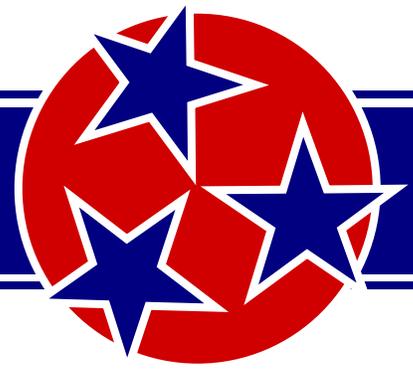
## Executive Summary



- The number of freshman GAMS recipients was 1,389 in Fall 2009, accounting for 5.2 percent of all incoming TELS freshmen.
- For the Fall 2009 freshman cohort, 51 percent of GAMS recipients were females. The gender difference of GAMS was narrower than that of TELS overall, where the ratio was 57 percent to 43 percent.
- The ethnic distribution of GAMS freshmen was more skewed toward white students than the distribution of TELS recipients. African-American students composed just one percent of GAMS freshmen, while they represented 11 percent of all TELS freshman recipients.
- In Fall 2009, 47 percent of GAMS freshmen were from families with an adjusted gross income of \$96,000 or higher, compared to 29 percent for TELS freshmen overall.
- The most recent second-year renewal rate for GAMS was 90 percent, considerably higher than that of TELS freshmen overall, whose second year renewal rate was 55 percent.
- The most recent five-year college graduation rate (regardless of scholarship status at completion) for GAMS students was 81.2 percent, in comparison to 50.1 percent for the overall TELS cohort. 73 percent of GAMS freshmen graduated with their scholarship intact.
- Male students and University of Tennessee Knoxville students had a relatively lower chance of scholarship renewal in their second year, albeit very slightly, as compared to female students and those attending other institutions.
- GAMS requires students to maintain a cumulative college GPA of 2.75 in the first two years. This requirement is relatively easier compared to similar high-ability scholarship programs in other Southern states, which require at least a 3.0 GPA.
- The average GPA of the Fall 2008 GAMS cohort who renewed the scholarship in the second year was 3.57, in comparison to 3.27 for overall TELS freshmen who renewed scholarships.
- If the state increased the GPA threshold for scholarship renewal, the second year renewal rate for GAMS recipients would decline from the current 90 percent to 81 percent if a 3.0 GPA were required, 72 percent with a 3.25 GPA, and 59 percent with a 3.5 GPA.

- For the 2008-09 public high school graduates, the state enrolled 1,947 out of 2,986 students with an ACT of 29 or above. The enrollment rate in Tennessee higher education for such students was 65.2 percent.

## Statutory Charge



During the 2010 legislative session, the General Assembly added the following statutory requirement relating to the Tennessee Education Lottery Scholarship (TELS) program:

“THEC shall study and include in its report required under subsection (b) an analysis of the general assembly merit scholarship program and its success in promoting exceptional academic achievement in college. Specifically, THEC shall report the number of students in each class who retain general assembly merit scholarships throughout their college careers and the number of students who do not retain general assembly scholarships and the reasons therefore. THEC shall analyze whether the retention standards for general assembly scholarships should be increased to promote further exceptional academic achievement in college.” (T.C.A. §49-4-903(d))

As directed by this law, this chapter presents the following information:

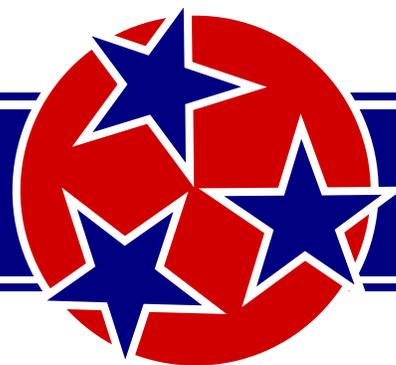
- Introduction;
- Recipient Demographic Profile;
- Scholarship Renewal Rates;
- College Completion Rates;
- Analysis of Factors Affecting Scholarship Renewal; and,
- Should the Renewal Standard be Increased?

Finally, though not required by the law, this chapter also includes the following analysis:

- Has Tennessee Retained More “Best and Brightest” Students? A Market Penetration Analysis of GAMS Eligible Students.

The last item examines the extent to which Tennessee has successfully retained the “best and brightest” students at in-state institutions, one of the missions pursued by the TELS program. First, it quantifies the size of the market and provides recent trends in the market penetration rate. Then it details the characteristics of high-achieving students who did not enroll at in-state institutions and considers distinct attributes that have been heretofore unknown.

# Introduction



The General Assembly Merit Scholarship (GAMS) is the lottery-funded financial aid program for students with exceptional academic ability. GAMS provides eligible students with a \$1,000 bonus on top of the base HOPE award, which grants a maximum of \$4,000 to students at 4-year universities or \$2,000 at 2-year colleges. For initial scholarship eligibility, GAMS requires students to have a composite score of 29 on the ACT *and* a 3.75 high school GPA. In order to renew the scholarship, recipients must maintain a 2.75 cumulative college GPA at the 24 and 48 credit hour benchmarks and a 3.0 GPA at each 24 hour checkpoint after that. This requirement is applicable not only to GAMS recipients, but to anyone in the TELS program.

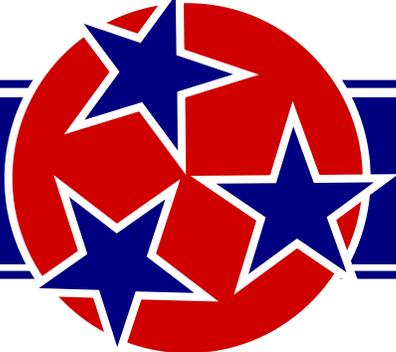
The number of GAMS recipients grew from 1,064 in Fall 2004 to 1,407 in Fall 2008, and then declined slightly to 1,389 in Fall 2009. During the same period, the enrollment share for GAMS students fluctuated minimally. In Fall 2004, GAMS freshman recipients accounted for 5.2 percent of all incoming TELS freshmen. The subsequent cohorts experienced ups and downs in their share of the total, which rested at 5.6 percent as of Fall 2009 (**Table 4-1**).

Table 4-1 : First-time TELS Freshmen by Major Scholarship Type, Fall 2004 through Fall 2009

		Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009
Recipients	HOPE	13,554	13,278	14,245	15,281	16,089	16,416
	<b>GAMS</b>	<b>1,064</b>	<b>1,229</b>	<b>1,210</b>	<b>1,315</b>	<b>1,407</b>	<b>1,389</b>
	ASPIRE	5,721	5,034	5,915	5,830	5,638	6,606
	ACCESS	110	263	344	358	423	245
	Total	20,449	19,804	21,714	22,784	23,557	24,656
Enrollment Share	HOPE	66.3%	67.0%	65.6%	67.1%	68.3%	66.6%
	<b>GAMS</b>	<b>5.2%</b>	<b>6.2%</b>	<b>5.6%</b>	<b>5.8%</b>	<b>6.0%</b>	<b>5.6%</b>
	ASPIRE	28.0%	25.4%	27.2%	25.6%	23.9%	26.8%
	ACCESS	0.5%	1.3%	1.6%	1.6%	1.8%	1.0%
	Total	100%	100%	100%	100%	100%	100%

Note: The data include both public and private institutions.  
Source: THEC Student Information System (SIS)

# Recipient Demographic Profile



**Table 4-2** shows the demographic profile of GAMS first-time freshmen in comparison to TELS freshmen overall. In Fall 2009, GAMS’ gender ratio was 51 percent for females to 49 percent for males, narrower than that of TELS overall, where the ratio was 57 percent to 43 percent. The ethnic distribution of GAMS was more skewed toward white students than the distribution of overall TELS recipients. The presence of African American students was especially low at one percent, compared to 11 percent of overall TELS recipients.

Table 4-2 : First-time TELS Freshmen by Gender and Ethnicity, TELS Total vs. GAMS, Fall 2009

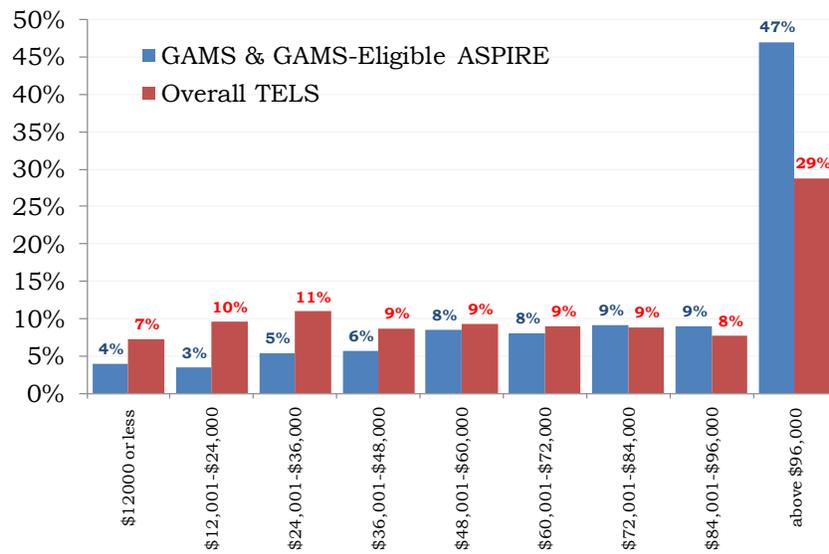
		TELS Total		GAMS	
Gender	Female	13,933	57%	708	51%
	Male	10,722	43%	681	49%
	<b>Total</b>	<b>24,655</b>	<b>100%</b>	<b>1,389</b>	<b>100%</b>
Ethnicity	White	19,812	80%	1,275	92%
	Black	2,819	11%	13	1%
	Other	2,024	8%	101	7%
	<b>Total</b>	<b>24,655</b>	<b>100%</b>	<b>1,389</b>	<b>100%</b>

Note: The data include both public and private institutions.  
 Source: THEC SIS

GAMS students tended to come from wealthier families than regular TELS recipients, as illustrated in **Figure 4-1**. The figure displays the distributions of adjusted gross incomes (AGI) for GAMS and overall TELS freshmen in Fall 2009. This figure regarded students who were GAMS eligible but received ASPIRE as GAMS recipients<sup>9</sup>. The graph indicates that 47 percent of GAMS recipients were from families with an AGI higher than \$96,000, compared to 29 percent for TELS freshmen overall.

<sup>9</sup> When students qualified for both GAMS and ASPIRE, the state awards them ASPIRE as it grants a maximum of \$5,500 for 4-year students and \$3,500 for 2-year students, a higher amount than GAMS award.

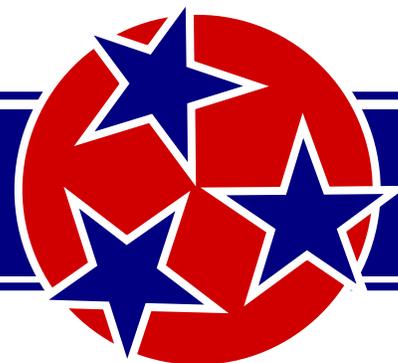
Figure 4-1: Adjusted Gross Income Distributions of GAMS Freshmen and TELS Freshmen Overall in Fall 2009



Note: The GAMS data also include GAMS-eligible ASPIRE students.

Sources: THEC SIS and Tennessee Student Assistance Corporation (TSAC) Free Application for Federal Student Aid (FAFSA) data

# Scholarship Renewal Rates



As **Table 4-3** displays, the second year renewal rates for GAMS recipients were consistently high for all freshman cohorts. The renewal rate hovered around 89 to 90 percent throughout, with the most recent renewal rate being 90 percent for the Fall 2008 GAMS freshmen. These renewal rates were considerably higher than for all TELS freshmen, whose second year renewal rates were between 52 and 55 percent for the same time period.

Table 4-3 : 2nd Year Scholarship Renewal Rate, GAMS vs. TELS Total, Fall 2004 through Fall 2008 Cohorts

		Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
GAMS	Beginning Cohort	1,064	1,229	1,210	1,315	1,407
	Renewed in 2nd Year	954	1,089	1,077	1,182	1,265
	<b>Renewal Rate</b>	<b>90%</b>	<b>89%</b>	<b>89%</b>	<b>90%</b>	<b>90%</b>
TELS	Beginning Cohort	20,449	19,804	21,714	22,784	23,557
	Renewed in 2nd Year	10,221	10,983	11,339	11,861	12,845
	<b>Renewal Rate</b>	<b>50%</b>	<b>55%</b>	<b>52%</b>	<b>52%</b>	<b>55%</b>

Notes: 1) The data include both public and private institutions; 2) "TELS" data also include GAMS recipients.  
Source: THEC SIS

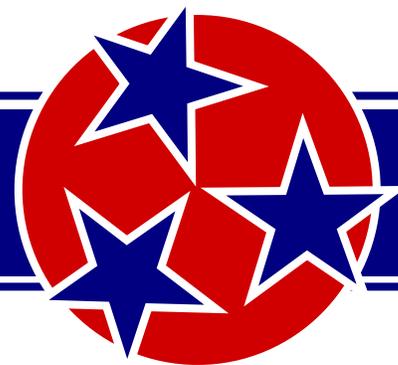
The cumulative scholarship renewal rates for GAMS students were also high. **Table 4-4** compares the cumulative scholarship renewal rates of the Fall 2005 beginning cohorts of GAMS and TELS recipients. The second year renewal rate for GAMS recipients was 89 percent, declining to 80 percent in the third year and 78 percent in the fourth year. In the 5<sup>th</sup> year of the scholarship, the renewal rate plummeted to 18 percent because many recipients had graduated by the end of the fourth year. Meanwhile, overall TELS recipients attrited at a much higher pace. The second year renewal rate was 55 percent, and then dropped to 41 and 38 percent in the third and fourth years. The fifth year renewal rate went down to 15 percent, 3 percentage points lower than for GAMS recipients.

Table 4-4 : Cumulative Scholarship Renewal Rate, GAMS vs. TELS Total, Fall 2005 Cohorts

		1st	2nd	3rd	4th	5th
GAMS	Beginning Cohort	1,229	1,089	989	954	218
	<b>Renewal Rate</b>	<b>100%</b>	<b>89%</b>	<b>80%</b>	<b>78%</b>	<b>18%</b>
TELS	Beginning Cohort	19,804	10,983	8,051	7,597	3,032
	<b>Renewal Rate</b>	<b>100%</b>	<b>55%</b>	<b>41%</b>	<b>38%</b>	<b>15%</b>

Note: The data includes both public and private institutions; 2) "TELS" data also include GAMS recipients.  
Source: THEC SIS

# College Completion Rates



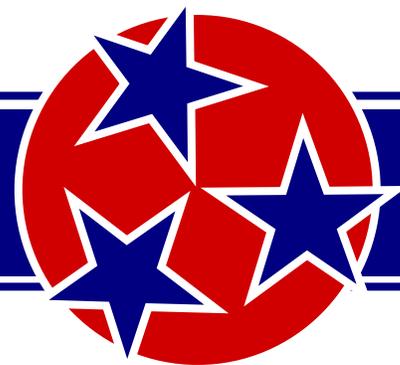
Along with the second year and cumulative scholarship renewal rates, GAMS students also tended to have a higher graduation rate than TELS recipients overall (**Table 4-5**). The table displays the five-year graduation rates for the Fall 2004 and 2005 freshman cohorts of GAMS and overall TELS recipients. The data reflect students who earned associate's degrees or above at public institutions. For the Fall 2005 cohort, the five-year college graduation rate (regardless of scholarship eligibility status at completion) for GAMS students was 81.2 percent, in comparison to 50.1 percent of the overall TELS cohort. 73.0 percent of the same GAMS cohort graduated with their scholarships intact, while only 32.9 percent of TELS recipients overall retained their scholarships through graduation.

Table 4-5 : 5-year Graduation Rates, GAMS vs. TELS Total, Fall 2005 Cohorts (Public Institutions Only)

	Fall 2004 Cohort		Fall 2005 Cohort	
	GAMS	TELS	GAMS	TELS
Beginning Cohort	717	17,341	764	16,492
Graduated within 5 year	567	7,765	620	8,269
Graduated within 5 year on TELS	502	4,877	558	5,428
5-year Grad Rate	79.1%	44.8%	81.2%	50.1%
5-year Grad Rate on TELS	70.0%	28.1%	73.0%	32.9%

Notes: 1) Graduation rates include both associate's and bachelor's degrees; 2) "TELS" data include GAMS students.  
Source: THEC SIS

## Analysis of Factors Affecting Scholarship Renewal



The reasons for not renewing the scholarship vary by individual. A full understanding of all the reasons would require additional research such as surveys, focus groups, or individualized interviews, which cannot be easily conducted because of difficulties in reaching non-renewals, who often do not come back to school after they lose the scholarship. While THEC and TSAC collect data on scholarship recipients, very limited data are available for non-renewing students.

Although the currently available data in the THEC database provide very little direct information on why GAMS students lost their scholarships, using statistical techniques it is possible to quantify the tendency of scholarship renewal based upon students' characteristics at entry. **Table 4-6** on the following page lays out the result from a stepwise binary logistic regression, which predicted the likelihood of retaining the scholarship in the second year for GAMS freshmen recipients in Fall 2008 based upon their entering characteristics. Coding scholarship renewal in the second year as 1 and otherwise as 0, the initial model contained the following explanatory variables:

- ACT Composite Score (29-36)
- Adjusted Gross Income
- Ethnicity (African American = 1; Others = 0)
- Gender (Male = 1; Female = 0)
- Earned College-level Course Credits Before Entering College (yes = 1; no = 0)
- Institutional Type (Other than University of Tennessee Knoxville = 1; University of Tennessee Knoxville = 0)

Logistic regression allows researchers to compare the probability of an event of interest while controlling for student or institutional characteristics. After conducting the regression with a sample of 1,336 students, the model reduced the number of independent (predictor) variables to two, dismissing the other four variables as not statistically relevant to second year scholarship renewal. The remaining two variables were: 1) Gender and 2) Institutional Type. The odds ratio in the table represents the odds of renewing the scholarship for students with one attribute relative to the odds of renewal for those with another attribute while holding other variables constant. For instance, the odds ratio for "Gender" is 0.48, meaning that a male student's odds of scholarship renewal decline by a factor of 0.48 relative to the odds for a female. In other words, female students have a higher likelihood of renewing the scholarship than male students. Similarly, the odds ratio for "Institutional Type" is 1.521, implying that GAMS recipients at UTK have a lower chance of renewing the scholarship compared to GAMS students attending other institutions.

Table 4-6 : Odds Ratios for 2nd Year Scholarship Renewal by Selected Attributes, Fall 2008 Cohort

	$\beta$	P-value	Odds Ratio
Intercept	2.5136	<.0001	n/a
Male (=1) vs. Female (=0)	-0.7344	0.0003	0.48
Other Institutions (=1) vs. UTK (=0)	0.4196	0.0291	1.521

**Table 4-7** below compares the average probability<sup>10</sup> of second year scholarship renewal by gender and institutional type based upon the results from the logistic regression. The results reveal that there is a statistically significant difference in the probability of scholarship renewal among gender and institutional type.

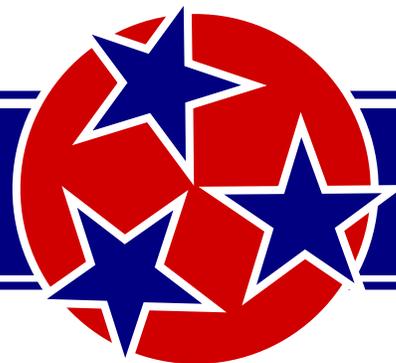
Table 4-7 : Average Probability of Second Year Scholarship Renewal by Gender and Institutional Type, Fall 2008 Cohorts

	Male	Female
UTK	86%	93%
Others	90%	95%

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<sup>10</sup> It is important to note that a probability is different from a rate. A probability corresponds to the chance of success for an individual based upon his/her characteristics, whereas a rate measures the actual number of successful events as a percent of a total number of events.

## Should the Renewal Standard be Increased?



As cited in the beginning of this chapter, state statute instructs THEC to analyze whether it is advisable to change the academic requirement for scholarship renewal. This section limits its scope to providing information that should be useful to policymakers in considering policy alternatives.

One way to examine the current renewal policy is to compare it to similar policies in other states. **Table 4-8** summarizes a list of the most selective scholarship programs in Southern states and shows their renewal policies. The other Southern states such as Georgia, Kentucky, Arkansas, and Alabama were not included in the table as they do not have an equivalent program to GAMS.

GAMS students are required to maintain a 2.75 cumulative college GPA at 24 and 48 credit hours and then a 3.0 GPA at the subsequent benchmarks. Compared to other states' scholarship programs, Tennessee's renewal criterion for the second year is less rigid, though the initial eligibility requirement is the toughest among those states. Mississippi's Eminent Scholars grant requires a 3.5 GPA for scholarship renewal, the highest GPA requirement. Florida, South Carolina, and Louisiana also set a higher renewal criterion than GAMS, requiring a college GPA of 3.0. All states except Tennessee require the same GPA at every renewal checkpoint.

Table 4-8 : Initial Eligibility Requirement and 2nd Year Renewal Requirement for Similar Scholarship Programs in Other Southern States

Scholarship Program	State	Initial Requirement	Required College GPA for Second Year Renewal	Note
Academic Scholars	FL	ACT 28	3.00	The same renewal requirement throughout college
Palmetto Fellows	SC	ACT 27 and HS GPA 3.5	3.00	
Eminent Scholars	MS	ACT 29 and HS GPA 3.5	3.50	
TOPS Honors	LA	ACT 27 and HS GPA 3.0	3.00	
GAMS	TN	ACT 29 and HS GPA 3.75	2.75	3.0 GPA at 72 hours and afterwards

Sources:

FL - <http://www.floridastudentfinancialaid.org/SSFAD/PDF/BFEligibilityAwardChart.pdf> (Initial Eligibility),  
<http://www.floridastudentfinancialaid.org/SSFAD/bf/renewpg.htm> (Renewal Requirement)

SC - [http://www.che.sc.gov/StudentServices/PalmettoFellows/files/Q&A\\_PFS\\_2010-11.pdf](http://www.che.sc.gov/StudentServices/PalmettoFellows/files/Q&A_PFS_2010-11.pdf) (Both Initial Eligibility and Renewal Requirement),

MS - [http://www.mississippi.edu/riseupms/search-results.php?article\\_id=228](http://www.mississippi.edu/riseupms/search-results.php?article_id=228) (Both Initial Eligibility and Renewal Requirement)

LA- [http://www.osfa.la.gov/TOPS\\_H.htm](http://www.osfa.la.gov/TOPS_H.htm) (Both Initial Eligibility and Renewal Requirement)

As another way of looking at the current GAMS renewal policy, **Table 4-9** presents the average college GPA at the end of the freshman year for students who renewed scholarships in the second year. GAMS recipients consistently demonstrated a higher GPA than overall TELS recipients. The average GPA of the Fall 2008 GAMS cohort who renewed the scholarship in the second year was 3.57, in comparison to 3.27 for the overall TELS students. The average GPA was consistent for all cohorts in both groups,

hovering between 3.57 and 3.63 for GAMS and 3.27 to 3.29 for TELS overall. Fall 2006 cohort data are not available due to the missing data of second year GPA for a few institutions.

Table 4-9 : Average College GPA at the End of Freshman Year for Second Year Scholarship Renewals, GAMS vs. All TELS Recipients, Fall 2004 through 2008 Cohorts

	Beginning Cohort				
	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
GAMS	3.63	3.61	N/A	3.63	3.57
TELS	3.28	3.29		3.29	3.27

Note: This table reflects both public and private institutions.  
Source: THEC SIS

Policymakers need to be aware of the impact the increased GPA requirement would have on Tennessee students. Toward that end, **Table 4-10** shows the projected results of a change in the second year renewal requirement. The table presents four scenarios, which include the current requirement (i.e. 2.75 of GPA), 3.0, 3.25, and 3.5 GPAs for scholarship renewal. The estimated 2<sup>nd</sup> year renewal rates are shown in the table for the past five freshman cohorts.

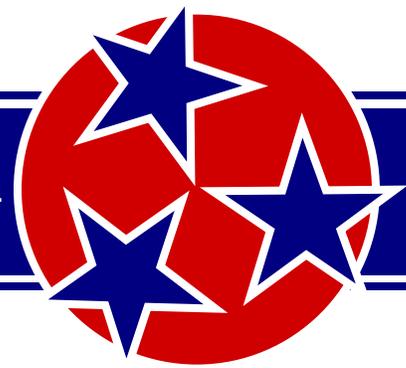
The table reveals that each scenario would have produced different results. For instance, the 3.0 GPA requirement would have lowered the renewal rate from 90 to 81 percent for the Fall 2008 cohort. The 3.25 GPA threshold would have made a further cut to the renewal rate, to 72 percent. The deepest cut would have occurred at 3.5 GPA, in which only 59 percent of Fall 2008 GAMS freshmen would have renewed. The impact of each scenario is relatively consistent for all cohorts.

Table 4-10: Projected GAMS Renewal Rate under Different Renewal Criteria, Fall 2004 though 2008 Cohorts

		Beginning Cohort				
		Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
Current	Beginning Cohort	1,064	1,229	1,210	1,315	1,407
	Renewed	954	1,089	1,077	1,182	1,265
	<b>Renewal Rate (Actual)</b>	<b>90%</b>	<b>89%</b>	<b>89%</b>	<b>90%</b>	<b>90%</b>
3.0 GPA	Would Have Renewed	897	1,017	N/A	1,099	1,145
	<b>Projected Renewal Rate</b>	<b>84%</b>	<b>83%</b>		<b>84%</b>	<b>81%</b>
3.25 GPA	Would Have Renewed	815	924		1,011	1,019
	<b>Projected Renewal Rate</b>	<b>77%</b>	<b>75%</b>		<b>77%</b>	<b>72%</b>
3.5 GPA	Would Have Renewed	689	768		851	835
	<b>Projected Renewal Rate</b>	<b>65%</b>	<b>62%</b>		<b>65%</b>	<b>59%</b>

Note: Data reflect both public and private institutions.  
Source: THEC SIS

## Has Tennessee Retained More “Best and Brightest” Students? A Market Penetration Analysis of GAMS Eligible Students



GAMS is designed to accomplish one particular mission; that is, to retain the state’s “best and brightest” students in Tennessee colleges and universities (TELS Annual Report, 2010). Past studies have shown that the in-state college participation rate has improved after the introduction of TELS, but the rate of improvement over time is within 3 percentage points (TELS Annual Report, 2010<sup>11</sup>), so incremental that some might argue the change is not substantial. Furthermore, more important questions still remain unanswered: What type of students has the state recruited? Has the state kept more talented students at in-state institutions? While past studies found that the post-lottery era witnessed a higher proportion of freshmen attending in-state institutions than the pre-lottery era, it is not equally clear how successfully the state has enrolled high-achieving students, the target population for the GAMS program. The following section focuses on those students, examining the market penetration rate of Tennessee higher education for high-achieving Tennessee public high school graduates.

The following analysis defines the market penetration rate as the number of Tennessee public high school graduates with an ACT of 29 or above who attended in-state institutions as a percent of Tennessee public high school graduates with the same academic aptitude. Although GAMS requires both ACT and high school GPA for initial scholarship eligibility, this analysis relied on ACT alone in identifying the market of high achieving students due to the lack of comprehensive high school GPA data. Because all students with a 29 or better ACT do not necessarily maintain a 3.75 GPA, this approach may overstate actual market size. Given that high ACT scorers tend to earn high GPAs, however, most of them are assumed to be GAMS eligible.

Also, this study is confined to only students who took the ACT during high school. This means that students with exceptional academic skills who did not take the ACT were excluded from this analysis. **Table 4-11** shows the percent of public high school graduates who took an ACT test, with the percentage hovering between the high 60s to low 70s for the last four years. Because high-achieving students are less likely to forego a free ACT test<sup>12</sup> than other students, the coverage rates for GAMS eligible students are probably higher than the statewide coverage rates. Also, some students may have taken only the SAT exam. The number of such exclusive SAT takers, however, is probably few in Tennessee.

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<sup>11</sup> Tennessee Higher Education Commission. (2010). *Tennessee Education Lottery Scholarship Program Annual Report*.

<sup>12</sup> Tennessee allows high school students to take an ACT test once for free.

Table 4-11: ACT Test Takers as a Percent of Public High School Graduates, 2005-06 through 2008-09

High School Graduation Year	2005-06	2006-07	2007-08	2008-09
Public High School Graduates	50,396	57,633	57,390	60,495
Took ACT	36,951	38,810	41,996	44,753
ACT Coverage Rate	73%	67%	73%	74%

Sources: ACT and Tennessee Department of Education (TN DOE)

**Table 4-12** presents the market penetration rate of Tennessee higher education for academically high-achieving high school graduates for the last four years. For the 2008-09 graduates, the state had a market penetration rate of 65.2 percent, enrolling 1,947 students out of 2,986 high school graduates with an ACT of 29 or above. In other words, approximately 1,000 high-achieving students did not enroll in Tennessee higher education. Of those who did not attend in-state institutions, 770 students proceeded to out-of-state institutions while 269 students did not participate in higher education at all. The market penetration rate was stable over the last four years, hovering around 65 percent. It is difficult to ascertain whether this trend was the same before introduction of the lottery scholarship, due to the lack of data prior to 2005-06.

Table 4-12: Tennessee Higher Education’s Market Penetration Rate for High-Achieving Public High School Graduates

HS Graduation Year		2005-06	2006-07	2007-08	2008-09
Students	ACT ≥ 29	2,208	2,269	2,676	2,986
	Attended College	2,030	2,058	2,219	2,717
	In-state institutions	1,433	1,499	1,696	1,947
	Out-of-state institutions	597	559	523	770
	Did not Attend College	178	211	457	269
Enrollment Share	ACT ≥ 29	100.0%	100.0%	100.0%	100.0%
	Attended College	91.9%	90.7%	82.9%	91.0%
	<b>In-state institutions</b>	<b>64.9%</b>	<b>66.1%</b>	<b>63.4%</b>	<b>65.2%</b>
	Out-of-state institutions	27.0%	24.6%	19.5%	25.8%
	Did not Attend College	8.1%	9.3%	17.1%	9.0%

Note: High-achieving students are defined as students whose ACT is 29 or above.

Sources: ACT, THEC SIS, TN DOE, and National Student Clearinghouse

The market penetration rate differs by demographics, as shown in **Table 4-13**. The participation rate for female students was 63.1 percent in Fall 2009, lower than that for males at 67.1 percent. Non-white students had an even lower penetration rate at 46.3 percent, approximately 20 percentage points below the 67.0 percent rate for white students. The low penetration rate for non-white students was attributable to their high participation in out-of-state institutions, which enrolled 42.9 percent of high-achieving non-white students. This out-of-state participation rate was exceptionally high compared to the state average of 25.8 percent. Low-income students, defined as students with AGI less than \$36,000, had a slightly higher market penetration rate at 72.0 percent than mid-to-high income students at 67.1 percent.

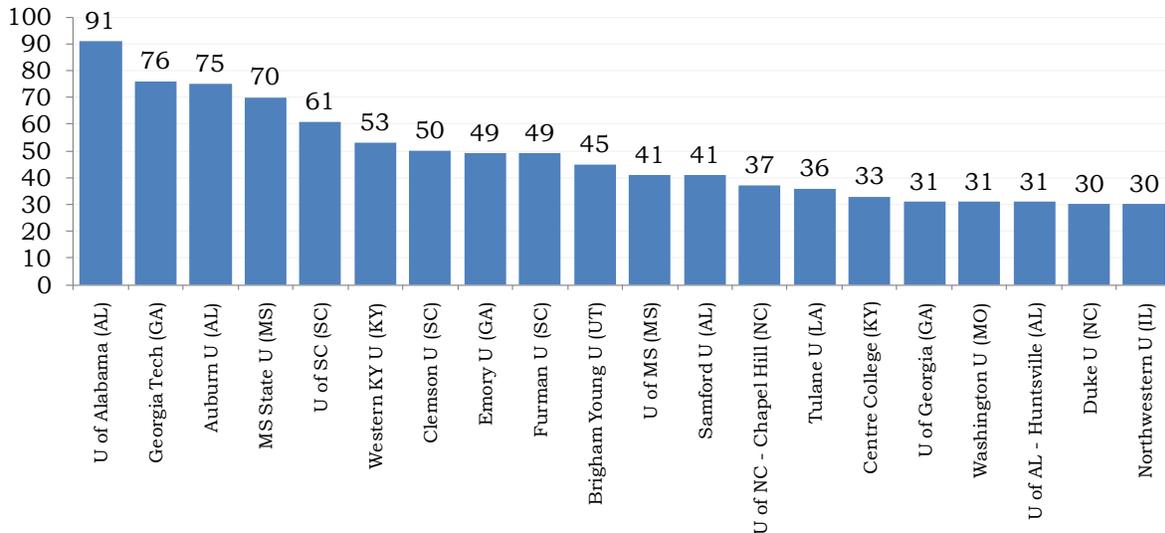
Table 4-13: Tennessee Higher Education Market Penetration Rate for High-Achieving Public High School Graduates, by Selected Demographic Characteristics, Fall 2009

	Demographics	Gender		Ethnicity		Family Income			Total
		Female	Male	White	Non-white	\$36,000 or above	Less than \$36,000	Income Not Available	
Students	ACT>=29	1,402	1,584	2,727	259	2,118	375	493	2,986
	Attended College	1,284	1,433	2,486	231	1,959	332	426	2,717
	In-state institutions	884	1,063	1,827	120	1,422	270	255	1,947
	Out-of-state institutions	400	370	659	111	537	62	171	770
	Did not Attend College	118	151	241	28	159	43	67	269
Enrollment Share	ACT>=29	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Attended College	91.6%	90.5%	91.2%	89.2%	92.5%	88.5%	86.4%	91.0%
	<b>In-state institutions</b>	<b>63.1%</b>	<b>67.1%</b>	<b>67.0%</b>	<b>46.3%</b>	<b>67.1%</b>	<b>72.0%</b>	<b>51.7%</b>	<b>65.2%</b>
	Out-of-state institutions	28.5%	23.4%	24.2%	42.9%	25.4%	16.5%	34.7%	25.8%
	Did not Attend College	8.4%	9.5%	8.8%	10.8%	7.5%	11.5%	13.6%	9.0%

Note: High-achieving students are defined as students whose ACT is 29 or above.  
Sources: ACT, THEC SIS, TN DOE, and National Student Clearinghouse

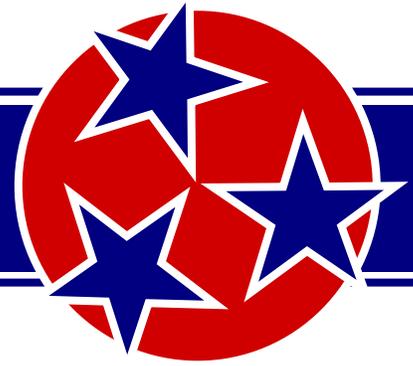
**Figure 4-2** lists the top 20 out-of-state institutions that enrolled the most Tennessee students with an ACT score of 29 or above. Institutions are ranked by the total enrollment of such students from Fall 2006 to Fall 2009, the most recent four fall semesters. According to the figure, the University of Alabama attracted the highest number of high-achieving Tennessee students, 91, and the Georgia Institute of Technology is second, enrolling 76 such students. Out of the top 20 out-of-state institutions, 17 institutions are located in Southern states. Three schools are not in the South, namely, Brigham Young University in Utah, Washington University in Missouri, and Northwestern University in Illinois.

Figure 4-2: Top 20 Out-of-state Institutions Enrolling Most Tennessee Students for the Last Four Years (2006-2009)



Sources: ACT, THEC SIS, TN DOE, and National Student Clearinghouse

## Conclusion



Since its inception in 2004, the Tennessee Education Lottery Scholarship (TELS) has enabled many Tennesseans to pursue their education beyond high school through its generous financial assistance. Among all TELS programs, GAMS has a unique mission, which is to retain highly talented students at Tennessee's institutions. Because of their high academic skills, GAMS students tended to excel in their academic careers, as demonstrated by their high scholarship renewal and college completion rates. This study found, however, that male students and students at the University of Tennessee Knoxville had a relatively lower chance of scholarship renewal in their second year, albeit very slightly, as compared to their peers.

The question has been raised whether the scholarship renewal requirement is too low for GAMS students. Under today's rule, the renewal standard for all TELS students is the same across the board regardless of the program, requiring any recipients to maintain a 2.75 GPA at the first two benchmark points and 3.0 afterwards. This study found that the GAMS renewal requirement in the first two years is relatively easier compared to similar kinds of scholarship programs in other Southern states, which require at least a 3.0 college GPA through graduation. If policymakers are interested in raising the renewal standard for GAMS students, they need to be aware of the consequences of the change. The analysis indicated that the second year renewal rate would decline from the current 90 percent to 81 percent with a 3.0 GPA requirement, 72 percent with a 3.25 GPA, and 59 percent with a 3.5 GPA.

Due to the lack of comprehensive student-level data in the pre-lottery era, it is difficult to determine if the GAMS program has resulted in increased recruitment of high-achieving students at in-state institutions. This study found that the most recent market penetration rate for GAMS eligible high school graduates was 65 percent, and approximately 1,000 students with exceptional academic ability did not attend in-state institutions. Because talented students are highly mobile and thus difficult to retain within the state, the GAMS award might not be enough to retain them. In order to improve the enrollment rate for such students, it may be necessary to reconsider the state's recruitment strategy and develop a better understanding of the many factors – financial, academic, and otherwise – that affect these students' enrollment decisions.