TENNESSEE HIGHER EDUCATION COMMISSION

Agenda Item: II.B.

DATE: July 28, 2011

SUBJECT: Special Report on Student Loan Default Rates in Tennessee Institutions

ACTION RECOMMENDED: Information

BACKGROUND INFORMATION: Staff will present a report on institutional three-year default rates in Tennessee. When the Higher Education Opportunity Act was renewed in 2008, the period used to define students who defaulted for inclusion in an institution's default rate was extended from two to three years beginning in 2012 (2009 cohort). Under the new three-year cohort default rate rules, an institution will be subject to sanctions if: 1) its three most recent default rates are over 30 percent, or 2) it has a default rate over 40 percent in the most recent year. However, institutions will not be sanctioned based on the new rates until the new three-year rates have been published annually three times, meaning institutions will not be subject to sanctions until 2014. Institutions that are sanctioned will lose eligibility to participate in federal loan programs, and potentially the Pell Grant program. Utilizing trial three-year default rates released by the Department of Education, this study compares Tennessee institutions' default rates to their peer institutions, and the SREB and national averages. The study also examines the factors that explain institutional default rates, and identifies which institutions' default rates are higher or lower than predicted.

Are Student Loan Default Rates Too High in Tennessee?

A report from the Policy, Planning, and Research Division at the Tennessee Higher Education Commission

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EXECUTIVE SUMMARY

- Tennessee (15.5 percent) has the sixth highest average three-year student loan default rate in the U.S. (12.3 percent) and the third highest among SREB states.

- Tennessee public 4-year and 2-year, private 4-year and 2-year, and for-profit 4-yr institutions' average three-year default rates were higher than their SREB peers and the national averages.

- On average, for-profit institutions' three-year default rates were higher than public and private institutions in Tennessee.

- However, Tennessee for-profit two-year institutions' and for-profit and not-for-profit less than two year institutions' average three-year default rates were lower than the SREB and national average for the same sector.

- Tennessee for-profit institutions represented around 22 percent of all students that were eligible for default, however, they represented over 36 percent of all students that defaulted.

- Higher graduation rates and instructional spending as a portion of an institution's total expenditures were consistent predictors of lower institutional default rates.

- Tennessee State University and Tennessee Technological University were the only two public institutions whose default rates were lower than the multivariate model predicted.

- Tennessee public institutions usually had higher institutional default rates than their peer institutions.

- Best practices identified for lowering institutional default rates were: creating a campus wide default management team, instituting an early warning system, appointing a default prevention manager, avoided giving students more in their financial aid package than their direct costs, and better educating students about their debt (Education, Sector, 2010)

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PURPOSE OF THE STUDY

The rising costs of college are contributing to the amount of loan debt students are incurring. This problem is exacerbated by the increasing number of students that incur these debt obligations and fail to graduate, which previous research has shown is the best predictor of student loan default (Knapp & Seaks, 1992; Podgursky et al., 2000; Woo, 2002). Additionally, there is evidence that even students that do graduate are overleveraged (King & Bannon, 2002).

Research suggests that these trends vary by institutional control and sector. In his report on the distribution of student debt, Kantrowitz (2010) showed that 22 percent of graduates from for-profit institutions graduate with excessive debt compared to about 11 percent for private institutions and about 4 percent for public institutions. He also found that when a student's debt burden is considered in light of the degree they received (Certificate, Associate's, or Bachelors), 40.7 percent of students from for-profit institutions graduated with excessive debt compared to their public (33.8 percent) and private (25.5 percent) counterparts.

The effects of the growing number of students graduating with excessive debt can be seen in the increase of the national average cohort default rate. For the first time in almost a quarter of a century, this default rate has risen for three consecutive cohort years (2005-2008). Moreover, numerous articles and reports have suggested that the official cohort default rate underestimates the number of students defaulting[1].

These trends raise questions regarding institutional and student behavior. While previous research has suggested that some of the growth in borrowing may be attributable to "convenience borrowing" (King, 1997, p. 6), a recent report by the Education Sector showed that institutions can mediate the default rates of at-risk students (Education Sector, 2010).

Given these realities, this report examines the default rates of institutions in Tennessee. Specifically, this report addresses the following research questions: 1) How does Tennessee's default rate compare to the national average and its SREB peers? 2) What institutions and sectors in Tennessee have the highest and lowest default rates? 3) What factors are related to institutional default rates? 4) And, which Tennessee institutions' default rates are higher or lower than expected?

The report is divided into five sections. First, in the **Introduction** a more detailed description of these general higher education trends is presented. Next, an overview of the U.S. Department of Education's **Official Cohort Default Rates** is presented along with a discussion of the recent changes to the measure associated with the renewal of the Higher Education Act in 2008. Third, a summary of the study's descriptive and analytical findings are presented in the **Summary of Findings** section. Finally, the study's **Descriptive Findings** are discussed, followed by the **Analytical Findings**.

[1] A more detailed discussion surrounding the official cohort default rate and its limitations is presented in Methodology section.

Additionally, the report contains four appendices. **Appendix A** contains the tables referenced throughout the report. The study's methodology is discussed in **Appendix B,** and **Appendix C** contains an explanation of the analytical methods, including a detailed description of the modeling processes and the model results. Finally, **Appendix D** contains a list of all Tennessee institutions' actual and predicted default rates that were included in the analyses.

INTRODUCTION

This section summarizes the national landscape in higher education regarding tuition and fees, student debt, and student loan defaults. A review of the trends reveals that over the past decade:

- College costs continue to increase and require a larger portion of a family's income.
- Students and families are borrowing more to cover these costs.
- The number of students graduating with unmanageable debt is increasing.
- More students are defaulting on their loans.

Tuition & Fees Trends

From 1984 to 2008, tuition and fees (in current dollars) increased more than 430 percent, outpacing healthcare (251 percent), median family income (147 percent), and inflation (106 percent) (NCHEMS, 2008). During the most recent decade, and for the first time, public higher education's tuition and fees increased at a rate higher than its not-for-profit-private counterparts; although, both outpaced inflation by almost 250 percent (National Association of State Universities and Land-Grant Colleges, 2008).

In 2000, a family with a median income spent about 19 percent of its income for a student to attend a public four-year institution and 57 percent for a private four-year institution. By 2008, a family with a median income needed over 27 percent of its income to pay for a student to attend a public four-year institution and 75 percent for a private four-year institution (NCHEMS, 2008).

The spiraling increase in tuition, combined with a shift in federal policy from grants to loans, and state and institutional policy shifts from need-based to merit-based funding, has left students with a larger portion of college costs to finance. As a result, the average student debt burden has also increased at accelerated rates.

Student Debt Trends

In 1996, college graduates had an average student loan debt of $12,750. By 2008, a decade later, the average student loan debt of college graduates had almost doubled to $23,200 (The Project on Student Debt, 2010). Furthermore, King and Bannon (2002) found that by the year 2000 almost 39 percent of college graduates graduated with unmanageable debt, defined as monthly student loan payments that exceed 8 percent of monthly pre-tax income[2] (King & Bannon, 2002). In 2010, American's total student loan debt ($829 billion) surpassed the total credit card debt for the first time ($826 billion) (Kantrowitz, 2010).

During the same period that these trends have occurred, higher education enrollment has been increasing. Since 1980 higher education enrollments have grown by almost 70 percent at degree-granting institutions, and are projected to continue to grow over the next decade (National Center for Education Statistics, 2010). During the same period, however, graduation rates have remained stagnate, meaning more students are leaving college without a degree (Lee, 2011). This trend is problematic, considering research has shown that dropping out is the best

[2] This is the loan industry suggested standard.

predictor of a student default (Knapp & Seaks, 1992; Podgursky et al., 2000; Woo, 2002).

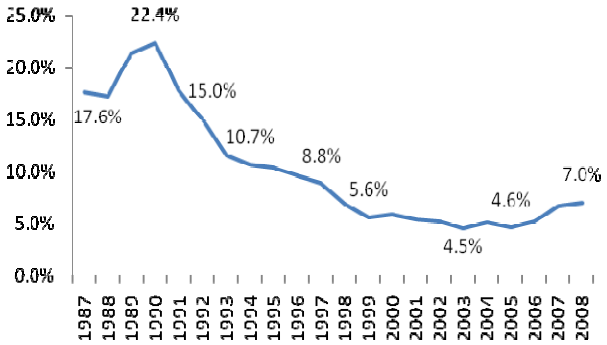
Periods of economic downturn typically lead to increases in default rates. For example, the current economic recession has limited job opportunities for graduating students and is likely to exacerbate these trends. As a result, students are borrowing larger sums, staying in school longer, and more students are entering into default on their loans (Education Sector, 2010). The combination of these trends (increasing costs, policy shifts from need-based to merit-based aid, using loans to finance these increased costs, and economic recessions) has created a recipe for more students to default on their loans. Additionally, because these loans are federally guaranteed, taxpayers are on the hook for between 97-100 percent of the losses.

Default Rate Trends

Figure 1 shows that for the first time since 1987, the average national cohort default rate increased for three consecutive years in 2006-2008. The 2008 default rate, the most recent cohort, was announced to be 7 percent (Field, 2010b). Additionally, institutional default rates vary by institution type and student population characteristics. For example, in 2008 the average default rate for for-profit institutions was higher (11.6 percent) than their non-profit private (4 percent) and public peers (6 percent).

Furthermore, for the academic year 2007-2008, 53 percent of students who graduated with a bachelor's degree had a cumulative loan debt of more than

Figure 1:
Average National Cohort Default Rate



$30,500 at for-profit institutions compared to 12 percent of students at public and 24 percent at private institutions (Baum & Steele, 2010). Looking from another perspective, of all students that graduate with less than $5,000 in debt (including no debt), over 83 percent graduated from public colleges, while graduates from for-profit institutions represent only about 5 percent (Kantrowitz, 2010). Finally, students that enroll at for-profit institutions are more than twice as likely to borrow at least $2,500 in excess of institutional charges compared to students that attend public or private institutions (Kantrowitz, 2011).

These trends are more concerning when they are placed in context of the 2008 reauthorization of the Higher Education Opportunity Act (HEOA). The reauthorization of the HEOA mandated that the official cohort default rate be extended to include students who default within the first three years of leaving school instead of the previous two-year standard. Researchers and administrators predicted that institutional default rates would increase by as much as 50 percent as a result of the change. These projections turned out to be conservative. The impacts of these changes are discussed in more detail in the next section.

OFFICIAL COHORT DEFAULT RATES

The U.S. Department of Education annually releases the official cohort default rates for institutions that participate in Title IV funding. A cohort default rate is the percentage of a school's borrowers who enter repayment on federal loans during the current fiscal year, and default prior to the end of the next fiscal year (OFSA, 2010)

An institution's official cohort default rate can affect its eligibility to participate in federal loan and Pell grant programs, which are vital sources of revenue. Currently, if an institution has a default rate over 40 percent in the most recent year, or its three most recent years default rates were over 25 percent, the institution will lose eligibility to participate in federal loan programs (the latter institutions also lose eligibility to participate in the Pell grant program).

When the Higher Education Opportunity Act was renewed in 2008, the period used to define students who defaulted for inclusion in an institution's default rate was extended from two to three years beginning in 2012 (2009 cohort). Under the new three-year cohort default rate rules, an institution will be subject to sanctions if: 1) its three most recent default rates are over 30 percent, or 2) it has a default rate over 40 percent in the most recent year. However, institutions will not be sanctioned based on the new rates until the new three-year rates have been published annually three times, meaning institutions will not be subject to sanctions until 2014.

Prior to the new default rates going into effect, the department released trial three year default rate numbers for the 2008 cohort. The new rates show (as shown in **Table 1**) that for-profit institutions' default rates more than doubled from 11.6 percent to 25 percent in 2008 (U.S. Department of Education, 2011). Additionally, while for-profit institutions enroll only 11 percent of all students, they are responsible for 26 percent of all student loans and 43 percent of all loan defaulters (U.S. Department of Education, 2010).

Table 1:
Two- and Three-Year Default Rates by Sector

	2-yr Rate	3-yr Rate
Public	6.0%	10.8%
Private	4.0%	7.6%
For-Profit	11.6%	25.0%

Source: U.S. Department of Education

Furthermore, a recent study by *The Chronicle of Higher Education* (2011) found that eight percent of degree-granting institutions had a three-year default rate that increased by at least 15 percentage points compared to their two-year rate, and of these 83 percent were for-profit institutions. The authors noted large increases from the two-year to the three-year default rate may signal that an institution is using "default management tools," such as encouraging borrowers to seek a deference or forbearance to mask problematic rates of default (Blumenstyk & Richards, 2011, p. A1)[3]. The article goes on to note that while for-profit institutional leaders have claimed that their default rates are higher because the students they serve are poorer than students at private not-for-profit and public institutions, Critics point out that if

[3] A discussion on the default management tools schools may be utilizing is presented in Appendix A: Methodology.

the changes were the result of demographics, one could expect the two-year, three-year, and ten-year default rates to display similar trends (Blumenstyk & Richards, 2011)

In response, the Department of Education has recently instituted a new "gainful employment" rule (U.S. Department of Education, 2011). The rule stipulates that to remain eligible for federal financial aid, all programs at for-profit institutions, and vocational programs at non-profit institutions, will have to meet at least one of three benchmarks: 1) A federal student loan repayment rate of at least 35 percent. 2) A student debt-to-income ratio less than 12 percent, or 3) A student debt-to-discretionary income ratio less than 30 percent.

Although for-profit institutions have been the focus of recent federal legislation, private and public institutions also saw their default rates nearly double under the new guidelines. It is clear that institutional default rates are not a problem limited to one sector of higher education. For example, public two-year institutions had the next highest default rates (17.9 percent) after for-profit institutions (U.S. Department of Education, 2011). Utilizing these trial three-year rates, this report examines institutional default rates in Tennessee.

SUMMARY OF FINDINGS

The purpose of this section is to summarize the study's findings. A more detailed discussion of the study's findings is presented in the **Descriptive Findings** and the **Analytical Findings** sections, which follow this summary section.

Using the recently released trial 3-year cohort default rates by the Office of Federal Student Aid, the study found that Tennessee's average cohort default rate (15.5 percent) was the sixth highest in the nation, and the third highest among its SREB peers. Furthermore, Tennessee institutions performed worse than the national average and their SREB peers regardless of institutional sector and control, with the exception of for-profit two-year institutions and for-profit and not-for-profit less than two year institutions[4].

Within-State Analysis

Among Tennessee institutions, nine of the ten institutions with the highest default rates were for-profit institutions. Additionally, five for-profit institutions had a three-year default rate over 30 percent. When comparing an institution's change from their two-year default rate to the trial three-year default rates, 13 institutions' default rates increased by more than 15 percentage points. This represents 14 percent of the institutions in Tennessee compared to the national average of 8 percent[5].

For-profit institutions served about 22 percent of the students in Tennessee eligible for being classified as in default for the 2008 cohort. However, 36 percent of all students that actually defaulted in Tennessee were from for-profit institutions. In other words, for-profit institutions were overrepresented in the number of students that actually defaulted in Tennessee. Furthermore, the results of the analytical analysis supported these findings. For example, being classified as a for-profit institution was consistently associated with higher institutional default rates than public or private institutions.

Private institutions, however, had lower default rates than both public and for-profit institutions. Furthermore, an institution's graduation rate was the only factor that accounted for differences in institutional default rates across Carnegie classifications. Specifically, higher graduation rates are associated with lower default rates. This finding confirms previous research that showed not completing a degree is a key predictor of student default.

Additionally, the lower the cost that a student actually pays to attend college was associated with lower default rates at doctoral/research universities. For bachelor's and associate's colleges, the greater the percentage of institutional expenditures that were spent on instruction was related to lower default rates. Furthermore, higher student to faculty ratios were associated with higher default rates for all

[4] There are no Tennessee public institutions included in the less than two-year sector.

[5] This refers only to institutions classified by the Office of Federal Student Aid as being located in Tennessee in the trial three-year default rate database.

Carnegie classes, except doctoral/research universities. Finally, there were additional significant factors that accounted for differences between institutions' default rates, but they were not consistent across the models, so they are discussed in the **analytical results** section.

Furthermore, the study found that only ten institutions in Tennessee had lower default rates than expected based on the statistical models, including two public institutions (Tennessee State University and Tennessee Technological University). All other Tennessee institutions' default rates were higher than expected, meaning more students are defaulting on their loans at these institutions than the models predicted. The only institutions that performed better than expected in the associate's college model were for-profit institutions (Kaplan Career Institute, Nashville Auto Diesel College, and Nossi College of Art).

Across-States Analysis

When compared to their peer institutions, Tennessee public institutions typically performed worse. Seven of the nine public four-year institutions in Tennessee were either the worst performing or second worst performing institution compared to their peers. The exceptions were: Tennessee State University and Tennessee Technological University, which both performed better than the majority of their peers.

A majority of Tennessee institutions' default rates are too high. Given that Tennessee's average default rate was the sixth highest in the nation, these findings are not surprising. Additionally, this problem is not limited to one sector or type of institution. Tennessee's average default rate was higher than its SREB peers and the national average across institutional sector and control. Furthermore, almost all the institutions in Tennessee, including private, public, and for-profit, had higher than expected default rates.

While Tennessee's default rates are higher than the national average and their SREB peers, a new report suggests that institutions can help moderate the number of their students that default. *Lowering Student Loan Default Rates* by the Education Sector (Education Sector Dillon & Smiles, 2010), documents the efforts of 12 Historically Black Colleges and Universities (HBCUs) and their success in lowering institutional default rates as a result of institutional intervention. HBCUs typically enroll a student population that has a greater risk of going into default (first generation and low-income) than the typical public institution.

To lower their default rate, these institutions utilized diverse strategies to achieve their goals. Some of the best practices that were identified were: creating a campus wide default management team, instituting an early warning system (which targeted students at risk of dropping out), appointing a default prevention manager (a person responsible for implementing the institution's default management plan), avoided giving students more in their financial aid package than their direct costs, and better educating students about their debt (Education, Sector, 2010).

The results of the study show that institutions can and should mediate at-risk student populations to

improve their institutional default rates. Some of the strategies these schools employed can be learned from and applied as best practices. Institutions in Tennessee may want to consider new programs and interventions to assist “at-risk” students, which may lead to lower institutional default rates.

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DESCRIPTIVE FINDINGS

How does Tennessee's default rate compare to the national average and its SREB peers?

Figure 2 (p. 9) shows the 2008 trial three-year cohort default rate, the most recent year of available data[6], for all states. Tennessee's average cohort default rate (red line) was 15.5 percent, while the US cohort default rate (yellow line) was 12.3 percent[7]. The state with the highest default rate was Arizona (18.9 percent), and the state with the lowest default rate was Montana (3.7 percent). Eighteen states had default rates below 10 percent.

Table 2 shows the states with the highest and lowest default rates. Three of the top six states, and six of the top ten with the highest default rates are SREB states. In contrast, none of the SREB states are represented among the states with the lowest default rates.

Table 2:
States with the Highest and Lowest Default Rates

Highest			*Lowest*		
Rank	State	Default Rate	Rank	State	Default Rate
1	AZ	18.9%	1	MT	3.7%
2	FL	15.8%	2	ND	4.3%
3	TX	15.6%	3	WI	6.5%
3	IA	15.6%	4	MN	6.7%
3	CO	15.6%	5	VT	7.0%
6	***TN***	***15.5%***	6	NH	7.3%
7	OK	15.4%	7	SD	7.4%
7	AR	15.4%	8	HI	7.5%
9	NV	14.4%	8	MA	7.5%
10	WV	14.2%	10	NE	8.1%

When compared to their SREB peers (**Table 3**), Tennessee's average cohort default ranked third highest out of the 16 states. Additionally, thirteen of the sixteen SREB states had default rates over 10 percent, while only three of the SREB states had a default rate below 10 percent (Delaware, South Carolina, North Carolina).

Table 3:
SREB States' Default Rates

Rank	State	Default Rate
1	FL	15.8%
2	TX	15.6%
3	***TN***	***15.5%***
4	OK	15.4%
4	AR	15.4%
5	WV	14.2%
6	KY	14.0%
6	LA	14.0%
7	AL	13.7%
8	MS	13.6%
9	GA	11.9%
10	VA	11.2%
11	MD	10.2%
12	DE	9.9%
12	SC	9.9%
13	NC	8.9%

Table 4 shows that, with the exception of for-profit two-year institutions, and private and for-profit institutions that offer programs that are under two years, Tennessee's default rates were also higher across institutional sectors than their SREB peer states and the national average (denoted in red).

Table 4:
Comparing TN's Default Rates by Sector

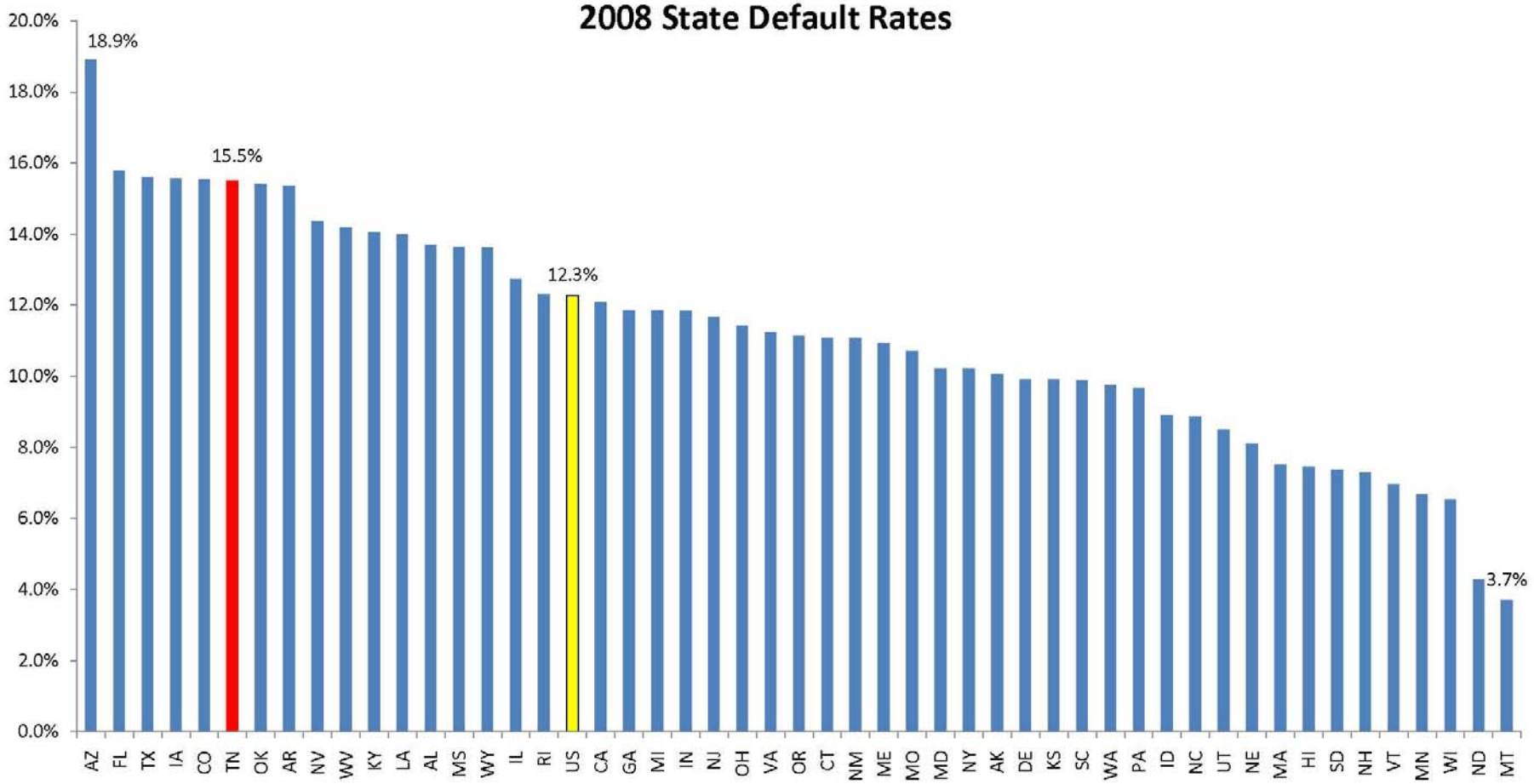
		TN	SREB	US
Public	Less Than 2 Years	*	18.2%	13.0%
Public	Two-Year	22.4%	18.5%	16.3%
Public	Four-Year	10.9%	9.3%	7.1%
Private	Less Than 2 Years	20.3%	17.7%	23.0%
Private	Two-Year	22.9%	18.1%	14.7%
Private	Four-Year	9.8%	8.6%	6.5%
For-Profit	Less Than 2 Years	22.1%	27.4%	24.2%
For-Profit	Two-Year	21.3%	26.3%	24.8%
For-Profit	Four-Year	28.8%	24.2%	20.5%

* No TN public institutions were classified in this category by the U.S. Department of Education

[6] The 2008 cohort default rates can be obtained from (http://federalstudentaid.ed.gov).

[7] The cohort default rates displayed are based on the institutions included in the study's population, which are defined in Appendix A: Methodology.

Figure 2:
2008 State Default Rates



What institutions and sectors in Tennessee have the highest and lowest cohort default rates?

Table 5 presents the ten institutions in Tennessee with the highest default rates. Nine of the ten institutions with the highest default rates were for-profit institutions. The Institute of Hair Design (43.8%) and Dudley Nwani The School (43%) both had three-year default rates over 40 percent. If institutions were subject to sanctions for their three-year default rates beginning this year[8], both of these institutions would lose their ability to participate in federal loan programs.

Table 5:
Tennessee Institutions with the ***Highest*** Default Rates
(based on 3-yr rates)

Rank	Institution	2-yr Rate	**3-yr Rate**	Sector
1	INSTITUTE OF HAIR DESIGN	21.9%	**43.8%**	For-Profit
2	DUDLEY NWANI THE SCHOOL	25.9%	**43.0%**	For-Profit
3	MILLER - MOTTE TECHNICAL COLLEGE	18.0%	**34.7%**	For-Profit
4	ITT TECHNICAL INSTITUTE	15.5%	**30.9%**	For-Profit
5	VOLUNTEER BEAUTY ACADEMY	13.5%	**30.6%**	For-Profit
6	CHATTANOOGA COLLEGE - MEDICAL, DENTAL AND TECHNICAL CAREERS	10.2%	**29.7%**	For-Profit
7	LANE COLLEGE	18.5%	**29.2%**	Private
8	ITT TECHNICAL INSTITUTE	13.0%	**28.0%**	For-Profit
9	NATIONAL COLLEGE OF BUSINESS AND TECHNOLOGY	8.9%	**27.2%**	For-Profit
10	SOUTH COLLEGE	14.6%	**26.4%**	For-Profit

*All rates are rounded

Additionally, the top five institutions had three-year default rates over 30 percent. Lane College, a private institution, was the lone non-proprietary institution to make the top ten, with a three-year default rate of 29.2 percent. The difference between the institution with the highest default rate and the institution with the tenth highest default rate was over 17 percentage points.

Table 6 presents institutions in Tennessee with the lowest default rates. All ten of the institutions with the lowest default rates were private institutions. Three institutions did not have any default during the three-year period: Southern College of Optometry, Middle Tennessee School of Anesthesia, and Richmont Graduate School. Five of the institutions had default rates below three percent, including Vanderbilt and Belmont University, and all but two of the private institutions had rates below four percent. Tennessee

Table 6:
Tennessee Institutions with the ***Lowest*** Default Rates
(based on 3-yr rates)

Rank	Institution	2-yr Rate	**3-yr Rate**	Sector
1	SOUTHERN COLLEGE OF OPTOMETRY	0.0%	**0.0%**	Private
2	MIDDLE TENNESSEE SCHOOL OF ANESTHESIA	0.0%	**0.0%**	Private
3	RICHMONT GRADUATE UNIVERSITY	0.0%	**0.0%**	Private
4	O'MORE COLLEGE OF DESIGN	2.2%	**2.2%**	Private
5	VANDERBILT UNIVERSITY	1.6%	**2.4%**	Private
6	BELMONT UNIVERSITY	1.9%	**3.3%**	Private
7	RHODES COLLEGE	2.2%	**3.4%**	Private
8	MILLIGAN COLLEGE	4.0%	**4.8%**	Private
9	PENTECOSTAL THEOLOGICAL SEMINARY	5.0%	**5.0%**	Private
10	UNION UNIVERSITY	3.2%	**5.1%**	Private

*All rates are rounded

[8] Institutions are not subject to sanctions on the new three-year default rates until 2014

Technological University ranked 12th, and was the public institution with the lowest default rate (5.27%).

Table 7 presents the default rates of Tennessee public community colleges. All of the community colleges had three-year default rates over 20 percent, except for Motlow State Community College (17.4%). While the default rates may seem high, the lack of variance suggests that they are behaving similarly.

Table 7:
Public 2-yr institutions' 3-yr default rates

Institution	Default Rate
CHATTANOOGA STATE COMMUNITY COLLEGE	24.8%
NORTHEAST STATE COMMUNITY COLLEGE	24.0%
CLEVELAND STATE COMMUNITY COLLEGE	23.5%
ROANE STATE COMMUNITY COLLEGE	23.3%
NASHVILLE STATE COMMUNITY COLLEGE	23.0%
COLUMBIA STATE COMMUNITY COLLEGE	21.9%
DYERSBURG STATE COMMUNITY COLLEGE	21.4%
PELLISSIPPI STATE COMMUNITY COLLEGE	21.1%
WALTERS STATE COMMUNITY COLLEGE	20.1%
VOLUNTEER STATE COMMUNITY COLLEGE	20.0%
MOTLOW STATE COMMUNITY COLLEGE	17.4%

* Jackson State and Southwest Tennessee Community Colleges are not listed due to missing data

Table 8 shows the default rates of Tennessee public four-year institutions. The University of Tennessee at Martin had the highest default rate (16.2 percent), and Tennessee Technological University had the lowest. Only two public four-year institutions had rates below 10 percent (Tennessee Technological University and University of Tennessee at Knoxville). Unlike Tennessee 2-yr institutions, there is more variation among the four-year institutions. This variation is probably related to the different Carnegie Classifications that the institutions represent and the types of students they serve.

Table 8:
Public 4-yr institutions' 3-yr default rates

Institution	Default Rate
UNIVERSITY OF TENNESSEE - MARTIN	16.2%
TENNESSEE STATE UNIVERSITY	13.2%
AUSTIN PEAY STATE UNIVERSITY	12.6%
EAST TENNESSEE STATE UNIVERSITY	12.6%
MIDDLE TENNESSEE STATE UNIVERSITY	12.5%
UNIVERSITY OF TENNESSEE - CHATTANOOGA	12.2%
UNIVERSITY OF MEMPHIS	10.2%
UNIVERSITY OF TENNESSEE	7.2%
TENNESSEE TECHNOLOGICAL UNIVERSITY	5.3%

Previously, a student was classified as being in default if he or she defaulted within two years of entering into repayment. Now, the window has been extended to three years. **Table 9** (on page 21) ranks Tennessee institutions by the percentage point change in their two-year and three-year default rates. John A. Gupton College, a private college, was the lone non-proprietary institution among the ten with the greatest percentage point increase. Additionally, nine of the institutions with the highest default rates (**Table 5**) also were among the ten institutions with the largest percentage point change. Five of the institutions on this list were cosmetology schools, and Volunteer Beauty Academy had two of its campuses on the list.

Figure 3 (on page 21) shows how students in Tennessee that were a part of the 2008 repayment cohort are distributed across institutional type. Public institutions had over twice as many students in their cohort than private or for-profit institutions. Of the three institutional types, for-profit institutions had the fewest students eligible for being classified as in default.

Table 9:
Percentage point change in institutional default rates

Rank	Institution	Sector	2-yr Default Rate	3-yr Default Rate	**Percentage Point Difference**
1	INSTITUTE OF HAIR DESIGN	For-Profit	21.88	43.75	**21.88**
2	CHATTANOOGA COLLEGE - MEDICAL, DENTAL AND TECHNICAL CAREERS	For-Profit	10.24	29.69	**19.45**
3	VOLUNTEER BEAUTY ACADEMY OF DYERSBURG	For-Profit	5.56	24.07	**18.52**
4	NATIONAL COLLEGE OF BUSINESS AND TECHNOLOGY	For-Profit	8.94	27.20	**18.26**
5	VOLUNTEER BEAUTY ACADEMY	For-Profit	13.51	30.56	**17.04**
5	DUDLEY NWANI THE SCHOOL	For-Profit	25.93	42.96	**17.04**
6	MILLER - MOTTE TECHNICAL COLLEGE	For-Profit	18.04	34.66	**16.63**
7	JOHN A GUPTON COLLEGE	Private	6.38	22.92	**16.53**
8	DAYMAR INSTITUTE	For-Profit	9.82	26.21	**16.39**
9	PLAZA BEAUTY SCHOOL	For-Profit	10.13	26.25	**16.12**
10	ITT TECHNICAL INSTITUTE	For-Profit	15.45	30.86	**15.41**

Figure 3:
Share of Students in Repayment by Institutional Control for the 2008 Cohort

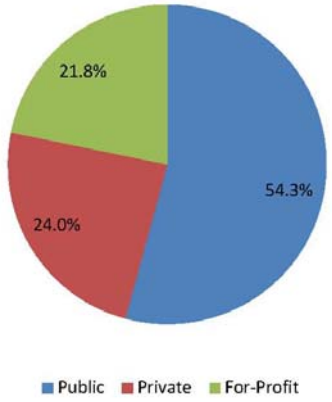
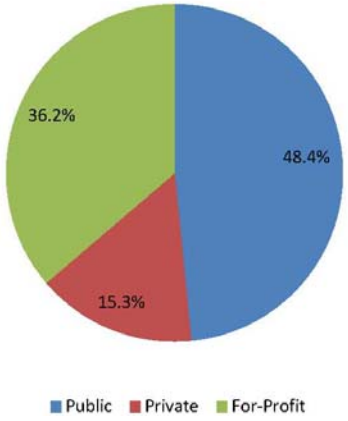


Figure 4 presents how students that defaulted on loans, as a part of the 2008 cohort, were distributed across institutional type. The pie chart shows that for-profit institutions were overrepresented in their number of defaulters compared to the public and private sectors. While for-profit institutions represented around 22 percent of all students in Tennessee in the cohort, they represented over 36 percent of all the students that had defaulted in Tennessee.

Figure 4:
Share of Defaultors by Institutional Control for the 2008 Cohort



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ANALYTICAL FINDINGS

In order to understand which institutions had higher or lower than expected default rates, and how Tennessee public institutions compared to their peers, multiple regression was utilized. Multiple regression allows researchers to control for institutional and student characteristics, which is necessary to answer the study's research questions.

The results are presented by Carnegie classification group, beginning with Doctoral/Research Universities and ending with associate's colleges. For each group, the findings related to factors that explain statistically significant variation in the three-year cohort default rates are presented and discussed first. *It is important to note that while these factors are significant and are worthy of discussion, many of these factors are not levers that institutions can easily influence in an attempt to moderate their default rates.*

Next, the default rate performance (whether institutional default rates were higher/lower than expected) for all institutions is presented. Finally, public institutions' performance is compared to their peers. Each section ends with a short summary of the findings.

What factors are related to institutional default rates at Doctoral/Research institutions?

Institutions classified as Doctoral/Research Universities by the Carnegie Foundation for the Advancement of Teaching have the average lowest default rates (4.79 percent) of all the Carnegie classifications[9]. There is also less variance between the institutions in their default rates, which reflects the characteristics of their student population. For example, doctoral/research universities are likely to have a larger percentage of their students that are classified as graduate or professional, which previous research has shown are approximately 50 percent less likely to default than undergraduates (McMillion, 2004).

Table 10 presents the factors that account for significant variation in cohort default rates at Doctoral/Research Universities (*n* =267). The table shows that an institution's 6-year graduation rate, the percentage of undergraduate students that receive Pell grants, the average net price of the institution, and being a historically black college or university, all explain statistically significant variation in the three-year default rates of doctoral/research universities. Furthermore, these factors explain over 73 percent of the differences between institutional default rates.

Table 10:
Factors that are related to institutional default rates at Doctoral/Research Institutions

R^2 = 0.73	
Factor	Percentage Point Change in Default Rate
6-year Graduation Rate	-0.0007
Pecent of Undergraduates Receiving Pell	0.0006
Net Price (Log)	0.2188
Historically Black College/University	0.7583

*Only Statistically Significant Predictors are shown

The report's findings support previous research that graduation is the most important predictor of

[9] See Table C in Appendix A

student default rates. Specifically, a ten percentage point increase in 6-year graduation rates is associated with a decrease in the default rate by about one tenth of a percentage point, holding all other factors constant. A ten percentage point increase in the percent of undergraduates receiving Pell grants is associated with less than one tenth of a percentage point increase in institutional default rates, holding all other factors constant. Furthermore, institutions with a lower net cost are associated with lower default rates. Simply, greater burdens on students to finance their education are associated with higher institutional default rates. Finally, historically black colleges and universities have higher default rates than their doctoral/research peers.

Which Tennessee Doctoral/Research Universities have lower/higher than predicted default rates compared to their peers?

Table 11 presents the Doctoral/Research Universities in Tennessee, their actual default rate, their predicted default rate, and whether their actual default rate was higher or lower than expected. The results are based on a statistical model that controlled for institution and student characteristics. Having a lower than expected default rate means that an institution is performing better than predicted, while a higher than expected default rate means that the institution's predicted default rate was lower than its actual default rate. The table shows that there is wide range in the actual default rates at Doctoral/Research Universities in Tennessee.

Table 11:
Default Rates of Doctoral/Research Universities in Tennessee

Institution	*Actual*	*Expected*	*Higher or Lower*
East Tennessee State University	12.6%	7.0%	↑
Tennessee State University	13.2%	14.4%	↓
The University of Tennessee	7.2%	4.7%	↑
Trevecca Nazarene University	8.0%	5.4%	↑
University of Memphis	10.2%	7.8%	↑
Vanderbilt University	2.4%	1.5%	↑

↑ = Higher Than Expected ↓ = Lower Than Expected

Vanderbilt has the lowest default rate (2.4 percent) and Tennessee State University (13.2 percent) the highest. The two private institutions (Vanderbilt and Trevecca) both have default rates below 6 percent, while the University of Tennessee at Knoxville was the only public doctoral/research institution with a default rate under 6 percent. Out of all the Doctoral/Research Universities in the state, only Tennessee State University's default rate was higher than predicted. The next four figures (**Figures 5-8**) present a comparison of the four public Doctoral/Research Universities included in **Table 11** and their peers. Each institution's peers were derived from the 2005-2010 funding formula[10]. These figures build on the information presented in **Table 11**.

While **Table 11** presents the institutions that had default rates higher/lower than expected, it does not provide a sense of the magnitude of the difference between the actual and predicted default rates. **Figures 5-8** show the magnitude of the difference.

[10] Table D in Appendix A contains a list of every Tennessee public institutions' peer institutions.

Any institution above zero had a higher than expected default rate, whereas any institution below zero had a lower than expected default rate. The scale at the bottom of the graph measures standard deviations (magnitude) from their expected value (0). Sixty-eight percent of all institutions fall between -1 and 1 standard deviation, and ninety-five percent of all institutions fall within -2 and 2 standard deviations.

For example consider **Figure 5**, which compares East Tennessee State University with its peers. The figure shows that ETSU's default rate was much higher than expected compared to its peer institutions. ETSU's actual default rate was over two standard deviations away from its expected default rate, meaning more students are defaulting then we would expect based on the model.

In contrast, Figure 6 compares Tennessee State University (TSU) to its peer institutions. TSU's default rate was lower than expected, meaning that TSU was performing better than we would expect based on the model. In other words, less students are defaulting on loans from TSU than we would expect. In fact, TSU outperformed seven of its peer institutions.

Figure 7 compares the University of Memphis (UM) to its peers. The University of Memphis's default rate was higher than expected, and only the University of Oklahoma had a bigger difference between its actual and predicted rate.

Figure 8 compares the University of Tennessee Knoxville (UTK) with its peer institutions. Compared to its peers, UTK's difference between its actual and predicted was the second largest. UTK's peers' actual default rates was much closer to their predicted rates than were UTK's after controlling for other factors.

Summary

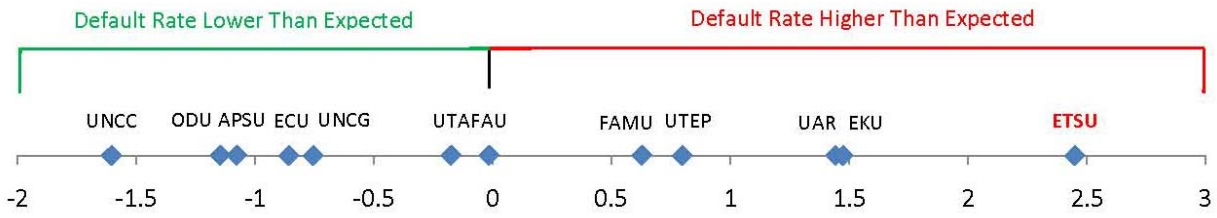
Controlling for student and institutional characteristics, all Doctoral/Research Universities in Tennessee default rates are higher than what they were expected to be, except for Tennessee State University. When compared to their peer institutions, Tennessee public Doctoral/Research Universities typically had higher default rates than expected. Simply, Tennessee's doctoral/research universities' default rates are too high. No for-profit institutions, which typically have higher default rates, were included in the doctoral/research model,[11].

One avenue institutions may choose to explore is to increase their 6-year graduation rates. As previous research has shown, and this study's findings confirm, institutions with higher graduation rates are more likely to have lower default rates. Accounting for institutional control, the study also showed increases in default rates are associated with increases in the average net-price of an institution. Simply, the lower the cost a student has to pay the less likely he/she is to default.

[11] There were only two institutions eligible to be included in the group: University of Phoenix and Capella University, however, missing data excluded both from the model.

Figure 5:

Magnitude of difference between Actual and Predicted Default Rate
East Tennessee State University compared to its Peer Institutions



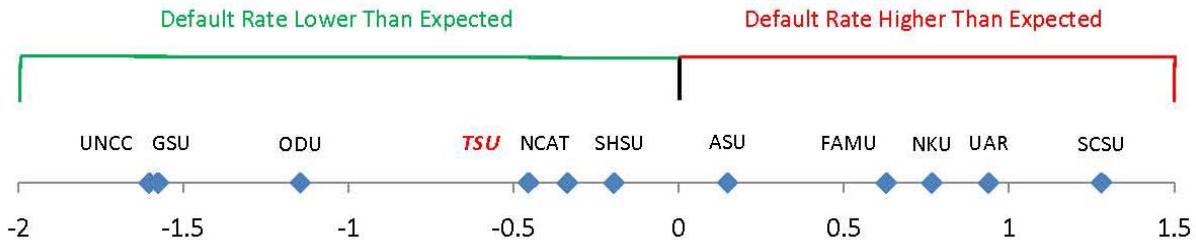
East Tennessee State University's (ETSU) Peer Institutions

Name	Abbreviation
University of Arkansas at Little Rock	UAR
Florida Agricultural and Mechanical University	FAMU
Florida Atlantic University	FAU
Eastern Kentucky University	EKU
East Carolina University	ECU
University of North Carolina at Charlotte	UNCC
University of North Carolina at Greensboro	UNCG
Appalachian State University	APSU
The University of Texas at Arlington	UTA
The University of Texas at El Paso	UTEP
Old Dominion University	ODU

*Any missing institutions due to missing data

Figure 6:

Magnitude of difference between Actual and Predicted Default Rate
Tennessee State University compared to its Peer Institutions



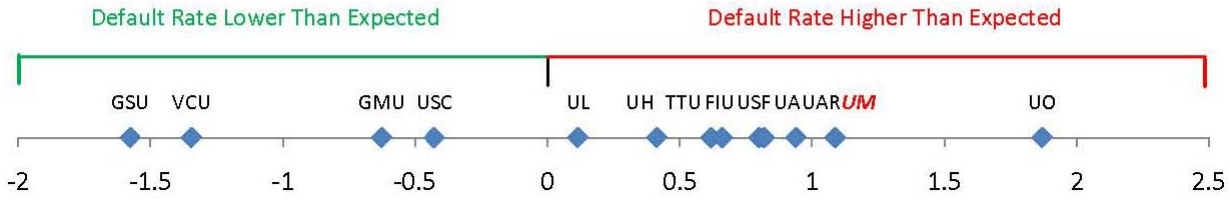
Tennessee State University's (TSU) Peer Institutions

Name	Abbreviation
University of North Carolina at Charlotte	UNCC
Georgia State University	GSU
Old Dominion University	ODU
North Carolina A & T State University	NCAT
Sam Houston State University	SHSU
Alcorn State University	ASU
Florida Agricultural and Mechanical University	FAMU
Northern Kentucky University	NKU
University of Arkansas	UAR
South Carolina State University	SCSU

*Any missing institutions are due to missing data

Figure 7:

Magnitude of difference between Actual and Predicted Default Rate
University of Memphis compared to its Peer Institutions



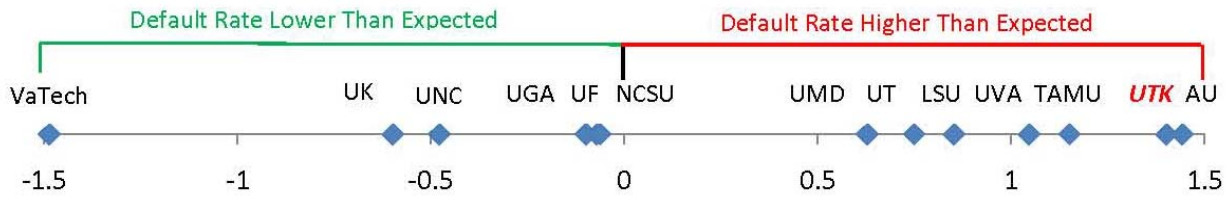
University of Memphis' (UM) Peer Institutions

Name	Abbreviation
Georgia State University	GSU
Virginia Commonwealth University	VCU
George Mason University	GMU
University of South Carolina-Columbia	USC
University of Louisville	UL
University of Houston	UH
Texas Tech University	TTU
Florida International University	FIU
University of South Florida-Main Campus	USF
The University of Alabama	UA
University of Arkansas	UAR
University of Oklahoma Norman Campus	UO

* Any missing institutions are due to missing data

Figure 8:

Magnitude of difference between Actual and Predicted Default Rate
Univeristy of Tennessee - Knoxville compared to its Peer Institutions



University of Tennessee's (UTK) Peer Institutions

Institution	Abbreviation
Virginia Polytechnic Institute and State University	VaTech
University of Kentucky	UK
University of North Carolina at Chapel Hill	UNC
University of Georgia	UGA
North Carolina State University at Raleigh	NCSU
University of Florida	UF
University of Maryland-College Park	UMD
The University of Texas at Austin	UT
Louisiana State University and Agricultural & Mechanical College	LSU
University of Virginia-Main Campus	UVA
Texas A & M University	TAMU
The University of Tennessee	UTK
Auburn University Main Campus	AU

*Any missing institutions are due to missing data

What factors explain cohort default rates at Masters Colleges/Universities?

Table 12 presents the factors that explain significant variation in default rates at Masters Colleges/Universities (*n* =593). The factors that explain statistically significant variation in the three-year default rates of master's colleges/universities are: graduation within 150 percent of time, for-profit institutions, private not-for-profit institutions, undergraduate enrollment, percent of undergraduates that are part-time, student-faculty ratio, and the percent of undergraduates that receive Pell. Furthermore, these factors explain almost 64 percent of the differences between institutional default rates.

Table 12:
Factors related to institutional default rates at Master's Colleges/Universities

$R^2 = 0.63$	
Factor	Percentage Point Change in Default rate
Gradrate	-0.00040
For-profit Institution	0.49288
Private Institution	-0.04597
Enrollment	-0.00621
Percent of Undergraduates that are Part-time	-0.05755
Student to Faculty Ratio	0.00001
Percent of Undergraduates Receiving Pell	0.00034

*Only statistically significant predictors are shown

As with Doctoral/Research institutions, having a higher graduation rate is associated with a lower default rate. Additionally, for-profit institutions' default rates were on average a half a percentage point higher than their public peers. Private institutions, however, had a lower default rate than public institutions. Interestingly, having a larger percentage of an institution's undergraduate students being part-time was associated with lower institutional default rates, as were larger undergraduate enrollments. An explanation for this finding may be that part-time students may be in a better financial position to payback their loans, as they are more likely to be employed full-time.

Also, having a larger student to faculty ratio was associated with lower default rates. These surprising findings are probably capturing the effect of larger institutions in this Carnegie class having better academically prepared students. Because almost all of the for-profit institutions did not have ACT or SAT scores publicly available, the analysis could not control for students' academic preparedness for any of the models, except the doctoral/research university model. Finally, having a larger percent of undergraduate students receiving Pell was related to higher institutional default rates.

Which Tennessee Masters Colleges/Universities have lower/higher than predicted default rates compared to their peers?

Table 13 presents the actual default rates for Masters Colleges/Universities in Tennessee, and whether their actual default rate was higher or lower than predicted. As mentioned previously in the doctoral/research university findings, having a lower than predicted default rate means that an institution is performing better than expected, while a higher than predicted default rate means that the institutions predicted default rate was lower than its actual default rate.

Table 13:
Default Rates of Master's Colleges/Universities in Tennessee

Institution	Actual	Predicted	Higher or Lower
Austin Peay State University	12.61%	10.34%	↑
Belmont University	3.31%	3.45%	↓
Bethel University	17.17%	12.61%	↑
Christian Brothers University	13.85%	6.49%	↑
Cumberland University	17.94%	7.73%	↑
Lipscomb University	7.42%	4.47%	↑
Freed-Hardeman University	9.84%	6.08%	↑
Lee University	11.93%	6.39%	↑
Lincoln Memorial University	6.35%	8.10%	↓
Middle Tennessee State University	12.51%	7.60%	↑
The University of Tennessee at Chattanooga	12.25%	7.18%	↑
The University of Tennessee-Martin	16.15%	8.04%	↑
Tennessee Technological University	5.27%	7.72%	↓
Tusculum College	13.52%	9.23%	↑
Union University	5.07%	4.75%	↑

↑ = Higher Than Expected ↓ = Lower Than Expected

Table 13 shows that the range of actual default rates for Masters Colleges/Universities is about the same as Doctoral/Research Universities in Tennessee. Belmont had the lowest default rate (3.31 percent) and Cumberland University has the highest default rate at almost 18 percent. Only three institutions in the masters Carnegie classification had default rates that were lower than predicted: Belmont, Lincoln Memorial, and Tennessee Technological University. Tennessee Technological University is the only public Masters Colleges/Universities to perform better than projected.

The following five figures (**Figures 9-13**) compare each of the five public Masters Colleges/Universities included in **Table 9** to their peers. The question addressed by the figures is: how do Tennessee public Masters Colleges/Universities default rates compare to their peers? While **Table 9** presented the institutions that had default rates higher/lower than predicted, it does not provide a sense of the magnitude of the difference between the actual and predicted default rates. The figures are presented to show the magnitude of difference in performance for Tennessee public Masters Colleges/Universities compared to their peers.

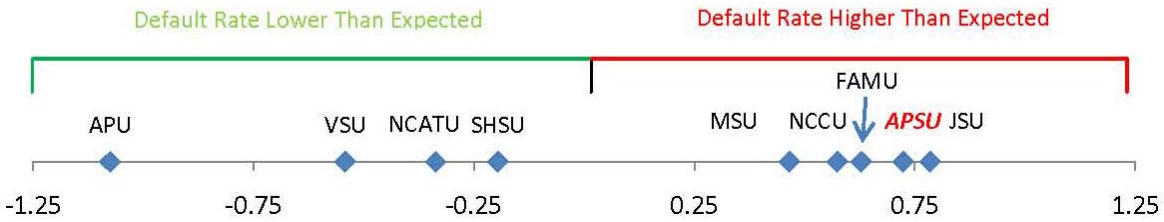
The scale at the bottom is measured in standard deviations. Any institution directly at zero means that the institution's actual and predicted default rate are equal. Any institution on the positive side of zero means that the institution's actual default rate was higher than expected. Any institution on the negative side of the scale means that the institution's default rate was lower than expected. Sixty-eight percent of all institutions fall between -1 and 1 standard deviations, and ninety-five percent of all institutions fall within -2 and 2 standard deviations. More informative, however, is the magnitude of an institution's difference relative to its peers.

Figure 9 compares Austin Peay State University (APSU) with its peers. The figure shows that the difference between APSU's actual and predicted default rate was greater than all but one of its peers (Appalachian State University). In other words, more students from APSU are defaulting on their student loans than we would expect. However, even though APSU's default rate was higher than expected the magnitude of difference was modest. **Figure 10** compares Middle Tennessee State University (MTSU) to its peer institutions. MTSU's difference between its actual and expected default rate was greater than all of its peer institutions and the only one above 1.5 standard deviations. Over half of MTSU's peers performed better than expected.

Figure 11 compares Tennessee Technological University (TTU) to its peer institutions. TTU's actual

Figure 9:

Magnitude of difference between Actual and Predicted Default Rate
Austin Peay State University compared to its Peer Institutions



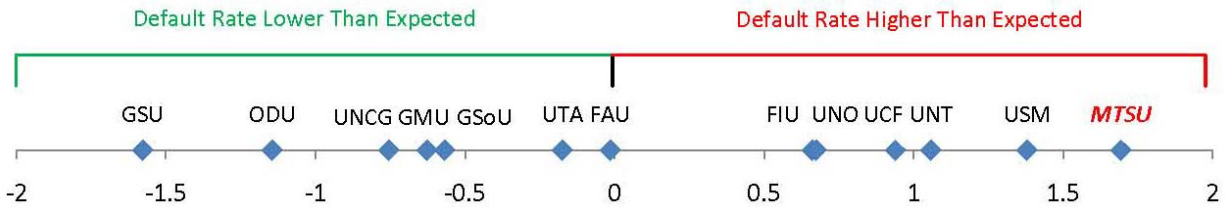
Austin Peay State University's (APSU) Peer Institutions

Name	Abbreviation
Sam Houston State University	SHSU
Austin Peay State University	APSU
North Carolina Central University	NCCU
North Carolina A & T State University	NCATU
Appalachian State University	APU
Morgan State University	MSU
Valdosta State University	VSU
Florida Agricultural and Mechanical University	FAMU
Jacksonville State University	JSU

*Any missing institutions are due to missing data

Figure 10:

Magnitude of difference between Actual and Predicted Default Rate
Middle Tennessee State University compared to its Peer Institutions



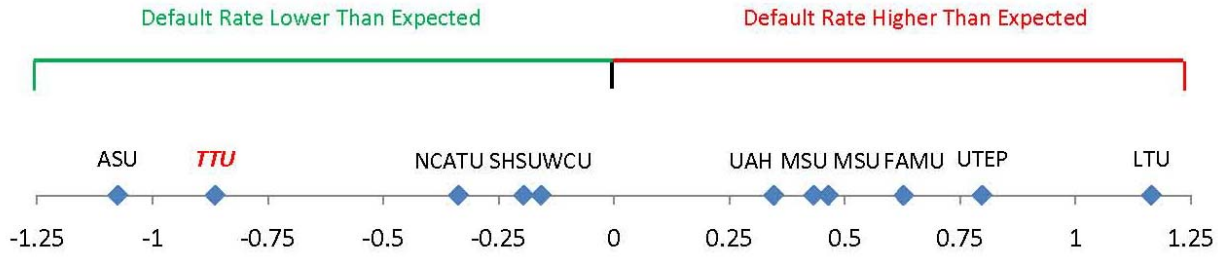
Middle Tennessee State University's (MTSU) Peer Institutions

Name	Abbreviation
George Mason University	GMU
Georgia State University	GSU
Florida International University	FIU
Old Dominion University	ODU
The University of Texas at Arlington	UTA
University of North Texas	UNT
Middle Tennessee State University	MTSU
University of North Carolina at Greensboro	UNCG
University of Southern Mississippi	USM
University of New Orleans	UNO
Georgia Southern University	GSoU
Florida Atlantic University	FAU
University of Central Florida	UCF

*Any missing institutions are due to missing data

Figure 11:

Magnitude of difference between Actual and Predicted Default Rate
Tennessee Technological University compared to its Peer Institutions



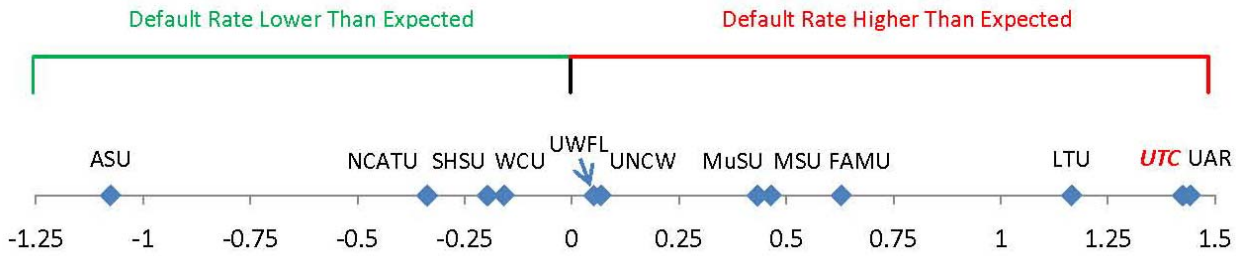
Tennessee Technological University's (TTU) Peer Institutions

Institution	Abbreviation
Sam Houston State University	SHSU
North Carolina A & T State University	NCATU
Appalachian State University	ASU
Morgan State University	MSU
Florida Agricultural and Mechanical University	FAMU
The University of Texas at El Paso	UTEP
Tennessee Technological University	TTU
Western Carolina University	WCU
Louisiana Tech University	LTU
Murray State University	MSU
University of Alabama in Huntsville	UAH

*Any missing institutions are due to missing data

Figure 12:

Magnitude of difference between Actual and Predicted Default Rate
University of Tennessee - Chattanooga compared to its Peer Institutions



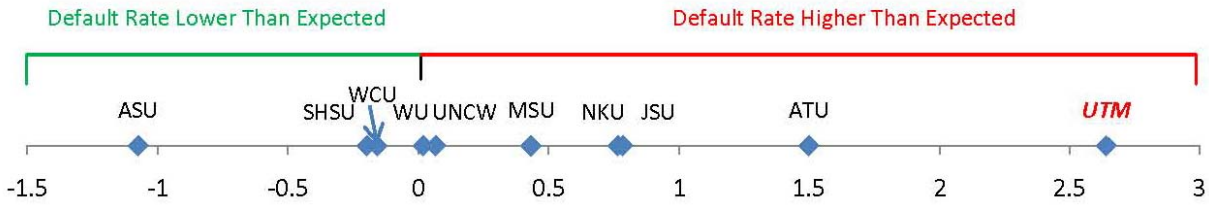
The University of Tennessee at Chattanooga's (UTC) Peer Institutions

Institution	Abbreviation
Sam Houston State University	SHSU
North Carolina A & T State University	NCATU
Appalachian State University	ASU
Morgan State University	MSU
Florida Agricultural and Mechanical University	FAMU
Western Carolina University	WCU
Louisiana Tech University	LTU
Murray State University	MSU
The University of Tennessee at Chattanooga	UTC
University of North Carolina-Wilmington	UNCW
The University of West Florida	UWFL
University of Arkansas at Little Rock	UAR

*Any missing institutions are due to missing data

Figure 13:

Magnitude of difference between Actual and Predicted Default Rate
University of Tennessee - Martin compared to its Peer Institutions



The University of Tennessee-Martin's (UTM) Peer Institutions

Institution	Abbreviation
Appalachian State University	ASU
Sam Houston State University	SHSU
Western Carolina University	WCU
Winthrop University	WU
University of North Carolina-Wilmington	UNCW
Murray State University	MSU
Northern Kentucky University	NKU
Jacksonville State University	JSU
Arkansas Tech University	ATU
The University of Tennessee-Martin	UTM

*Any missing institutions are due to missing data

default rate was lower than predicted. TTU is performing better than expected, and it outperformed all but one of its peer institutions. However, almost all of TTU's peer institutions were within one standard deviation of their expected values.

Figure 12 compares University of Tennessee – Chattanooga (UTC) to its peer institutions. UTC's default rate was higher than expected. Additionally, the difference between University of Tennessee-Chattanooga's actual and predicted default rate was greater than all but one of its peers (University of Arkansas-Little Rock).

Figure 13 compares University of Tennessee - Martin (UTM) with its peers. The figure shows that the difference between UTM's actual and predicted default rate was the highest among its peer institutions. The difference between UTM's actual default rate was over two standard deviations away from its expected default rate.

Summary

With the exception of Tennessee Technological University, Tennessee public Masters' Colleges/Universities default rates are all higher than predicted. Tennessee Technological University outperformed all but one of its peer institutions. The University of Tennessee – Martin had the highest difference between its actual and predicted default rate compared to its peer institutions. Overall, master's institutions in Tennessee, like their doctoral counterparts, have higher default rates than predicted, even when compared to their peers. These trends are not surprising given that Tennessee had one of the highest default rates in the nation.

What factors explain cohort default rates at Bachelor's colleges/universities?

Table 14 presents factors that explain significant variation in official cohort default rates for Bachelor's Colleges/Universities (*n* =611). The number of variables that explained unique variance in institutional cohort default rate was larger for the Bachelor's Carnegie classification group. As in the doctoral/research and master's models, 6-year graduation rates are related to institutional default rates. Specifically, a higher institutional six-year graduation rate was associated with a lower institutional default rate. For bachelor's institutions, a greater percentage of an institution's undergraduate population that is over twenty-five is associated with a higher institutional default rate. Based on the standardized coefficients, the percent of minority undergraduate students was also the most powerful predictor of institutional default rates in the bachelor model.

Table 14:
Factors related to institutional default rates at Bachelor's Colleges

$R^2 = 0.74$	
Factor	Percentage Point Change in Default Rate
For-Profit	0.0655
Private	-0.1175
Undergraduate Enrollment	-0.0794
Percent of Undergraduates over 25	0.1270
Percent of Undergraduates that are Minority	0.9955
Percent of Undergraduates that are Part-time	0.1040
Student to Faculty Ratio	0.0003
6-year Graduation Rate	-0.0002
Percent of Undergraduates that received Pell	0.0007
Percent of Expenditures on Instruction	-1.2285

*Only statistically significant predictors are shown

Additionally, the greater the percent of their expenditures institutions spend on instruction, the

lower the institutional default rate. Specifically, for every additional percent of their expenditures they spend on instruction, default rates decline by over one percentage point. Finally, being a for-profit institution has accounted for significant variation in the current model and the Masters college/university model. For bachelor's institutions, being a for-profit institution is associated with a higher institutional default rate than public institutions, holding all other factor constant.

Which Tennessee Bachelor's Colleges/Universities have lower/higher than predicted default rates?

Table 15 presents the actual default rates for Bachelor's Colleges/Universities in Tennessee, and whether their actual default rate was higher or lower than predicted. As mentioned in previous sections, having a lower than expected default rate means that an institution is performing better than expected, while a higher than expected default rate means that the institution's predicted default rate was lower than its actual default rate.

Rhodes College had the smallest actual default rate at 3.37 percent, while Lane College had the highest (29.9 percent). Three of the bachelor's colleges and universities had lower than predicted default rates: Fisk University, Le Moyne-Owen College, and Milligan College. As with the master's colleges/universities, the model did not account for student academic preparedness, which may affect institutions' predicted results.

Table 15:
Default Rates of Bachelor's Institutions in Tennessee

Institution	Actual	Predicted	Higher or Lower
Aquinas College	10.00	9.25	↑
Bryan College	7.14	5.68	↑
Carson-Newman College	12.71	5.58	↑
Fisk University	11.84	14.17	↓
Free Will Baptist Bible College	9.00	7.38	↑
King College	10.76	6.40	↑
Lambuth University	11.04	7.57	↑
Lane College	29.19	28.43	↑
Le Moyne-Owen College	20.86	23.68	↓
Martin Methodist College	18.34	3.46	↑
Maryville College	11.93	5.48	↑
Crichton College	10.30	26.54	↑
Milligan College	4.76	4.85	↓
Rhodes College	3.37	2.01	↑
Sewanee-The University of the South	6.43	2.05	↑
Southern Adventist University	6.83	6.02	↑
Tennessee Wesleyan College	11.34	8.76	↑

↑ = Higher Than Expected ↓ = Lower Than Expected

How do Tennessee public Bachelor's Colleges/Universities compare to their peers?

This question is not addressed in the study, because there are no public institutions in the state of Tennessee classified as bachelor's colleges/universities by Carnegie in 2005. Table 16 comprises all private and for-profit institutions. All four-year public institutions in Tennessee are classified at the Masters college/university level or above by Carnegie in 2005.

Summary

As a group Bachelor's colleges/universities in Tennessee default rates were higher than expected. All but three of the bachelor's institutions had a default rate lower than predicted, meaning they performed below expectations. The institutions that

performed better than expected were: Fisk University, Le Moyne-Owen College, and Milligan College. The bachelor's group has no public institutions included in the sample because no public institutions in Tennessee were classified as bachelor's institutions by the 2005 Carnegie Classification.

What factors explain cohort default rates at Associate's Colleges?

Table 16 presents the predictors that explain unique variation in the official cohort default rates of Associate's colleges (*n* = 1190). The predictors that are statistically significant are: for-profit institutions, private institutions, the percent of students that are minorities, student to faculty ratio, graduation rate, enrollment, and the percent of expenditures spent on instruction. As was the case in the previous group models, for-profit institutions had a higher default rate than public institutions. On average, for-profit institutions' default rates were less than a quarter of a percentage point higher than public institutions, while private institution's default rates were a quarter of a percentage point lower than public institutions.

Table 16:
Factors related to institutional default rates at Associate's Colleges

$R^2 = 0.27$	
Factor	Percentage Point Change in Default Rate
For-Profit	0.1988
Private	-0.2546
Percent of Undergraduates that are Minority	0.6328
Student to Faculty Ratio	0.0003
Graduation Rate (150% of Normal Time)	-0.0001
Undergraduate Enrollment	-0.0002
Percent of Expenditures on Instruction	-0.8722

*Only statistically significant predictor are shown

Also, for every one percentage point greater of its expenditures that an institution spends on instruction, an institution's default rate is expected to be one percentage point lower. Finally, a one percentage point increase in the percent of undergraduates that are minorities was associated with over a half a percentage point increase in institutional default rates.

While the model incorporated many of the same predictors as the previous models, the model only explains about 28 percent of the difference in institutional default rates. Most of the predictors attempt to explain variation across institutions; however the model seems to suggest that the majority of the variation at the Associate's college level dealing with default rates may be within-institutional variation. This finding confirms similar findings in previous research. In analysis by the Education Sector, the researchers found that only 15 percent of the variation in cohort default rates could be explained by measurable demographic differences. They concluded that Associate's colleges had significant influence over whether students default (Education Sector, 2010).

Which Tennessee Associate's Colleges have lower/higher than predicted default rates compared to their peers?

Table 17 presents the actual default rates of Associate's Colleges in Tennessee, and whether their default rate was higher or lower than predicted based on the statistical model. As mentioned in the previous sections, having a lower than expected default rate means that an institution is performing better than

expected, while a higher than expected default rate means that the institution's predicted default rate was lower than its actual default rate.

Compared to the Carnegie groups previously presented, the Associate's colleges have a much higher default rate. The average for the Associate's institutions in Tennessee was over 23 percent. All of the Associate's colleges in Tennessee had a higher than predicted default rate, except Kaplan Career Institute, Nashville Auto Diesel College, and Nossi College of Art. All three of the institutions that performed better than predicted were for-profit institutions. Nashville Auto Diesel College had the lowest actual default rate at 17 percent. Miller-Motte Technical College had the highest default rate at almost 35 percent.

Table 17:
Default rates of Associate's Colleges in Tennessee

Institution	Actual	Expected	Higher or Lower
Chattanooga College Medical Dental and Technical Careers	29.7%	20.6%	↑
Chattanooga State Community College	24.8%	15.1%	↑
Cleveland State Community College	23.6%	15.5%	↑
Concorde Career College	24.0%	20.7%	↑
Draughons Junior College Inc	26.2%	22.0%	↑
Dyersburg State Community College	21.4%	16.7%	↑
John A Gupton College	22.9%	13.9%	↑
Kaplan Career Institute	19.5%	23.9%	↓
Miller-Motte Technical College	34.7%	17.8%	↑
Motlow State Community College	17.4%	15.3%	↑
Nashville Auto Diesel College Inc	17.3%	19.8%	↓
Nossi College of Art	18.1%	19.5%	↓
Pellissippi State Community College	21.1%	15.3%	↑
Roane State Community College	23.3%	15.0%	↑
South College	26.4%	19.1%	↑
Walters State Community College	20.1%	14.2%	↑
West Tennessee Business College	20.4%	20.1%	↑

↑ = Higher Than Expected ↓ = Lower Than Expected

Figure 14 compares Tennessee's public Associate's colleges with their peer institutions. The figures are presented to show the magnitude of the difference between the actual and expected default rates. Once again, the scale at the bottom is measured in standard deviations. Any institution directly at zero means that the institution's actual and predicted default rate are equal. Any institution on the positive side of zero means that the institution's actual default rate was higher than predicted. Any institution on the negative side of the scale means that the institution's default rate was lower than expected. Sixty-eight percent of all institutions fall between -1 and 1 standard deviation, and ninety-five percent of all institutions fall within -2 and 2 standard deviations.

Figure 14 shows that Tennessee's public Associate's colleges were comparable to their peer institutions. However, all of Tennessee public community colleges and their peers had default rates that were higher than expected. Dyersburg State Community College was the closest to performing as expected, while Chattanooga State Community College had the biggest gap between its actual and expected default rate. Finally, many of the peer institutions were not included due to missing data, which may affect the expected values for the institutions included in the analysis.

Summary

Associate's colleges had the highest default rates of all the Carnegie groups in Tennessee. The default rates ranged from a low of 17 percent to a high of almost 35 percent. Compared to their peer institutions, Tennessee public Associate's colleges' default rates tended to be higher than predicted;

however, they performed very similarly to their peers. No Associate's colleges performed better than expected. Between-institutional characteristics accounted for only 28 percent of the variance in the official cohort default rate, suggesting that most of the variation is attributable to within-group variance.

Figure 14:

Magnitude of difference between Actual and Predicted Default Rate
Tennessee Community Colleges compared to their Peer Institutions

Tennessee Community Colleges and their Peer Institutions

Name	Abbreviation
Middle Georgia College	MGC
Dyersburg State Community College	DSCC
Motlow State Community College	MSCC
Anne Arundel Community College	AACC
McLennan Community College	MCC
Walters State Community College	WSCC
Southern West Virginia Community and Technical College	SWVC
Rose State College	RSC
Pellissippi State Community College	PSCC
Cleveland State Community College	CSCC
Roane State Community College	RSCC
Chattanooga State Community College	CtSCC

*Any missing institutions are due to missing data

APPENDIX A: Methodology

This section explains the study's methodology. Specifically, the data sources, the study's population characteristics, and research design are presented. Also, there is a discussion on the limitations of the official cohort default rate as a measure of student default behavior, and methods that institutions may use to manage their default rates.

METHODOLOGY

The purpose of this study is twofold: 1) to explain factors related to official cohort default rates; and 2) to explore which Tennessee public institutions have lower/higher than predicted default rates compared to their peers. In order to answer these questions, multiple regression analyses are utilized. This section discusses the data, the research design, and the analytical methods employed.

Data

The sample for the study was derived from the institutions included in the Trial 3-year Cohort Default Rate Database for 2008. The sample (*N* = 2487) includes all degree-granting institutions classified as an Associates college or higher in the 2005 Carnegie classification, except institutions with less than 30 borrowers in a cohort, which were excluded from the study to limit the influence of small numbers. Data for this study were obtained using the Integrated Postsecondary Data System (IPEDS) and the Federal Student Aid Official Cohort Default Rate Database. The dependent variable examined in the study is the trial three-year cohort default rate, which is discussed in more detail in the next section. **Table A** in **Appendix B** presents the other variables included in the analyses in more detail. The next section outlines the current two-year official default rate measure. The official cohort default rate is defined, and its calculation is presented. Finally, there is a discussion on its limitations as an effective measure of student defaulting behavior. The new three-year default rates are a step in moderating some of the concerns that are raised.

Official Cohort Default Rate Definition

The dependent variable utilized in this study is the Official Cohort Default Rate provided by the Office of Federal Student Aid (OFSA). The official definition (OFSA, 2010) is:

> "A cohort default rate is the percentage of a school's borrowers who enter repayment on certain Federal Family Education Loan (FFEL) Program or William D. Ford Federal Direct Loan (Direct Loan) Program loans during a particular federal fiscal year (FY), October 1 to September 30, and default or meet other specified conditions prior to the end of the next fiscal year".

Cohort default rates are based on the number of borrowers who enter repayment, not the number of loans entering repayment. For example, a student with multiple types of loans from the same institution, whose loans enter repayment at the same time, is only included once in the calculation. Depending on the number of borrowers entering into repayment, the official cohort default rate is calculated differently.

For a FFEL to be considered in default, the guaranty agency must have paid a default claim to the lender holding the loan. The date that the guaranty agency pays the default claim is the date used to determine if the borrower is considered as being in default for the

cohort. An individual is considered in default of a Direct Loan, and counted in the default rate cohort, if the individual is delinquent over 360 days (or after 270 days if the borrower's first day of delinquency was before October 7, 1998). Due to the six-month grace period, borrowers that graduate in May do not enter repayment until the next fiscal year

For schools who have at least 30 borrowers entering repayment in a fiscal year, the school's cohort default rate is the percentage of a school's borrowers who enter repayment on certain Federal Family Education Loans (FFELs) and/or William D. Ford Federal Direct Loans (Direct Loans) during that fiscal year and default prior to the end of the next fiscal year. If a school has 29 or fewer borrowers entering repayment during a fiscal year, the cohort default rate is an average rate of the borrowers entering repayment over a three-year period.

Institutional default rates are monitored by the US Department of Education for eligibility to participate in some federal lending programs. If an institution has an official cohort default rate of 25 percent or greater over a three year period or the current cohort has a default rate greater than 40 percent, the institution loses participation in FFEL and Direct Loan programs for the year the institution is notified and for the next two fiscal years. In the former situation, the institution also loses Pell eligibility. The Higher Education Opportunity Act of 2008 legislated that the cohort default rate be expanded to a three-year rate beginning in 2014.

Problems with the Official Cohort Default Rate

The National Association of Student Financial Aid Administrators (NASFAA) stated that they expected the addition of a third year to the cohort to increase institutional default rates anywhere from 30 to 50 percent (Futrell, 2010). This change in the definition of the official cohort default rate is expected to lead to more institutions being at risk of receiving sanctions. The recent changes to the cohort default rate are exposing a larger problem with the measure and its accuracy in representing the defaulting behavior of students who borrowed loans.

The official cohort default rate fails to sufficiently account for three main factors: the entire loan portfolio, adequate time, and small numbers. For example, the official cohort default rate only includes the loans listed in **Table B** in **Appendix B** in its calculations. Loans from guaranty agencies and lenders, and the Federal Perkins loan program are not included in the calculation. Federal Consolidation Loans and Federal Direct Consolidation Loans are only included in the calculation if one of the original loans went into default prior to consolidation. If the loans were consolidated and then went into default, they are not included in the calculation.

The official rate also includes loans that are in periods of deferment or forbearance, which can artificially lower the institutional default rate. One of the ways that institutions are able to "manage their defaults" is by encouraging borrowers to seek a deference or forbearance on their loans.

Additionally, the new income-based repayment plan allows borrowers with an income 150 percent

under the poverty line to make a zero monthly payment. The remaining balance is cancelled after 25 years in repayment. By capturing only a portion of the loans utilized by students, the official cohort default rate does not provide an accurate representation of the actual student default rate.

The projected 50 percent growth in the official cohort default rate, as a result of expanding the official cohort default rate calculation to three years from two, reveals that the official cohort default rate calculation is capturing only a fragment of the number of students who end up defaulting on their student loans. Research has shown that defaults are more likely to occur after the first two years of entering into repayment (Field, 2010). Miller explains, "this means that it takes roughly 360 days, basically a full year for an unpaid loan to be officially counted as going into default. These 360 days do not, however, include the 60 day grace period most borrowers have to make their first payment. In other words, a borrower who decides to never pay back a single penny of student loan will not be considered in default until roughly 420 days after their first payment was due" (Burd, 2010).

A recent study by the Chronicle of Higher Education (2010), using unpublished data, found that the percentage of students who default on student loans is bigger than the official cohort default rate. Tracking loans that have been in repayment since 1995, the study found that one in five students have defaulted on their student loans, with the number for community college students being much higher (40 percent) (Field, 2010). At for-profit colleges, the numbers are worse, fifteen years after entering into repayment, two out of every five borrowers had defaulted. The study showed that default rates continued to climb as the years passed. The National Center for Educational Statistics reached similar findings using NCES data (Choy & Li, 2006) . The study showed that the actual default rate for students that graduated in 1993 was 9.7 in 2003, compared to the official cohort default rate, which was reported as 4.5 percent.

The small number problem is best illustrated by community colleges. Due to the risk of losing Pell eligibility, as a result of having an official cohort default rate of at least 25 percent for three consecutive years, many community colleges have decided to opt out of the loan system. Community colleges often have a small number of borrowers (under 50), and their default rate can be high simply due to the low number of borrowers that enter into repayment. In these small number cases, using a percentage as the lone evaluative tool is questionable.

Research Design

Table C in **Appendix B** presents descriptive statistics of the Official Cohort Default Rate by Carnegie classification. A cursory review of the table reveals that the mean default rate is different across Carnegie classifications. A between-subjects analysis of variance was conducted to compare the mean default rate between institutions by Carnegie classification groups. The results $F(3, 2483) = 509$, $p < .01$, reveal that the means across groups are statistically different, suggesting that the institutions should not be grouped together. A more detailed summary of the analysis and the A priori contrast test results are presented in **Appendix C**. As a result of

these findings, the study attempts to answer the two research questions by Carnegie classification.

Separate models were developed for each Carnegie classification, resulting in four models presented in the study in an attempt to answer the two research questions (doctoral and research institutions were collapsed into one category). **Table D** in **Appendix B** presents each public Tennessee institution and its peer institutions used for comparison. The peer institutions were selected because they were outlined as the peer institutions in the 2005-2010 Tennessee higher education funding formula.

Analytical Method

The study employs multiple regression to answer the study's guiding research questions. The primary uses of multiple regression are for prediction and explanation (Ethington, Thomas, & Pike, 2002). These uses are appropriate for answering the study's guiding questions: 1) to *explain* factors that are related to official cohort default rates; 2) to explore which Tennessee public institutions have lower/higher than *predicted* default rates compared to their peers. Multiple regression allows the researcher to examine the impact of a predictor on the dependent variable, while simultaneously controlling for the impact of other variables on the dependent variable. The basic multiple regression model can be defined as:

(2.1) $$y = \beta_0 + \beta_{1i} X_{1i} + \beta_{2i} X_{2i} + ... + \beta_k X_{ki} + \varepsilon_{ki}$$

(I = 1, 2, …, n)

Where *y* is the outcome, β_0 is the intercept, the predictors are represented by ($\beta_{1i} X_{1i} + \beta_{2i} X_{2i} + ... + \beta_k X_{ki}$), and the error term ($\varepsilon_{ki}$). The model assumes that: 1) E(ε_i)=0, the mean of the error term is always equal to 0. 2) Var(ε_i) = σ^2, the variance of the error is the same at any level of *x*. 3) Cov(ε_i, ε_j) = 0, the error terms for any two observations are uncorrelated. 4) ε_i is normally distributed.

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APPENDIX B:
Tables

Table A:
Factors that predict three-year cohort default rates

	Variable	*Metric*	*Source*
Dependent Variable	Trial 3-year Cohort Default rate	Percent	Office of Federal Student Aid
Student Characteristics	% Pell Students	Percent	Integrated Postsecondary Data System (IPEDS)
	% of Undergraduates that are Minority	Percent	Derived Variable from IPEDS
	% of Undergraduates that are Part-time	Percent	Derived Variable from IPEDS
	% of Undergraduates that are over 25 years old	Percent	Derived Variable from IPEDS
	Graduation Rate within 150% of normal time	Percent	IPEDS
	Average ACT score	Continuous	Derived Variable from IPEDS
Institutional Characteristics	Sector	Categorical	IPEDS
	2005 Carnegie Classification	Categorical	IPEDS
	Institutional Control	Categorical	IPEDS
	Historically Black College or University	Dichotomous	IPEDS
	Enrollment (Log)	Continuous	IPEDS
	Student to Faculty Ratio	Ratio	IPEDS
	Net Price of Attendance	Continuous	IPEDS
	% of Expenditures spent on Instruction	Percent	Derived Variable from IPEDS

Table B:
Loans included in Official Cohort Default Rate Calculation

FFEL Loans:		
	Federal Stafford Loans:	
		Subsidized Federal Stafford Loans
		Unsubsidized Supplemental Loans
	Federal Supplemental Loans for Students:	
		Federal SLS Loans
Direct Loans:		
	Direct Stafford/Ford Loans:	
		Federal Direct Subsidized Stafford/Ford Loans
		Federal Direct Unsubsized Stafford/Direct Loans

Table C:
Default Rate Descriptive Statistics by Carnegie Classification

Carnegie Group	*Mean*	*Standard Deviation*
Doctoral/Research Institutions	4.79	3.32
Masters Colleges/Universities	6.25	4.52
Bachelor's Colleges	9.28	7.51
Associates Colleges	18.1	7.53

Table D:
Tennessee Public Institutions and their Peer Institutions by Carnegie Classification

Doctoral/Research Universities:				*Associates Colleges:*
East Tennessee State University	*Tennessee State University*	*University of Memphis*	*University of Tennessee - Knoxville*	*All Tennessee Public Associates Colleges*
Peer Institutions				**Peer Institutions**
East Carolina University	University of Arkansas, Fayetteville	Georgia State University	University of Florida	James H Faulkner State Community College
The University of South Alabama	Florida A&M University	The University of Houston	University of Georgia	National Park (Garland County) Community College
The University of Arkansas at Little Rock	North Carolina A&T	University of Alabama	Texas A&M	Delaware Technical And Community College-Owens
Florida A & M University	South Carolina State University	University of Arkansas, Fayetteville	Louisiana State University	Palm Beach Community College
Florida Atlantic University	Delaware State University	University of South Florida	Virginia Polytechnical Institute	Middle Georgia College
Eastern Kentucky University	Georgia State University	University of Louisville	Auburn University	Bluegrass Community & Technical College
Appalachian State	Northern Kentucky University	Florida International University	University of Kentucky	Delgado Community College
University of North Carolina, Charlotte	Alcorn State University	University of Oklahoma Norman Campus	North Carolina State University	Anne Arundel Community College
University of North Carolina at Greensboro	University of North Carolina, Charlotte	University of South Carolina, Columbia	University of Texas at Austin	Southwest Mississippi Community College
The University of Texas at Arlington	Sam Houston State University	Texas Tech University	University of North Carolina, Chapel Hill	Central Piedmont Community College
The University of Texas at El Paso	Old Dominion University	George Mason University	University of Maryland, College Park	Rose State College
Old Dominion	Virginia State University	Virginia Commonwealth University	University of Virginia, Main Campus	Florence Darlington Technical College
				Mclennan Community College
				Virginia Western Community College
				Southern West Virginia Community & Technical College

Masters Colleges/Universities:

Austin Peay State University	*Middle Tennessee State University*	*Tennessee Technological University*	*University of Tennessee - Chattanooga*	*University of Tennessee - Martin*
Peer Institutions				
Jacksonville State University	Florida Atlantic University	University of Alabama-Huntsville	Western Carolina University	Frostburg State University (MD)
Morehead State University	Florida International University	University of North Florida	Murray State University (KY)	University of North Carolina Wilmington
McNeese State University	University of Central Florida	Murray State University	University of Arkansas Little Rock	Salisbury State University (MD)
Salisbury State University	Georgia State University	Louisiana Tech University	University of West Florida	Winthrop University (SC)
Valdosta State University	University of Southern Mississippi	Morgan State University	Louisiana Tech University	Jacksonville State University (AL)
Sam Houston State University	University of North Carolina at Greensboro	The University of Texas at El Paso	University of North Florida	Radford University
Morgan State University	University of North Texas	The University of South Alabama	Sam Houston State University (TX)	Arkansas Tech University
Texas A&M University-Corpus Christi	Old Dominion University	Western Carolina University	University of North Carolina Wilmington	Northern Kentucky University
Appalachian State	Georgia Southern	Sam Houston State University	Morgan St. University (MD)	Murray State University
Florida A & M University	University of New Orleans	Appalachian State	Appalachian State University (NC)	Western Carolina
North Carolina Central University	University of Texas - Arlington	Florida A & M University	Florida A & M University	Sam Houston State University
North Carolina A&T University	George Mason University	North Carolina A&T University	North Carolina A&T	Appalachian State

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APPENDIX C:
Analytical Methods

This appendix contains the analytical methods utilized to produce the report. More specifically, the analytical and statistical methods that were employed by the study are discussed in more detail. The appendix discusses data issues, the modeling process, and the model results. This section is designed for users of the report who are more interested in the analytical methods than the broader contents of the report itself.

ANALYTICAL METHODS

The first step in the analytical process was to review graphical representations of the data. Basic plots of the average official cohort default rate by Carnegie group revealed differing means, suggesting that the groups represented differing populations. Based on the graphical findings, a between-subjects ANOVA was used to compare the mean cohort default rate between four different groups of institutions (grouped by 2005 Carnegie Classification), namely: Doctoral/Research Institutions (*M = 4.79*, *SD* = 3.32), Masters Colleges/Universities (*M = 6.25*, *SD* = 4.52), Bachelors Colleges (*M = 9.28*, *SD* = 7.51), and Associates Colleges (*M = 18.1*, *SD* = 7.53). Using an alpha level of 0.05, this test was found to be statistically significant, $F(3, 2483) = 509$, $p < .01$. The evidence suggests that official cohort default rates differ by institutional classification.

A priori, the decision was made to tests all simple pairwise contrasts between each group. Using the Tukey-Kramer test to adjust for the unbalanced design, significant differences were found between the Doctoral and Masters groups, $t(2483) = -14.878$, $p < .001$, Doctoral and Bachelor groups, $t(2483) = -3.817$, $p < .001$, Doctoral and Associates groups, $t(2483) = -28.409$, $p < .001$, Masters and Bachelor groups, $t(2483) = -26.215$, $p < .001$, Masters and Associates groups, $t(2483) = -30.528$ $p < .001$, Bachelor and Associates groups, $t(2483) = -21.47$, $p < .001$. These findings show that the official cohort default rate should be examined by Carnegie Classification.

Next, graphical and descriptive analyses were conducted by Carnegie Classification. These analyses revealed that the dependent variable in each of the four analyses was not normally distributed. As a result, the square root transformation was applied to each of the four models to better meet the assumption of normality. Based upon the findings from these analyses and after applying the transformations, the model building process began.

The same set of variables was identified for each analysis from the study's conceptual framework. The study's conceptual framework identified two constructs that needed to be accounted for when attempting to explain variance in official cohort default rate: student characteristics and institutional behavior. Due to missing data, however, several variables were not included in one or more of the models. For example, institutional average ACT score was included only in the doctoral/research model due to the high counts of missing data in the other models. Missing data were handled using listwise deletion.

The study relied on rationales by Ethington, Thomas, and Pike (2002) to guide the variable selection process and model building procedure. Specifically, the authors suggest that theory should drive variable selection, and that final models should be parsimonious, excluding variables that may be highly correlated with one another. Informed by these recommendations, our first consideration in building the model was a conceptual one. For each of the four models, independent variables were entered into the model after accounting for their pair-wise correlation coefficient. If any two independent

variables had a correlation coefficient above 0.70, the variable that was better able to explain variation in the response was retained. This method allowed us to create the most parsimonious model, while capturing the independent variables that were the most theoretically relevant.

Results

Table E presents the statistical model for the Doctoral/Research institutions. **Table F** presents the statistical model for the Masters Colleges/Universities, and **Table G** presents the statistical model for the Bachelors Colleges/Universities. Finally, **Table H** presents the statistical model for the Associates Colleges. All of the results are presented in the square root metric.

Table E:
Doctoral/Research University Model

	Estimate	Std. Error	*t* value	Pr(>|t|)
(Intercept)	0.984817	1.063421	0.926	
Private Institution	-0.078491	0.109846	-0.715	
HBCU	0.87083	0.182801	4.764	***
Undergraduate Enrollment (Log)	0.132375	0.111633	1.186	
% Undergraduates that are Adult	-0.079468	0.279052	-0.285	
% Undergraduates that are Minority	0.126268	0.16873	0.748	
% Undergraduates that are Part-time	-0.238771	0.15583	-1.532	
Student to Faculty Ratio	0.00506	0.005943	0.852	
Graduation Rate	-0.028199	0.002606	-10.821	***
% Undergraduates that receive Pell	0.007987	0.004301	1.857	.
Net Costs (Log)	0.218832	0.104011	2.104	*

*** $p < .001$; ** $p < .01$; * $p < .05$; . $p < .1$

Table F:
Master's Colleges/Universities Model

	Estimate	Std. Error	*t* value	Pr(>|t|)
(Intercept)	3.34769	0.354823	9.435	***
For-profit Institution	0.702052	0.162946	4.309	***
Private Institution	-0.21441	0.064765	-3.311	**
Undergraduate Enrollment (Log)	-0.078794	0.085602	-0.92	
PctAdult	-0.069563	0.128826	-0.54	
% Undergraduates that are Minority	0.416997	0.125413	3.325	***
% Undergraduates that are Part-time	-0.239886	0.062135	-3.861	***
Student to Faculty Ratio	0.003038	0.003273	0.928	
Graduation Rate	-0.020031	0.001776	-11.278	***
% Undergraduates that receive Pell	0.018567	0.002405	7.719	***
% of expenditures spent on instruction	0.022044	0.327053	0.067	

*** $p < .001$; ** $p < .01$; * $p < .05$; . $p < .1$

Table G:
Bachelor's Colleges Model

	Estimate	Std. Error	*t* value	Pr(>|t|)
(Intercept)	3.421076	0.365933	9.349	***
For-profit Institution	0.255919	0.150216	1.704	.
Private Institution	-0.342774	0.094947	-3.61	***
Undergraduate Enrollment (Log)	-0.281837	0.101636	-2.773	**
% Undergraduates that are Adults	0.356429	0.17816	2.001	*
% Undergraduates that are Minority	0.997762	0.130495	7.646	***
% Undergraduates that are Part-time	0.322461	0.152715	2.112	*
Student to Faculty Ratio	0.017933	0.004447	4.032	***
Graduation Rate	-0.012952	0.001818	-7.124	***
% Undergraduates that receive Pell	0.026947	0.002301	11.712	***
% of expenditures spent on instruction	-1.108362	0.369161	-3.002	**

*** $p < .001$; ** $p < .01$; * $p < .05$; . $p < .1$

Table H:
Associate's Colleges Model

	Estimate	Std. Error	*t* value	Pr(>|t|)	
(Intercept)	4.690648	0.280609	16.716	***
For-profit Institution	0.445835	0.112745	3.954	***
Private Institution	-0.504551	0.132327	-3.813	***
% Undergraduates that are Minority	0.795515	0.118394	6.719	***
Student to Faculty Ratio	0.017879	0.002989	5.982	***
Graduation Rate	-0.008124	0.001623	-5.006	***
Undergraduate Enrollment (Log)	-0.208714	0.075455	-2.766	**
% of expenditures spent on instruction	-0.933914	0.257093	-3.633	***

*** $p < .001$; ** $p < .01$; * $p < .05$; . $p < .1$

Finally, all model assumptions were examined. A scatterplot of the residuals against the predicted values revealed that the assumptions of linearity and homoscedasticity had not been violated. In addition, the assumption of normality was examined by reviewing a histogram of the response variable and a histogram and Q-Q plot of the residuals, which revealed some slight departures from normality in the tails of the distribution. Additionally, independence was determined to be satisfied after reviewing a scatterplot of the residuals.

Interpretation

For the sake of interpretability, the Tables throughout the report present the findings in their original metric. The findings presented in this appendix are in the square root metric.

APPENDIX D:

Tennessee Institutions included in the Analyses

This appendix contains a table of all Tennessee institutions included in the analyses and their actual and expected three-year default rate in the square root metric.

Table I:
Tennessee institutions included in the analyses

Institution	Carnegie Classification	Sector	3-year Default Rate	Predicted
Aquinas College	Bachelor's	Private 4-yr	3.16	3.04
Austin Peay State University	Master's	Public 4-yr	3.55	3.23
Belmont University	Master's	Private 4-yr	1.82	1.82
Bethel University	Master's	Private 4-yr	4.14	3.43
Bryan College	Bachelor's	Private 4-yr	2.67	2.38
Carson-Newman College	Bachelor's	Private 4-yr	3.57	2.36
Chattanooga College Medical Dental and Technical Careers	Associate's	For-Profit 2-yr	5.45	4.54
Chattanooga State Community College	Associate's	Public 2-yr	4.98	3.88
Christian Brothers University	Master's	Private 4-yr	3.72	2.48
Cleveland State Community College	Associate's	Public 2-yr	4.85	3.94
Concorde Career College	Associate's	For-Profit 2-yr	4.90	4.55
Crichton College	Bachelor's	Private 4-yr	3.21	5.15
Cumberland University	Master's	Private 4-yr	4.24	2.71
Draughons Junior College Inc	Associate's	For-Profit 2-yr	5.12	4.70
Dyersburg State Community College	Associate's	Public 2-yr	4.63	4.08
East Tennessee State University	Doctoral	Public 4-yr	3.55	2.65
Fisk University	Bachelor's	Private 4-yr	3.44	3.76
Free Will Baptist Bible College	Bachelor's	Private 4-yr	3.00	2.72
Freed-Hardeman University	Master's	Private 4-yr	3.14	2.40
High-Tech Institute-Memphis	Associate's	For-Profit 2-yr	4.66	5.61
John A Gupton College	Associate's	Private 2-yr	4.79	3.72
Kaplan Career Institute	Associate's	For-Profit 2-yr	4.41	4.89
King College	Bachelor's	Private 4-yr	3.28	2.53
Lambuth University	Bachelor's	Private 4-yr	3.32	2.75
Lane College	Bachelor's	Private 4-yr	5.40	5.33
Le Moyne-Owen College	Bachelor's	Private 4-yr	4.57	4.87
Lee University	Master's	Private 4-yr	3.45	2.38
Lincoln Memorial University	Master's	Private 4-yr	2.52	2.74
Lipscomb University	Master's	Private 4-yr	2.73	2.06
Martin Methodist College	Bachelor's	Private 4-yr	4.28	1.86
Maryville College	Bachelor's	Private 4-yr	3.45	2.34
Medvance Institute-Cookeville	Associate's	For-Profit 2-yr	4.66	4.14

Middle Tennessee State University	Master's	Public 4-yr	3.54	2.70
Miller-Motte Technical College	Associate's	For-Profit 2-yr	5.89	4.22
Milligan College	Bachelor's	Private 4-yr	2.18	2.20
Motlow State Community College	Associate's	Public 2-yr	4.17	3.91
Nashville Auto Diesel College Inc	Associate's	For-Profit 2-yr	4.16	4.45
National College of Business and Technology-Nashville	Associate's	For-Profit 2-yr	5.22	4.46
Nossi College of Art	Associate's	For-Profit 4-yr	4.25	4.41
Pellissippi State Community College	Associate's	Public 2-yr	4.60	3.91
Rhodes College	Bachelor's	Private 4-yr	1.84	1.42
Roane State Community College	Associate's	Public 2-yr	4.82	3.87
Sewanee-The University of the South	Bachelor's	Private 4-yr	2.54	1.43
South College	Associate's	For-Profit 4-yr	5.13	4.37
Southern Adventist University	Bachelor's	Private 4-yr	2.61	2.45
Tennessee State University	Doctoral	Public 4-yr	3.63	3.80
Tennessee Technological University	Master's	Public 4-yr	2.30	2.69
Tennessee Wesleyan College	Bachelor's	Private 4-yr	3.37	2.96
The University of Tennessee	Doctoral	Public 4-yr	2.69	2.17
The University of Tennessee at Chattanooga	Master's	Public 4-yr	3.50	2.84
The University of Tennessee-Martin	Master's	Public 4-yr	4.02	2.72
Trevecca Nazarene University	Doctoral	Private 4-yr	2.82	2.31
Tusculum College	Master's	Private 4-yr	3.68	3.02
Union University	Master's	Private 4-yr	2.25	2.08
University of Memphis	Doctoral	Public 4-yr	3.19	2.79
Vanderbilt University	Doctoral	Private 4-yr	1.56	1.23
Walters State Community College	Associate's	Public 2-yr	4.48	3.77
West Tennessee Business College	Associate's	For-Profit 2-yr	4.51	4.48

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