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**Tennessee: The Birth and Development of Performance-  
Based Funding in Higher Education**

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**The University Of Tennessee at Chattanooga**

**Departmental Thesis**

**The University of Tennessee at Chattanooga**

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**March 28, 2014**

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## **Abstract**

Tennessee was the first state to introduce performance based funding metrics into their higher education system in 1979. Over the past 30+ years, the state reevaluated and amended their formula every five years. What was initially an additional allocation that could be earned on top of an institution's standard budget has now become the sole method of allocating funds for higher education in Tennessee. In 2010 the Tennessee legislature passed the Complete College Tennessee Act, Which put the state on the path to be the first state in the nation that allocates 100% of higher education funds on the basis of a performance based funding formula. In order to learn how Tennessee ultimately created this policy, I looked at the various changes to Tennessee's funding formulae since it was introduced in 1979, evaluating the purpose of each change, and culminating in a complete analysis of Tennessee's radical new formula. Although for the first time in Tennessee's history, funding changes were initially proposed by the state legislature, the Tennessee Higher Education Commission, who was tasked with developing the formula, was able to take all of the lessons learned since 1979 and developed a formula that initially appears to be stable and will lead to success. By examining the process that Tennessee went through, my hope is that if Tennessee is successful in implementing this 100% formula, other states may appreciate the process it took to get to this model, and not jump into formulation of a formula without laying the necessary groundwork.

## **Introduction**

Performance-based funding in higher education is an ongoing policy discussion in the United States. By the end of 2013, in 12 states a portion of higher education funding is contingent on performance-based metrics, and 19 other states are in formal discussion on implementing performance based-funding, and 4 others are in the process of transitioning. Of the 13 states who have implemented performance based funding —Illinois, Indiana, Louisiana, Michigan, Minnesota, Missouri, New Mexico, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, and Washington—the majority allocate 5% or less of their funding for performance metrics, with exceptions in Louisiana (15%), and Tennessee (100%) (National Council of State Legislatures, n.d.). With Tennessee being the only state to move entirely to a performance-based model, it has become an excellent case study in how competition for government dollars and performance metrics affect university actions, and impact the number of college graduates. Further, Tennessee was the first state to implement any form of performance-based funding into higher education in 1979 (Layzell, 1998). During the spring 2010 legislative session, the Tennessee General Assembly passed the Complete College Tennessee Act of 2010 (CCTA) (Complete College Tennessee Act (CCTA), 2010). CCTA fundamentally altered Tennessee’s approach to higher education. Rather than funding universities based on how many students are enrolled at the end of the second full week of school, The Tennessee Higher Education Commission (THEC) was tasked with producing a

set of outcomes and progression metrics that would be used in creating a funding formula. The purpose of this research is to learn: how the state of Tennessee has implemented performance based funding in higher education, and what is so radically different about its latest approach, the Complete College Tennessee Act of 2010?

### **How some states are implementing with performance based funding**

This paper will focus on Tennessee's path of developing and implementing performance based funding in higher education, but it is good to see how other states are currently implementing models based on the same philosophical principles.

Louisiana currently has 15% of higher education funding allocated based on performance indicators. Louisiana has developed 3 separate goals: reaching the SREB's average rate of adult populations with post-secondary education by 2025, foster innovation through research, and increase accountability efficiency, and effectiveness in higher education. Within each of these 3 goals, there are multiple performance indicators that the state is grading its institutions on. Because of the 3-part approach, Louisiana has developed several dozen indicators on which institutions are graded (Louisiana Board of Regents, 2012).

Pennsylvania allocates 2.4% of their higher education budget based on performance indicators. In Pennsylvania, there are 3 different categories of performance indicators: student success, access, and stewardship. Within all three of those, some indicators are mandatory, 3-5 may be chosen from between

the groups, and then each university may develop up to two indicators of their own. Because of this approach, there is no way to holistically measure institutions against each other, since each institution has the ability to pick and choose the majority of the measures that will be used to assess them.

Pennsylvania just instituted this policy in 2011, and it is too soon to be able to evaluate the effectiveness of its malleable model (Pennsylvania State System of Higher Education, 2012).

Illinois allocates less than 1% of their higher education funding through performance based metrics. Although there is not a lot of money allocated, they use metrics similar to those in Tennessee: bachelor's degrees, master's degrees, doctoral degrees, degrees/100 FTE, 6-year graduation rate, research funding, 24 hours of course completion, cost per credit hour, and cost per completion.

Illinois introduced these measures in an attempt to have 60% of adults in the state to have some sort of higher education credentials by 2025 (National Council of State Legislatures, n.d.).

### **What are performance based indicators?**

Performance based indicators have traditionally been used for two different reasons in budget decisions: deciding on where to make savings based on efficiency, and using performance indicators to drive the initial budgeting process. By measuring the performance of various departments, and personnel, an organization can then determine how efficient each one of them is in using their funds. Once the more inefficient departments are located, they can be

targeted for revision in order to bring their performance in line with the rest of the organization; however there have also been instances of increasing efficiency by simple line-item budget cuts without any actual revision of the department. Rather than incentivizing improvement, performance indicators are used as a justification to reduce a budget without taking time to understand *why* that department is underperforming. Rather than using performance to simply reallocate funding, setting realistic, if loose, targets for organizations is a way to often increase savings within any budget. (Miller, Roberts, & Keum, 2007)

Performance indicators have been measured in two separate ways as well. In the public sector, indicators are often used as more of a “scorecard,” to measuring performance in a small scale. The public sector is using performance indicators in a much broader fashion because they have access to large data sets and more sophisticated analytic tools (Smith & Goddard, 2002). In England, the National Health Service Hospitals instituted performance funding in 2003. They are public; not-for-profit institutions that were first formed in 1948, and are the largest and oldest single-payer healthcare system. During an evaluation of the transition to performance funding in 2008, the researchers came to the conclusion that most hospitals were not showing any major responses to the performance indicators. They argue that because most of the employees of NHS hospitals see themselves as working for the community, rather than their particular hospital, they do not respond to performance incentives. There is not a sense of competition between the hospitals to drive performance to the front

of many employees mind, and this they are not reactive to the intended incentives that are created by performance funding. What this research suggests is that a sense of competition is essential for any performance based funding, either within an organization for their limited resources, or between organizations to draw in more customers to increase net revenue (Sussex & Farrar, 2009).

There has been some discussion in higher education about using performance indicators to evaluate individual faculty and their research output. In 2003, Ingo Liefner compared 6 institutions of higher education from across the world and talked with their faculty about this type of funding. What he learned was that, in a research context, performance funding would be a detriment to the body of scholarly knowledge, and relatively ineffective at “bettering” a university. If the indicators are focused at revenue gleaned from research, then basic research would likely decrease in the face of applied research. Also, faculty members who focus less on producing research would be incentivized to produce more scholarly literature just to maintain their position, regardless of their desire and passion to continue researching; whereas the primary researchers will not change their behavior, because they are already performing at a level that this type of model would incentivize. This shows that performance indicators in education are most likely not beneficial at an individual level to incentivize changes in faculty, but leaves open the door for broad performance indicators (Liefner, 2003)



In higher education, performance funding has had a very rocky history of implementation and failure in various states. The inherent difficulties involved in measuring such a complex system have led to the downfall and struggle most states encounter. Some states, like Arkansas, have tried to focus more on efficiency than quality. Other states like Tennessee and Missouri focused more on quality than efficiency. The unstable programs often suffered more influence from outside indicators like legislatures, business leaders, and executive officials. Major struggle for performance funding in higher education is defining clear and precise definitions and goals for the funding formula. What is “success” for a university? Does success vary from institution to institution? Is the state looking to judge schools based on their ability to transfer graduating students into the workforce, or are they looking for an educated population in the hopes that a more educated workforce will be successful in turning their knowledge into economic advancement and innovation? From there, there are the practical problems of transferring the defined goal into outcomes and weights to meaningful measures. It is this struggle in definition setting that has led to a lot of instability in some performance based programs in higher education. (Burke & Modarresi, 2000).

With a more general understanding of performance indicators and the difficulty of implementing them into higher education, I now want to examine some of the best practices that have arisen in the realm of higher education in regards to performance based indicators. In higher education, the metrics used

to measure performance tend to be along the lines of course completion, research funding allocations received, and graduation rates. In the 1990s, enough research had been completed to produce a sufficient list of best practices involved in higher education's experimentation with performance indicators:

- Keep the number of performance indicators low (<20)
- "performance indicators should not be developed in a top-down manner
- There needs to be buy-in by the state and faculty. Both should be involved in creating the formula
- Institutions are different, indicators must be able to reflect this without negatively impacting schools
- There need to be financial incentives for institutions
- Policy-makers often more easily absorb quantitative measures than qualitative measures.
- Performance results should be easy to understand, and communicated in a timely manner (Layzell, 1998)

### **Performance Indicators**

The number of indicators is important to the success of any model. By having too few indicators, a state will likely ignore multiple objectives of the model. Further, any small failure by an institution could result in a substantial decrease in funding because of a single indicator; however, having too many indicators creates a different set of problems. If there are so many indicators that

each one represents <2% of an institutions budget, institutions will not feel the financial loss of slightly underperforming in a number of areas. This leads to institutions being able to actively decide to ignore certain objectives, with the belief that they can make it up somewhere else in the formula. The number of indicators should be small enough to carry significant financial weight and institutional direction without being so few that the formula can do neither job effectively.

Institutions of higher education all have individual mission statements, goals, and purposes. A 2-year community college focused on preparing a slew of medical personnel (nurses, X-ray technicians, etc.) will focus their resources very differently than a 4-year research university that is a premier graduate university as well. Performance indicators need to be tailored to accurately measure all types of institutions without placing others at a disadvantage.

### **Buy-In**

Legislation that is seen to be interfering or manipulating the education system is often met with backlash from teachers and administration. Buy-in is essential to the successful implementation of any program, but especially one with millions of dollars and thousands of student's futures at stake. State legislators are not experts on running a higher education institution, nor should they be. Government officials are important for two reasons: 1. The officials are the ones who actually vote on the formula and 2. The officials represent the interests of the state during the discussion. Public institutions, specifically 2-year

community colleges and technical schools, serve specific purposes in ensuring the state has an adequately trained workforce for both the present and future.

Keeping faculty and administration involved in the process is also essential for a couple of reasons. First, these individuals know what is working and what isn't at the campus level. They have insight to how changes to performance indicators may directly impact behavior on campus. We must remember that performance funding is not simply a tool to measure institutions, but to also help guide them in ways that the state deems beneficial. Implementation of a formula does not guarantee success, and having members from campus involved in the formulation process can help circumvent any problems that may arise. Secondly, if members of campus are invested in the performance indicators they will actively work within the framework, rather than raise criticism of the state for imposing unrealistic/unreliable performance indicators. "Educators find fault with virtually every attempt to measure educational outcomes," (Banta, Rudolph, Van Dyke, 1996). Buy-in is essential from all parties, not just for the successful identification of performance indicators, but also for political and public relations reasons.

### **The Origins of Performance-funding in Tennessee**

In 1975, the Tennessee Higher Education Commission, in conjunction with the Kellogg Foundation and the Ford Foundation researched, "the philosophical and technical feasibility," of having a portion of higher education funding come from performance indicators instead of enrollment (Bogue, Trout,

1980). This process was initiated by the THEC, not directed by the state legislature. The hope of the Commission was to “improve the return on [Tennessee’s] higher education investment,” (Banta, Rudolph, Van Dyke, 1996). By 1979, Tennessee had implemented the nation’s first performance-based funding model in higher education. Figure 1 on page 10 shows the performance indicators used in each formula for 1979-1997.

### **1979-1982**

Tennessee’s first model allowed public institutions to earn an additional 2% of funding. The first model had 5 separate metrics, weighted at 20% apiece.

These metrics were:

1. Program accreditation
2. Graduate performance on an in-field standardized test
3. Graduate performance on a general education standardized test
4. Satisfaction surveys on university academic programs and services by current and former students, as well as community members and employers
5. Peer evaluation of academic programs.

The only significant change to the metrics was after the first year (79-80), item (5) was changed from peer-review plans for institutional improvement.

### **1983-1987**

Beginning in 1983, Tennessee evaluated and revised their funding formula every five years, and the performance indicators were all strengthened

and finessed. The document that described the funding guidelines doubled in length between 1979 and 1982 (Banta, Rudolph, Van Dyke, 1996). More programs were being evaluated by the formula, and the general education test was standardized. Previously, each institution was given to opportunity to create their personal general education test. In order to standardize the results form institutions across the state, Tennessee began using the ACT College Outcome Measures Program (COMP) test for all schools in 1983. The Act Comp is designed to:

- Test graduates general education skills
- help institutions revise their curriculum to help students meet their needs
- Be an valid exam to show accountability and proof that higher education is effective (Ohio Office of Institutional Research, 2996)

Tennessee also changed the weights applied to each performance indicator. The five indicators would no longer carry equal weight in the formula.

1. Program Accreditation – 25%
2. Program field evaluation – 30%
3. General Education testing – 25%
4. Instructional Improvement – 10%
5. Planning for program improvement – 10%

(Banta, Rudolph, Van Dyke, 1996)

Because the nature of the performance indicators is to help universities self-improve, the weights reflect that importance. Program accreditation is essential for any university. At the implementation of the first formula in 1979, 83% of university programs were accredited across the state. By 1983, the number had risen slightly to 85%. By giving the accreditation performance indicator more weight, the committee was able to further incentivize accreditation at schools where it was lacking.

Further emphasis was also placed on evaluating graduates. Overall, testing of graduates received an increase of 15% across performance indicators (2) and (3). In total, 55% of the performance funding is based around student performance on both general education and major related exams. The state needs to be producing qualified members of the workforce through higher education. By placing so much importance on student success in the formula, institutions are tasked with not just ensuring their students graduate, but that their graduates are prepared to enter the state's workforce.

Indicator (4) is essentially a satisfaction survey taken by graduates and alumni. Surveys like this are important, because it measures institutions on areas of campus that may not necessarily be academic, but are still important to higher education, such as housing, dining services, etc.. Only weighing this at 10% gives institutions an incentive provide adequate services and leave students with a good impression of the institution, without unnecessarily penalizing a school for subjective reasons.

The final indicator (5) puts an impetus on institutions to always be trying to improve their academic programs. Where indicators (2) and (3) focus on the outcomes of the programs currently in place, indicator (5) shows an institution that is planning to keep all of its programs relevant in the future. This also helps keep faculty actively involved in the assessment and evaluation of the university. Further, there was a large push in the 1980s by the regional accrediting agencies for institutions to document quality and effectiveness through institutional evaluation practices. Institutions were tasked with evaluating the various aspects of campus that were impacted by performance-based funding.



TABLE 1  
Evolution of Tennessee's Performance-Funding Standards 1979 - 1997 Standards and Associated Weights (% of 100 points)

	1979-1980	1981-1982	1983-1987	1988-1992	1993-1997
	%	%	%	%	%
1. Program accreditation	(20)	1. Program accreditation (20)	1. Program accreditation (25)	1. Accreditation (20)	1. Accreditation (10)
2. Graduate's performance on major field test	(20)	2. Program performance outcomes (20)	2. Program field evaluation — via testing or peer review (30)	2. Major field assessment (30)	2. Major field tests (10)
3. Graduates' performance on general education outcome measure	(20)	3. General education outcomes (20)	3. Institutionwide education outcomes via test scores and value added for 4-year and placement of graduates of 2-year institutions (25)	3. Undergraduate general education outcomes (20)	3. Measurement of general education outcomes (10)
4. Evaluation of programs and services via surveys for students, graduates, employers	(20)	4. Programs/services satisfaction (20)	4. Instructional improvement based on surveys (10)	4. Satisfaction surveys (15)	4. Alumni and enrolled student surveys (10)
5. Peer evaluation of academic programs	(20)	5. Evaluation planning for renewal and improvement (20)	5. Planning for instructional program improvement (10)	5. Corrective measures (planning for instructional improvement) (15)	5. Improvement actions taken to remedy identified weaknesses (10)
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
					6. Peer review of non-accreditable undergraduate programs (10)
					7. Master's program reviews (universities) or placement (2-year institutions) (10)
					8. Enrollment goals for campus-specific groups (10)
					9. Persistence to graduation for minority and all students (10)
					10. Mission-specific objectives (10)
					<u>100</u>

Figure 1

**1988-1992**

After the first full five-year period expired, the THEC returned to the funding formula for review. On the whole, the formula was working as the drafters intended, and only minor changes to the weights employed were implemented. Accreditation was reduced by 5%, as well as the general education tests. Those 10 percentage points were evenly distributed to satisfaction surveys and institutional planning (Banta, Rudolph, Van Dyke, 1996).

**1993-1997**

The third cycle of the formula brought many changes with it. The number of performance indicators doubled from five to ten, with each weighted evenly.

The five new indicators were:

1. Peer-review of non-accreditable undergraduate programs
2. Master's program reviews (universities) or placement (2-year institutions)
3. Enrollment goals for specific groups
4. Persistence to graduation
5. Mission-specific objectives

Beyond adding five new indicators, institutions were able to choose the focus within some of the metrics. For instance, institutions were given the ability to choose which target population (minority, gifted, etc.) they wanted to enroll more of. The extension of peer-review to non-accreditable programs was also

very much approved of by faculty members (Banta, Rudolph, Van Dyke, 1996).

At this point, more than 90% of programs throughout all institutions were accredited (Bogue, Dandridge, 2010); however, some programs simply could not receive accreditation, because they were designed specifically for a regional need or lacked the infrastructure required by the accreditation agencies (Banta, Rudolph, Van Dyke, 1996).

### **2000-2005**

In the 2000 formula, the number of performance indicators was reduced to 4, with subcategories within. The four major categories were:

1. Academic Testing and Program Review
  - a. Foundation Testing of General Education Outcomes
  - b. Pilot Evaluations of Other General Education Outcome Measures
  - c. Program
    - i. Accountability
    - ii. Review
    - iii. Accreditation
  - d. Major Field Testing
2. Satisfaction Surveys
  - a. Student/Alumni/Employer Surveys
  - b. Transfer and Articulation
3. Planning and Collaboration
  - a. Mission Distinctive Institutional Goals

- b. State Strategic Plan Goals
4. Student Outcomes and Implementation

- a. Output Attainment
  - i. Retention/Persistence
  - ii. Job Placement (2-year institutions only)
- b. Assessment Implementation

Of the 4 performance indicators, (1) maintained largely a rebranding of indicators already in place. Its intended overall goal was to incentivize institutional academic competitiveness and graduate comprehension. Within indicator (2) the addition of Transfer and Articulation is interesting. This is the first time in nearly 20 years of the formula that institutions are being incentivized to make it easier to transfer schools throughout the state. This shows the beginnings of seeing higher education as a collaborative effort throughout the state, and recognizing that students may decide to transfer schools for any number of reasons. Performance indicators (3) and (4) both maintain the general purpose of the previous iterations indicators. The only noteworthy addition is (3b) State Strategic Plan Goals. This rewards institutions for actively moving in the direction desired by the state. This shows a shift from internal, individual, improvement of institutions, and further ties institutions of higher education together into a cohesive unit with a defined purpose: preparing the workforce of tomorrow (THEC, 2000)

**2005-2010**

This is the 7<sup>th</sup> performance formula in the state of Tennessee, and the last to be a part of the regular 5-year cycle of review and revision. The formula maintained primary indicators, with subcategories therein. The only major revision was taking (4.a.i) out, and strengthening it to be an indicator all its own. This brought the total number of primary indicators to five, and increased the weight of “Student Persistence” from 5% to 15%. Student retention was calculated by measuring the number of first-time full-time (FTFT) freshmen who returned in the next fall term. Student persistence to graduation was measured by using the standard 6-year graduation rate. Both of these measures were taken twice: once for all students, and once for FTFT African-American students (THEC, 2005).

**What Tennessee Did Right**

Tennessee has been considered one of the best in performance-based funding for higher education, since they first implemented it in 1979. Since its implementation, the THEC has been leading the charge, rather than the legislature. By keeping the process relatively apolitical, Tennessee has managed to maintain a fairly stable system across a 30 year period (Dougherty, Natow, 2010). The entire process was initiated by higher education experts who took slow, deliberate steps in regards to forming and revising the formula. The formula was developed by all of the major stakeholders, and was not a zero-sum game. No institution could “take” money from another. Each institution earned

their allocation independent of any other institutions score, and the formula was strong (Bogue, Dandridge, 2010). Unlike some states (Florida) who had up to 37 performance indicators, Tennessee stayed with 5 for just over a decade, before it expanded to 10-14 for the last 15 years. It's worth noting that even with an expansion of indicators, the original 5 were maintained in some form or fashion throughout this entire span. The consistency and slow revision of the formula ensured stability for institutions to invest in changes to fit the formula (Dougherty, Natow, 2011). This is evident just by examining the accreditation of programs in Tennessee between 1980 and 2006. When the program was first implemented, Tennessee's rate of accredited programs was around 82%. In 2006 that number was 99%. The formula achieved its goal by incentivizing institutions to become accredited (and keep too that indicator), reforms were made across the state to maximize their amount of funding by receiving accreditation. Nearly every institution now actively assesses itself in order to improve. Even if the formula remained incredibly stable throughout its thirty-year lifespan, institutions were active in improving both their quality and student services (Bogue, Dandridge, 2011).

### **CCTA**

In 2010, the state of Tennessee passed the Complete College Tennessee Act of 2010 (CCTA). At that time, 29.9% of Tennesseans aged 25-64 held an associate's degree or higher. The national average in 2010 was 37.2%, which is a 7.3% difference (Rhoda, 2010). Tennessee's 6-year graduation rate was 46% and

was in the bottom ten states in the nation for both bachelor (40<sup>th</sup>) degree and associate (45<sup>th</sup>) degree attainment. Because Tennessee does not institute a state income tax, the majority of its tax revenue comes through sales taxes, which are entirely dependent on the population's ability to spend money. Using the year 2025 as a benchmark, Tennessee would have to increase the number of college graduates *annually*, annually to meet the national average. If Tennessee were able to reach the national average, its citizens would earn an estimated \$6 billion more annually, bringing in \$400 million to the state through tax revenue, annually. With this information in hand, as well as a 3<sup>rd</sup>-party assessment of Tennessee's higher education system commissioned by the governor's office, Tennessee set to work in drafting what would become CCTA (Complete College America, 2010).

CCTA brought major changes for higher education in Tennessee. On the whole, CCTA tied Tennessee's higher education system with the state's economic development. With the goal of achieving the national average of higher education graduates by 2025, Tennessee instituted these changes:

- Develop a state-wide master plan for higher education with input from universities, community colleges, and technology centers
- Create or revise institutional mission statements that differentiate the unique missions of each institution and align with the new master plan
- Standardize general education requirements across both the Tennessee Board of Regents (TBR) system and the University of Tennessee (UT)

system of higher education institutions to allow for full transferability between higher education institutions across the state

- Any student admitted to a TBR institution can be granted admission to UT institutions concurrently, if so desired, and vice versa
- 4-year institutions are no longer allowed to offer remedial courses. Any remedial courses to “catch up” recent high school graduates will be offered by the community colleges
- TBR, in consultation with the Tennessee Higher Education Commission (THEC) will bring together all of the community colleges under what will be known as the Tennessee Community College System
- A common course numbering system should be instituted throughout the community colleges
- Under the guidance of THEC, a new funding formula based on performance indicators must be implemented that includes, but is not limited to: end of term enrollment, student retention, progression to a degree, degree production, and graduation rates (CCTA, 2010)

### **Funding Formula**

What would ultimately become the most dramatic change in Tennessee higher education would be the new funding formula required under CCTA. Unlike the pre-emptive action from the THEC in the late 1970s, this time the state government was legislating performance-based metrics for higher education funding. The committee that ultimately created the funding



formula was headed by the THEC, with 24 members from both university systems, including faculty members and administrative staff, as well as members from the state. Every actor who had a stake in the success of the funding formula was represented during its construction (Tennessee Higher Education Formula Review Committee, 2010). The formula that was ultimately decided upon was the first of its kind in Tennessee and the nation. 95% of higher education funding would be allocated based on performance metrics, rather than the “enrollment-plus” method of the past. The other 5% accounts for mandatory costs, such as utilities. Effectively, Tennessee’s outcomes based funding formula is responsible for 100% of a university’s budget. Due to the unique purposes of both universities and community colleges, each type of institution has its own particular funding formula. For the purposes of this research, I will be focusing on the university funding formula and the differences between each institution therein.

## CCTA Funding Formula with UT Knoxville's 2010 Data: Phase 1

Figure 2  
 (Tennessee  
 Higher  
 Education  
 Commission,  
 2011)

Outcome	Data		Scale Factor		Scaled Data
Student Progression: 24 Credit Hours	4,619	/	1	=	4,619
Student Progression: 48 Credit Hours	5,200	/	1	=	5,200
Student Progression: 72 Credit Hours	5,385	/	1	=	5,385
Bachelors Degrees	4,593	/	1	=	4,593
Masters Degrees	1,573	/	0.30	=	5,244
Doctoral/Law Degrees	477	/	0.05	=	9,540
Research/Grant Funding	\$128.1M	/	20,000	=	6,404
Student Transfers	822	/	1	=	822
Degrees per 100 FTE	20	/	0.02	=	989
Graduation Rate	66%	/	0.04	=	1,641

CCTA Funding Formula with UT Knoxville's 2010 Data: Phase 1

Figure 3  
 (Tennessee  
 Higher  
 Education  
 Commission,  
 2011)

Outcome	Data	Scaled Data		Weight		Weighted Outcome
Student Progression: 24 Credit Hours	4,619	4,619	x	2%	=	92
Student Progression: 48 Credit Hours	5,200	5,200	x	3%	=	156
Student Progression: 72 Credit Hours	5,385	5,385	x	5%	=	269
Bachelors Degrees	4,593	4,593	x	15%	=	689
Masters Degrees	1,573	5,244	x	15%	=	787
Doctoral/Law Degrees	477	9,540	x	10%	=	954
Research/Grant Funding	\$128.1M	6,404	x	15%	=	961
Student Transfers	822	822	x	5%	=	41
Degrees per 100 FTE	20	989	x	10%	=	99
Graduation Rate	66%	1,641	x	20%	=	328
				<b>Total</b>		<b>4,376</b>

As in Figures 3 and 4, the formula is divided into 10 “outcome” categories:

- |                                  |  |
|----------------------------------|--|
| 1. Student Progression: 24 Hours | 7. Research/Grant Funding                        |
| 2. Student Progression: 48 Hours | 8. Student Transfers                             |
| 3. Student Progression: 72 Hours | 9. Degrees per 100 Full<br>Time Equivalent (FTE) |
| 4. Bachelors Degrees             | 10. Graduation Rate                              |
| 5. Masters Degrees               |  |
| 6. Doctoral/Law Degrees          |  |

### **1-3: Student progression at 24, 48 and 72 hours**

Students both transfer to different universities as well as drop out of college. That being said, a university who contributes to their education should not be penalized in the funding formula because the student changed their mind about that school for any number of reasons. Each university in Tennessee weighs these three progression indicators between 2-7%, with more weight being placed on the higher progression checkpoints. Universities are better rewarded the longer they retain students at their university.

### **4-6: Bachelors, Masters, and Doctoral/Law Degrees**

These three metrics carry the most weight for any school. The purpose of CCTA was to bring Tennessee’s graduation rate up to the national average. Increasing the number of adults who have some level of tertiary education will help bolster Tennessee’s economy, and that is impossible if schools are not graduating students. In order to incentive schools to successfully graduate

students, the most weight is placed on those measures (Tennessee Higher Education Commission, 2011).

### **7: Research/Grant Funding**

An important function of universities is to give back to the scientific and academic communities. In 2005, more than \$45 billion was spent on research by academic institutions in the United States. Universities should be encouraged to continue giving back to the intellectual communities, and including this measure does just that. Excluding it would be a disincentive for universities and professors. Intellectual discoveries not only increase notoriety of the institutions and professors who discover them, but they can also bring in a hefty profit for those involved. If schools were disincentivized to increase their research/grant funding, they would be less competitive to top-tier professors who are looking for employment. Further, companies grow from innovation. More than 5,100 start-ups have been created from university-based research since 1980. University research not only contributes to the intellectual communities in academia, but also to industry and the economic well-being of a community (Neal, Smith, McCormick, 2008)

### **8: Student Transfers**

Due to the nature of how graduation rates are counted, student transfers must be accounted for as well in the funding formula. Universities are given credit for any student that transfers out of their university who had accumulated at least 12 credit hours before the transfer. These transfers are

tracked by the THEC, and students who drop-out are not counted in this metric. This is relevant to graduation rates, because once a student transfers, their graduation counts to their new schools graduation rate, rather than the university they transferred from. So, a student may leave their current university for any number of reasons, but still graduate and contribute to the overall goal of the state: meet national average of higher education degrees. Instead of penalizing the university for a student leaving, since that student will not count to the universities graduation rate, they are compensated by having this performance indicator.

### **9: Degrees per 100 FTE**

FTE stands for Full-Time Equivalent. Based on the number of professors, each university has the number of “x” it should be producing based off of the resources available. This metric uses degrees in place of “x.” Institutions that are able to graduate more students with fewer resources will be rewarded. This incentivizes institutions to not make frivolous decisions, because it will impact their bottom line. Frivolous includes unnecessary hires, but can be primarily focused on faculty teaching loads.

### **10: Graduation Rate**

The formula awards points based on the six-year graduation rate of a university. This includes graduates who transfer in from a different university. Using the graduation rate as a performance indicator in addition to degree attainment is important, because schools are rewarded not just by the absolute

number of degrees, which benefits larger schools, but by the rate at which they are awarding degrees. Schools are incentivized to graduate students (performance indicators 4-6), but to also do it in a timely manner.

### **How the formula actually works**

Now, with an understanding of the performance indicators, it is time to delve into the nuts and bolts of the surprisingly simple formula. Figures 3 and 4 show the entire process, using the University of Tennessee Knoxville's number from 2010. In Figure 2, THEC gathers the actual numbers for all of the performance indicators for a university. Each student who reaches an outcomes threshold is counted as one, and the each dollar collected for research and grant funding is counted as well. Because these numbers are not all easy to work with, they are divided by a scale factor, which is applied to every university, to make the numbers more manageable. Once the scale factor is applied, the data is moved into Figure 3, where the weights are applied. Due to the differing institutional mission and objectives, each institution chooses its own weights. In this instance, UTK is the premiere research institution in the state of Tennessee, and offers more graduate fields of study than most in the state schools. Because of this, they have a smaller weight in baccalaureate degrees than any other 4-year institution in Tennessee (THEC, 2013). Once every performance indicator is scaled and weighed, it is added up into a total, as seen in Figure 4. Then the weighted outcomes are multiplied by the SREB faculty salary multiplier. The Southern Regional Education Board (SREB) compiles data from universities

across the south, and “is one of the nation’s oldest, most comprehensive sources on comparative data in public higher education,” (Southern Regional Education Board (SREB), n.d.). The SREB compiles the averages of faculty pay from universities and uses this to create the SREB faculty salary multiplier, which helps states and institutions project allocations needed for current and future faculty funding needs (SREB, 2011).

### Outcomes Model Summary - UTK

Outcome	Data	Scaled Data	Weight	Weighted Outcome
Students Accumulating 24 hrs (Scale=1)	4,619	4,619	2%	92
Students Accumulating 48 hrs (Scale=1)	5,200	5,200	3%	156
Students Accumulating 72 hrs (Scale=1)	5,385	5,385	5%	269
Bachelors and Associates (Scale=1)	4,593	4,593	15%	689
Masters/Ed Specialist Degrees (Scale=0.3)	1,573	5,244	15%	787
Doctoral / Law Degrees (Scale=.05)	477	9,540	10%	954
Research and Service (Scale=20,000)	\$128.1M	6,404	15%	961
Transfers Out with 12 hrs (Scale=1)	822	822	5%	41
Degrees per 100 FTE (Scale=.02)	20	989	10%	99
Six-Year Graduation Rate (Scale=.04)	66%	1,641	20%	328
			<b>Total</b>	<b>4,376</b>

Total Weighted Outcomes		Avg SREB Salary		Subtotal
4,376	x	89,473	=	391,531,000

M&O, Utilities	+	74,993,000
Equipment	+	19,177,000
Performance Funding	+	22,897,000

<b>Grand Total Calculation</b>		<b>508,598,000</b>
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Figure 4 (Tennessee Higher Education Commission, 2011)



Figure 4 shows the entire process using only the final numbers. The Data column consists of the raw data that THEC acquires, such as the exact number of students to reach each outcomes threshold, exact graduation rate, and the total grant and research dollars. Scaled Data comprises the values once the scale (which can be seen in parentheses in the Outcome column), which normalize the values into whole numbers, regardless of unit. At that point, the institution's weights are applied to create the final value that will be attributed to each outcome, the Weighted Outcome. From there, the weighted outcome is multiplied to the universities individual average SREB salary number, which produces the total dollar amount an institution has earned through their outcomes in the Subtotal. The numbers below (M&O, Utilities, and Equipment) are the standard operational costs that each institution should be granted, regardless of outcomes. Those numbers are added to the Subtotal, which ultimately leaves the institution with their final dollar amount that THEC will ask for from the state for higher education appropriations.

The funding model also incentivizes institutions to serve underrepresented populations. Any student coming from low socioeconomic status or is an adult student is represented as 1.25 people, rather than one person. This encourages institutions to bring in students who may be first-generation college students, or adults who dropped out or ignored higher education for any number of reasons.

The funding formulae are different between universities and community colleges, because of the differences between the missions of each type of institution. In Figure 5, the universities are in order from the largest weight in bachelor's degrees (UTM) to the lowest weight in bachelor's degrees (UTK). While some may be concerned that universities are able to influence their individual weights, Figure 5 shows that there are only small variations among universities. The largest difference is the difference between UTM and UTK's bachelor degree weight, with a difference of 15%; however, in context of each school's mission, this difference makes sense. UTM is a primarily undergraduate university that does not offer a single doctoral program. As such, their largest weight is bachelor degree attainment, because that is the school's primary goal. On the other hand, UTK has dozens of doctoral degree programs, and brings in 52 times the amount of research and grant funding as UTM (THEC, 2013). Because each university can accomplish different goals in higher education, their weights need to be tailored to their capabilities and goals specifically. It would be unfair to grade UTM based off of their doctoral degrees when they don't have a single doctoral degree program. Yet the formula does not allow for major differences between universities. The credit hour progression weight is the same at all but two universities (U of M and UTK), and the other metrics see small variation (within 5%), excluding UTK compared to both UTM and APSU, who are both focused almost entirely on their undergraduate degree production.

Figure 5: TN university weight percentages.

<b>Weights Based on Institutional Mission</b>	<b>UTM</b>	<b>APSU</b>	<b>TTU</b>	<b>UTC</b>	<b>MTSU</b>
Student Progression: 24 Credit Hours	3.0%	3.0%	3.0%	3.0%	3.0%
Student Progression: 48 Credit Hours	5.0%	5.0%	5.0%	5.0%	5.0%
Student Progression: 72 Credit Hours	7.0%	7.0%	7.0%	7.0%	7.0%
Bachelor's Degrees	30.0%	25.0%	25.0%	25.0%	25.0%
Masters/Ed Specialist Degrees	15.0%	20.0%	15.0%	15.0%	15.0%
Doctoral / Law Degrees	0.0%	0.0%	5.0%	5.0%	7.5%
Research/Grant Funding	10.0%	10.0%	10.0%	10.0%	12.5%
Student Transfers	10.0%	10.0%	10.0%	10.0%	5.0%
Degrees per 100 FTE	15.0%	10.0%	10.0%	10.0%	10.0%
Six-Year Graduation Rate	5.0%	10.0%	10.0%	10.0%	10.0%
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

<b>Weights Based on Institutional Mission</b>	<b>ETSU</b>	<b>TSU</b>	<b>UM</b>	<b>UTK</b>
Student Progression: 24 Credit Hours	3.0%	3.0%	2.0%	2.0%
Student Progression: 48 Credit Hours	5.0%	5.0%	3.0%	3.0%
Student Progression: 72 Credit Hours	7.0%	7.0%	5.0%	5.0%
Bachelor's Degrees	25.0%	25.0%	25.0%	15.0%
Masters/Ed Specialist Degrees	15.0%	15.0%	15.0%	15.0%
Doctoral / Law Degrees	7.5%	7.5%	10.0%	10.0%
Research / Grant Funding	12.5%	12.5%	12.5%	15.0%
Student Transfers	5.0%	5.0%	5.0%	5.0%
Degrees per 100 FTE	10.0%	10.0%	7.5%	10.0%
Six-Year Graduation Rate	10.0%	10.0%	15.0%	20.0%
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

### **Comparing CCTA with the Best Practices**

- Keep the number of performance indicators low (<20)

The formula designed by the committee meets this practice. There are only ten performance indicators by which universities are scored.

- “Performance indicators should not be developed in a top-down manner”
- There needs to be buy-in by the state and faculty. Both should be involved in creating the formula

The entire formula was developed with every key stakeholder. Chief academic officers, institutional CFO's, faculty, as well as the Secretary of State and State Treasurer all helped create this formula. No one body or area of influence had complete control over the formulation of the funding formula. With involvement of every relevant party, “buy-in” was achieved. Everyone had a hand in creating a policy they hoped and believed would work.

- Institutions are different, indicators must be able to reflect this without negatively impacting schools

By allowing each school to assign weights based on their primary mission, the formula is able to adapt to these changes as necessary. By scaling the numbers prior to weighing them, each institution is assessed equally, while their scoring is individualized.

- There need to be financial incentives for institutions

Frankly, if the entirety of an institutions budget is not enough financial incentive from those in-charge of institutional direction, there are much larger problems at that institution than the amount of funding they will receive.

- Policy-makers often more easily absorb quantitative measures than qualitative measures.

Every indicator of the formula is quantifiable. This may ignore some of the more qualitative and individually impactful aspects of an institution of higher learning, such as the spark a student receives that tells them they have chosen the right major; however, individually qualitative moments and interactions are frustratingly difficult to measure. The formula opts to forego those qualitative measures entirely, which makes the data more digestible for policy-makers.

- Performance results should be easy to understand, and communicated in a timely manner (Layzell, 1998)

The formula developed is incredibly simple. Every measure is quantitative, and they each undergo three basic arithmetic functions: division, multiplication, and addition. Each function occurs once, and the calculations can be done by hand. Further, the calculations for each institution are published on the Tennessee Higher Education Commission's website soon after they are calculated. Any and every one with a basic understanding of arithmetic can access and understand this performance-based funding formula within weeks of the time that the institutions do themselves (Tennessee Higher Education Commission, 2011).

## **The Impact of CCTA in Tennessee**

At this point in time (Spring 2014), the funding formula from CCTA has only been in complete operation for one year. There was a 3-year phase in period in order to allow universities to adjust to the new funding metrics. This does not mean that some impacts cannot already be seen throughout the state. According to Governor Haslam, CCTA has “indeed changed the way we do business.” Institutions have been looking now, more than ever, how they are allocating funds. Institutions are spending more resources to directly interact with students and ensure that they are registered for the right classes/major for their career goals, and on their way to graduation (Haslam, 2012). It is far too early to see the major impacts of this legislation, but it is worth noting that universities are responding. A topic for future research is certainly what each institution is doing individually to maximize their individual weight within the formula. What practices yield the best results for which indicator? Do demographics play a larger role than any individual program put forth by an institution? These are the types of questions that need to be asked further down the line now that there are reliable data and a time benchmarks with which to measure the impact of a myriad of approaches to student retention and success.

## **Conclusion**

Tennessee is a unique state. It rests in two different time zones, has three distinct geographical regions that divide it into thirds, gave women the franchise, and 20 years later helped develop the atomic bomb. All of these historical

moments help make Tennessee unique, but its impact on higher education should not be ignored. In the 1970s, its Higher Education Commission took it upon themselves to assess institutions based on outcomes. Over thirty years, with clear and deliberate action, Tennessee has maintained some of the most stable higher education funding and institutional improvement by using performance-based funding as an incentive. What began as 2% additional allocation to an institutions budget, grew to 5.75% of an institutions actual budget, and now encompasses the entirety of an institutions budget, performance-based funding metrics began in Tennessee, matured in Tennessee, and took bold steps in Tennessee.

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