TENNESSEE'S PERFORMANCE FUNDING MODEL: A MIXED METHODS STUDY

DESIGNED TO PREDICT FUTURE SUCCESS

By

Tyler S. Forrest

Elizabeth K. Crawford
Professor
(Chair)

David W. Rausch
Professor
(Committee Member)

Steven R. Banks
Associate Professor
(Methodologist)

Yancy E. Freeman, Sr.
External Reviewer
(Committee Member)

TENNESSEE'S PERFORMANCE FUNDING MODEL: A MIXED METHODS STUDY

DESIGNED TO PREDICT FUTURE SUCCESS

By

Tyler S. Forrest

A Proposal Submitted to the Faculty of the University of
Tennessee at Chattanooga in Partial Fulfillment of the
Requirements of the Degree of
Doctorate of Philosophy: Learning and Leadership

The University of Tennessee at Chattanooga
Chattanooga, Tennessee

August 2021

ABSTRACT

The primary purpose of this study was to examine how best a Tennessee 4-year public university can perform under the state's outcomes-based funding formula, most commonly identified as either PF 2.0 or the Complete College Tennessee Act (CCTA) funding formula. Using a mixed methods approach, the research analyzed select input variable performance and administrative responses to the outcomes-based formula changes at a moderately-selective, doctoral and professional level Carnegie public institution in Tennessee. There were the following three quantitative and one qualitative research questions:

- Research Question 1 (RQ1): Is there a difference in student progression (cumulative credit hours) based on the outcomes-based funding formula focus populations?
- Research Question 2 (RQ2): Is there a relationship between degree attainment (yes, no) and the outcomes-based funding formula focus populations?
- Research Question 3 (RQ3): Can a model be created to predict progression and degree attainment based on the outcomes-based funding formula focus populations?
- Research Question 4 (RQ4): What were the processes developed, policies adopted, and actions taken by the university to maximize state support since the adoption of the Complete College Tennessee Act (CCTA) in 2010?

For the quantitative portion of this study, a select portion of unaggregated data were used for the period beginning in fiscal years 2015-16 through 2018-19. It was determined adult learners either progress at a higher rate or have accumulated more hours due to time in study than non-adult learners and students classified as low-income either progress at a higher rate or have accumulated more hours due to time in study than students not classified as low-income. In addition, a regression model determined a statistically significant relationship exists between the focus populations and both cumulative credit hours and whether a student graduated. The

qualitative portion included interviews with select senior-level administrators at the focus

institution. The interviewees shared significant insights, including how the State of Tennessee's

revisions to the outcomes-based funding formula in 2010 were positive and had positively

impacted the focus institution.

DEDICATION


This dissertation is dedicated to my wonderful children, Caroline and Benjamin. They have

inspired me throughout the process of completing this dissertation and the Ph.D. program.

# ACKNOWLEDGEMENTS

A very special thank you is extended to my wife, Emily, who has been exceptionally supportive and has been my encourager-in-chief throughout the entire Ph.D. program.

Thank you to all my family members who have supported me along my educational journey. Much appreciation is owed to my mom, Amie Forrest Simbeck, and my late grandmother, Susie Priest (Nanny), for instilling in me from a young age that I could accomplish anything.

Thank you to one of my mentors, Dr. Richard Brown, who has been a constant source of encouragement while completing the Ph.D. program.

My wonderful colleagues at UTC have been incredibly supportive. I thank you all for your support.

Words can never express how thankful I am to Drs. Beth Crawford, David Rausch, Steve Banks, and Yancy Freeman for being an outstanding dissertation committee. Drs. Crawford and Rausch, thank you both specifically for all your support.

As I conclude my terminal degree, I would be remiss if I did not thank the tremendous educators that have taught me through the years in the Athens City School System, at McMinn County High School, and at the University of Tennessee at Chattanooga. You have all been tremendous.

Finally, thank you to my friends of LEAD Cohort 12, who simply are the best.

TABLE OF CONTENTS

# LIST OF TABLES

CHAPTER I

INTRODUCTION

**Background**

Higher education funding is derived from various sources. Each of these sources has a multitude of variables that can impact them in a variety of ways. Common funding sources include tuition and fees, state support, grants and contracts, sales and services, gifts, and auxiliary enterprises (Alstete, 2014). Of these, state support is often the most volatile of the overall funding structure because it is impacted by a number of factors including economic climates, policy changes, changing occupiers of gubernatorial and legislative seats, and workforce needs to name only a few (Dougherty & Natow, 2015; Finney et al., 2017; Weerts & Ronca, 2006). In an effort by states to increase accountability and shift the focus from enrollment only to student outcomes at public institutions of higher education, states have gradually shifted to performance funding models (Bogue & Johnson, 2010; Hall, 2000; Nisar, 2015). They are designed to hold higher education institutions accountable by requiring certain student-related outcomes be met in order to maintain or receive additional funding (Nisar, 2015). As defined by Li (2016), "Performance funding connects state funding directly and tightly to the performance of public campuses on individual indicators or outcomes" (p. 7). States such as Tennessee and 40 others have implemented performance funding to some degree (Boggs, 2018; Hillman, Hicklin Fryar, & Crespín-Trujillo, 2018).

Dougherty and Natow (2015) stated, "For nearly four decades, state policymakers have been concerned about securing better performance from higher education institutions in the face

of strained state finances and the growing importance of higher education to economic development" (p. 1). State support over those four decades has often declined, which has forced institutions to rely more heavily on tuition and fees (Callahan et al., 2017; Snyder, Fox, & Moore, 2016). In addition, state support was largely appropriated based on the rise and fall of each institution's enrollment. Institutions tended to focus their efforts on enrolling students but invested less in student support services once students arrived on campus. In Tennessee, this practice resulted in lower retention and graduation rates, which were not adequate to meet the state's economic and social needs (Rhoda, 2010).

From a political perspective, state legislators hear from voters in their respective districts about the rising cost of tuition and fees, which can create pressure on them during election cycles. The rising cost of tuition and fees has forced state governments to review how best to appropriate state support to higher education institutions (Dougherty, Natow, Hare, Jones, & Vega, 2011). The outcome of such reviews has resulted in many states shifting to performance funding models, including the State of Tennessee. Until this shift, apart from a minimal portion designated to performance, higher education institutions in Tennessee were predominately funded based on enrollment.

The original performance-based funding model adopted by Tennessee, which was the first state in the nation to incorporate any type of performance funding, resulted in little success at increasing retention or graduation rates at 4-year institutions (D'Amico, Friedel, Katsinas, & Thornton, 2014; Sanford & Hunter, 2011). Although an improvement in graduation and retention did not occur by allocating the minimal 5% of state support to performance funding, a slight rise in national accreditation did increase. Tennessee higher education leaders and others eventually concluded allocating only 5% to performance funding was likely not enough (D'Amico et al., 2014). The initial program in Tennessee, as well as those early programs in many other states,

were labeled by some scholars as Performance Funding 1.0 (PF 1.0) programs (Dougherty et al., 2014a, 2014b). Most of them, including Tennessee's original program, have been significantly modified or no longer exist at all. According to D'Amico et al. (2014), "Tennessee has revised its model eight times since initial implementation in 1979" (p. 233). Such revisions in Tennessee, as well as many other states, have resulted in a significantly revised performance funding model, known as Performance Funding 2.0 (PF 2.0) (Dougherty et al., 2014a, 2014b).

At Tennessee public 4-year institutions, the current model applies weights to various outcomes, which include the following: students accumulating 30, 60, and 90 credit hours; bachelors, masters, and doctoral degrees awarded; research and service dollars awarded; degrees awarded per 100 full-time equivalent (FTE) students; and 6-year graduation rates (Tennessee Higher Education Commission, 2016a). At Tennessee 2-year community colleges, the model also applies weights to various outcomes, but the outcomes are different in order to incorporate the mission of those colleges. The outcomes at community colleges include the following: students accumulating 12, 24, and 36 credit hours; dual enrollment hours completed; associate degrees awarded; certificates awarded; and job placements (Tennessee Higher Education Commission, 2016a). The formula also includes premium weights for focus populations, including adults, low-income, and academically underprepared (applicable at community colleges only) (Tennessee Higher Education Commission, 2016b).

**Statement of the Problem**

As 41 states, or 82% of the United States, have adopted performance funding in some form, it is more imperative than ever the effectiveness of performance funding be studied (Boggs, 2018; Hillman et al., 2018). Furthermore, institutions must understand how best they can navigate the often complex performance funding models (Boggs, 2018; Hillman et al., 2018).

3

Major foundations, such as the Bill and Melinda Gates and Lumina Foundations, have taken particular interest in promoting the development of performance funding, so colleges and universities will be incentivized to help students complete degrees (Hillman et al., 2018). In addition, Conklin, Snyder, Stanley, and Boelscher (2016) stated:

> With an aging population exiting the workforce and a declining but more diverse high school graduating pool entering the workforce, the demand for a skilled workforce with postsecondary credentials will only increase. Simply relying on the current enrollment-based state and federal financing structure (and current investment levels) for postsecondary education will prove increasingly inadequate since the supply of available students will simply not keep up with the demands of the labor market unless production (graduating and credential attainment rates) increases. (p. 3)

To add to these pressures, colleges and universities are faced with a shifting learning modality from traditional classrooms to online platforms, and many have financial pressures some believe will force nearly half of all of them to close in the United States in the next 50 years (Harden, 2013; Selingo, 2016). The combination of the national shift to performance funding models, population shifts, changing learning modalities, and financial pressures further exacerbates the need of institutions to be able to navigate performance funding models.

The State of Tennessee, where performance funding was adopted originally in 1979 and substantially revised in 2010, is often looked at by other states as a model for performance funding given its longevity and stability (Dougherty & Natow, 2010; Sanford & Hunter, 2011). The need to study it is important. Of perhaps greater importance is the need for institutions funded by the formula to understand which formula attributes will yield the greatest return on the institution's investments.

Higher education institutions in the state have indicated performance funding has enhanced the institutions' efforts to focus on student success, enhanced degree completion programs, promoted student graduation, and revising institutional and academic policies (Conklin et al., 2016; Johnson & Yanagiura, 2016; Ness, Deupree, & Gándara, 2015). Other

studies have either been less conclusive or have found negative aspects to performance funding. The direct impact of performance funding on degrees and certificates awarded does not appear to necessarily outpace institutions not funded through performance funding models (Hillman et al., 2018; Johnson & Yanagiura, 2016). It has also been concluded some institutions in Tennessee view other in-state institutions as competitors given the state's model is a zero-sum outcomes-based funding model (Ness et al., 2015). The findings of this study, with focus on Tennessee, are intended to further educate policymakers and higher education leaders as they study the effectiveness of the formula and how best institutions can maximize state support.

**Purpose and Significant of the Study**

The primary purpose of this study was to examine how best a Tennessee 4-year public university can perform under the state's outcomes-based funding formula, most commonly identified as either PF 2.0 or the Complete College Tennessee Act (CCTA) funding formula. Using a mixed methods approach, the research analyzed select input variable performance and administrative responses to the outcomes-based formula changes at a moderately-selective, doctoral and professional level Carnegie public institution in Tennessee. Using a mixed methods approach, the intent of this study was to identify the differences the two focus populations incorporated into Tennessee's outcomes-based funding formula for 4-year institutions have on two select formula input variables, develop a predictive model, and better understand how institutions have responded to the adoption of CCTA. A greater understanding of the outcomes-based funding formula could potentially lead institutions to increase funding through state support in the future. The study could inform faculty and administrators not only at the institution of focus, but other similarly situated institutions in Tennessee, as they continue to

5

strategically plan how the institutions can best perform under the outcomes-based funding formula.

In addition, as higher education institutions continuously work to either maintain or improve their financial health and better understand the changing paradigms of higher education, this study could offer faculty and administrators additional insights into one of their primary funding sources. In 50 years or less, it has been predicted by at least one author that half of the colleges and universities in the United States will be closed (Harden, 2013). As institutions of higher learning seek to find ways to survive in an economy where the traditional classroom is being flipped to online learning, they are also under pressure from governments and foundations to become more efficient and graduate more students in order to either maintain or receive additional resources through performance funding (Harden, 2013; Hillman et al., 2018). Furthermore, Selingo (2016) stated, "The public and policy makers are demanding better information on higher education's return on investment" (p. 6). Higher education leaders are under tremendous pressure to make their institutions relevant and thrive in the future.

As the very existence of college and universities is being questioned, this study could provide the public, policymakers, and other interested parties, insights into the potential future performance of their investment in public higher education. By analyzing the differences between select formula input variables and the focus populations, the higher education community, policymakers, the general public, and other interested parties could be better informed on how institutional resources should be committed in order to improve state support. Subsequently, state policymakers and higher education leaders could gain a better understanding of how future state support can impact both the economic and employment needs of the State of Tennessee.

**Research Questions and Hypotheses**

   This study explored the opportunities a university has to enhance its state support through the outcomes-based funding formula. The study used select historical outcomes-based formula input data from the university and outlined the actions taken by the university in response to the adoption of the CCTA in 2010. That was accomplished through answering the research questions below. The corresponding hypotheses are outlined below as well.

- Research Question 1 (RQ1): Is there a difference in student progression (cumulative credit hours) based on the outcomes-based funding formula focus populations?
  a. Based on age (under 25, 25 and older)
  b. Based on income (Pell eligible yes, no)

- Hypothesis 1: There will be a difference in student progression based on both the age and income focus populations.

- Research Question 2 (RQ2): Is there a relationship between degree attainment (yes, no) and the outcomes-based funding formula focus populations?
  a. Based on age (under 25, 25 and older)
  b. Based on income (Pell eligible yes, no)

- Hypothesis 2: There will be a relationship between degree attainment and both the age and income focus populations.

- Research Question 3 (RQ3): Can a model be created to predict progression and degree attainment based on the outcomes-based funding formula focus populations?

- Hypothesis 3: A model can be created to predict progression and degree attainment based on the focus populations.

- Research Question 4 (RQ4): What were the processes developed, policies adopted, and actions taken by the university to maximize state support since the adoption of the Complete College Tennessee Act (CCTA) in 2010?

**Overview of Methodology**

The primary purpose of this study was to examine how best a Tennessee 4-year public university can perform under the state's outcomes-based funding formula, most commonly identified as either PF 2.0 or the CCTA funding formula. The quantitative analysis was completed by using variables from a moderately-selective, doctoral and professional level Carnegie public institution that are input into Tennessee's PF 2.0 outcomes-based funding formula. In addition, university processes, policies, and actions taken were analyzed in order to outline how the university responded to the adoption of the CCTA in 2010. Although data are only coming from one Tennessee 4-year public institution, the study's outcomes were designed to illustrate how institutional leaders and faculty across all 4-year public institutions could maximize their respective institutions state support funding.

**Definition of Terms**

Adult Students – students who are 25 years or older (Tennessee Higher Education Commission, 2016b).

Associate's Degrees – associate's degrees conferred to undergraduate students during an academic year (Tennessee Higher Education Commission, 2016b).

Bachelor's Degrees – bachelor's degrees conferred to undergraduate students during an academic year (Tennessee Higher Education Commission, 2016b).

Complete College Tennessee Act (CCTA) – a comprehensive piece of legislation passed by the

      Tennessee General Assembly and signed into law by the Governor in 2010 that required

      the funding formula for public higher education institutions be revised among other

      things (The General Assembly of the State of Tennessee, 2010).

Degrees Per 100 Full-Time Equivalent (FTE) Students – total of associate's and bachelor's

      degrees conferred during an academic year for every 100 year-round, end-of-term

      undergraduate FTE generated during the same academic year (Tennessee Higher

      Education Commission, 2016b).

Doctoral Degrees – doctoral degrees conferred to students during an academic year (Tennessee

      Higher Education Commission, 2016b).

Locally Governed Institutions (LGIs) – LGI is a label given to the locally governed

      undergraduate campuses that are not part of the University of Tennessee System, which

      includes Austin Peay State University, East Tennessee State University, Middle

      Tennessee State University, Tennessee State University, Tennessee Technological

      University, and University of Memphis (Tennessee Higher Education Commission,

      2019b).

Low-Income Students – students that are Pell eligible at any time during their academic career

      (Tennessee Higher Education Commission, 2016b).

Master's (or Education Specialist) Degrees – master's degrees and education specialist degrees

      conferred to students during an academic year (Tennessee Higher Education

      Commission, 2016b).

Outcomes-Based Funding – a revised form of performance funding that incents and rewards

      higher education institutions for either meeting or exceeding set goals, particularly those

aligning with state policies and student completion outcomes (Dougherty, Jones, Pheatt, Natow, & Reddy, 2016; Snyder, 2015).

Performance Budgeting – empowers governors, legislators, and governing boards to consider institutional achievement as a factor when determining budget allocations and tends to ignore actual budget distribution (Burke, 2002; Gorbunov, 2013; Umbricht, Fernandez, & Ortagus, 2017).

Performance Funding – ties specific resources to institutional results based on preestablished criteria through an allocation formula (Burke, 2002; Gorbunov, 2013; Umbricht et al., 2017).

Performance Funding (PF) 1.0 – state support to higher education institutions consists of a base allocation, plus a performance bonus based on defined metrics, over and above the typical enrollment-based state support (Dougherty et al., 2016; Dougherty & Natow, 2015; Dougherty & Reddy, 2013).

Performance Funding (PF) 2.0 – typically referred to as outcomes-based funding, allocates state support to higher education institutions through performance metrics tied to the base allocation; rather than, as a bonus to the base allocation (Dougherty et al., 2016; Dougherty & Natow, 2015; Dougherty & Reddy, 2013).

Research, Service, and Sponsored Programs – expenditures on activities eligible for indirect cost allocation, primarily externally generated from research, service, or instruction (Tennessee Higher Education Commission, 2016b).

6-Year Graduation Rate – first-time, full-time, fall and summer freshmen, who continued in the fall and attempt at least 12 credit hours, and who were awarded either a bachelor's or associate's degree no later than the summer semester following their sixth year (Tennessee Higher Education Commission, 2016b).

Student Progression (Credit Hour Production) – number of full-time and part-time students

      whose cumulative credits earned at the beginning of a semester are less than the

      established credit hour threshold benchmarks of 30, 60, or 90 student credits hours for

      universities (Tennessee Higher Education Commission, 2016b).

Tennessee Higher Education Commission (THEC) – the Commission coordinates public

      institutions of higher education in Tennessee (Tennessee Higher Education Commission,

      2019b).

University of Tennessee (UT) System – the System is comprised of undergraduate campuses at

      Chattanooga, Knoxville, and Martin (Tennessee Higher Education Commission, 2019b).

**Limitations of the Study**

      Limitations of this study included the impact of Tennessee Promise, a last-dollar

scholarship adopted by the Tennessee General Assembly in 2014, which made community

colleges free for Tennessee high school graduates (Ness et al., 2015). The long-term impact of

this substantial investment from the State of Tennessee is unknown but could drive more

students to community colleges. Freshman and sophomore classes at universities could be

impacted the most in relation to the outcomes-based funding formula because students that may

have previously gone to a university could now choose to attend community colleges. Transfer

students with associate degrees from community colleges could benefit the universities though,

since they would be factored into junior and senior student success outcome metrics.

      The importance of the information this study produced could be impacted by the state not

investing new dollars into the formula. This could be the result of shifting national and state

policies, political ideologies, or state budget constraints. PF 2.0 was fully implemented after the

2008 Great Recession (Callahan et al., 2017; Kelchen & Stedrak, 2016; Tennessee Higher

Education Commission, 2020). The formula remains untested as to how the state will react when there is another economic downturn. In either of these cases, institutions may be less interested to invest in outcome-based metrics if the state is not increasing its investment in higher education. The state also allows institutions to adjust their formula weights every five years to account for any institutional mission changes (Callahan et al., 2017; Miao, 2012). Any adjustments made could impact the research when reviewing state support and outcomes over a multiyear period.

The overall complexity of Tennessee's outcomes-based funding formula presents a limitation. The formula is used to allocate state support to publicly supported universities, community colleges, and technical centers throughout the state. The universities have nine and the community colleges have 11 outcome metrics that are input into the formula (Tennessee Higher Education Commission, 2019a). The state support recommendation from THEC is subsequently developed based on a 3-year rolling average of the institution's outcomes data (Tennessee Higher Education Commission, 2019a). The formula is zero-sum, so one institution can gain state support while another institution can lose state support based on their respective performance (Ness et al., 2015). Given the number of each institutions' outcomes metrics input into the formula and the zero-sum component of it, a limitation exists around the complexity of predicting potential state support awarded to institutions.

In addition, the data available from the focus institution had a limitation. The data file generated for the researcher reports individual student data by semester beginning in the Fall 2015 semester and ending with the Summer 2019 semester, the focus period of this study. The Excel file generated consisted of 103,030 student records by semester. Given the student data were reported by semester and not comprehensively by individual students, the students enrolled at the institution during this time period have a record reported for each semester they were

enrolled. A graduation indicator was only applied to the students record during the semester the student graduated. An indicator is not applied if they never graduated. Given the data were only available by semester and there was not a mechanism to identify student graduation status outside of the semester the graduation occurred, this was a data limitation of the study.

Finally, the personal bias of the study's author may be a limitation. He currently serves in a financial administration position at a moderately-selective, doctoral and professional level Carnegie public institution in Tennessee. He has held progressive positions of responsibility in financial administration over the past 11 years. Each of the positions included him closely working with the outcomes-based funding formula.

## Delimitations of the Study

This study has been delimited by primarily focusing on a select component of the outcomes-based formula data at one 4-year public doctoral and professional level Carnegie public institution in Tennessee. The state is home to eight additional 4-year public universities, 13 community colleges that produce associate's degrees and certificates, and a system of technology centers that are located across the state (Tennessee Higher Education Commission, 2019b). Each of these institutions of higher education receives state support through the outcomes-based formula. In addition, this study did not focus on universities and community colleges outside of Tennessee. Given the limited scope of focus on Tennessee only, the amount of data collected on a national scale were also a delimitation.

## Methodological Assumptions

The researcher of this study made two primary assumptions in order to complete the study. First, the outcomes-based funding formula in Tennessee, most commonly referred to as PF

2.0, will continue to be funded at either its current level or increased levels by the State of Tennessee. It is possible funding for the formula could be reduced by the state. A reduction would likely have a negative impact on all institutions, including the institution that is the focus of this study.

For the purpose of this study, the researcher also assumed the outcomes-based funding formula weights, which are based on institutional mission, and the focus populations will remain the same. Based on future institutional mission changes, or Tennessee's higher education priorities, the weights and focus populations could change in the future. For the institution that is the focus of this study, those weights currently are as follows: students accumulating 30 hours (4%); students accumulating 60 hours (6%); students accumulating 90 hours (10%); bachelors and associates degrees awarded (25%); masters/education specialist degrees awarded (10%); doctoral degrees awarded (5%); research, service, and sponsored programs funding (10%); degrees awarded per 100 full-time equivalent (15%); and 6-year graduation rate (15%) (Tennessee Higher Education Commission, 2019b). The focus populations are adult students and low-income students. An 80% percent premium is applied for meeting one focus population and a 100% premium is applied for meeting both (Tennessee Higher Education Commission, 2019b). As part of the formula review cycle that occurs every five years, each institution receiving funding from the formula can adjust the weights for any institutional mission changes.

**Summary**

The primary purpose of this study was to examine how best a Tennessee 4-year public university can perform under the state's outcomes-based funding formula, most commonly identified as either PF 2.0 or the CCTA funding formula. Having had some type of performance funding model since 1979, Tennessee is an excellent state to study in order to examine the

potential future impact institutions could realize from state support as a result of focusing on

student outcome variables. Although the impact of PF 1.0 prior to 2010 has been studied

thoroughly by others, the focus of this study will be on PF 2.0. As noted, student outcomes are a

key component of Tennessee's performance funding model. Since each 4-year institution

generally uses the same outcomes within their respective classification as a university, it is easier

to compare the impact performance funding has on various institutions. In analyzing multiple

years of formula input data and outlining university responses to formula changes, trends can be

developed to examine how institutions could achieve greater or less success under the model in

the future. Although the primary source of data for this study were from one higher education

institution in Tennessee, the research could be a guide for higher education institutions across the

state as they continue to analyze how to best perform under the performance funding model.

CHAPTER II

LITERATURE REVIEW

**Performance Funding Introduction**

Performance funding measures success on a series of indicators that are intended to

influence behavior. Callahan et al. (2017) stated, "Outcomes-based funding (OBF) is a term used

to describe state- and system-level higher education funding policies that link public dollars to

key student outcomes such as credit completion, retention and graduation" (p. 3). As

policymakers have actively explored ways to insure improved performance from higher

education institutions, performance funding has been one of the primary tools they have

leveraged (Dougherty et al., 2014b; Dougherty & Reddy, 2013).

In the United States, 41 states have elected to adopt performance funding, or are in the

process of doing so in some form, as an influencer of behavior and as a shift of focus from inputs

to outcomes at their respective higher education institutions (Boggs, 2018; D'Amico et al., 2014;

Hillman et al., 2018; McLendon, Hearn, & Deaton, 2006). McLendon, Hearn, and Deaton (2006)

suggested the following were the most likely explanations states have adopted performance

funding:

- long-term demographic conditions

- short-term economic climates

- legislative professionalism

- party strength in the legislature

- gubernatorial power

- partisan control of the governor's office

- growth in public-sector tuition levels

- growth in undergraduate enrollment levels

- centralized governance structures for higher education

- interstate diffusion (p. 4).

In addition to state support, public higher education institutions have traditionally operated on tuition and fees, endowments, auxiliary enterprises, and other various types of miscellaneous revenue (Alstete, 2014). Of these types of revenue, tuition and fees are often closely scrutinized, but performance funding gives governors and state legislators the power to hold institutions accountable to their various outcomes, which has made performance funding appealing to many states (Weerts & Ronca, 2006).

**History of Performance Funding**

In the 1950s, after the end of World War II, enrollments at colleges and universities across the Unites States boomed, which led to states basing their funding model of higher education institutions on enrollment (Callahan et al., 2017). Beginning in the 1960s, improving postsecondary access became a policy priority of both the Federal and state governments (Hearn, 2015). As a result, there were significant national gains on student access to a postsecondary education (Hearn, 2015). Beginning in 1979 and through the late-1990s, a number of states began adopting performance funding models (Callahan et al., 2017; Dougherty et al., 2014b). These models are commonly referred to as Performance Funding 1.0 (PF 1.0) models (Dougherty et al., 2014a, 2014b). Early performance funding models primarily provided institutions a bonus in addition to base state support if the institutions met certain key outcomes

metrics, such as increased graduation rates or job placement rates (Callahan et al., 2017; Snyder et al., 2016).

In an effort to summarize the primary higher education funding models prior to the year 2000, Hearn (2015) stated, "We can identify three reasonably distinct approaches to state subsidies of colleges and universities: base-plus funding, providing annual or bi-annual increments over an established base; enrollment-based formula funding; and early versions of performance-centered funding" (p. 3). With the performance-centered funding, each state's early approach was distinct; however, the core focus in most were primarily centered on student instruction (Hearn, 2015). Primary performance-centered indicators in the late-1990s focused on graduation rates, transfer rates, faculty/workload productivity, student follow-up satisfaction, and externally funded research (Shin & Milton, 2004).

Beginning in 2007, a second wave of performance funding models began to be adopted by states (Callahan et al., 2017; Dougherty et al., 2014b). These models shifted away from the traditional performance bonus model to a structure where the performance indicators were embedded in the state support (Dougherty et al., 2014b; Snyder et al., 2016). This second wave of performance funding models, commonly referred to as the Performance Funding 2.0 (PF 2.0) models, became known as outcomes-based funding models (Dougherty et al., 2014a, 2014b; Hearn, 2015; Snyder et al., 2016). In some states, such as Ohio and Tennessee, the majority of state support shifted to being driven by student outcomes (Dougherty et al., 2014b; Hearn, 2015). In addition, these second wave models became more stakeholder and mission driven and were less reactionary to swift economic or policy changes (Hearn, 2015).

**History of Tennessee's Performance Funding**

In 1979, the State of Tennessee, through THEC, introduced performance funding as an experiment, which made Tennessee the first state in the nation to adopt a performance funding model (Banta & Fisher, 1984; Bogue & Brown, 1982). The model's development was based on the key policy accent of accountability, which was emerging at the time (Bogue & Johnson, 2010; Hall, 2000). With an increased desire for accountability, THEC launched the Performance Funding Project in the late 1970s. The primary objective of the project was to determine the feasibility of allocating a portion of state support to higher education institutions based on the merits of performance as opposed to completely on enrollment (Bogue & Troutt, 1980). Although a vast majority of the state support allocated to higher education institutions in Tennessee would remain based on enrollment, there was angst amongst some administrators and faculty about the potential of a performance-based funding model, because it was difficult to understand (Bogue & Troutt, 1980). Despite the angst that existed at the time, given the model was primarily led by higher education and foundation leadership with government involvement, but not government led, a model was eventually developed and implemented (Bogue & Johnson, 2010).

The model took five years to develop, which included an extensive grassroots effort and countless negotiations among higher education leaders and policymakers (Bogue & Brown, 1982). Bogue and Dandridge (2010) stated, "This policy design effort was patient, persistent, and participatory" (p. 6). The original model included up to a 2%, and later 5%, incentive payment in addition to the state's traditional enrollment-based appropriations budget to institutions that met certain outcome metrics. Banta and Fisher (1984) discovered:

> Under the leadership of (E. Grady) Bogue and (Wayne) Brown a performance funding feature was instituted that applies to all public colleges and universities: Up to 5 percent of an institution's annual state allocation for instruction is awarded on the basis of its ability to demonstrate accomplishments in five performance areas. (p. 30)

Those performance areas included: percentage of programs eligible for accreditation (25%); percentage of programs that had undergone peer review (30%); the value added by the general education component (25%); survey results from students, alumni, and the community (10%); and the ability to prove an institution had a campus-wide plan for instructional improvement (10%) (Banta & Fisher, 1984). Two features of the Tennessee model were noteworthy. Bogue and Johnson (2010) stated, "First, a periodic five-year recurrent evaluation/revision was built into the policy" (p. 6) and "Second, this [the policy] was not a zero-sum policy" (p. 6). The latter avoided colleges and universities competing against one another. Both contributed to the staying power of the policy (Bogue & Johnson, 2010).

By 1981, the program was able to see measurable success, with 16 institutions adopting some form of general education assessment (Bogue & Brown, 1982). To gauge the impact of Tennessee's initial performance funding experiment, the University of Tennessee, Knoxville (UTK), launched an instructional evaluation of the THEC performance-based funding formula, funded by a grant from the Kellogg Foundation (Banta & Fisher, 1984). The study focused on achievement in general education, majors, and opinions concerning the academic quality of programs and services on the campus (Banta & Fisher, 1984). The study determined performance funding was generally positive (Banta & Fisher, 1984). Tennessee has had a performance funding model ever since this initial experiment. The model has maintained a high level of stability since its inception (Dougherty et al., 2011).

Again, at UTK, another study was completed in 2000 that analyzed how Tennessee's performance-based funding policy had impacted the university's awareness to the policy, the initiatives the campus had put in place as result of the policy, how educational decisions were being made to respond to the policy, and an overall assessment of the strengths and liabilities of the policy (Hall, 2000). It was determined the university's response had become routine to the

policy, communication was inconsistent to the campus about the policy, few educational related decisions were tied back to the policy, and there was skepticism around how data were being generated for the performance funding indicators (Hall, 2000). Despite these challenges, there was near unanimous support from university administrators to maintain the performance-based funding policy (Hall, 2000).

From its initial adoption to the point of substantial revisions in 2010, Tennessee's performance-based funding formula was considered more stable when compared to other states (Dougherty & Natow, 2010). In the first 31 years of the formula's existence, Tennessee only added six and dropped four performance indicators (Dougherty & Natow, 2010). In addition, the percentage of formula funding tied to performance during that same time period remained relatively stable (Dougherty & Natow, 2010). It began in 1979 as a 2% potential additional allocation, was increased to 5% in 1983, and was increased again to 5.45% in 1987, where it remained until 2010 (Bogue & Johnson, 2010; Dougherty & Natow, 2010). By 2010, it had been determined some of the student performance data did not reveal substantial improvements; however, it was clear virtually 100% of institutions and programs at universities and community colleges in Tennessee were accredited (Bogue & Johnson, 2010). In contrast, some assessments were only being made to satisfy policy and did not directly impact students, which also led to some of the formula data not necessarily being used to impact program level improvement or student placement and progress (Bogue & Johnson, 2010). In addition to the formula's stability, the State of Tennessee has consistently invested in higher education support, including through the formula. Table 1 outlines those investments from fiscal years 1997 to 2020.

Table 1 Performance Funding History 1997-2020

| | Final State Appropriation | | | State Appropriations for HE Operating Expenses* |
|---|---|---|---|---|
| Fiscal Year | PF/QA Funding | Outcomes-Based Funding | OBF + QAF | |
| 1996-1997 | $25,636,857 | $0 | $25,636,857 | $936,401,000 |
| 1997-1998 | $23,642,675 | $0 | $23,642,675 | $907,391,000 |
| 1998-1999 | $23,641,224 | $0 | $23,641,224 | $967,969,000 |
| 1999-2000 | $27,129,189 | $0 | $27,129,189 | $984,858,000 |
| 2000-2001 | $27,272,447 | $0 | $27,272,447 | $1,045,546,000 |
| 2001-2002 | $27,781,693 | $0 | $27,781,693 | $1,071,515,000 |
| 2002-2003 | $28,386,766 | $0 | $28,386,766 | $1,106,889,000 |
| 2003-2004 | $30,457,610 | $0 | $30,457,610 | $1,088,681,000 |
| 2004-2005 | $33,595,494 | $0 | $33,595,494 | $1,122,978,000 |
| 2005-2006 | $33,068,743 | $0 | $33,068,743 | $1,164,332,000 |
| 2006-2007 | $42,940,779 | $0 | $42,940,779 | $1,241,782,000 |
| 2007-2008 | $43,454,726 | $0 | $43,454,726 | $1,346,366,000 |
| 2008-2009 | $39,815,183 | $0 | $39,815,183 | $1,255,834,000 |
| 2009-2010 | $36,527,961 | $0 | $36,527,961 | $1,118,661,000 |
| 2010-2011 | $31,447,907 | $0 | $31,447,907 | $1,059,527,000 |
| 2011-2012 | $30,951,623 | $683,838,477 | $714,790,100 | $1,069,571,000 |
| 2012-2013 | $34,285,397 | $683,745,303 | $718,030,700 | $1,125,478,000 |
| 2013-2014 | $36,991,307 | $716,539,393 | $753,530,700 | $1,206,387,000 |
| 2014-2015 | $37,979,367 | $715,551,333 | $753,530,700 | $1,211,738,000 |
| 2015-2016 | $38,606,300 | $740,624,400 | $779,230,700 | $1,279,434,000 |
| 2016-2017 | $41,219,974 | $788,010,726 | $829,230,700 | $1,367,290,000 |
| 2017-2018 | $40,534,629 | $813,696,071 | $854,230,700 | $1,483,643,000 |
| 2018-2019 | $43,265,599 | $839,530,401 | $882,796,000 | $1,595,275,000 |
| 2019-2020 | $46,090,630 | $892,705,370 | $938,796,000 | $1,684,938,000 |

* Includes both formula and nonformula unit appropriations.
Note. Information collected from Collins (2020).

## Tennessee's Current Performance Funding Formula

The national higher education landscape has gradually shifted towards a completion agenda, which has put the focus on retaining and graduating students, as opposed to an enrollment based agenda (Ness et al., 2015). This shift has been driven by a number of factors, including former United States President Barack Obama's national goal to lead the world in educational attainment, as well as the focus of a number of national foundations, regional higher

education cooperatives, and states targeting degree attainment initiatives (Callahan et al., 2017; Ness et al., 2015; Umbricht et al., 2017).

In conjunction with the national efforts, the State of Tennessee has adopted several policy initiatives that were anchored around the goal of increasing education attainment (Finney et al., 2017). A statewide higher education master plan beginning in 2010 and ending in 2015 was one of those policy initiatives. It called for Tennessee's higher education institutions to produce an additional 26,000 undergraduate degrees by 2015 (Callahan et al., 2017). Callahan et al. (2017) stated, "This completion goal was reinforced in 2013, with the introduction of Tennessee's Drive to 55, an initiative aimed at increasing the state's education attainment rate to 55 percent by 2025" (p. 13). In addition, in 2010, then Tennessee Governor Phil Bredsen challenged the University of Tennessee, Knoxville to become a top 25 institution, which closely aligns with many of the outcomes-based formula metrics (Callahan et al., 2017; Snyder, 2015). Tennessee Promise, a highly publicized initiative, was announced by then Tennessee Governor Bill Haslam in 2014 that provided a last-dollar scholarship to pay for tuition and fees at community colleges or applied technology centers (Finney et al., 2017). Finney, Leigh, Ruiz, Castillo, and Smith (2017) stated, "The Drive to 55 campaign has succeeded in unifying goals among higher education stakeholders, and the Tennessee Promise has influenced various policy innovations" (p. 28). The premier piece of legislation that initially underpinned many of these initiatives was the passing of the CCTA.

PF 1.0, the state's original funding model, existed with limited variation between 1979 and 2010. In 2010, the Tennessee General Assembly met in an extraordinary session and adopted the CCTA (Johnson & Yanagiura, 2016; Rhoda, 2010). The Act was the culmination of months of negotiations between then Tennessee Governor Phil Bredesen and legislative leadership to

address how to educate more Tennesseans on the heels of declining state support after one of the worst financial crises in American history (Rhoda, 2010). The Act

- revised the state's higher education master plan,

- revised the performance-based funding formula that determines operating support for public higher education institutions,

- developed and revised policies in order to increase student success and degree completion,

- expanded the University of Tennessee, Knoxville's (UTK) relationship with Oak Ridge National Laboratory in order to elevate the institutions status as a top-tier research institution, and

- elevated the University of Memphis as a leading collaborator in the Memphis Research Consortium (Rhoda, 2010).

With the passage of this Act, Tennessee became the first state in the nation to appropriate funding for higher education almost entirely based on student success outcomes (Johnson & Yanagiura, 2016; Kelderman, 2012). PF 2.0 was born. Tennessee and Ohio were the first two states to drastically revamp their performance funding programs (Dougherty & Natow, 2015). The two states switched their long-standing state support bonus structure to a model where performance was embedded in the support and accounted for a much greater portion of the formula (Dougherty & Natow, 2015; Snyder et al., 2016). Like PF 1.0, the new PF 2.0 was not only driven by state legislative and gubernatorial powers, but also higher education leaders themselves who recognized a need for a change. With each group serving as a supportive driving force, performance funding in Tennessee continues to be both healthy and stable (Dougherty et al., 2014a; Snyder et al., 2016).

In Tennessee, higher education and state officials worked closely to implement performance funding; however, the general public and business community served as strong forces in persuading their respective political leaders (Finney et al., 2017). Dougherty et al. (2013) concluded, "In the case of the general public, rapidly rising tuitions – caused by growing cost of college operation and dropping share of state revenues – were causing great distress to students and their parents" (p. 4). Over time, state dollars have been partially offset by slowly transitioning institutional funding from state support to tuition and fees (Dowd & Shieh, 2014). In addition, some observers have been particularly critical that, on average, public colleges in the United States graduate less than 60% of their students (Rabovsky, 2014). It was determined state legislators, particularly those associating with the Republican Party, governors, and business leaders were supportive of performance funding (Dougherty et al., 2013; Gorbunov, 2013; Kelchen & Stedrak, 2016). It was also determined higher education officials served as a strong advocate for the model. In addition, policy entrepreneurs and various civic groups across states were prone to advocate for the model (Dougherty et al., 2013). As can be seen, state culture and politics go hand-in-hand when predicting state support for higher education institutions (Weerts & Ronca, 2006).

Although some states, such as Pennsylvania, have had successful performance funding implementation by state education boards, most states have been more successful with implementation mandated by state legislators, as was the case in Tennessee (Li, 2016). There are three primary performance funding models: an output-based funding formula, performance set-asides, and performance contracts. Tennessee chose the output-based funding formula where specific targets are not set aside, but outcomes are incorporated in the performance funding formula. Tennessee also developed a standard review process for its formula that occurs every five years in order to keep it relevant to the strategic goals and objectives of each institution

(Callahan et al., 2017; Miao, 2012). Policymakers have implemented this approach in many states with performance funding models (Li, 2016).

**Key Features of Tennessee's Outcomes-Based Funding Model**

Tennessee's outcomes-based funding formula allows for mission differentiation where each university can choose the weights they apply to each performance metrics and the community colleges collectively choose their weights they apply to their performance metrics (Callahan et al., 2017). This approach allows each institution to have greater control of its performance outcome under the formula as opposed to the state exclusively setting both the performance metrics and the associated weights. The formula also includes premiums for a range of at-risk student populations (Callahan et al., 2017). Under PF 2.0, at the university level, the focus is on low-income and adult student populations (Tennessee Higher Education Commission, 2016b). PF 2.0 has also offered great stability, since its initial adoption in 2010. The formula was edited once in 2015, was planned to be reviewed in 2020, but the review was delayed until 2021 because the COVID-19 pandemic (Callahan et al., 2017; Tennessee Higher Education Commission, 2020). The guiding principles of the THEC Formula Review Working Group as defined by statute and THEC are as follows:

- the Commission will use the formula in all funding scenarios
- the formula will align with the education goals of the state, providing incentives for productivity improvements consistent with the statewide master plan
- the formula will continue to incorporate outcomes across a range of variables, reflecting differences in institutional missions
- any new outcomes will be incorporated only after rigorous evaluation of data quality and integrity

- effects in formula will be driven by performance not by integration of new outcomes (Tennessee Higher Education Commission, 2020).

The Formula Review Working Group will make a recommendation to the THEC Statutory Formula Review Committee in the summer of 2021 that will include any revisions to the formula following the guiding principles outlined above. Table 2 offers a chronological history of outcomes-based funding in Tennessee.

Table 2 Tennessee's Outcomes-Based Funding (OBF) Timeline

| 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2019 | 2021 |
|---|---|---|---|---|---|---|---|
| Outcomes-based funding policies are adopted in Tennessee | Phase-in of outcomes model, phase-out of hold harmless policy | | Removal of hold harmless policy | Final distributions for FY 15-16 under 2010-2015 model | Revisions made to 2010-2015 model; introduced 2015-2020 model | Final distributions for FY 20-21 under the 2015-2020 model | Revisions made to 2015-2021 model; introduced in fiscal year 2022-23 |

Note. Information collected from Callahan et al. (2017), Tennessee Higher Education Commission (2020), and Collins (2021).

**Performance Funding Impact on the United States**

With 41 states having implemented performance funding in some form over the past four decades, sufficient data exists to determine the effectiveness of performance funding (Boggs, 2018; Hillman et al., 2018). The studies completed are not all in agreement that the impact performance funding has on outcomes are positive. Fincher (2015) hypothesized:

> The main drawback of performance funding was its inability to influence what it was designed to impact. Many studies have indicated little to no statistical significance of the effect of performance-based funding on outcomes, as institutional characteristics have been more predictive of these outcomes. (p. 2)

However, after the research was completed, it was concluded there was a positive correlation between state funding per student and student outcomes (Fincher, 2015). Nationally, between 1990 and 2010, it was determined states with performance funding produced more degrees than the national average (Tandberg & Hillman, 2014). Furthermore, states with performance funding tend to have more aggressive financial aid packages to support their students (Tandberg & Hillman, 2014).

Alternatively, some research has determined performance funding had no impact or negative impacts on student outcomes. Performance funding and performance budgeting appears to have a limited impact on remedial completion, retention, and graduation rates (Dougherty & Reddy, 2011; Hillman, Tandberg, & Fryar, 2015; Hillman, Tandberg, & Gross, 2014; Rutherford & Rabovsky, 2014; Sanford & Hunter, 2011; Shin, 2010; Shin & Milton, 2004; Tandberg & Hillman, 2014). In addition, some states that have had performance funding for longer periods of time tend to have declining graduation rates (Rutherford & Rabovsky, 2014). Tandberg and Hillman (2013) concluded, "On average, performance funding had little to no impact on associate or baccalaureate degree completions" (p. 2). In Pennsylvania, as an example, it was determined taxpayer dollars were best spent on outcomes rather than enrollment, but degree completions themselves did not increase (Hillman & Gross, 2014). A study of community colleges in Washington state, which has adopted a performance funding model, showed community colleges were not outperforming their peers that were not subject to performance funding policies in most student outcome categories (Hillman et al., 2015). The limited results on increased outcomes in states with performance funding has caused some other states to not implement the model and others to discontinue it (Dougherty et al., 2014b; Renzulli, 2016).

Although nationally it remains either unanswered or debatable as to what extent the results of performance funding are having on student outcomes, it has been determined tying

funding to outcomes has the ability to influence institutional behavior (Dougherty & Reddy, 2011; Hillman et al., 2015). There is also evidence to suggest college and university leadership are aware of the performance based metrics and the state's priorities, even if the metrics are not improving (Dougherty & Reddy, 2011; Hall, 2000). Public colleges and universities have made institutional policy and program related decisions in response to performance funding models (Dougherty et al., 2014b). These changes include closing some programs with low graduation rates and discontinuing courses that are barriers for students to progress to graduation (Dougherty et al., 2014b).

Much of the research that has been done on the effectiveness of performance funding models has centered on whether they contributed to improving student outcomes, such as retention and graduation rates. Although the body of literature is not extensive, additional research has been completed on how performance funding models impact higher education institutions revenue, expenditures, and grant aid approaches at 4-year public institutions. In regards to revenue, it was concluded states that adopt performance funding models tend to initially allocate more to state support, but these additional allocations fade over time (Kelchen & Stedrak, 2016). In regards to expenditures and grant aid, over time, higher education institutions tended to invest more in student services and grant aid (Kelchen & Stedrak, 2016). However, of the grant aid allocated, higher education institutions operating under performance funding models tended to receive less Pell Grant revenue, which appears to be driven by a slight shift toward enrolling students from higher-income families or non-Pell eligible students (Kelchen & Stedrak, 2016; Umbricht et al., 2017). Kelchen (2018) stated, "However, the presence of bonuses for serving at-risk students appears to help mitigate any efforts to enroll a more advantaged student body that may be present in other PBF [performance-based funding] systems" (p. 702). In other words, the bonuses received by institutions through performance-

based funding models tend to encourage the institutions to enroll at-risk students, even though the institutions may have less Pell eligible students.

**Performance Funding Impact on Tennessee**

In Tennessee, under PF 1.0, research did not indicate improved retention or 6-year graduation rates (Sanford & Hunter, 2011). During a 2005 modification of the formula, Tennessee chose to double the monetary incentive associated with retention and 6-year graduation rates, but results still showed the state's rates did not increase when compared to peer institutions (Sanford & Hunter, 2011). When asked to respond to the effectiveness of PF 1.0, administrators and faculty at the University of Tennessee, Knoxville noted they agreed with the overall philosophy of the performance-based funding formula; however, given the small portion of state support derived from it, it was not a financial motivator (Hall, 2000). In addition, certain weaknesses were noted from these same administrators and faculty, including that there were limited incentives for colleges and departments, the legislative funding was inconsistent, the mechanics of the policy, and additional tasks being asked of faculty resulted in little results for them (Hall, 2000). Despite the weaknesses identified, the overwhelming majority of the interviewees indicated the policy should not be discontinued, but modifications should be made (Hall, 2000).

Tennessee adopted significant modifications to its original performance-based funding formula when it shifted to an outcomes-based funding formula with the adoption of PF 2.0 11 years ago. Although it has been 11 years since the adoption of PF 2.0 in Tennessee, the research on its long-term impact on student outcomes is limited. Despite the limited research on the formula's long-term impact on student outcomes, Johnson and Yanagiura (2016) stated, "There is significant evidence that institutions have responded to the new funding system with revised

30

institutional policies and practices focused on improving student outcomes" (p. 3). Institutions in particular have focused on a number of completion-related initiatives and programs, including advising, enhanced student services, and revised academic policies promoting progression to graduation (Ness et al., 2015). A focus has also been placed on incorporating the outcomes-based formula into institutional strategic plans and current visions (Ness et al., 2015). The institutions of focus in the study completed by Ness, Deupree, and Gandara (2015) were Middle Tennessee State University, Pellissippi State Community College, Southwest Tennessee Community College, and the University of Tennessee, Knoxville (p. 4). Among these institutions, it was noted collaboration often occurred on student success, such as the adoption of the Tennessee Transfer Pathways, but it was also noted PF 2.0 caused competition, because it was a zero-sum formula (Ness et al., 2015). If one institution outperforms the other, the state support is shifted from the underperforming institution.

Early results after the formula's revisions were positive. Results showed bachelor's degrees awarded increased, associate degrees awarded increased, and certificates awarded increased (Johnson & Yanagiura, 2016). More recent studies tend to conflict with one another on whether performance funding is having a positive impact on student outcomes or not. Callahan's (2017) summary findings stated the following:

- OBF in Tennessee had a significant, positive impact on on-time bachelor's degree completions for first-time, full-time students.
- Analyses also show a positive impact for accumulating 24 and 48 credits, but only for the most recent cohort. We see no effect of OBF on accumulating 72 credits within a student's first three years.
- OBF had a positive impact on graduating on-time for students entering their senior years on track to graduate, but only for the most recent cohort (2011 cohort). (p. 57)

In a later study, it was acknowledged that determining the impact of outcomes-based funding on bachelor's degree production can be difficult, particularly because student academic progress can vary by each student and colleges and universities can fail to deliver certain services to assist

students to graduation (Hillman et al., 2018). This study concluded performance funding has not

encouraged 4-year colleges and universities to produce additional bachelor's degrees (Hillman et

al., 2018). Hillman et al. (2018) acknowledge their findings are in contrast with the findings of

Callahan et al. (2017).

**Summary**

The popularity of performance funding has continued to grow nationally as 41 states have

now implemented some form of performance funding (Boggs, 2018; Hillman et al., 2018).

Holding higher education institutions accountable by way of performance funding continues to

be a priority for many state governments (Dougherty & Natow, 2015). In a higher education

landscape that is ever-changing, particularly in one where some colleges and universities are

predicted to be out of business in the next few decades, holding institutions accountable for their

performance is ever more popular and necessary (Harden, 2013).

The level of accountability provided by performance funding has been studied and

encouraged by prominent national foundations and continues to be supported by many state

governments (Hillman et al., 2018). Despite the encouragement of these institutions, the impact

of performance funding on a national scale has been found to either be negative or null in some

states (Hillman et al., 2018). The complexity of higher education institutions responding to state

policy changes and implementing measures to respond to them cannot be discounted, particularly

if the policy is not consistent with institutional practices (Shin, 2010). As an example, improving

retention rates might seem easy; however, it can take a significant campus investment and

coordinated effort over a number of academic years to make the improvement happen (Hillman

et al., 2015).

Some empirical evidence does exist that adoption of such models leads to greater efficiency in higher education and can be used by policymakers to enhance efficiency within government programs (de Vries, Nemec, & Špaček, 2019). Early results after the performance funding formula were revised in Tennessee showed some gains in student success outcomes; however, later results have been conflicting with at least one study finding an increase of bachelor's degree produced and at least one other concluding additional bachelor's degrees were not produced as a result of the formula (Callahan et al., 2017; Hillman et al., 2018; Johnson & Yanagiura, 2016). As the current outcomes-based funding formula in Tennessee continues to mature, it is likely the trends and effectiveness of the formula will be closely studied.

CHAPTER III

METHODOLOGY

**Description of the Sample and Population**

The quantitative population for this study included students at a moderately-selective, doctoral and professional level Carnegie public institution in Tennessee. For the Fall 2019 term at this institution, there were a total of 11,651 students enrolled, 85% were full-time, 88% were undergraduates, 43% were male, 57% were female, and the average American College Testing (ACT) Program score for a first-time freshman was 23.9. (The University of Tennessee at Chattanooga, 2019a, 2019b). For fiscal year 2019-2020, the institution's total unrestricted budget was $204,064,391, and of that $59,484,805 or 29% was from state support (The University of Tennessee, 2019). Since the Great Recession in 2008, tuition and fee revenue growth has far outpaced state support revenue at the institution and it now makes up 58% of the total unrestricted budget (The University of Tennessee, 2019; The University of Tennessee at Chattanooga, 2017).

The student outcomes data that align with Tennessee's outcomes-based funding formula are reported to THEC for aggregation into the formula. The state support recommendation from THEC is subsequently developed based on a 3-year rolling average of the institution's outcomes data. For the purpose of this study, a select portion of the unaggregated data were used for the period beginning in fiscal years 2015-16 through 2018-19, which is a period of four years or four reporting cycles. The aggregate outcomes data from these four years reported by the institution are outlined in Table 3.

Table 3 Combined Outcomes Data 2016-2019

| Outcome* | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---|---|---|---|
| Students Accumulating 30 hrs | 2,219 | 2,166 | 2,270 | 2,330 |
| Students Accumulating 60 hrs | 2,390 | 2,317 | 2,247 | 2,257 |
| Students Accumulating 90 hrs | 2,779 | 2,770 | 2,770 | 2,654 |
| Bachelors and Associates | 2,985 | 2,964 | 3,013 | 3,061 |
| Masters/Ed Specialist Degrees | 385 | 358 | 395 | 402 |
| Doctoral / Law Degrees | 40 | 79 | 86 | 68 |
| Research, Service and Sponsored Programs | $9,561,462 | $9,143,624 | $9,482,193 | Not Available |
| Degrees per 100 FTE | 22.2 | 21.8 | 22.0 | 22.4 |
| Six-Year Graduation Rate | 60.1% | 62.2% | 64.7% | 63.9% |

*Figures are inclusive of the focus populations weights.
Note. Information collected from the THEC Outcomes Formula Model (2019a).

The qualitative population for this study included select senior-level administrators at the same moderately-selective, doctoral and professional level Carnegie public institution in Tennessee. To enhance the quantitative portion of this study, interviews were conducted with a select number of senior-level administrators to gain a greater understanding of how processes were developed, policies were adopted, and actions were taken by the university to maximize state support since the adoption of the CCTA in 2010. The qualitative population included oral interviews with up to five senior-level administrators. Senior-level administrators included select members of the chief executive's cabinet and a senior-level administrator who serves the university system, which has governing authority over the focus institution.

**Research Design**

This study was designed to identify the differences the two focus populations incorporated into the outcomes-based funding formula have on two select formula input variables at a moderately-selective, doctoral and professional level Carnegie public institution that receives state support from Tennessee's outcomes-based funding formula. Understanding these differences could potentially lead institutions to enhance funding through state support in the future. The historical data used for the quantitative portion of this study were input into the outcomes-based funding formula beginning with the 2015-16 fiscal year and ending with the 2018-19 fiscal year. To answer the first and second quantitative research questions, the formula focus populations (e.g. adult students and low-income students) served as the independent variables. Two of the formula input variables with the highest percentage formula weights (e.g. student progression and degree attainment) served as the dependent variables. *T-test* and correlations analyses were used to examine if a difference existed between the variables.

Predictive analytics are based on either previous experiences or past information that are designed to predict future performance (McGrayne, 2011). The third quantitative research question was answered by using a regression analysis to develop a model intended to predict progression and degree attainment based on the focus populations. As universities continue to face increased pressure from policymakers, taxpayers, students, and various other constituencies, it is imperative they reflect on their previous performance. By using a predictive model to analyze a select portion of the university's historical data that were input into the outcomes-based funding formula, the university could have the advantage of being able to predict future success at improving its performance metrics. To enhance the findings from the predictive model, the qualitative portion of the study helped gain insight into how processes were developed, policies were adopted, and actions were taken by the university to maximize state

support since the adoption of the CCTA in 2010. The university's administration could be more informed about which formula input variables generate the best return on investment in order to maximize state support.

**Data Collection and Procedures**

For the quantitative portion of this study, the researcher gained an understanding of the data available from the focus institution's Office of Planning, Evaluation, and Institutional Research (OPEIR). Once the data available were known, the researcher then requested expedited review of the proposed data set for this study from the Institutional Review Board (IRB). The worksheets provided by OPEIR included unaggregated and unidentifiable student outcomes formula input data for each corresponding year within the study's timeframe. The data, which ultimately becomes a portion of THEC's aggregate data file, were collected by the OPEIR annually. Once collected, the data were submitted to the university's governing system office (Williamson, 2020). The system office then develops a comprehensive file of all data for the system and submits it to THEC on the institution's behalf (Williamson, 2020). OPEIR primarily gathers the information from the institution's Banner system, an Ellucian student information system product.

For the qualitative portion of this study, the researcher developed interview questions for senior-level administrators designed to provide insight into how processes were developed, policies were adopted, and actions were taken by the university to maximize state support since the adoption of the CCTA in 2010. Qualitative studies typically adopt one of five approaches (Creswell & Poth, 2018). For the purpose of the qualitative portion of this study, the case study approach was used. The case study approach allowed the researcher to develop interview questions based on the outcomes of the quantitative portion of this study. The responses to those

questions enhanced the quantitative data and allowed the researcher to provide a narrative for how the institution either successfully or perhaps not responded to the CCTA.

Each interview signed an informed consent form acknowledging the confidential nature of the interviews and giving consent for the interviews to be recorded. The informed consent form can be found in Appendix B. Whether in reasonable driving distance or not from the researcher's home base, each interview was conducted via Zoom technology in order to consistently record the information in the same format and not create a material variation between each interview. A standardized list of questions was used to gain an understanding of the impact of the outcomes-based funding formula at the focus institution. The list of questions can be found in Appendix C. Certain questions were also used to understand how the institution responded to the state's adoption of the outcomes-based funding formula in 2010. The interviewer carefully reviewed notes taken during the interviews and each interviewee recording in order to summarize the answers and identify commonalities and outliers in the answers provided by the administrators. Those were subsequently used to answer the study's fourth research question.

The data gathered for the quantitative portion of this study were reliable to the extent they were accurately reported by OPEIR from the institutions Banner system. OPEIR has a process in place to closely review, validate, and correct any data that are either missing or inaccurate prior to submitting the information to the governing system office (Williamson, 2020). THEC's governance and coordinating roles over higher education institutions empowers them as the ultimate source of authority on all data published. Also, the data gathered for both the quantitative and qualitative portions for this study were valid to the extent that they accurately represent the institution to the best of the researcher's ability. The data gathered from the OPEIR were the foundation for the researcher's subsequent analyses, qualitative component, and

conclusions on how best the university can focus its resources in the future to successfully perform under the outcomes-based funding formula.

Both internal and external validity are of importance within this study. The data collected from the OPEIR, interviews, and the subsequent data analysis techniques and software used were managed with the utmost ethical considerations in order to yield the most reliable study possible. Regarding external validity, the findings of the study were expected to serve as a guide to the institution of focus and other public university's in Tennessee as they look towards how best to perform as an institution receiving state support from the outcomes-based funding formula.

**Data Analysis**

The quantitative portion of this study used a portion of the unaggregated historical data provided by OPEIR that were input into Tennessee's outcomes-based funding formula for the last four annual reporting cycles, beginning in fiscal years 2015-16 through 2018-19. The unaggregated data were deidentified to protect the privacy of individual students. They were associated with individual students using an identifier assigned to each student record based on the semester the data were reported. The *t-test*, correlation, and regression functions in the Statistical Package for Social Sciences (SPSS) software were used to complete the analysis.

The qualitative portion of this study used oral interviews with senior-level university administrators in order to enhance the predictive model developed in the quantitative portion of the study and to assess how the institution responded to the CCTA when it was adopted in 2010 and thereafter. Each senior-level administrator plays a critical role in their respective institutions' success or failure in receiving funding under the outcomes-based funding model. The administrators were selected based on their respective position and the positions' involvement with either impacting state support or managing state support allocated through the outcomes-

based funding formula. The confidential interview responses assisted in gauging how institutions either successfully or not navigated the outcomes-based funding formula.

**Research Questions**

This study explored the opportunities a university has to enhance its state support through the outcomes-based funding formula. The study used both select historical outcomes-based formula input data from the university and outlined the actions taken by the focus university in response to the adoption of the CCTA in 2010. That was accomplished through answering the research questions below. The corresponding hypotheses are outlined below as well.

- Research Question 1 (RQ1): Is there a difference in student progression (cumulative credit hours) based on the outcomes-based funding formula focus populations?

    c. Based on age (under 25, 25 and older)

    d. Based on income (Pell eligible yes, no)

- Hypothesis 1: There will be a difference in student progression based on both the age and income focus populations.

- Research Question 2 (RQ2): Is there a relationship between degree attainment (yes, no) and the outcomes-based funding formula focus populations?

    c. Based on age (under 25, 25 and older)

    d. Based on income (Pell eligible yes, no)

- Hypothesis 2: There will be a relationship between degree attainment and both the age and income focus populations.

- Research Question 3 (RQ3): Can a model be created to predict progression and degree attainment based on the outcomes-based funding formula focus populations?

- Hypothesis 3: A model can be created to predict progression and degree attainment based on the focus populations.

- Research Question 4 (RQ4): What were the processes developed, policies adopted, and actions taken by the university to maximize state support since the adoption of the Complete College Tennessee Act (CCTA) in 2010?

A list of variables used to answer the quantitative research questions of this study, inclusive of the formula's two focus populations, are as follows:

- cumulative hours earned

- degree attainment

- adult students, focus population

- low-income students, focus population

**Summary**

The methodological approach used for this study resulted in enhanced understanding of the outcomes-based funding formula that could be used by the institution of focus, as well as other public universities in Tennessee to maximize their state support. The methodological approach of the mixed methods study included quantitative analyses and a qualitative case study based on interviews with select senior-level administrators at the institution of focus. As stated by de Vries, Nemec, and Spacek (2019), "In an era of budget deficits and a high degree of scrutiny over government spending, better educational management is needed to efficiently and effectively use public funds" (p. 227). With the anticipated outcomes of the quantitative analysis possibly assisting to maximize state support, a greater understanding of how institutions respond to the outcomes-based funding formula, and an overall greater understanding of how the formula

functions, Tennessee institutions could be better positioned to respond to the call to be more

efficient and effective.

CHAPTER IV

FINDINGS

**Introduction**

This study explored several components of Tennessee's outcomes-based funding formula used to appropriate state support to public higher education institutions in the state. A mixed methods approach was used in order to best understand the relationship between the focus populations identified by the formula – low-income students and adult learners – and both student progression and graduation of students enrolled at a moderately-selective, doctoral and professional level Carnegie public institution in Tennessee. By using these data, a predictive model was developed in order to allow the focus institution and other 4-year public institutions in the state to understand how to respond to the focus populations in the future. Finally, qualitative interviews were conducted with senior administrators at the focus institution and its governing system in order to gain a better understanding of how the focus institution has responded to the outcomes-based funding formula since it was materially changed in 2010.

The quantitative population for this study was limited to students at the focus institution. A select portion of the student outcomes unaggregated data, aligning with the data reported by the institution to THEC, were used to complete the quantitative analysis. This study used data for the period beginning in fiscal years 2015-16 through 2018-19, which is a period of four years or the equivalent of four reporting cycles to THEC. The qualitative population for this study included select senior-level administrators at the focus institution.

The study's focus institution provided the necessary data file in order to complete the quantitative data analysis. The unaggregated data were unidentifiable to any specific student and consisted of 103,028 individual student records by semester for the period beginning in fiscal years 2015-16 through 2018-19. The data provided by the focus institution via an Excel file included the following components:

- term

- adult learner indicator

- low-income indicator

- term hours earned

- term hours attempted

- cumulative hours earned

- cumulative hours attempted

- degree type

- graduation status indicator

The term hours earned, term hours attempted, cumulative hours earned, and degree type were not used to complete the quantitative analysis. The data provided were only available by semester and there was not a mechanism to identify student graduation status outside of the semester the graduation occurred, which resulted in a limitation being identified. *T-test*, correlations, and regression analyses were used to answer the three quantitative research questions. Virtual interviews with five senior-level administrators were completed in order to answer the qualitative research question.

**Quantitative Research Component**

This study included three quantitative research questions and one qualitative research question. The results of the quantitative research questions are explained below.

Research Question 1 (RQ1): Is there a difference in student progression (cumulative credit hours) based on the outcomes-based funding formula focus populations?

a. Based on age (under 25, 25 and older)

b. Based on income (Pell eligible yes, no)

The *t-test* and correlations analyses were both used to answer Part A of Research Question 1. For the *t-test*, the independent variable was whether the student was classified as an adult learner based on age. The outcomes-based funding formula defines an adult learner as someone who is 25-years of age or older. Therefore, the independent variable consisted of two levels: 25 years or older and under 25 years of age. The dependent variable was the cumulative credit hours earned by the student. The independent variable was nominal, and the dependent variable was scale. The *t-test* analysis found a statistically significant difference between adult learners and non-adult learners on the cumulative credit hours earned (t = 59.465, p < 0.001). The mean of cumulative credit hours earned was greater for adult learners ($\bar{x}$ = 83.106) than non-adult learners ($\bar{x}$ = 71.406); therefore, it was determined adult learners either progress at a higher rate or have accumulated more hours due to time in study than non-adult learners. The student progression based on age data analysis summary is outlined in Table 4.

Table 4 Student Progression Based on Age

| Student Progression | N | Mean | SD | T | df | Significance (2-tailed) |
|---|---|---|---|---|---|---|
| Adult Learner | 25,025.000 | 83.106 | 59.465 | 59.465 | 103,028 | 0.001 |
| Non-Adult Learner | 78,005.000 | 71.406 | 39.244 | | | |

In addition to the *t-test* analysis, both parametric correlation and non-parametric correlation analyses were completed to answer Part A of Research Question 1. The parametric correlation was measured using Pearson Correlation and the non-parametric correlation was measured using Spearman's Rho. Specifically, the correlation between cumulative hours earned and adult learners was measured by each semester reported. The correlations showed a statistically significant relationship between cumulative hours earned and type of learner (adult or non-adult learners). Both measurements showed a modest correlation between cumulative hours earned and type of learner for the parametric ($r = -0.111$, $p < 0.001$) and non-parametric ($r_s = -0.063$, $p < 0.001$) correlations. The cumulative hours earned and type of learner data analyses summary are outlined in Table 5.

Table 5 Cumulative Hours Earned and Type of Learner

|  | Correlation | Significance (2-tailed) |
|---|---|---|
| Pearson Correlation | -0.111 | 0.001 |
| Spearman's Rho | -0.063 | 0.001 |

The *t-test* and correlations analyses were both used to answer Part B of Research Question 1. The *t-test* independent variable was student income (low-income or not low-income). The outcomes-based funding formula defines low-income as a student who is Pell eligible. The dependent variable was the cumulative credit hours earned by the student. The independent variable was nominal, and the dependent variable was scale. The *t-test* analysis found a statistically significant difference between students classified as low-income and students not classified as low-income when measured by cumulative credit hours earned ($t = 9.417$, $p < 0.001$). The mean of cumulative credit hours earned was greater for students classified as low-

income ($\bar{x}$ = 76.467) than students not classified as low-income ($\bar{x}$ = 73.341); therefore, it was determined students classified as low-income either progress at a higher rate or have accumulated more hours due to time in study than students not classified as low-income. The student progression based on income data analysis summary is outlined in Table 6.

Table 6 Student Progression Based on Income

| Low Income | N | Mean | SD | t | df | Significance (2-tailed) |
|---|---|---|---|---|---|---|
| Yes | 22,977.000 | 76.427 | 45.852 | 9.417 | 83,561.000 | 0.001 |
| No | 60,586.000 | 73.341 | 40.883 | | | |

In addition to the *t-test* analysis, both parametric correlation and non-parametric correlation analyses were completed to answer Part B of Research Question 1. The parametric correlation was measured using Pearson Correlation and the non-parametric correlation was measured using Spearman's Rho. Specifically, the correlation between cumulative hours earned and student income was measured. The correlations showed a statistically significant relationship between cumulative hours earned and student income (low-income and not low-income). Both measurements showed a modest correlation between cumulative hours earned and income for the parametric ($r$ = -0.015, $p < 0.001$) and non-parametric ($r_s$ = -0.034, $p < 0.001$) correlations. The cumulative hours earned and income data analyses summary is outlined in Table 7.

Table 7 Cumulative Hours Earned and Income

| | Correlation | Significance (2-tailed) |
|---|---|---|
| Pearson Correlation | -0.015 | 0.001 |
| Spearman's Rho | -0.034 | 0.001 |

Research Question 2 (RQ2): Is there a relationship between degree attainment (yes, no) and the outcomes-based funding formula focus populations?

   a.   Based on age (under 25, 25 and older)

   b.   Based on income (Pell eligible yes, no)

Unlike Research Question 1, *t-test* analyses were not used to answer Parts A and B of Research Question 2 because of the limitation previously explained in this study. In summary, the data for this study were only available by semester, and there was not a mechanism to identify student graduation status outside of the semester the graduation occurred, which resulted in this limitation being identified. Although unable to specifically answer the research question with a direct comparison of those who graduated versus those who did not, the correlation analyses were completed in order to provide limited insight into student degree attainment based on the outcomes-based funding formula focus populations.

Both parametric correlation and non-parametric correlation analyses were completed to answer Part A of Research Question 2. The parametric correlation was measured using Pearson Correlation, and the non-parametric correlation was measured using Spearman's Rho. Specifically, the correlation between degree attainment and type of learner (adult or non-adult learner) was measured. The correlations showed a statistically significant relationship between degree attainment and type of learner. Both measurements showed a modest correlation between cumulative hours earned and type of learner for the parametric ($r = 0.044$, $p < 0.001$) and non-parametric ($r_s = 0.044$, $p < 0.001$) correlations. The degree attainment and type of learner analyses summary is outlined in Table 8.

Table 8 Degree Attainment and Type of Learner

|  | Correlation | Significance (2-tailed) |
|---|---|---|
| Pearson Correlation | 0.044 | 0.001 |
| Spearman's Rho | 0.044 | 0.001 |

Both parametric correlation and non-parametric correlation analyses were completed to answer Part B of Research Question 2. The parametric correlation was measured using Pearson Correlation and the non-parametric correlation was measured using Spearman's Rho. Specifically, the correlation between degree attainment and student income was measured. The correlations showed a statistically significant relationship between degree attainment and student income. Both measurements showed a modest correlation between degree attainment and student income for the parametric ($r = -0.047$, $p < 0.001$) and non-parametric ($r_s = -0.047$, $p < 0.001$) correlations. The degree attainment and income data analyses summary is outlined in Table 9.

Table 9 Degree Attainment and Income

|  | Correlation | Significance (2-tailed) |
|---|---|---|
| Pearson Correlation | -0.047 | 0.001 |
| Spearman's Rho | -0.047 | 0.001 |

Research Question 3 (RQ3): Can a model be created to predict progression and degree attainment based on the outcomes-based funding formula focus populations?
A regression analysis was completed in order to predict student progression based on the outcomes-based funding formula focus populations. The regression analysis independent variables were income level and type of learner, both of which are the two focus populations of the outcomes-based funding formula. The dependent variable was cumulative hours earned by

students. Both type of learner and student income level are statistically significant predictors of student progression; however, type of learner ($\beta = 0.114$, $p < 0.001$) was a more significant predictor than student income level ($\beta = 0.029$, $p < 0.001$). The progression prediction data analysis summary is outlined in Table 10.

Table 10 Progression Prediction

|  | Unstd. B | Coefficients Std. Error. | Std. Coefficients Beta | t | P |
|---|---|---|---|---|---|
| Type of Learner | 12.070 | 0.329 | 0.114 | 36.664 | 0.001 |
| Income | 2.046 | 0.220 | 0.029 | 9.289 | 0.001 |

A regression analysis was also completed in order to predict student degree attainment based on the outcomes-based funding formula focus populations. The regression analysis independent variables were income level and type of learner, both of which are the two focus populations of the outcomes-based funding formula. The dependent variable was whether the student graduated. Both type of learner and student income level are statistically significant predictors of degree attainment; however, student income level ($\beta = 0.044$, $p < 0.001$) was a slightly more significant predictor than type of learner ($\beta = 0.041$, $p < 0.001$). The degree attainment prediction data analysis summary is outlined in Table 11.

Table 11 Degree Attainment Prediction

|  | Unstd. B | Coefficients Std. Error. | Std. Coefficients Beta | t | P |
|---|---|---|---|---|---|
| Type of Learner | 0.003 | 0.001 | 0.041 | 3.999 | 0.001 |
| Income | 0.002 | 0.000 | 0.044 | 4.279 | 0.001 |

**Qualitative Research Component**

This study included three quantitative research questions and one qualitative research question. The results of the qualitative research question are explained below.

Research Question 4 (RQ4): What were the processes developed, policies adopted, and actions taken by the university to maximize state support since the adoption of the Complete College Tennessee Act (CCTA) in 2010?

The researcher completed qualitative interviews to enhance the quantitative portion of the study. Interviews were conducted with a select number of senior-level administrators to gain a greater understanding of how processes were developed, policies were adopted, and actions were taken by the university to maximize state support since the adoption of the CCTA in 2010. The qualitative population included five senior-level administrators at either the moderately-selective, doctoral and professional level Carnegie public institution in Tennessee or the university system, which has governing authority over the focus institution. The oral interviews consisted of questions covering the following six topics:

- formula impact on Tennessee's public higher education system

- formula impact on the focus institution

- formula responses at the focus institution

- biggest challenges responding to the formula

- formula changes to consider

- formula focus populations

The questions were used to gauge the interviewees general perspective of the formula and examine how it has impacted this study's focus institution. The interviews were all conducted virtually using the Zoom platform. They were recorded, and none of them lasted in excess of 30-

minutes. The qualitative interviewees' years of experience with Tennessee's formula are outlined in Table 12.

Table 12 Qualitative Interviewees' Years of Experience with Tennessee's Formula

| Interviewee description | Years of experience with Tennessee's outcomes-based funding formula |
| --- | --- |
| Senior-level campus administrator | 6-9 years |
| Senior-level campus administrator | 1-5 years |
| Senior-level campus administrator | 10+ years |
| Senior-level campus administrator | 10+ years |
| Senior-level university system administrator | 10+ years |

The information in the sub-sections below represents a summary of the interviewee's responses to the interviewer's questions.

***Formula Impact on Tennessee's Public Higher Education System***

All interviewees agreed the outcomes-based funding formula has positively impacted Tennessee's public higher education system since it was materially changed by the CCTA in 2010. The change forced institutions to stop thinking primarily about enrolling more students in order to get additional support to looking at how to progress students to graduation. Several interviewees acknowledged this shift has had a positive economic impact on Tennessee and has helped the state get closer to achieving its Drive to 55 goal. Although generally viewed as positive now, one interviewee noted there were challenges at both the institution and state-wide levels to implement the formula change. One interviewee recalled faculty and staff had a difficult time focusing on the substantial shift from enrollment to outcomes and much institution-level education was required to get them onboard.

The shift to the outcomes-based formula on the heels of the Great Recession was challenging for many institutions, including this study's focus institution recalled one interviewee. Several interviewees remembered resources being limited and how the focus institution was negatively impacted by poor outcomes in the early years of implementation. Although some hold-harmless safeguards were offered by the state initially, some institutions that failed to perform early on had a difficult time recovering. Most all interviewees noted, despite the early challenges, the shift of focus to student success has been well worth it and significantly impacted students, most public higher education institutions in the state, and the state's economy.

### Formula Impact on the Focus Institution

All interviewees agreed the focus institution has been positively impacted by the outcomes-based funding formula since it was materially changed by the CCTA in 2010. This change forced the institution to focus on the common problem of the need to progress and graduate students. The institution has focused significantly on improving both its 4-year and 6-year graduation rates noted several interviewees. Although additional work is needed, there has been significant improvement since the formula changes in 2010. In addition, the formula change forced the institution to not just look at its own goals, but the broader goals outlined by the State of Tennessee for higher education, workforce development, and economic improvements noted one interviewee. Some of these broader goals have forced the institution to closely review how it serves low-income and adult students, both of which are focus populations incorporated into the formula.

Several interviewees acknowledged in the inaugural year of the new formula, the study institution was the lowest performing 4-year public institution in the state. Although difficult to

53

absorb, it forced the campus leadership to share the importance of focusing on improving student outcomes with the campus community. One interviewee noted some faculty resisted the change outright, because there was a belief among faculty that they were being asked to avoid academic rigor. With much education and investment in key student success programs, the institution began to see a gradual shift that had it positioned as one of the highest performing 4-year public institutions in the state in recent fiscal years. There was also a common belief among all interviewees the formula forced proper allocation of state support across public higher education as opposed to the old model, which perhaps favored underperforming, yet high enrolling institutions. It is believed the focus institution has significantly benefited from this change.

### *Formula Responses at the Focus Institution*

Most interviewees mentioned how the focus institution has placed an emphasis on dissecting student success since the outcomes-based funding formula was materially changed by the CCTA in 2010. In many ways, the institution and the entire state were behind many others in focusing on student success programs noted one interviewee. The institution quickly realized it was not just one challenge, it was countless challenges that needed to be addressed in order to best respond to the state's new approach. As was already alluded to, a key element of implementing any student success program was the institutional culture change that had to occur first for the faculty and staff to completely get on board with focusing on student outcomes.

Several interviewees acknowledged as the institution developed its responses to the formula change, it was recognized early on how there needed to be specific departments designated to work on student success. Eventually, the partially new and partially refocused Enrollment Management and Student Success division was formed with its leader serving as a member of the institution's executive leadership team. Along with this organizational change,

many services were consolidated to make it easier for students to get assistance in one place through a one stop shop model as opposed to students having to go to multiple departments to assistance.

Beyond the organizational change, many other actions were adopted by the institution to shift the focus to student success. All interviewees noted one of the most notable was the hiring of professional advisors. In 2010, the institution had three professional advisors, today it has 42 recalled one interviewee. The institution started the Summer Bridge Program to give some students an advance start to their freshman years by allowing them to get acclimated with the institution and earn some credits in advance. In addition, the institution has retooled some of its financial aid packages to allocate small grants to students that exhausted their aid but are almost finished and implemented substantial initiatives to allocate aid to students with the greatest need. Interviewees shared a variety of other programs and initiatives that have been adopted with most of them not only helping students, but also helping the institution better perform under the formula.

### *Biggest Challenges Responding to the Formula*

One of the biggest challenges to responding to the outcomes-based funding formula since it was materially changed by the CCTA in 2010 has been the unpredictability of its outcome noted several interviewees. The formula is zero-sum, so one institution can gain state support while another institution can lose state support. Several interviewees acknowledged without the ability of the focus institution to predict the successes or challenges of other institutions, it has made it difficult for the institution to predict its own state support received through the formula each year. Instead of the state's public higher education working together to accomplish the state's goals, it has created an environment where institutions are competitors noted two

interviewees. When an institution loses $1 million from the reallocation of the funding formula, it can be difficult for the institution to not only recover, but still try to invest in improving student success.

One interviewee mentioned higher education's challenge of often not moving quickly. The cultural barriers were already explained above; however, the occasional inability for the focus institution to quickly respond to needed changes has been a challenge. The focus institution has had to address everything from certain faculty and staff believing it is not their responsibility to focus on student success to others who only wanted to do it their way. In addition, some of the faculty and staff stated they made it through their post-secondary education experience without various student success services, so why should they or the institution invest in them now noted one interviewee. The focus institution has made significant strides at addressing the challenges presented by the formula it can control, but it was acknowledged by several interviewees there is additional work to be done.

### *Formula Changes to Consider*

Although interviewees expressed a general favorability around the outcomes-based funding formula since it was materially changed by the CCTA in 2010, it was also acknowledged there are enhancements that could be made to potentially make it more effective. The ability for institutions to tailor the input metric weights is seen as both a positive and negative noted one interviewee. It gives the institutions flexibility, but also has the potential to weaken some of the state's goals, such as Drive to 55, without the state clearly defining how institutions should focus their efforts and resources. In addition, several interviewees shared the formula is currently viewed as somewhat complex with several of the input variables being highly correlated, such as

the six-year graduation rate and graduation rate per 100 full-time equivalent (FTE). Interviewees generally believed there could be opportunities to simplify it.

As institutions continue to improve their student success metrics, several interviewees shared a concern how at some point in the future there will not be an opportunity to grow. The formula could become nothing more than a reallocation of existing state support between institutions funded by the formula. The state will likely need to plan for revising the formula at some point in the future to prevent this from occurring. Finally, if the state wants to accomplish its Drive to 55 goal, several interviewees noted additional resources must be committed to the current focus populations (low-income and adult students). Without greater incentives beyond what are already available, institutions will have less willingness to invest in the additional resources needed to support these two focus populations.

### *Formula Focus Populations*

Interviewees shared the consensus of low-income and adult student focus populations identified for 4-year public institutions being appropriate since the outcomes-based funding formula was materially changed by the CCTA in 2010. Beyond additional institutional incentives needed in order to meet the Drive to 55 goal, institutions must be willing and able to support these two focus populations. One interviewee shared this study's focus institution often has success in recruiting students from both focus populations. All interviewees noted the focus institution has developed programs, particularly for those students identified as low-income, to assist them in progressing through the institution. They are often the students who come to the institution having to work one or two jobs in order to support themselves, so additional resources are needed to ensure they are successful. More work is still needed to support adult students,

additionally several interviewees expressly acknowledged greater attention must be focused on this demographic of student if the state ever wants to meet the Drive to 55 goal.

In respect to both low-income and adult students, there is a natural tendency for this study's focus institution to focus its efforts on the urban areas where it is geographically positioned. In order to ultimately expand the number of Tennesseans with either post-secondary degrees or certificates, the institution must also focus greater attention to the rural areas of the state noted one interviewee. It was suggested by the same interviewee the formula be adjusted to have sub-focus populations divided into both rural and urban to offer greater incentives for institutions to focus on the rural areas of the state. Like with the other changes, additional resources will likely be needed to make this happen. In summary, the interviewees agreed the focus populations should be kept, but additional investment is needed to support them, and they should perhaps be defined in different ways than they are currently.

**Summary**

The mixed methods study consisted of both quantitative and qualitative components. The quantitative portion consisted of three distinct questions centered around the relationship between the outcomes-based funding formula focus populations and both cumulative credit hours and graduation, including the development of a predictive model. *T-test*, correlation, and regression analyses were used to answer the questions. It was determined adult learners either progress at a higher rate or have accumulated more hours due to time in study than non-adult learners and students classified as low-income either progress at a higher rate or have accumulated more hours due to time in study than students not classified as low-income. It was also determined that statistically significant correlations exist between both degree attainment and type of learner and degree attainment and student income. In addition, the regression model

58

determined a statistically significant relationship exists between the focus populations and both cumulative credit hours and whether a student graduated. All are indicators 4-year public institutions in Tennessee should focus on ensuring both low-income students and adult learners succeed, because they tend to progress and graduate. Should the students' progress and eventually graduate, the focus institutions and other 4-years public institutions in the state could benefit from additional state support.

The qualitative portion of the study consisted of interviews with senior-level administrators representing the focus institution and its governing system. The interviewees shared the consensus the State of Tennessee's revisions to the outcomes-based funding formula in 2010 were positive and had positively impacted the focus institution. In addition, there was consensus the two focus populations applicable to 4-year public institutions in the state were relevant, although some interviewees shared the rewards for serving these populations might need to be enhanced to make further progress. Challenges identified were the often inability to predict the model's outcome and the internal competition it creates among public higher education institutions in the state. Despite some challenges, the interviewees believed the State of Tennessee should continue to refine and invest in the outcomes-based funding formula.

CHAPTER V

SUMMARY AND DISCUSSION

The primary purpose of this study was to determine how best a Tennessee 4-year public university can perform under the state's outcomes-based funding formula, most commonly identified as either PF 2.0 or the Complete College Tennessee Act (CCTA) funding formula. Specifically, the study examined the impact of the formula's two university focus populations, low-income and adult students, impact on two select formula outcome variables, progression and graduation. In addition, a predictive model was designed to simulate the possible impact of these focus populations on the outcome variables and a qualitative study was completed to better understand the effectiveness of the formula and how universities can best respond to it. The study's findings offer insight into how Tennessee's 4-year public universities can best perform under the formula, how focus populations impact the formula, and how best the citizens of the State of Tennessee can be served.

**Statement of the Problem**

As 41 states, or 82% of the United States, have adopted performance funding in some form, it is more imperative than ever the effectiveness of performance funding be studied (Boggs, 2018; Hillman et al., 2018). Furthermore, institutions must understand how best they can navigate the often complex performance funding models (Boggs, 2018; Hillman et al., 2018). Major foundations, such as the Bill and Melinda Gates and Lumina Foundations, have taken particular interest in promoting the development of performance funding, so colleges and

universities will be incentivized to help students complete degrees (Hillman et al., 2018). In

addition, Conklin, Snyder, Stanley, and Boelscher (2016) stated:

> With an aging population exiting the workforce and a declining but more diverse high school graduating pool entering the workforce, the demand for a skilled workforce with postsecondary credentials will only increase. Simply relying on the current enrollment-based stated and federal financing structure (and current investment levels) for postsecondary education will prove increasingly inadequate since the supply of available students will simply not keep up with the demands of the labor market unless production (graduating and credential attainment rates) increases. (p. 9)

To add to these pressures, colleges and universities are faced with a shifting learning modality

from traditional classrooms to online platforms, and many have financial pressures some believe

will force nearly half of all of them to close in the United States in the next 50 years (Harden,

2013; Selingo, 2016). The combination of the national shift to performance funding models,

population shifts, changing learning modalities, and financial pressures further exasperates the

need of institutions to be able to navigate performance funding models.

The State of Tennessee, where performance funding was adopted originally in 1979 and

substantially revised in 2010, is often looked at by other states as a model for performance

funding given its longevity and stability (Dougherty & Natow, 2010; Sanford & Hunter, 2011).

The need to study it is important. Of perhaps greater importance is the need for institutions that

are funded by the formula to understand which formula attributes will yield the greatest return on

the institution's investments.

Higher education institutions in the state have indicated performance funding has

enhanced the institutions' efforts to focus on student success, enhanced degree completion

programs, promoted student graduation, and revised institutional and academic policies (Conklin

et al., 2016; Johnson & Yanagiura, 2016; Ness et al., 2015). Other studies have either been less

conclusive or have found negative aspects to performance funding. The direct impact of

performance funding on degrees and certificates awarded does not appear to necessarily outpace

institutions not funded through performance funding models (Hillman et al., 2018; Johnson &

Yanagiura, 2016). It has also been concluded some institutions in Tennessee view other in-state

institutions as competitors given the state's model is a zero-sum outcomes-based funding model

(Ness et al., 2015). The findings of this study, with focus on Tennessee, are intended to further

educate policymakers and higher education leaders as they study the effectiveness of the formula

and how best institutions can maximize state support.

**Methodology Review**

This study included four research questions. The first three questions were quantitative

and the fourth was qualitative. The quantitative questions were designed primarily to better

understand the difference in student progression and graduation based on the outcomes-based

formula focus populations and to develop a predictive model using the same variables. In

addition, the qualitative question was designed to offer additional insight into the outcomes-

based funding formula from senior-level campus administrators. The four research questions are

listed below.

- Research Question 1 (RQ1): Is there a difference in student progression (cumulative

  credit hours) based on the outcomes-based funding formula focus populations?

  a. Based on age (under 25, 25 and older)

  b. Based on income (Pell eligible yes, no)

- Research Question 2 (RQ2): Is there a relationship between degree attainment (yes, no)

  and the outcomes-based funding formula focus populations?

  a. Based on age (under 25, 25 and older)

  b. Based on income (Pell eligible yes, no)

- Research Question 3 (RQ3): Can a model be created to predict progression and degree attainment based on the outcomes-based funding formula focus populations?

- Research Question 4 (RQ4): What were the processes developed, policies adopted, and actions taken by the university to maximize state support since the adoption of the Complete College Tennessee Act (CCTA) in 2010?

The quantitative analysis was completed by using variables from a moderately-selective, doctoral and professional level Carnegie public institution that were input into Tennessee's PF 2.0 outcomes-based funding formula. In addition, university processes, policies, and actions taken were analyzed in order to outline how the university responded to the adoption of the CCTA in 2010. Although data only came from one Tennessee 4-year public institution, the study's outcomes were designed to illustrate how institutional leaders and faculty across all 4-year public institutions could maximize their respective institutions state support funding.

For the quantitative portion of this study, the researcher gained an understanding of the data available from the focus institution's Office of Planning, Evaluation, and Institutional Research (OPEIR). Once the data available were known, the researcher then requested expedited review of the proposed data set for this study from the Institutional Review Board (IRB). This portion of the study used unaggregated historical data provided by OPEIR that were input into Tennessee's outcomes-based funding formula during four recent annual reporting cycles, beginning in fiscal years 2015-16 through 2018-19. The unaggregated data were deidentified to protect the privacy of individual students. It was associated with individual students using an identifier assigned to each student record based on the semester the data were reported. The *t-test*, correlation, and regressions functions in the Statistical Package for Social Sciences (SPSS) software were used to complete the analysis.

For the qualitative portion of this study, the researcher conducted virtual oral interviews with five senior-level administrators. The administrators were selected based on his or her respective position and that positions involvement with either impacting state support or managing state support allocated through the outcomes-based funding formula. The interview questions were designed to provide insight into how processes were developed, policies were adopted, and actions were taken by the university to maximize state support since the adoption of the CCTA in 2010. The confidential interview responses offered a great deal of insight into how the focus institution previously responded to and currently navigates the outcomes-based funding formula.

**Results Summary**

The first research question (RQ1) examined whether there was a difference in student progression (cumulative credit hours) based on the outcomes-based funding formula focus populations. *T-test* and both parametric and non-parametric correlation analyses were used to answer the question. For the two *t-test* analyses, the independent variables were student age (adult or not) and student income (low-income or not), respectively. The dependent variable was the cumulative credit hours earned by the student for both analyses. The *t-test* analyses determined adult learners either progress at a higher rate or have accumulated more hours due to time in study than non-adult learners and students classified as low-income either progress at a higher rate or have accumulated more hours due to time in study than students not classified as low-income.

The parametric correlation was measured using Pearson Correlation and the non-parametric correlation was measured using Spearman's Rho. Specifically, the correlations between cumulative hours earned and type of learner and cumulative hours earned and student

income were measured. The correlations showed a statistically significant relationship between cumulative hours earned and type of learner (adult or non-adult learners). The correlations also showed a statistically significant relationship between cumulative hours earned and student income (low-income and not low-income).

The second research question (RQ2) examined whether there was difference in degree attainment (yes, no) based on the outcomes-based funding formula focus populations. The *t-test* analyses were not used because of the limitation previously explained in this study. In summary, the data for this study were only available by semester and there was not a mechanism to identify student graduation status outside of the semester the graduation occurred, which resulted in this limitation being identified. Although unable to use the t-test analyses to answer the research question, the correlation analyses were completed in order to provide limited insight into student degree attainment based on the outcomes-based funding formula focus populations.

The parametric correlation was measured using Pearson Correlation and the non-parametric correlation was measured using Spearman's Rho. Specifically, the correlation between degree attainment and type of learner and degree attainment and student income were measured. The correlations showed a statistically significant relationship between cumulative hours earned and type of learner (adult or non-adult learners). The correlations also showed a statistically significant relationship between cumulative hours earned and student income (low-income and not low-income). The correlations showed a statistically significant relationship between degree attainment and type of learner. The correlations also showed a statistically significant relationship between degree attainment and student income.

The third research question (RQ3) examined whether a model could be created to predict progression and degree attainment based on the outcomes-based funding formula focus populations. Regression analyses were completed in order to predict student progression and

65

degree attainment based on the outcomes-based funding formula focus populations. The regression analyses independent variables were income level and type of learner. The dependent variable was cumulative hours earned by students and whether students graduated, respectively. For student progression, it was determined that both type of learner and student income level are significant predictors, but type of learner is the more significant predictor of the two independent variables. For degree attainment, it was determined that both type of learner and student income level are significant predictors, but student income level is the more significant predictor of the two independent variables.

The fourth research question (RQ4) examined processes developed, policies adopted, and actions taken by the university to maximize state support since the adoption of the Complete College Tennessee Act (CCTA) in 2010. The qualitative portion of the study consisted of five virtual oral interviews with senior-level administrators representing the focus institution and its governing system. The interviewees shared the consensus the State of Tennessee's revisions to the outcomes-based funding formula in 2010 were positive and had positively impacted the focus institution. In addition, there was consensus among the interviewees that the two focus populations applicable to 4-year public institutions in the state were relevant, although some interviewees shared the rewards for serving these populations might need to be enhanced to make further progress. Challenges identified by the interviewees were the often inability to predict the model's outcome and the internal competition it creates among public higher education institutions in the state. Despite some challenges, the interviewees believed the State of Tennessee should continue to refine and invest in the outcomes-based funding formula.

**Discussion**

As has been noted throughout this study, the State of Tennessee was the birthplace of performance funding for higher education and is often looked at by other states as a model given its longevity and stability (Dougherty & Natow, 2010; Sanford & Hunter, 2011). There is a need to study the formula and for institutions funded by it to understand the impact the formula input variables have on potential future state support. Using select input variable performance and administrative responses to the outcomes-based formula changes at the focus institution, this study has offered additional insight into some aspects of the formula.

The national conversation among scholars has been divided as to whether performance-based funding, and its successor outcomes-based performance funding, for higher education has been effective. Nationally, between 1990 and 2010, it was determined states with performance funding produced more degrees than the national average (Tandberg & Hillman, 2014). Furthermore, states with performance funding tend to have more aggressive financial aid packages to support their students (Tandberg & Hillman, 2014). Through the qualitative analysis, this study determined both 4-year and 6-year graduation rates have increased at the focus institution. The study also determined adult learners either progress at a higher rate or have accumulated more hours due to time in study than non-adult learners and students classified as low-income either progress at a higher rate or have accumulated more hours due to time in study than students not classified as low-income. Given these determinations and the premiums offered under Tennessee's outcomes-based funding formula for progressing and graduating adult and low-income students, institutions should consider investing more resources in adult and low-income students in order to increase their chances of awarding more degrees. Enhanced financial aid and student support services for these students should be considered.

In addition, some national research has determined performance funding had no impact or negative impacts on student outcomes. Performance funding and performance budgeting appears to have a limited impact on remedial completion, retention, and graduation rates (Dougherty & Reddy, 2011; Hillman et al., 2015; Hillman et al., 2014; Rutherford & Rabovsky, 2014; Sanford & Hunter, 2011; Shin, 2010; Shin & Milton, 2004; Tandberg & Hillman, 2014). Although this study only looked at a select sample of Tennessee's outcomes-based formula input variables, with the determination adult students and students classified as low-income progress at a higher rate than their respective counterparts with the opposite classifications, retention and graduation rates could remain constant or decline for non-adult students and students not classified as low-income. Additional resources and support services need to be made available to all students to ensure they are continuing to progress to graduation. The institutions would increase their chances of increasing state support by making these investments.

More specific than the national perspective, results of the outcomes-based funding formula since it was incorporated into the CCTA legislation in 2010, have been mixed (Callahan et al., 2017; Hillman et al., 2018; Sanford & Hunter, 2011). Results showed student progression increasing at the 24 and 48 cumulative credit hour marks, but progression at the 72 cumulative credit hour mark and overall degree production not increasing (Callahan et al., 2017; Hillman et al., 2018). Given the significant correlations found in this study between cumulative credit hours and degree attainment with both type of learner (adult or non-adult) and student income (low-income or not low-income), there is preliminary evidence to suggest institutions should focus closely on these relationships. By gaining a better understanding of these relationships it is possible institutions could better understand how to maximize their state support from the outcomes-based funding formula, particularly with the focus population premiums offered.

Research specific to Tennessee has concluded public higher education institutions have responded to the adoption of the outcomes-based funding formula in 2010 by adopting strategies to improve student outcomes (Johnson & Yanagiura, 2016). Institutions in particular have focused on a number of completion-related initiatives and programs, including advising, enhanced student services, and revised academic policies that promote progression to graduation (Ness et al., 2015). The results of this study made the same determination. Since the adoption of the outcomes-based funding formula, the focus institution has made significant investments in student success measures to improve progression and graduation, which have yielded improved 4-year and 6-year graduation rates. Given student progression and 6-year graduation rates are both input variables into the formula, continuing to focus on both will assist the focus institution and other public universities in Tennessee maximize their state support.

**Implications for Future Research**

The study was limited by focusing only on a moderately-selective, doctoral and professional level Carnegie public institution in Tennessee and by exploring only select input variables of the outcomes-based funding formula. A broader study of both to incorporate other institutions in Tennessee, or beyond, should be considered. Given Tennessee's stature as having the most mature performance funding formula in the nation, it offers many opportunities to conduct research on this topic (Sanford & Hunter, 2011). Future research about Tennessee would be a welcome addition to the state and national literature on the topic.

The debate on the effectiveness of outcomes-based funding has been developing for several years. Callahan et al. (2017) wrote, "Large-scale debates about the overall efficacy of OBF (outcomes-based funding) will no doubt continue, and the question of whether long-term effects are evident is centrally important" (p. 61). The effectiveness of Tennessee's outcomes-

based funding formula simply cannot be ignored. Whether it contains correct metrics, weights, or is supported by the appropriate amount of funding, will all continue to be a part of this important conversation and should be researched further.

In addition, in direct alignment with this study, how best to serve the formula focus populations, must also be a consideration for future research. Appropriately aligning an institution's desire to serve these populations and avoid only serving those considered to be the highest performers is important and can be encouraged by weighting them correctly in a performance funding formula (McKinney & Hagedorn, 2017). Tennessee has done so by incorporating premiums for serving adult and low-income students at the university-level (Finney et al., 2017). So far, at least at the focus institution, incorporating these premiums appears to be having the impact the formula author's intended. However, further research is needed on whether these incentives are effective and as to whether they should be increased.

Further research on how best to support the focus populations should also be considered. With both adult and low-income students being prioritized in the outcomes-based formula calculations, the focus institution and others in the state must determine how best to actively engage these populations. Determining which support services best serve these focus populations from the initial point of recruitment all the way to graduation should become an important component of any future research conducted on this topic. The public higher education institutions in the state that best understand how to support these students could have an advantage over other institutions given the premiums incorporated for them into the outcomes-based funding formula.

There is also an emerging trend, particularly considering the COVID-19 pandemic, about the viability of higher education institutions. The topic has been an interest for several years, particularly as it was declared by at least one scholar nearly a decade ago that half of the colleges

and universities in the Unites States would close in the next 50 years (Harden, 2013). Robert

Zemsky, Susan Shaman, and Susan Campbell Baldridge (2020) recently wrote, "Estimating the

number of colleges or universities about to close has become something of a national parlor

game" (p. 5). Given this concerning trend, further study on the effectiveness of performance

funding is needed. The question of whether performance funding formulas are positively

impacting student performance is directly correlated to the viability of colleges and universities,

so it must be answered.

## Summary and Conclusion

Performance funding, whether it be performance-based or outcomes-based, has become

an integral part of public higher education funding for the vast majority of the United States

(Boggs, 2018; Hillman et al., 2018). The state support often driven by performance funding

remains volatile at time because it is impacted by a number of factors including economic

climates, policy changes, changing occupiers of gubernatorial and legislative seats, and

workforce needs to name only a few (Dougherty & Natow, 2015; Finney et al., 2017; Weerts &

Ronca, 2006). For these reasons and more, performance funding remains a frequent topic of

scholarly research and discussions.

As has been stated throughout this study, the State of Tennessee was the inaugural state

to adopt performance funding of any time and has subsequently been a national leader in

thoughtfully revising its formula (Banta & Fisher, 1984; Bogue & Brown, 1982; Finney et al.,

2017; Sanford & Hunter, 2011). Using the formula as a way for the state to hold institutions

accountable and encourage institutions to respond to various higher education state policies has

been a success. Whether it simply be accountability, policies adopted by the Complete College

Tennessee Act, Drive to 55 or other policy initiatives, there is clear evidence to show institutions

have worked to respond to each in part because of performance funding. Institutions have changed student success strategies and eliminated barriers to student progression and graduation. For these reasons, and many more, the State of Tennessee's leadership, including higher education leaders, are to be commended.

What remains a challenge is gauging the overall effectiveness of what is most commonly now outcomes-based funding formulas across the nation. In Tennessee, scholars do not entirely agree as to whether the formula has been a success in driving student outcomes since it was materially revised in 2010. Some studies show increases to progression rates and degrees awarded and others do not (Callahan et al., 2017; Hillman et al., 2018; Johnson & Yanagiura, 2016). It has been 11 years since the current formula was adopted, so the amount of longitudinal data available are more extensive than ever. Given this lack of clarity, Tennessee's outcomes-based funding formula, should remain a focus of scholarly research.

The findings of this study are able to offer additional insight into Tennessee's outcomes-based funding formula from the perspective of one moderately-selective, doctoral and professional level Carnegie public institution in the state. Although only limited to one institution and select formula input variables, the findings should still offer insight to universities across the state that receive state support through the outcomes-based funding formula. All four research questions were answered, and the findings were consistent with the original hypotheses, except for one where a limitation existed, and the research question could not be answered fully. The knowledge gained about the formula focus populations is particularly intriguing, because of the limited research completed about these populations in relation to Tennessee's formula.

One finding concluded students identified as being adult and low-income both either progressed at higher rates or have accumulated more hours due to time in study than students identified as non-adults and not being low-income. Given the State of Tennessee has identified

adult and low-income students as focus populations at the university level, this finding suggests universities are making progress to serve both populations; however, must continue to make further investments. Another finding suggests university leadership support these focus populations, and some believe the formula premium weights applied to them should be increased to further drive attention to these populations. Although the findings are positive towards serving the focus populations, institutions should not slow their efforts to support these populations. The state should consider enhancing the premium associated with these students. By doing both, it is possible the students in the focus populations could be better served and the institutions could yield additional state support by prioritizing these important populations.

Simplification of Tennessee's outcomes-based funding formula should also be considered by state and higher education leaders. The study's findings support simplification. More than one senior-level administrator interviewed suggested the formula is too complex and difficult to predict future success. In addition, it is believed several of the current formula variables are highly correlated, which would further suggest the need to explore simplification. The study's findings also suggest the formula creates internal competition within the state. Although acknowledge by the research as likely true, competition is the inevitable with any outcomes-based funding formula. Eliminating competition would be difficult and possibly be counterproductive.

As higher education continues to evolve, the State of Tennessee, like all other states, must continue to focus on how best to incent and promote educational attainment and economic growth. Much of that will be done by revising the outcomes-based funding formula, in order to incentivize institutions receiving state support. The formula is a powerful tool and one that institutions have shown they respond to by changing student success strategies, eliminating barriers to degree attainment, and revising institutional policies. A continued collaborative effort

between state and higher education leaders to promote and revise the formula has the possibility

of paying significant dividends. Those dividends could come in the form of a more educated

population, regardless of demographics, that could continue to position the State of Tennessee as

a leader in not only performance funding, but also overall educational attainment.

REFERENCES

Alstete, J. W. (2014). Revenue generation strategies: Leveraging higher education resources for increased income. *ASHE Higher Education Report, 41*(1), 1-138.

Banta, T. W., & Fisher, H. S. (1984). Performance funding: Tennessee's experiment. *New Directions for Higher Education, 1984*(48), 29-41.

Boggs, B. G. (2018). A legislator's toolkit for the new world of higher education: Outcomes-based funding as an evolving state appropriation model. *National Conference of State Legislators*.

Bogue, E. G., & Brown, W. (1982). Performance incentives for state colleges. *Harvard Business Review, 60*(6), 123-128.

Bogue, E. G., & Johnson, B. D. (2010). Performance incentives and public college accountability in the United States. *Higher Education Management and Policy, 22*(2), 1-22.

Bogue, E. G., & Troutt, W. (1980). Allocation of state funds on a performance criterion. *Nashville, TN: Tennessee Higher Education Commission*.

Burke, J. C. (2002). *Funding public colleges and universities for performance*: SUNY Press.

Callahan, M. K., Meehan, K., Shaw, K. M., Slaughter, A., Kim, D. Y., Hunter, V. R., . . . Wainstein, L. (2017). Implementation and impact of outcomes-based funding in Tennessee. *Philadelphia, PA: Research for Action*.

Collins, C. L. (2020). *Performance funding history 1997-2020*.

Collins, C. L. (2021). *2020-25 formula review committee working group - update*.

Conklin, K., Snyder, M., Stanley, J., & Boelscher, S. (2016). Rowing together: Aligning state and federal investments in talent to common outcomes. *Denver, CO: Education Commission of the States*.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4 ed.). Thousand Oaks, CA: SAGE Publications, Inc.

D'Amico, M. M., Friedel, J. N., Katsinas, S. G., & Thornton, Z. M. (2014). Current developments in community college performance funding. *Community College Journal of Research and Practice, 38*(2-3), 231-241.

de Vries, M. S., Nemec, J., & Špaček, D. (2019). *Performance-based budgeting in the public sector*: Springer.

Dougherty, K. J., Jones, S. M., Lahr, H., Natow, R. S., Pheatt, L., & Reddy, V. (2014a). Envisioning performance funding impacts: The espoused theories of action for state higher education performance funding in three states. *Community College Research Center Working Paper*(63).

Dougherty, K. J., Jones, S. M., Lahr, H., Natow, R. S., Pheatt, L., & Reddy, V. (2014b). Performance funding for higher education: Forms, origins, impacts, and futures. *The ANNALS of the American Academy of Political and Social Science, 655*(1), 163-184.

Dougherty, K. J., Jones, S. M., Pheatt, L., Natow, R. S., & Reddy, V. (2016). *Performance funding for higher education*: JHU Press.

Dougherty, K. J., & Natow, R. S. (2010). Continuity and change in long-lasting state performance funding systems for higher education: The cases of Tennessee and Florida.

Dougherty, K. J., & Natow, R. S. (2015). *The politics of performance funding for higher education: Origins, discontinuations, and transformations*: JHU Press.

Dougherty, K. J., Natow, R. S., Bork, R. H., Jones, S. M., & Vega, B. E. (2013). Accounting for higher education accountability: Political origins of state performance funding for higher education. *Teachers College Record, 115*(1), 1-50.

Dougherty, K. J., Natow, R. S., Hare, R. J., Jones, S. M., & Vega, B. E. (2011). The politics of performance funding in eight states: Origins, demise, and change. Final report to the lumina foundation for education. *Community College Research Center, Columbia University*.

Dougherty, K. J., & Reddy, V. (2013). Performance funding for higher education: What are the mechanisms what are the impacts. *ASHE Higher Education Report, 39*(2).

Dougherty, K. J., & Reddy, V. T. (2011). The impacts of state performance funding systems on higher education institutions: Research literature review and policy recommendations.

Dowd, A. C., & Shieh, L. T. (2014). The implications of state fiscal policies for community colleges. *New Directions for Community Colleges, 2014*(168), 53-63.

Fincher, S. M. E. (2015). *An exploration of performance-based funding at four-year public colleges in the north central association of colleges and schools.* (Doctorate of Education in Higher Education). University of Arkansas,

Finney, J. E., Leigh, E. W., Ruiz, R., Castillo, W., Smith, E., & Kent, D. C. (2017). Driven to Perform: Tennessee's higher education policies and outcomes: A case study.

Gorbunov, A. V. (2013). *Performance funding in public higher education: Determinants of policy shifts*: Vanderbilt University Dissertation.

Hall, K. B. (2000). Tennessee performance funding and the University of Tennessee, Knoxville: A case study.

Harden, N. (2013). The end of the university as we know it. *The American Interest, 8*(3), 54-62.

Hearn, J. C. (2015). Outcomes-based funding in historical and comparative context. Lumina issue papers. *Lumina Foundation for Education*.

Hillman, N. W., & Gross, J. P. K. (2014). Performance funding in higher education: Do financial incentives impact college completions? *The Journal of Higher Education, 85*(6), 826-857.

Hillman, N. W., Hicklin Fryar, A., & Crespín-Trujillo, V. (2018). Evaluating the impact of performance funding in Ohio and Tennessee. *American Educational Research Journal, 55*(1), 144-170.

Hillman, N. W., Tandberg, D. A., & Fryar, A. H. (2015). Evaluating the impacts of "new" performance funding in higher education. *Educational Evaluation and Policy Analysis, 37*(4), 501-519.

Hillman, N. W., Tandberg, D. A., & Gross, J. P. (2014). Market-based higher education: Does Colorado's voucher model improve higher education access and efficiency? *Research in Higher Education, 55*(6), 601-625.

Johnson, N., & Yanagiura, T. (2016). Lumina issue papers: Early results of outcomes-based funding in Tennessee. *Lumina Foundation*.

Kelchen, R. (2018). Do performance-based funding policies affect underrepresented student enrollment? *The Journal of Higher Education, 89*(5), 702-727.

Kelchen, R., & Stedrak, L. J. (2016). Does performance-based funding affect colleges' financial priorities? *Journal of Education Finance*, 302-321.

Kelderman, E. (2012). With state support now tied to completion, Tennessee colleges must refocus. *Chronicle of Higher Education*.

Li, A. Y. (2016). *The renaissance for performance funding for higher education: Policy adoption, implementation, and impacts.* (Doctor of Philosophy). University of Washington,

McGrayne, S. B. (2011). *The theory that would not die: How Bayes' rule cracked the enigma code, hunted down Russian submarines, & emerged triumphant from two centuries of controversy*: Yale University Press.

McKinney, L., & Hagedorn, L. S. (2017). Performance-based funding for community colleges: Are colleges disadvantaged by serving the most disadvantaged students? *The Journal of Higher Education, 88*(2), 159-182.

McLendon, M. K., Hearn, J. C., & Deaton, R. (2006). Called to account: Analyzing the origins and spread of state performance-accountability policies for higher education. *Educational Evaluation and Policy Analysis, 28*(1), 1-24.

Miao, K. (2012). Performance-based funding of higher education: A detailed look at best practices in 6 states. *Center for American Progress*.

Ness, E. C., Deupree, M. M., & Gándara, D. (2015). Campus responses to outcomes-based funding in Tennessee: Robust, aligned, and contested. *Nashville, TN: Tennessee Higher Education Commission*, 1-135.

Nisar, M. A. (2015). Higher education governance and performance based funding as an ecology of games. *Higher Education, 69*(2), 289-302.

Rabovsky, T. (2014). Support for performance-based funding: The role of political ideology, performance, and dysfunctional information environments. *Public Administration Review, 74*(6), 761-774.

Renzulli, L. A. (2016). The politics of performance funding for higher education: Origins, discontinuations, and transformations. *Contemporary Sociology: A Journal of Reviews, 45*(5), 596-597.

Rhoda, R. (2010). A matter of degrees: Public higher education reform in Tennessee. *Tennessee's Business, 19*(2), 1-2.

Rutherford, A., & Rabovsky, T. (2014). Evaluating impacts of performance funding policies on student outcomes in higher education. *The ANNALS of the American Academy of Political and Social Science, 655*(1), 185-208.

Sanford, T., & Hunter, J. M. (2011). Impact of performance funding on retention and graduation rates. *Education Policy Analysis Archives, 19*, 33.

Selingo, J. J. (2016). *2026, the decade ahead: The seismic shifts transforming the future of higher education*: Chronicle of Higher Education.

Shin, J. C. (2010). Impacts of performance-based accountability on institutional performance in the US. *Higher Education, 60*(1), 47-68.

Shin, J. C., & Milton, S. (2004). The effects of performance budgeting and funding programs on graduation rate in public four-year colleges and universities. *Education Policy Analysis Archives, 12*(22), n22.

Snyder, M. (2015). Driving better outcomes. *Washington, DC: HCM Strategists*.

Snyder, M., Fox, B., & Moore, C. (2016). State Finance Policy Best Practices. *The Miller Center, 21*.

Tandberg, D. A., & Hillman, N. W. (2013). State performance funding for higher education: Silver bullet or red herring. *WISCAPE Policy Brief, 18*.

Tandberg, D. A., & Hillman, N. W. (2014). State higher education performance funding: Data, outcomes, and policy implications. *Journal of Education Finance, 39*(3), 222-243.

Tennessee Higher Education Commission. (2016a). *2016-17 Outcomes Formula*. Retrieved from: https://www.tn.gov/thec/bureaus/finance-and-administration/fiscal-policy/redirect-fiscal-policy/outcomes-based-funding-formula-resources/redirect-outcomes-based-funding-formula-resources/2015-20-outcomes-based-funding-formula.html

Tennessee Higher Education Commission. (2016b). *Outcomes-based formula model data definitions*. Retrieved from https://www.tn.gov/content/dam/tn/thec/bureau/fiscal_admin/fiscal_pol/obff/Detailed_Outcomes_Formula_Definitions_08-2016.pdf

Tennessee Higher Education Commission. (2019a). *Outcomes formula model*. Retrieved from https://www.tn.gov/thec/bureaus/policy--planning--and-research/fiscal-policy/redirect-fiscal-policy/outcomes-based-funding-formula-resources/redirect-outcomes-based-funding-formula-resources/2015-20-outcomes-based-funding-formula.html

Tennessee Higher Education Commission. (2019b). *Tennessee higher education fack book*. Retrieved from https://www.tn.gov/content/dam/tn/thec/bureau/research/other-research/factbook/2018%2019%20Fact%20Book%20Suppressed%20Final.pdf

Tennessee Higher Education Commission. (2020). *2020-25 outcome-based funding formula review committee: Working group meeting #1*.

The General Assembly of the State of Tennessee. (2010). *Complete College Tennessee Act of 2010*. Retrieved from https://publications.tnsosfiles.com/acts/106/pub/pc0003EOS.pdf

The University of Tennessee. (2019). *FY 2019-2020 budget document*. Retrieved from http://finance.tennessee.edu/wp-content/uploads/2019/06/FY_2019_20_Proposed_Budget.pdf

The University of Tennessee at Chattanooga. (2017). *Budget town hall meeting: FY 2017-18 operating budget proposal*. Retrieved from https://cloudprod.utc.edu/sites/default/files/2020-05/budget-town-hall-meeting.pdf

The University of Tennessee at Chattanooga. (2019a). *First-time college freshmen: Average ACT composite score and average high school GPA*. Retrieved from https://www.utc.edu/planning-evaluation-institutional-research/pdfs/factbook/freshmen-act-gpa-10-19.pdf

The University of Tennessee at Chattanooga. (2019b). *Student demographics: Fall 2019*. Retrieved from https://www.utc.edu/planning-evaluation-institutional-research/pdfs/factbook/student-demographics-fall-2019.pdf

Umbricht, M. R., Fernandez, F., & Ortagus, J. C. (2017). An examination of the (un) intended consequences of performance funding in higher education. *Educational Policy, 31*(5), 643-673.

Weerts, D. J., & Ronca, J. M. (2006). Examing differences in state support for higher education: A comparative study of state appropriations for research I universities. *The Journal of Higher Education, 77*(6), 935-967.

Williamson, C. (2020, January 28, 2020) *The University of Tennessee at Chattanooga's reporting methods to the Tennessee Higher Education Commission/Interviewer: T. S. Forrest*.

Zemsky, R., Shaman, S., & Baldridge, S. C. (2020). *The college stress test: Tracking institutional futures across a crowded market*: JHU Press.

APPENDIX A

IRB APPROVAL

**Institutional Review Board**

Dept 4915
615 McCallie Avenue
Chattanooga, TN 37403
Phone: (423) 425-5867
Fax: (423) 425-4052
instrb@utc.edu
http://www.utc.edu/irb

TO:        Tyler Forrest                              **IRB # 20-154**
              Dr. Beth Crawford

FROM:     David Deardorff, Interim Director of Research Integrity
             Dr. Susan Davidson, IRB Committee Chair

DATE:      11/10/2020

SUBJECT:    IRB #20-154: Tennessee's Performance Funding Model: A Mixed Methods Study Designed to Predict Future Success

Thank you for submitting your application for exemption to The University of Tennessee at Chattanooga Institutional Review Board. Your proposal was evaluated in light of the federal regulations that govern the protection of human subjects.

Specifically, 45 CFR 46.104(d) identifies studies that are exempt from IRB oversight. The UTC IRB Chairperson or his/her designee has determined that your proposed project falls within the category described in the following subsection of this policy:

**46.104(d)(2)(ii)**: Research only includes educational tests, surveys, interviews, public observation and any disclosure of responses outside of the research would NOT reasonably place subject at risk

Even though your project is exempt from further IRB review, the research must be conducted according to the proposal submitted to the UTC IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an Application for Changes, Annual Review, or Project Termination/Completion form to the UTC IRB. Please be aware that changes to the research protocol may prevent the research from qualifying for exempt review and require submission of a new IRB application or other materials to the UTC IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the UTC IRB as soon as

The University of Tennessee at Chattanooga is a comprehensive, community-engaged campus of the University of Tennessee System.

1 of 2

82

possible. Once notified, we will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval.

For additional information, please consult our web page http://www.utc.edu/irb or email instrb@utc.edu.

Best wishes for a successful research project.

APPENDIX B

QUALITATIVE RESEARCH INFORMED CONSENT FORM

INFORMED CONSENT FORM


THE UNIVERSITY OF TENNESSEE AT CHATTANOOGA
PROTOCOL TITLE: TENNESSEE'S PERFORMANCE FUNDING MODEL: A MIXED
METHODS STUDY DESIGNED TO PREDICT FUTURE SUCCESS

Please read this consent document carefully before you decide to participate in this study.

Purpose of the research study:

This is a research study designed to contribute to general knowledge. The purpose of this
research study is to determine how best a Tennessee 4-year public university can perform under
the state's outcomes-based performance funding formula, most commonly identified as either
Performance Funding 2.0 or the Complete College Tennessee Act funding formula. The research
will analyze outcome variable performance and administrative responses at a moderately-
selective, doctoral and professional level Carnegie public institution in Tennessee. Using
quantitative analytics and qualitative interviews, the intent of this study is to identify the
differences that the only two focus populations incorporated into Tennessee's outcomes-based
funding formula have on two select formula input variables, develop a predictive model, and
better understand how institutions have responded to the adoption of CCTA. The study will
inform faculty and administrators not only at the institution of focus, but other similarly situated
institutions in Tennessee, as they continue to strategically plan how the institutions can best
perform under the outcomes-based performance funding formula.

What you will be asked to do in the study:

Your participation will involve a virtual interview with the researcher to discuss the processes
developed, policies adopted, and actions taken by the university to maximize state support since
the adoption of the Complete College Tennessee Act (CCTA) in 2010.

Time required:

No more than 1 hour

Risks and Benefits:

The risks of the study are unforeseen. If any, they are limited to not existent. The potential
benefits of the study include informing faculty and administrators not only at the institution of
focus, but other similarly situated institutions in Tennessee, as they continue to strategically plan
how the institutions can best perform under the outcomes-based performance funding formula.

Incentive or Compensation:

There are no incentives and you will not be paid for your participation.

Confidentiality:

Your identity will be kept confidential to the extent provided by law. Your information will be assigned a code number. The list connecting your name to this number will be kept in a cloud environment only accessible to the researcher. When the study is completed and the data have been analyzed, the list will be destroyed. Your name will not be used in any report or publication.

Voluntary participation:

You will be excluded from the study if you are younger than 18. Your participation in this study is completely voluntary. Should you elect to discontinue participation, any information already collected will be discarded. There is no penalty or loss of benefit for choosing not to participate.

Right to withdraw from the study:

You have the right to withdraw from the study at any time without consequence or penalty.

Whom to contact if you have questions about the study:

Dr. Elizabeth Crawford
Elizabeth-Crawford@utc.edu
(423) 425-5286

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you may contact Dr. Susan Davidson, Chair of the UTC Institutional Review Board at (423) 425-5568.  This research protocol has been approved by the UTC Institutional Review Board. Additional contact information is available at www.utc.edu/irb.

Agreement:

If you wish to participate in this study, please sign the form below. A signature will indicate agreement to participate.

Participant's Name: (Print) _____

Signature _____ (Date) _____

Video/Audio recording of study activities (if applicable)

Interviews may be recorded using video devices (or audio recording) to assist with the accuracy of your responses. These recordings will be kept by the researcher in a cloud environment only accessible to the researcher. Only the researcher will have access to these recordings. They will be destroyed by December 31, 2021. You have the right to refuse the recording. Please select one of the following options:

I consent to video (or audio) recording: Yes _____ No_____

APPENDIX C

QUALITATIVE RESEARCH QUESTIONS

Tennessee's Performance Funding Model: A Mixed Methods Study Designed to Predict Future Success

Qualitative Interview Questions

Tyler S. Forrest

January 24, 2021

1) How do you believe Tennessee's outcomes-based funding formula has positively or negatively impacted Tennessee's public higher education system? Why?

2) How do you believe Tennessee's outcomes-based funding formula has positively or negatively impacted the institution you serve? Why?

3) What are some of the programs, interventions, or approaches your institution has used in order to respond to Tennessee's outcomes-based funding formula since it was materially changed in 2010?

4) What has been the biggest challenge in responding to Tennessee's outcomes-based funding formula since it was materially changed in 2010?

5) What is one thing you would change about Tennessee's outcomes-based funding formula if you had an opportunity?

6) Tennessee's outcomes-based funding formula has two focus populations, adult and low-income students. Are these two focus populations appropriate or if they should be changed, what should they be changed to?

VITA

Tyler S. Forrest is a native and current resident of Athens, Tennessee. He is a graduate of McMinn County High School and the University of Tennessee at Chattanooga (UTC). He completed a Bachelor of Science in Finance degree in 2010 and a Master of Business Administration degree in 2012. His entire professional career has been spent in higher education. He has held several administrative positions at varying levels of responsibility over the past 11 years. He currently serves as the Vice Chancellor for Finance and Administration and Chief Business Officer at UTC. In this role, he is responsible for leading the financial, operational, and administrative enterprises of the institution, including the Budget and Finance, Business Services, Human Resources, Facilities Planning and Management, and Emergency Services units.

Tyler and his family are active members of Eastanallee Baptist Church, where he currently chairs the Finance Committee. As a proud East Tennessean, he prides himself in being engaged in both the Athens and Chattanooga communities. He currently serves as Board Chair for the Partnership for Family and Children Services, Board Member for Orange Grove Center, Board Member for Bessie Smith Cultural Center, Board Chair of the McMinn County Library Board, Member of the Athens City Council Advisory Committee, and Member of The University of Tennessee Alumni Legislative Council.