An Investigation of the Excess Credit Hour Surcharge Policy and Its Impact on First-Time-In-College Students at a Large Metropolitan University in the State of Florida

Lynn Grabenhorst
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AN INVESTIGATION OF THE EXCESS CREDIT HOUR SURCHARGE POLICY AND ITS IMPACT ON FIRST-TIME-IN-COLLEGE STUDENTS AT A LARGE METROPOLITAN UNIVERSITY IN THE STATE OF FLORIDA

by

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Education in the Department of Educational Leadership & Higher Education in the College of Community Innovation and Education at the University of Central Florida
Orlando, Florida

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Major Professor: Thomas Cox
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ABSTRACT

An Excess Credit Hour policy “assesses a tuition surcharge for any credits taken beyond a predetermined threshold” (Smith, 2017, para. 1). In 2009, the State of Florida implemented legislation on excess credit hours at four-year public institutions, Fla. Stat. § 1009.286 (State of Florida, 2012). Legislation found under title forty-eight (XLVIII) of the K-20 Education Code, Fla. Stat. § 1009.286, relating to “Educational Scholarships, Fees, and Financial Assistance,” discussed the “intent of the Legislature to encourage each undergraduate student who enrolls in a state university to complete the student’s respective baccalaureate degree program in the most efficient way possible…” (State of Florida, 2018, para. 1). Throughout the duration of the policy, various entities were deficient in monitoring or delivering an assessment of this legislation to determine its effectiveness. Minimal legislative follow up and a small number of empirical studies have tried to confirm the proficiency of this policy in the State of Florida (Carvajal, 2021; State of Florida, 2018). A lack of empirical research exists regarding the relationship between first time-in-college students (FTIC) in the mechanical and aerospace engineering disciplines at a Large Metropolitan University (LMU) and the Excess Credit Hour Surcharge policy’s effect on student demographics and baccalaureate degree completion. This quantitative study will use pre-existing data to analyze the complex relationship between variables in collaboration with descriptive statistics. The data collection methods will report specific data points and demographics of students in mechanical and aerospace engineering at LMU. Findings from this study will provide further insight into the implementation of this policy and impart confirmation regarding its objective of increasing graduation rates while attempting to minimize credit hour utilization among students at State of Florida universities.
For my Dad and Whiskers,

because my Mom asked me too.
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To my dissertation chairs, both past and present, thank you for your steady support, encouragement when I felt lost, and insight regarding the challenges of the dissertation process. Dr. King, as my original dissertation chair, you were a guiding light to a new doctoral student, and I am sad that we were not able to make it to the finish line together. However, I know that outcome was not by choice or chance. Please know you were always and continued to be part of my journey, and I was placed on a path to success because of you. Dr. Cox, I sincerely appreciate your selfless dedication to all the students in the Higher Education and Policy Studies (HEPS) program, myself included. I/we would not have made it to completion without your leadership, direction, mentorship, and commitment to us and the program, thank you.

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To the Mechanical and Aerospace Engineering department at UCF, the faculty, the staff, and especially the MAE Advising Office, both past and present – Amanda, Bonnie, Gabriela, Kamryn, Morgan, and Tom - thank you for your quiet support and never-ending flexibility, I could not have finished my dissertation without you. To Dr. Cho, Dr. Peles, and Dr. Georgiopoulos, there are no words for how understanding and supportive each of you were on this academic endeavor. MAE and CECS have my loyalty and admiration because of your encouragement and exceptional leadership.
To my mom, Nancy/Dink, who is ingrained in everything I am and do, thank you for your unwavering support and the endless supply of prosecco, during this long and arduous process. You showed me what it means to never give up, I love you always. To my brothers, Marc and Brian, and my sisters-in-law, Pam and Wendy, thank you for your cheerleading and constant faith I would finish, especially when I was not as confident. To my nieces and nephews, Bailey, Taylor, Cade, Ardinn, Harper, Cara, and Hudson, you all inspire me every day to do better, give more, love harder, and be kind – never stop believing in yourselves and the difference you make, every day. To my dad, Jim – I think you would have been proud. I only wish you were here to see those steps across the commencement stage. I love you and miss you, every day.

To my extended families, the Grabenhorst’s, the Lauer’s, and the Lysaught’s, thank you for your understanding and love, especially, when the words “I am writing, researching, or reading” came out of my mouth, and accepting that for the last few years this academic pursuit took priority. Thank you for always asking questions, even the ones I did not want to answer, like “when are you graduating?”, and being interested in my academic goals (even when you had no idea what I was talking about), you all kept me going, every day. I would have given up long before now if it was not for you, I love each of you, so very much.

To my friends both near and far – thank you for always being an inspiration and some of the kindest, most genuine people I know. You know who you are. Thank you for the wine, the tacos, your friendship, the laughs, the text messages, the emails, for planning hangouts 6 weeks in advance because of school obligations, and ultimately, for the constant love and support.

For my colleagues and colleagues that I am lucky enough to call friends in higher education, thank you for always providing steadfast advice and feedback, for listening, and
always letting me talk through my latest concern or problem. Knowing you all have paved the road ahead, always made it seem like it was possible to complete the seemingly impossible dissertation process. It felt good knowing there was someone who had been there before, telling me I could succeed.

Finally, to my husband Matt, there are simply no words for how supportive, understanding, and patient you have been during my dissertation journey. From the constant stops, starts, and seemingly impossible obstacles, you have been my constant, my person. You listened to my struggles, celebrated the victories, and provided your help, love, and encouragement in every way imaginable. I could not have made it to the finish line without you, thank you for helping me to make this last checklist item happen, I am forever grateful to have you by my side and in my corner – I Love You.

For anyone who has made it to the end of these acknowledgments, this is by far the hardest thing I have ever tried to do academically. Honestly, if asked, I would probably never attempt this feat again knowing what I know now, as I was fairly certain this process would break my resolve to earn this degree. To reiterate the words of every doctoral candidate to walk before me, “the only good dissertation, is a done dissertation.”
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LIST OF ACRONYMS OR ABBREVIATIONS

ANOVA: Analysis of Variance
AP: Advanced Placement
CPA: Critical Policy Analysis
CPI: Consumer Price Index
DE: Dual Enrollment
ECH: Excess Credit Hours
FLBOG: Florida Board of Governors
FSU: Florida State University
FTIC: First Time-in-College
GPA: Grade Point Average
IB: International Baccalaureate Program
LMU: Large Metropolitan University
NCAA: National Colligate Athletic Association
NSOE: New Sociology of Education
SPSS: Statistical Package for the Social Sciences
STEM: Science, Technology, Engineering, and Mathematics
SUS: State University System
UCF: University of Central Florida
UF: University of Florida
UNC: University of North Carolina
USF: University of South Florida
CHAPTER ONE: INTRODUCTION

From December 2007 to January 2009, the United States of America experienced an economic downturn that left many families, businesses, and financial markets struggling to maintain stability. Known as the Great Recession, this financial freefall occurred because of inflationary prices in the housing market, excessive loan and mortgage underwriting, and a potential overextension of the average American citizen’s finances (The Economic Policy Institute [EPI]; Rich, 2013). When the market faltered, domestically, global markets suffered up to an eight trillion-dollar loss with concerning results for all aspects of the economy (EPI, 2012; Rich, 2013). As Williams (2019) noted, “The…recession in 2007 had a severe impact on the higher education economy; operating budgets, state investment and spending, and long-term strategic plans all come into questions when the economy writ-large experiences instability” (para. 1). In recent years, the markets have finally begun to recover from the Great Recession, and certain aspects of the economy’s vitality are returning. However, these improvements were not happening as quickly as economists preferred, which meant the review and scrutiny of decisions about funding in all areas of the federal and state budgets, and higher education funding is often an easy target for fund reduction (Depillis, 2017).

In addition to the challenging economic outlook, public higher education presents an effective relationship between costs and outcomes, as part of an overall model of accountability (Cohen & Kisker, 2010). In the state of Florida, performance-based factors such as degree completion, graduation rates, and average time to degree contribute to accountability measures for the institution. These accountability measures related to the economic and community benefits of higher education cost to students, stakeholders, and the expenditures of the state.
government and legislature (Gillmore & Hoffman, 1997; Hillman et al., 2014; Rubin & Hagood, 2018; Schudde & Bernell, 2019).

Students and families have also seen a drastic increase in the cost to attend a college or university (Fricke, 2018; Kramer et al., 2018; Ross 2019). These cost increases are associated, in part, with budget cuts in federal and state funding for higher education (Hillman et al., 2018; Office of Program Policy Analysis and Government Accountability [OPPAGA], 2004). Oftentimes higher education officials and administrators must pass on the deficit in state funding to students and families by increasing tuition and fees, which is a standard approach to resolving funding gaps within postsecondary institutions (Martin, 2020; Mitchell et al., 2019). As a result, state officials, and other community shareholders often advocate for legislative efforts to hold public post-secondary institutions accountable for the costs and benefits of a college education (Carvajal, 2021).

However, it is important to note that institutions alone cannot simply increase tuition rates. The Board of Governors (BOG), which oversees the State University System (SUS) typically chooses to discuss the possibility of increasing or decreasing college tuition rates at state institutions as an official item on their meeting agenda (Martin, 2020; Stephens 2020; Zhang, 2020). After that discussion has taken place, the BOG will make a recommendation to state lawmakers on the per credit hour cost and associated fees for State of Florida higher education institutions (Martin, 2020; Stephens, 2020; Zhang, 2020). From there, the State of Florida Legislature presents a proposal or legislation to increase or decrease tuition rates at state institutions concurrent with BOG recommendations regarding tuition increases or decreases, the State of Florida legislature votes then on increasing or decreasing the tuition rate for the upcoming academic year (Martin, 2020; Stephens, 2020; Zhang, 2020). The annual Florida
State officials also want students to be responsible for academic progress and efficiency when earning a baccalaureate degree, especially as it relates to earning a degree with the minimum number of hours and not exceeding or taking excess hours to earn a degree (Grove & Southern Regional Education Board, 2007). Excess hours are defined as credit hours that a student increases beyond what must complete a bachelor’s degree (Carvajal, 2021; Gillmore & Hoffman, 1997). In 2009, the Florida state legislature initiated an Excess Credit Hours policy with the adoption of section 1009.286 of the Florida Statutes, henceforth Fla. Stat. § 1009.286. This legislation holds students accountable for a tuition rate surcharge for accumulated excess credit hours (Carvajal, 2021; State of Florida, 2012). A gap exists in the available and relevant literature on the relationship between excess hours policies and first time-in-college (FTIC) students, as it relates to student demographics and degree completion. An exploratory quantitative analysis contrasting FTIC students, degree completion, and various student demographic data (i.e., gender, ethnicity and race, GPA, and student status) could provide additional insight and scholarship in the realm of higher education and the associated practice of policy creation and analysis.

**General Policy Information and Background**

While the benefits of a college education are well documented, state policymakers and legislators also focus on the price associated with earning a baccalaureate degree (Schudde & Bernell, 2019). Tuition and fee disbursements, potential lost earnings, and the cost to state taxpayers are all a plausible subsequent outcome when students take longer than anticipated to
earn a degree (Belfield et al., 2014; Carvajal, 2021; Lobo & Burke-Smalley, 2018; OPPAGA, 2004; Zeidenberg, 2015). One measure that state legislatures have implemented to encourage students to graduate on time with the minimum number of credit hours required is an excess credit hour surcharge, for any credit hours beyond the stated excess credit hours threshold to earn a baccalaureate degree (Kramer et al., 2018). North Carolina adopted this policy approach in 1993, and since then, other states have enacted similar legislation, including Arizona, Florida, Massachusetts, Montana, Nevada, Texas, Utah, Virginia, and Wisconsin (Carvajal, 2021; Smith, 2017).

As concerns surrounding the economic outlook and rising costs of higher education grew, the Florida State Legislature elected to encourage students at postsecondary institutions to complete their course of study more efficiently (Russon, 2016). In 2009, the legislative body proposed Title XLVIII, Chapter 1009, Fla. Stat. § 1009.286, “Educational Scholarships, Fees, and Financial Assistance,” which placed a percentage limitation on the number of credit hours students can take at the published or advertised tuition rate. As students exceed the number of credit hours allotted during their course of study, the cost per credit hour of tuition increases (State of Florida, 2012). This legislation is known in the State of Florida as the Excess Credit Hour Surcharge policy and similar policies throughout higher education are known as Excess Credit Hours (ECH) policies. Policymakers designed this excess credit hours legislation as a multi-purpose solution to save funds in higher education, provide increased institutional and student accountability, and improve graduation rates (Burke, 2003; Jacobson, 2014). The Florida Board of Governors (FLBOG) operationalized this policy in 2009 under the amendment of regulation of Fla. BOG 7.003 (“Fees, Fines, and Penalties,” 2019).
Policymakers and legislators have often advocated that an excess hour surcharge policy is an incentive for increased responsibility and accountability among students, especially as it relates to graduation rates and average time to degree completion (Carvajal, 2021; Cornelius & Cavanaugh, 2016). However, not all members of the higher education community agree that excess hour’s laws should be categorized as an incentive, especially when there is a potential for increased costs to students or a general financial penalty (Carvajal, 2021; Kramer et al., 2018; Ross, 2019). Additionally, the effectiveness of this policy implementation has not been consistently studied or monitored, as there are only two legislative reports regarding the possible relationship between the implementation of an excess hour’s surcharge policy and graduation rates (N.C. Fiscal Research Div., 2012; State of Utah Office of the Legislative Auditor General, 2011). In 2011, an audit of the performance of the excess hours’ law in Utah determined that the state did not apply the law to students consistently, making the monetary collection of surcharge revenue insignificant. The same report also discussed that the policy was not effective in encouraging students to graduate on time or in minimizing the number of credit hours required to complete a degree program (State of Utah Office of the Legislative Auditor General, 2011). In a similar report, crafted for the North Carolina legislature in 2012, the results indicated that the time to graduation remained the same among graduates, although there was a slight decline in the number of credit hours attempted (N.C. Fiscal Research Div., 2012; Ross, 2019). Excess-hours policies may allow legislators to believe that enacting these measures or types of policies will hold students and institutions more accountable for academic success. However, the subsequent lack of monitoring makes the certainty of policy success and efficiency a grey area.

While striving to improve graduation rates and degree completion, these excess hour policies also provide an added revenue stream for the state and higher education funding and
may have contributed the legislative desire to implement such a policy (Kramer et al., 2018; OPPAGA, 2004). At the outset of the policy in Florida, the FLBOG estimated an increase in revenue due to the excess credit hours policy; an additional $7.6 million 2009-2010 fiscal year and $7.7 million in the 2010-2011 fiscal year (Florida Senate, 2009). Legislators assumed that students would rather pay the added tuition costs associated with excess hours than “stop out” (Florida Senate, 2009). Five years after four-year public institutions in Florida implemented this policy, initial data became available on the students affected by the Excess Credit Hours policy. In 2014, 1,760 students paid an estimated $851,120 in excess credit hours tuition costs at major institutions across the state, such as Florida State University (FSU), University of Florida (UF), and University of South Florida (USF) (Russon, 2016). As of 2017, the numbers increased to over 3,770 students who paid an estimated $2.35 million in excess credit hours to State of Florida institutions (Russon, 2016). The SUS has consistently mentioned the excess credit hours earned by undergraduate students in their annual accountability reports (Carvajal, 2021; FLBOG, n.d.; State University System of Florida [SUS], 1998). In the state of Florida, the emphasis on and importance of the excess hours’ policy increased in 2016 when the FLBOG added a metric to the Performance Funding Model to incentivize efficiency among the public universities (2016).

**State of Florida: Policy Revisions**

In the state of Florida, the Legislature has revised the Excess Credit Hour Surcharge policy three times since its enactment in 2009. The revisions occurred in 2011, 2012, and 2019. The revisions altered the threshold percentage a student needed to exceed to receive a charge for excess credit hours. At the start of the policy in 2009, for example, the percentage was 120% of
total program credit hours. Therefore, if a degree program was 120 credit hours, the student was
given 20% above the total number of hours (i.e., 144 credit hours) needed to complete their
degree before the excess hours’ surcharge was assessed, the surcharge amount was a 50% increase in the cost of tuition per credit hour. In 2011 and 2012 assessments, these credit hour percentages decreased to 115% and 110% (138 credit hours and 132 total credit hours), respectively, as the threshold to complete a degree program before the excess credit hour surcharge. In this same academic year (i.e., 2012), the tuition surcharge cost increased to 100%, doubling the tuition cost for students who exceeded their distributed hours. See Table 1 below for more information on the excess hours’ policy, revision, and associated credit hours.

Table 1

<table>
<thead>
<tr>
<th>Excess Hours Cohort</th>
<th>Threshold Percentage</th>
<th>a)Credit Hours Threshold</th>
<th>b)Credit Hours Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2011</td>
<td>120%</td>
<td>153.6 Credit Hours</td>
<td>144 Credit Hours</td>
</tr>
<tr>
<td>2011-2012</td>
<td>115%</td>
<td>147.2 Credit Hours</td>
<td>138 Credit Hours</td>
</tr>
<tr>
<td>2012-2019</td>
<td>110%</td>
<td>140.8 Credit Hours</td>
<td>132 Credit Hours</td>
</tr>
<tr>
<td>2019 &amp; After</td>
<td>120%</td>
<td>153.6 Credit Hours</td>
<td>144 Credit Hours</td>
</tr>
</tbody>
</table>

a Based on a 128 Credit Hour STEM Degree Program
b Based on a 120 Credit Hours Degree Program

In July of 2018, the Florida Senate approved new legislation, SB 844, changing the
original Excess Credit Hour Surcharge policy to note a few exceptions to the original policy
language (State of Florida, 2018). The first revision allowed FTIC students (i.e., first-time
attendees or freshmen) who completed their baccalaureate degree in four years, an exemption to
any excess hours incurred, up to 12 credit hours (State of Florida Legislature, 2018). The second
alteration allowed students in areas of strategic emphasis (i.e., sciences, technology, engineering,
and mathematics), as determined by the Board of Governors, to take up to 120% of their
baccalaureate credits before being assessed excess credit hours charges (State of Florida Legislature, 2018). These two aforementioned policy alterations went into effect in the 2019-2020 academic year. Finally, in the summer of 2019 and beyond, the percentage threshold reverted to 120% (i.e., 144 credit hours), and students would owe a 100% tuition surcharge or double the amount of tuition for all hours beyond the threshold (Florida Legislature, 2020). See Tables 2 and 3 for a concise summary of the excess hour’s tuition surcharge and the credit hours threshold.

Table 2

*Excess Credit Hour Tuition Surcharge Percentage and Threshold, Florida*

<table>
<thead>
<tr>
<th>Tuition Surcharge</th>
<th>Credit Hours Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>X 2009-2010 and 2010-2011 cohorts – 120%</td>
</tr>
<tr>
<td></td>
<td>X 2011-2012 cohort – 115%</td>
</tr>
<tr>
<td></td>
<td>X 2012-2019 cohorts – 110%</td>
</tr>
<tr>
<td></td>
<td>X 2019 (summer) and after cohorts – 120%</td>
</tr>
</tbody>
</table>

Table 3

*Excess Credit Hour Surcharge Percentage and Credit Hour Threshold, Florida*

<table>
<thead>
<tr>
<th>Excess Hours Cohort</th>
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<th>(^a)Credit Hours Threshold</th>
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<td>120%</td>
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<td>144 Credit Hours</td>
</tr>
</tbody>
</table>

\(^a\) Based on a 128 Credit Hour STEM Degree Program  
\(^b\) Based on a 120 Credit Hours Degree Program

In the last policy variation, that took effect in the 2019-2020 academic year, the policy returned to a similar iteration from its 2009 implementation, and students were afforded
increased leeway on credit hours and degree completion. In all variants of this policy, the effect of the policy on students and their percentage thresholds varies based on the year they entered college or when they took their first college course. The latent impacts on varying student demographics from this policy and its historical changes are still an unknown factor. The lack of documented information about the metrics and clear goals of the Excess Credit Hour Surcharge policy makes it difficult to determine if the State of Florida legislature accomplished its goal.

**Statement of the Problem**

Student accountability and fiscal responsibility have become two powerful motivators driving administrators and policymakers in postsecondary education (Grove & Southern Region Education Board, 2007; Kinne et al., 2013, Kramer et al., 2018). In more recent years, a shift has occurred to place more responsibility on the role of students during their journey to complete their degree, rather than on the institution or the various governmental agencies (Grove & Southern Regional Education Board, 2007). In 2009, the State of Florida passed legislation, section 1009.286 of the Florida Statutes, increasing tuition prices for students that accrued an excessive amount of credit hours, during their tenure at a State of Florida University (i.e., 4-year public institution) as determined by state guidelines.

The Excess Credit Hour Surcharge policy threshold encompasses a percentage of credit hours beyond what students have been allocated to complete their undergraduate degree program. For most degrees in the State of Florida, the minimum number of hours to complete a baccalaureate is 120 credit hours. For a few science and engineering programs, the minimum number of credit hours to earn a bachelor’s degree varies between 128 and 132 credit hours, based on the program. The calculations for the specific excess hours’ threshold vary by student
based on the year an individual student began taking classes at a higher education institution (State of Florida, 2012). See Table 4 for more information on the excess credit hours percentage and credit hour threshold.

Table 4

<table>
<thead>
<tr>
<th>Excess Hours Cohort</th>
<th>Threshold Percentage</th>
<th>aCredit Hours Threshold</th>
<th>bCredit Hours Threshold</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
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</table>

a Based on a 128 Credit Hour STEM Degree Program
b Based on a 120 Credit Hours Degree Program

Implemented in 2009, this policy may have varying effects on different student demographics or student groups. The primary purpose of the Excess Credit Hour Surcharge policy is to increase degree completion efficiency while simultaneously reducing the number of credit hours students attempt. However, little research exists to prove this policy has met or continues to meet its goals. This surcharge policy may provide fiscal accountability and an increased revenue stream for institutions, but concern also exists related to the repercussions of this policy for students because of the lack of research on the legislation’s efficacy. The state will have to consider several factors to provide a comprehensive examination of the overarching effects of the Excess Credit Hour Surcharge policy.

The first consideration is a thorough review of the application of the excess credit hour policy and quantitative data analysis regarding FTIC students in mechanical and aerospace engineering. Additional variables to consider are the various demographic characteristics and student groups affected by this policy as part of the policy analysis and review. The problem
under investigation in this study aimed to determine if a relationship exists between FTIC students with varying demographic characteristics such as (a) gender, (b) race and ethnicity, and (c) GPA in the mechanical or aerospace engineering disciplines at a Large Metropolitan University (LMU). Additionally, this study aimed to confirm if a relationship exists between policy and degree completion among FTIC students in the mechanical and aerospace engineering discipline at LMU, and to determine if this excess credit hours policy has met its objective to reduce the time to degree completion, per the reasoning for the inception of this policy in the State of Florida.

Overview of the Theoretical Framework

This study used the critical policy analysis (CPA) approach as a framework to understand the impact of the excess hours’ surcharge policy at LMU. The CPA method investigates the “winners” and “losers” associated with policy implementation and drives to understand “the broader effect a given policy has on relationships of inequity and privilege” (Diem et al., 2014; Worsham et al., 2021, p. 4). In an article entitled, The Intellectual Landscape of Critical Policy Analysis, Diem et al. (2014) indicated, “critical policy analysis refers to a form of education policy studies where the focus is upon exposing inconsistencies between what policy says and what policy does, particularly in terms of power relationships in society” (Diem et al., 2014; Cahill, 2015, p.303; Whorsham et al., 2021). Diem et al. (2014) emphasized that it is of note that as “power and control in education” have merged and become increasingly limited in scope and supply, educational scholars became dissatisfied with the traditional frameworks available in the realm of policy analysis (p. 1069). Diem et al. (2014) further posited that the changes in critical
educational policy analysis are a result of ever-evolving circumstances in education and indicate a paradigm shift within the field itself.

CPA emphasizes five major concerns, (a) the difference between policy language or policy symbolism and policy in practice, (b) the policy, the reasoning for the creation of the policy, including what problem it was intended to resolve, and the development of the policy over time, (c) how power, resources and knowledge are distributed, (d) how social stratification looks at the over-arching outcome the policy may have on relationships of “inequality” and “privilege”, and (e) examination of members of non-dominant groups who resist the structural processes of being dominated or oppressed (Diem et al., 2014, p. 1072). Critical policy scholars also tend to emphasize two main features of the approach which are (a) the complicated systems and surrounding in which the policy is created and implemented and (b) and that the CPA lends itself to qualitative research, but it is not limited to this realm of research (Diem et al., 2014, p. 1073).

CPA provides the ability to investigate the policy process and how and why the policy was initiated, and part of the investigation process includes “examining the players involved in the process” and the paradigm constraints of the policy (Diem et al., 2014, p 1075). Educational scholars stress that CPA is also a valuable tool to explore the “silences” by examining, “what the policy says and doesn’t say, looking at how problems and solutions are defined and not defined, what voices are included and not included, and looking for voices on the margin” (Diem et al., 2014, p. 1077). One advantage of using CPA is that this allows for the examination of voices excluded from other methods of analysis. CPA allows for a new framework to review educational policy, CPA provides a more thorough approach and exploratory examination of education policy studies at a significant precipice a there is a “tightening of control on students,
educators, administrators, and the schooling process in general through national-level, educational policies” (Delisle, 2019; Diem et al., 2014, p. 1069).

**Significance of the Study**

As the cost of post-secondary education continues to increase each year, the completion of baccalaureate degrees and the price of associated educational expenses have a significant impact on the state, the taxpayers of that state, students, and families (Grove & Southern Region Education Board, 2007; Kinne et al., 2013). Students who do not graduate on time, or who graduate with more credit hours than necessary, place an additional burden on taxpayers and the state, as higher education is largely funded by the state and taxpayers’ dollars (Grove & Southern Region Education Board, 2007; Kinne et al., 2013). The Florida legislature acted and encouraged students to be more responsible during the completion of their bachelor’s degree, and to support this action, enacting excess hours laws in the state of Florida and elsewhere in the nation (Carvajal, 2021; Florida Legislature, 2020). These surcharges and additional tuition charges pass added costs onto the student with minimal research to determine whether this legislative policy has increased the rate of graduation (Carvajal, 2021).

The significance of this quantitative longitudinal research study is a foundational exploration of the Excess Credit Hour Surcharge policy, and the determination if a relationship exists between the implementation of this policy and increased or improved graduation statistics. Additionally, this research also aimed to examine if this relationship between the excess hours’ policy and graduation statistics had a specific impact on student demographic groups within the mechanical and aerospace discipline at LMU. It addressed whether this policy affected the student group’s time to completion of their bachelors’ degree program and if the group
experienced an increase in degree efficiency or could complete their degree in a more time-efficient manner. The investigational nature of this study is important to determine if unintended ECH policy outcomes make degree completion more difficult or costly for students across various demographic categories.

This quantitative study aimed to review the impact of the excess credit hour policy on student demographics, such as (a) gender, (b) ethnicity and race, and (c) GPA for students in the mechanical and aerospace engineering discipline at LMU. By examining the effect that this policy has had on students who have surpassed the excess hours’ threshold and a control group of those who have not exceeded the credit hour threshold, a review of the quantitative data will reveal any potential pattern, trend, or statistical significance and the corresponding relationship as it relates to the excess credit hour policy. An additional review of the data inspected whether the time to degree completion and degree efficiency components had increased or decreased for various demographic groups.

The results of this study will help inform the public and policymakers of the impact of this legislation, and to learn if the legislature met the intended objectives of the policy. The study outcomes will also benefit academic administrators and higher education institutions by highlighting any affected students. Knowing more about how this policy affects these students will facilitate the creation of a best practice to encourage degree completion, as it relates to the Excess Credit Hour Surcharge policy. The results of this study will either confirm to legislators and policymakers if the excess hours’ policy is effectively increasing the number of timely graduates in a baccalaureate program. Conversely, the results of the study may determine that this policy had some unintended consequences for major stakeholders in post-secondary institutions, by indicating that an ECH policy was ineffective for students as they work to
complete their degree programs. If the excess hours policy is determined to be ineffective, a new policy approach may be required to increase graduation rates and further exploration may be needed in the State of Florida to help improve the cost-effective strategy of graduating students in a timelier manner.

**Purpose Statement**

The purpose of this study is to confirm how the excess hours’ surcharge legislation, implemented in 2009 throughout the SUS affects students (State of Florida, 2012). More specifically, a confirmation of how this policy affects the number of students that are completing their bachelor’s degrees in an efficient manner, where efficiency is based on an average time to degree metric. This study sought to determine how the policy has affected student demographic groups in the mechanical and aerospace engineering discipline at LMU.

Higher education uses terminology such as graduation rates, time-to-degree, and degree completion when referring to students earning their degrees. While these terms are not used often interchangeably, higher learning institutions can use these terms in the following ways:

1. Most of this research study will use the term “degree completion,” as this phrasing mirrors the language used by the State of Florida Legislator when referring to the Excess Credit Hour Surcharge policy. Degree completion will refer to the completion of a baccalaureate degree program (State of Florida, 2021; University of Arkansas, 2022).

2. Time-to-degree metrics refer to the time elapsed and are the total time in calendar years, between first enrollment in a postsecondary institution and successive degree attainment. This research examined this data point to see if a historical trend existed in terms of time-to-degree increasing or decreasing based on the analysis of the pre-policy and post-policy
data. This data point will be known as “Calendar_AcadYears_To_Degree” for the purposes of this study (Institutional Knowledge Management, 2022; National Student Clearing House, 2022).

3. Graduation rates are a mathematically determined percentage of students who graduate or complete their program within a quantified timeframe. Most post-secondary institutions tend to count four-and-six-year graduation rates, as the specific period analyzed (Integrated Postsecondary Education Data System, 2016).

For consistent language this research study will use the language provided by the Florida Legislator to refer to “degree completion”, as the other terms also refer to graduation or earning a baccalaureate degree, they may be used to refer to certain data points, measurements, or results, as needed.

This longitudinal study aimed to determine the varied relationships that may exist between a group of students affected by the excess credit hour policy and whether this policy increased or decreased the time to degree or degree efficiency among these students. This study aimed also to determine if the implementation of the excess hours’ policy was effective in meeting its initial and intended objective of increasing the number of students graduating with a bachelor’s degree. Understanding the association between the excess hours’ policy and degree efficiency will provide higher education administrators, college leaders, and legislators with additional knowledge to improve upon general efficiency associated with the degree completion process, as well as performance-based metrics in relation to funding models, as outlined by the State of Florida.
Research Questions

The Excess Credit Hour Surcharge policy was designed to encourage students to become more efficient with their academic choices, increase the number of graduating students who enter the workforce and reduce the growing costs associated with higher education by incentivizing students to reduce the number of credit hours taken during their academic career. Hypothetically, the excess hours’ surcharge policy may affect students from various demographic groups, either positively or negatively. A thorough review of the existing literature, an investigation of the background materials, a collection of institution-specific data, and a statistical analysis of this data should provide further insight into the effect this policy has had on students from differing demographic backgrounds, as it relates to degree completion. This study is specifically choosing to analyze FTIC students to avoid skewed data with the addition of transfer students who often will bring additional or excess credit hours to their new institution (Nguyen, 2017). This study will utilize a quantitative research method and will include a review of student demographics, such as: (a) gender, (b) ethnicity and race, (c) GPA, and (d) and average time to degree or degree completion data among FTIC students. A review of these categories of data will reveal whether there are any trends among the categories selected for study and if any of the data is statistically significant. This study will address the following questions:

1. What is the relationship, if any, between the Excess Credit Hour Surcharge policy and FTIC student data, in the mechanical or aerospace engineering discipline at Large Metropolitan University, as it relates to the demographic variables of, (a) gender, (b) ethnicity and race, or (c) GPA?
2. What relationship, if any, does the Excess Credit Hour Surcharge policy have on degree completion data, among FTIC students in the mechanical and aerospace engineering discipline at Large Metropolitan University?

**Definition of Terms**

As it relates to this study, the following list contains definitions of terms and variables:

1. **Advanced Placement Program (AP):** Gives students the chance to take college-level work while they are still in high school. Students can earn college-level credit by taking the AP Exam (College Board, 2020)

2. **College:** An independent institution of higher learning offering a course of general studies leading to a bachelor's degree (Merriam Webster, 2021).

3. **College credit:** Type of credit assigned to courses as equivalent learning (Statewide Course Numbering System [SCNS], 2020)

4. **Degree Completion:** Refers to the completion of a baccalaureate degree program. Completion is the cumulative number of students graduating (out of a defined cohort group of students) and the terminology can be associated with four-and-six-year graduation rates (University of Arkansas for Medical Sciences, 2022)

5. **Dual Enrollment (DE):** Describes students enrolled in two academic programs or educational institutions at the same time. Often, this refers to high school students who take college classes while they are still enrolled in a secondary school (Florida Department of Education, 2021)

6. **Efficiency:** As defined for this study, it will be based on average time to degree.
7. Excess hours law: For the current study, this term refers to the codification of an accountability measure by which legislators intended to incentivize undergraduate students to complete their baccalaureate degree programs efficiently (e.g., Additional student payment for hours exceeding…, 2009).

8. Excess Credit Hour Surcharge: In this study, the term refers to the additional fee students must pay for each credit hour in excess of the number of credit hours required to complete the baccalaureate degree program (e.g., Additional student payment for hours exceeding…, 2009).

9. Excess credit hour threshold: In this study, the term refers to the number of credits students can earn before an assessment for the excess hours’ surcharge (e.g., Additional student payment for hours exceeding…, 2009).

10. First-Time-in-College (FTIC) Student: A high school senior or a prospective student enrolling in college for the first time (Undergraduate Admissions, 2021).

11. Graduation Rate: Is the percentage of a school's first-time, first-year undergraduate students who complete their program within 150% of the published time for the program (Department of Education, 2022).

12. International Baccalaureate (IB): A program in which students can participate during high school that allows the student to earn college credit (International Baccalaureate Organization, 2021).

13. Specialty Programs: Programs available to students, such as the Honors College, LEAD Scholars Academy, and Study Abroad (University of Central Florida, Undergraduate Catalog, 2021).
14. Average Time to Degree: Time elapsed is the total time in calendar years, between initial enrollment in a postsecondary institution and successive degree attainment (National Student Clearinghouse, 2022).

15. Transfer student: Undergraduate transfer students are defined as having earned twelve (12) or more semester hours of transferable college credit since receiving a standard high school diploma or its equivalent before admission at the post-secondary education institution (Admission of Undergraduate, Degree-Seeking Transfer Students, 2016; Carvajal, 2021).

16. Tuition: Basic fee assessed to students for enrollment in credit courses at any state university (Carvajal, 2021; Tuition and Associated Fees, 2017).

17. University: An institution of higher learning that provides facilities for teaching and research that is authorized to grant academic degrees, either public or private (Merriam-Webster, 2021).

Limitations

A limitation is a part of the study that is out of the control of the researcher or research group, which may lead to a weakness in the results of the study (Simon & Goes, 2013). The following limitations will affect this study:

Discipline or Major Specific Review

Choosing to review only two majors at LMU may skew or cause bias in the data or results, as students in other majors may have varying experiences with this policy that differ
from majors in the mechanical and aerospace engineering programs. Additionally, each of these
specified disciplines requires more credit hours to complete the program (i.e., 128 hours) versus
other programs at LMU (i.e., 120 credit hours). However, the researcher selected these majors
based on the ability to access this data more readily than other majors at LMU, to provide a
purposeful and convenience-based sample.

Generalizability

Given the potentially limited population scope and size, the results of this research may
not be generalizable because of the specific major selection of mechanical and aerospace
engineering disciplines at LMU. This may mean that the researcher cannot generalize the results
of this study across a broader student population. While some of the demographic results or
findings may be transferable to a larger student population at LMU, the results related to degree
completion may not be generalizable to other majors at LMU because of the discrepancy in
credit hours required for completion mentioned in the previous section.

Delimitations

A delimitation is a part of the study narrowed or controlled by defining the scope or depth
of the research or research questions (Simon & Goes, 2013). The following delimitations will
affect this study:
Institutional

One limitation of this study is the use of a single institution for specific academic years that relate to the period before and after the implementation of the Excess Credit Hour Surcharge policy (i.e., 2003-2008 and 2009 and beyond). Currently, all Florida four-year State University institutions adhere to the Excess Credit Hour Surcharge policy. Data accessibility restrictions may constrain the scope of the study, as the study used only data from LMU.

The quantitative nature of this study only reviews the quantitative or “raw” data, and thus what the data shows after statistical analysis is conducted based on how the Excess Credit Hour Surcharge policy impacts students can limit this study. Therefore, the “personal” or student perspective is absent. This qualitative perspective may help to clarify or explain some of the results provided by the quantitative analysis.

Discipline or Major Specific Review

By only choosing to review two majors at the LMU, this may skew or cause bias in the data or results, as other majors may have varying experiences with this policy that differ from majors in the mechanical and aerospace engineering programs.

Type of Student Attendee

By reviewing the data from FTIC students who have graduated, having only one classification of students also limited the scope of the current study. This may cause the results from the data to be incomplete and incomparable across the diverse types of student attendees at LMU, such as transfer students to the institution. This research excluded transfer students
prevent skewing the data or the results based on the number of credit hours completed at their earlier institution.

**Assumptions**

It is assumed that the raw data will be appropriately analyzed, and the correct statistical analysis or test will be run to analyze the data. Each of the students included in the data set will be considered FTIC students and an was active students at LMU. All selected students will have a declared major in mechanical and aerospace engineering and that each student who completed their degree met the degree requirements to complete 128 credit hours for a bachelor’s degree in mechanical or aerospace engineering.

**Chapter One Summary**

As accountability and fiscal responsibility have increased throughout higher education, state entities and agencies have felt a need to manage and reduce the cost of higher education to the state and taxpayers. The excess hours legislation was designed to shift some of the ballooning costs and responsibilities to students and families, with the understanding that this legislative policy was not a penalty but an incentive to encourage students to select a degree program and to complete that program in the most efficient way possible.

This quantitative study aimed to investigate the consequences and benefits between the excess hours policy and a specified set of student demographic variables including (a) gender, (b) ethnicity and race, and an academic factor such as (c) GPA. It aimed to determine how these
variables interact with the degree completion. Two research questions directed this study with a
framework grounded in CPA (Diem et al., 2014).

The current lack of research about this Excess Credit Hour Surcharge policy and these
types of legislative measures is concerning, as the lack of knowledge means that a gap in the
literature and practice exists related to how this policy affects the student as an end-user. This
policy may have encouraged students to select a major, work swiftly to complete their degree
requirements, and graduate. However, it is equally possible that this policy has not increased
effective degree completion and has affected various groups of students with specific
demographic characteristics, and to what effect is an unknown variable. For higher education
administrators, policymakers, and the public- at-large to formulate best practices and methods to
successfully navigate this policy for students, as it relates to efficient degree completion, this
research will provide information about policy outcomes and whether the results on to this policy
are meeting their intended goals.
CHAPTER TWO: LITERATURE REVIEW

At its start, society will consider postsecondary education as a privilege rather than an expectation. As society has undergone decades of modernization, the concept of higher education has shifted to something that is “expected.” As this paradigm shift happened, a sizable part of the financial burden and academic responsibility has also shifted from the government or institution to the student. In 2009, the Florida legislature crafted section 1009.286 of the Florida Statutes, and enacted legislation that made students accountable for a tuition surcharge for any credit hours that exceed the specified threshold to complete a baccalaureate degree (Florida State Legislature, 2020). This legislation attests that “additional student payment for hours exceeding baccalaureate degree program completion requirements at state universities” is more aptly known as the Excess Credit Hour Surcharge (Florida Statutes, 2009). This policy affects students who enrolled at a SUS institution in or after the Fall 2009 term.

Currently, limited research is available about excess hours policies and the intended degree completion goal of these types of policies. Little research is even available concerning to how these policies might affect certain demographic characteristics within student groups. However, this study analyzed various tangential topics to develop a thorough review of the effects of excess credit hour policies on students, student demographic characteristics, and degree completion. The chapter will begin with a general overview of accountability in higher education during the last several decades. The next section will encompass a review of credit-based accountability in higher education. The third section will discuss the effect of the different tuition and fee policies and their impact on degree attainment. The fourth section incorporates literature on graduation rates and current information on the graduation rates among selected...
student demographics. The fifth section will provide an overview and historical background of excess credit hour policies throughout the nation, and the last section will review the specific Excess Credit Hour Surcharge policy that affects Florida institutions.

**Accountability in Higher Education**

Accountability in higher education is not a new topic and minimally dates to 1944 (Delisle, 2019). One of the first significant federal financial aid programs was the Servicemen’s Readjustments Act of 1944 (i.e., G.I. Bill). At the time, Congress worried that institutions would attempt to take advantage of military veterans and their loan funding, especially among institutions with lesser credibility within the higher education community. As a first regulatory measure, Congress declared that state agencies would need to monitor the marketplace for higher education to keep the federal loan funding available to veterans (Delisle, 2019). In 1952, as the original G.I. Bill expanded to veterans of the Korean War, Congress added a secondary protective measure, private accreditation agencies, which ensured that only accredited institutions were eligible for federal funding (Delisle, 2019). As a final measure of oversight, to fend off for-profit institutions in the 1980s and 1990s, colleges and universities lost federal financial aid funding if a larger number of their students did not pay back their student loans (Delisle, 2019). This third metric of accountability forms the “regulatory triad” for institutions in higher education (Delisle, 2019, para. 2). Despite these three ongoing accountability measures, calls for concern about value and quality have only increased over the years.

Huisman and Currie (2004) reviewed accountability policies and their impact on higher education in the United States and Europe, and one of the key factors that influenced the shift in accountability was the “changing relationships between governments and universities” (p. 532).
The authors also highlighted additional shift during the 1960s and 1970s as political factors influenced professional judgment, and political motivations affected quality assurance in the realm of accountability (Huisman & Currie, 2004). However, an ever-increasing accountability motivator was the need for governments to justify the value of higher education based on its cost (Huisman & Currie, 2004). The issue became that more students than ever were choosing to complete a postsecondary degree as part of a “massification” movement. Policymakers monitored closely the government budget, and taxpayers and parents increasingly questioned the value of a college education (Huisman & Currie, 2004). As the idea of “student fees” and various types of student loans was introduced into the discussion on accountability, students were asked to bear more of the financial burden or private costs and, therefore, became increasingly critical of the services they were provided (Huisman & Currie, 2004).

In the mid-2000s, policymakers brought to discussion four-year institutions in higher education and associated costs and expenses, which had increased and were steadily rising (Delisle, 2019). During this debate regarding the growing costs, the issue of low graduation rates coupled with a lack of transparency about costs became part of the conversation among policymakers and legislators (Carey, 2004; Delisle, 2019). With the onset of the great recession in December 2007 lasting through June 2009, both federal and state governments felt the need to provide increased accountability and transparency regarding the level of funding higher education institutions received (EPI, 2012). The structure of accountability in higher education in the United States has changed drastically over time. Postsecondary institutional accountability in the United States shifted from an internally focused system with a goal of continuous improvement and has now moved towards an externally oriented accountability structure (Huisman & Currie, 2004). This major change emerged from multiple factors, (a) the exponential
population growth in higher education and the rapidly rising costs associated with this field advancement, (b) the struggle of national and state budgets to match pace, and (c) the general public’s view that higher education was not providing the appropriate value for the current cost (Huisman & Currie, 2004).

The Great Recession, coupled with the rising costs of attending a college or university, and a questioning worldview about the overall value of a college degree have been driving factors to increase accountability in higher education. While institutions and states can use a variety of factors to increase the level of accountability, excess credit hour policies were one external mechanism that legislators and policymakers had at their disposal. With the advent of this type of policy, accountability in various forms shifted from the federal to the state level, and from the institution to the student, with increasing responsibilities accounted to the individual.

Credit-Based Accountability in Higher Education

Students attend a college or university with the hope to attain credentials or a degree and complete coursework towards their goal(s), which is a critical part of this process. Along with this emphasis on degree completion, colleges and universities must also maintain strenuous metrics to meet assessment objectives. While completion of a singular class or semester of courses may be a goal for active students as they disperse their degree progress into parts or stages, degree completion is oftentimes the goal for colleges and universities. One of the motivating factors for institutions to push students towards degree completion is the resurgence of performance-based funding models. Performance-based funding models place emphasis on incentives for institutions to meet certain specified assessment measures, and one of the more important metrics is often related to degree completion or graduation rates (Miao, 2012;
McLendon & Hearn, 2013; Hillman, et al., 2014). Johnson (2011) stated, “Time is measured two ways in academia—by the calendar and by the credit hour. Both can be costly, whether in the form of tuition, taxpayer subsidies, or the wages students lose with each additional term enrolled” (p. 1).

The lack of data and scholarly literature available on excess credit hour policies indicates that educational scholars must consider course completion and time-to-degree information to provide insight regarding the effect of these policies. The data suggests that students are taking more time complete a degree program (Grove & Southern Regional Education Board, 2007; Kramer et al., 2018). In the past, students were, potentially, only paying or assisting with part of the cost to attend a college or university. Today, more students than ever are paying tuition and associated costs and living expenses. These additional expenses are represented often as “cost of attendance,” (i.e., textbooks, food, and school supplies) which encompasses other costs to attend a college or university, in addition to tuition (Kelchen et al., 2017). Based on the Educational Longitudinal Study, the average time-to-degree completion, at public four-year institutions, has risen over the last few decades, going from 4.34 years in 1972 to 4.56 years in 1992 to 4.83 years in 2004 (Adelman, 2004). To combat the extension of the average time-to-degree completion, institutions across the nation have created policies and advertisements to encourage students to complete their degrees within a four-year timeframe. Examples such as, “Fly in 4' at Temple University (2018), the “Think 30” campaign at the University of Central Florida, “15 to Finish” in Indiana, and the awarding of merit-based aid in California and West Virginia, which provides students an incentive for completing either a certain number of credit hours per term or year or additional funding for meeting certain milestones on time (Kramer et al., 2018; Scott-Clayton, 2011; Smith, 2018; Fly in 4 2018; University of Central Florida, 2018).
In post-secondary education, performance-based funding can incentivize institutions to meet specified metrics by offering increased funding; however, the pace and number of courses a student completes is a data point that has seen an increase in analysis and review (Kinne et al., 2013). This analysis tends to offer two varying positions. The first conducts a general analysis of the importance of completing courses, and the second viewpoint which reviews and considers the consequences of excess hours. The Commission on the Future of Undergraduate Education, in collaboration with the Academy of Arts and Sciences, released a report in 2017 called *The Future of Undergraduate Education, The Future of America*. In a review and analysis of this report, Colleen Flaherty (2017) summed up the document by stating, “the completion of a few college courses is not a sufficient education in the 21st century” (para. 3). The report provides several suggestions for improving educational quality and enhancing the academic future of undergraduates. Course and degree completion are top priorities to ensure the success of this objective. Timely course completion allows four-year institutions to keep students on track toward their degree-seeking objectives.

According to Complete College America, a non-profit organization, students at public institutions in America average 14% more credit hours than they need to graduate, and some students earn up to 50% more credit hours than required for graduation (Kinne et al., 2013). In New York and Georgia, two states that do not currently have excess credit hour policies, students average approximately 10 to 13 excess credit hours per degree, respectively, by state (Kinne et al., 2013). If these numbers extrapolate across the entire state, “in just one-year, excess credits among degree earners cost the public $105 million in Georgia and $151 million in New York” (Kinne et al., 2013, p. 3). The additional classes or credit hours students take to earn a degree have serious repercussions from multiple perspectives, and in New York and Georgia, if this
funding was either recaptured or saved because the cost burden was switched to the student, New York and Georgia would be able to support at least 10,000 more students a year (Kinne et al., 2013).

As mentioned in the previous section, a shift in responsibility from the federal and state government to the institution and the student occurred in the preceding decade, and among the legislative measures available to increase accountability is the use of excess credit hour policies. These policies encourage undergraduate students to complete their baccalaureate degree with the minimum amount of credit hours required to earn their degree, which limits the state funding of these credits (Grove & Southern Regional Education Board, 2007; Kramer et al., 2018). In the state of Florida, state funding underwrites the cost of educating students through revenue and lottery funding (Carvajal, 2021; OPPAGA, 2005). When state revenue declined (College Board, 2019) and the Great Recession took hold of the nation, state legislators throughout the nation supported excess hours law(s) as one solution to mitigate the deficiency in educational funding. The Florida Legislature's OPPAGA administered two reports, which showed that most students complete more credits than necessary to meet degree requirements or to graduate. In 2005, OPPAGA report the State of Florida concluded that on “average student accumulated 21.7 more credit hours than they needed to graduate” based on a review of 28 community college institutions in Florida (Romano et al., 2011, p. 220). In the 2002-2003 and 2004-2005 academic year, those unnecessary credit hours cost the state of Florida $124 million dollars in total (i.e., 62 million each year) (Carvajal, 2021; OPPAGA, 2004, 2006). Additionally, the FLBOG Annual Report indicated that state support for higher education had been on a successive decline since 2005, with academic years 2007-2008 to 2010-2011 being particularly financially challenging.
because of a 24% decrease in state funding (Carvajal, 2021; State University System of Florida, 2009).

Student course completion and excess credit hours that are not required to complete a degree program are two aspects of the degree completion and timely graduation issue, which is a heavily weighted and incentivized metric in higher education and most state funding models. Excess hours policies and degree completion have an associated cost and affect the institution and student differently. The perspectives for the effective nature of each of these topics vary, and government continues to hold accountable American higher education institutions for timely graduation rates and institutional performance and effectiveness. Lastly, the impact of these credit-based accountability and incentivization practices will continue to change and alter the institutional perspective and student experience.

**Rising Cost of Higher Education**

In *the College Cost Crisis*, congressional representatives Boehner and McKeon (2003) asserted, “the ongoing college cost explosion is a disturbing trend and one that cannot be allowed to continue. After all, education is the great equalizer in our nation. It can bridge social, economic, racial, and geographic divides like no other force” (p. 4). In 2011, Archibald and Feldman noted that as decades have gone by the costs associated with attending a college or university have steadily risen, the Consumer Price Index (CPI) rose to 3.1 times the costs for tuition and board during the period from 1960 to 1981, and in 2006 that same CPI index indicated rose to 22 times the cost the same tuition and board at the same institution (p. 6). Boehner and Howard (2003) asserted that “in the 10-year period ending in 2001-2002 the Consumer Price Index increased by 30 percent, while the median family income increased by 40
percent.” (p. 7). The authors emphasized that during “that same time period, federal financial student aid increased by 161 percent” (p. 7). In 1998, The National Commission on the Cost of Higher Education noted that since the early 1980s the cost of college tuition has risen year over year at two to three times the rate of inflation, and between 1981 through 1995 tuition at four-year public institutions had increased 234% (Archibald & Feldman, 2011; Boehner & Howard, 2003; Upcraft, 1999, p. 16). A more complex issue is the competing theories related to the cost of higher education, in that the federal and state legislator will argue that they have continued to provide appropriations on a per-student basis and that the funding they have provided has steadily increased over the years. In that same discussion, a state institution representative contradicted this statement asserting that the data showed that state appropriations had declined in the same period (Archibald & Feldman, 2008a; Archibald & Feldman, 2008b). Numerous factors drive tuition at both public and private institutions and sometimes these influences can differ but result in the same outcome of increasing costs (Archibald & Feldman, 2011). Public universities are beholden to changes in state-supported funding, while private institutions are more affected by the financial market and the resulting impact on their endowment funds (Archibald & Feldman, 2011).

In a report published by Georgetown University in 2021, Carnevale et al. indicated that the cost of college has risen 169% in the preceding years, 1980 through 2019 based on data analysis provided by the United States. Census Bureau of Labor Statistics and the National Center for Education Statistics (p. 12). Additionally, the authors highlighted that “Today, two out of three jobs require postsecondary education and training, while three out of four jobs in the 1970s required a high school diploma or less.” The article reported that while young people are
more in need of higher education than ever before in the past, that same postsecondary education is more expensive than ever before as well (Carnevale et al., 2021, p. 12).

**Tuition and Fee Models**

Public universities tend to use several common types of financial structures to enable efficient degree production. The first strategy is a standard credit hour model which tends to be the most well-known or common type of tuition model, in which students receive tuition charges per credit hour. Most students will choose to take 12 credit hours (or more) to meet full-time status requirements, and this model may seem reasonable in that the student receives an additional charge based on the amount of instruction received. However, students undergo increased strain for each credit hour taken (Holman et al, 2017). Given that higher education institutions weight all credit hours equally, the law of diminishing marginal returns can become a factor in the cost-benefit analysis for the student and the institution (Holman et al., 2017). This model does not encourage students to enroll in additional credit hours, as the cost increases for each credit hour taken, although there may be some short-term savings for the student on overall cost.

The second tuition model is known as block, flat-rate, or unlimited tuition pricing (Holman et al., 2017; Nguyen, 2017). This tuition structure allows students to enroll in more than 12 credit hours for the same rate. A student can choose to simply take 12 hours, also known as full-time, or they can choose to take more hours and the tuition amount will remain the same (Holman et al., 2017; Nguyen, 2017). This block, flat-rate, or unlimited tuition pricing can be an attractive choice to take even one more course, considering the rapidly rising costs to students and families. However, the increased credit hour load can sometimes result in poor academic
performance (Holman et al., 2017). Additionally, poor academic performance can lead to students needing to retake courses for personal or financial aid related reasons. As a strategy, taking more courses often results in students enrolling in an increased credit hour enrollment per term and can cause the time-to-degree completion rates to elongate.

Guaranteed tuition is the third tuition model that some states and institutions use, which allows students to lock in a tuition rate for a set period, typically four years. If a student does not complete their degree program within that period, the institution will adjust their tuition rate to a higher rate that is charged to new students for the academic year (Nguyen, 2017). With this pricing structure, students can circumvent yearly tuition increases and plan their financial obligations for several years, based on the locked-in tuition rate. It is important to note that failure to stay on track and graduate within the established timeframe may result in a higher tuition rate than one of the other tuition structures (Mullin et al., 2015).

The approach to tuition is the excess hours’ surcharge, and the objective of this fee is to discourage students from completing more credit hours than they need to earn a degree. Table 5 summarizes which states have adopted a specific tuition strategy:
Table 5

Different Tuition Incentive Programs by State

<table>
<thead>
<tr>
<th>Tuition Incentive Program</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaranteed Tuition</td>
<td>Illinois and Oklahoma*</td>
</tr>
<tr>
<td>Block / Flat Rate Tuition</td>
<td>Alabama, Connecticut, Delaware, Idaho, Kentucky, Massachusetts, Minnesota, Montana, North Dakota, New Hampshire, New Jersey, New York, Oklahoma*, Pennsylvania, Rhode Island, South Carolina, Vermont, Washington, West Virginia, and Wisconsin</td>
</tr>
<tr>
<td>Excess Hours Surcharge Fee</td>
<td>Arizona, Florida, North Carolina, Montana, Texas, and Utah</td>
</tr>
<tr>
<td>Differential Tuition</td>
<td>Hawaii, Michigan, Nebraska, North Dakota, Ohio, and South Dakota</td>
</tr>
</tbody>
</table>

*Effective Fall 2008, First-Time-in-College full-time students have two options.


An additional tuition model is known as the tuition band model, which is like the guaranteed tuition model, but only locks in pricing for a semester or grouping of credit hours (Holman et al., 2017). At various institutions, students can enroll in a minimum of 12 and up to 15, 18, or 21 credit hours for a set price (the credit hour cap varies by institution). This model encourages students to enroll in 15 credit hours or more (Holman et al., 2017). However, if a student exceeds the cap of credit hours, each additional credit hour beyond 15, 18, or 21 will cost additional tuition dollars.

In 2014, students in public four-year institutions failed to graduate; 42% of the full-time, FTIC graduates within a six-year period (Holman et al., 2017). Finances and financial support play an integral role in student persistence and graduation, especially among economically
disadvantaged students (Tinto, 1999). A few of the tuition models provide students with the perspective that they may receive additional credit hours for “free” (Holman et al., 2017). This perception of discounted or free credit hours does aid in the rise of graduation rates, degree production, and the ability of students to perform at a higher human capital rate (Holman et al., 2017). However, it should be noted that, while various tuition models have advantages, increasing the number of credit hours in which a student enrolls will result in a heavier course load which is not ideal for all students and may affect the quality of work produced (Holman et al., 2017). The unlimited and band tuition models have varying advantages and disadvantages and do help to improve graduation rates and degree production, as students often receive incentives for “free” or discounted tuition rates (Holman et al., 2017). The institution benefits from these models as graduation rates increase, and students quickly enter the workforce and begin contributing to their communities and society (Holman et al., 2017).

Graduation Statistics

Before 1985, national data from postsecondary institutions relating to graduation rates was non-existent. The requirement for information to be gathered on graduation rates came through the National Collegiate Athletic Association (NCAA), which required member institutions to submit data collected on graduation rates to the governing body of the NCAA, so the association could compare academic records and performance of student-athletes with the overall student body at the institution (Cook & Pullaro, 2010). In 1988, United States Senators Bill Bradley and Edward Kennedy proposed bill S.2498, which would later be known as the Student-Athlete Right-to-Know Act. This bill was the first of its kind to mandate higher education institutions that receive Title IV funding to submit an annual report to the Secretary of
Education containing information on graduation rates (Cook & Pullaro, 2010). It is due to the requirements of the NCAA, that graduation statistics and data are reported for all disciplines at post-secondary institutions across the nation.

However, it should be noted that this particular research study targeted findings relating to mechanical and aerospace engineering students under a STEM (i.e., Science, Technology, Engineering, and Mathematics) discipline, and the potential connection between the Excess Credit Hour Surcharge policy and degree completion. Scholars believe that STEM fields are significant motivators for creativity and modernization throughout the economy and global marketplace and, therefore, have a vital role to play in long-term economic development (Winters, 2014). Throughout government and industry, a wide-held belief exists about the shortage of STEM graduates. State and local government(s) believe that their economic future and fortune depend on the ability to produce, recruit, and retain STEM graduates (Winters, 2014). Similarly, according to Nguyen (2017), “the national and workforce shortage in STEM graduates generate concerns for the United States to remain competitive in the global economy” (p. 38) The President’s Council of Advisors on Science and Technology (PCAST) believes that approximately one million college graduates in STEM disciplines will be required for the United States to “retain its historical preeminence in science and technology” (Dagley et al., 2016; Henderson, Beach., Finkelstein, 2011; PCAST, 2012). Unfortunately, national numbers on the retention of STEM majors remain at a level just below 40%, and retaining students is often more challenging for women and students of color (Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce Pipeline, 2011; Dagley et al., 2016; PCAST, 2012). At present, the United States graduates approximately 300,000 students in STEM majors, annually, with students completing their associate’s and bachelor’s degrees (PCAST,
Creating one million more STEM major graduates would be a 34% increase over current production or graduation rates (PCAST, 2012).

Despite the attractive employment potential and future earning opportunities, many students who begin in STEM fields often do not finish or change their major during their academic careers. In a preliminary report compiled by the University of California at Los Angeles (UCLA) Higher Education Research Institute (2010), researchers investigated students who began college in the Fall 2004 semester in a STEM major. The report indicated that student interest in STEM majors had grown, reaching a “Cold War-era” level of interest. However, the report also found that students who plan to major in a STEM discipline graduate at a rate far slower than their non-STEM counterparts, especially if they are African American, Latina or Latino, or Native American (Epstein, 2010). Eagan (as in Higher Education Research Institute at UCLA, 2010) attested, “We’re seeing this increase over the last 15 years in students’ interest in STEM fields, but we’re not seeing a corresponding increase in students’ graduation rates” (Epstein, 2010, para. 3).

In the Fall 2004 semester, just 31% of first-time, full-time first-year students indicated they planned to major in a STEM discipline. In the Fall 2009 term, these numbers rose slightly, and 34% of students planned to pursue a STEM major (Epstein, 2010). Unfortunately, a fair percentage of these students did not complete their STEM major requirements for a variety of reasons. Only 33% of White students and 42% of Asian-American students who began a STEM major completed the degree (Epstein, 2010). For racial minority students, the completion numbers are even lower, with the five-year completion rate for Latino or Latina, African American, and Native American students at 22%, 18.4%, and 18.8%, respectively (Epstein 2010). Additionally, the information provided by STEM Women (2020) also confirmed that only
36% of women were earning their degree in a STEM-related field, and in the 2018-2017 academic year only 22% of women earned a degree in engineering. The other concerning factor is the disproportionate number of students who start college with a non-STEM major and complete a degree within a four or five-year period. For example, 30% of Hispanic students who began in a STEM field completed their degree in four years, and 41.6% graduated in five years, whereas Latino or Latina students in non-STEM disciplines were consequently 56.1% and 67.6% (Epstein, 2010).

In an investigational study published in the American Education Research Associate (AERA) Kramer et al. (2018) determined that students from “marginalized” families or circumstances, such as low-income or first-generation students appear to be “most adversely” impacted by excess credit hour policies (p. 1). Kramer et al. (2018), using data from the Integrated Postsecondary Education Data System (IPEDS), noted that Hispanic/Latino students improved slightly six-year rates by percentages of 2.5% and 3.4% after excess credit hours were adopted (p. 13). However, African American/Black students experienced a signification decrease in six-year graduation rates, between 3.5% and 4.2% after an implementation of an ECH policy (p. 13).

In a 2014 study, Perez et al. determined that the “perceived cost” produced a significant effect on student retention in a STEM-related program. The study suggested that “students who perceived the STEM major as requiring too much effort or as requiring them to forego other valued activities were more likely to intend to leave the major” (Perez et al., 2014, p. 10). Within American higher education scholars typically focus on the impact of tuition and fee increases in terms of degree completion and time-to-degree metrics (Kramer et al., 2018). Hemelt and Marcotte (2011) determined that for every $100 increase in tuition and fees, the institution
experienced a substantial decrease in enrollment (Hemelt & Marcotte, 2011; Kramer et al., 2018). Further, Hemelt and Marcotte (2011) also found that these tuition and fee increases also created a decline in the number of credit hours completed (Hemelt & Marcotte, 2011; Kramer et al., 2018). Concerning excess credit hour policies, academicians also consider STEM coursework as more challenging regarding content and workload. This may often force students to repeat or re-take courses for their STEM discipline, which moves the student closer to the excess hour threshold. This perception of actual costs, perceived costs, and perceived effort play an integral role in a student’s decision to retain and complete a STEM discipline (Nguyen, 2017). A variety of initiatives exists to increase the production and graduation of STEM majors at post-secondary institutions. The goal of this study is to ensure that the excess hours’ policy and associated tuition surcharge do not harm the growth and renewed interest in STEM majors. Policymakers and higher education administrators want to be cautious that excess hours policies do not provide unintended outcomes or consequences to students as they pursue these much-needed fields of study in STEM majors.

**History of Excess Hour Policies**

The first excess credit hours policy was developed in 1992 when the North Carolina General Assembly directed the University of North Carolina (UNC) Board of Governors to formulate and implement a policy to charge students a 25% surcharge for any credit hour that exceeded 140 credit hours for a single, four-year degree program (Kramer et al., 2018; Ross, 2019). The North Carolina legislature approved and enacted this policy in the Fall of 1993 at all 16 UNC institutions, and the state added formally the state law in 2009 as G.S. 116-143.7 (Ross, 2019). The new legislation also stipulated that the 25% surcharge would increase to a 50%
surcharge in the Fall 2010 semester (Ross, 2019). The tuition surcharge only takes effect if the student exceeds the 140-credit hour threshold, and a semester maximum of eight semesters (fall and spring terms) (Ross, 2019). Additionally, not all credit hours count towards the 140-credit hour threshold. Such courses that do not count towards excess hours are; repeated courses, failed courses, courses dropped during the “add/drop” period, Advanced Placement (AP) courses, College-Level Examination Program (CLEP), and so forth. (Ross, 2019). The excess credit hours policy that began in North Carolina became a credit-based accountability measure for post-secondary institutions throughout the United States.

The appropriate state or institutional governing bodies of Arizona, Florida, Massachusetts, Montana, Nevada, North Carolina, Texas, Utah, Virginia, and Wisconsin adopted similar excess hours policies (Carvajal, 2021; Grove & Southern Regional Education Board, 2007; Kramer et al., 2018; Nguyen, 2017; Ross, 2019). Arizona, Florida, Montana, Nevada, North Carolina, Utah, and Wisconsin have a similar state higher education governing body, comparable to the FLBOG (Carvajal, 2021). The Board of Governors revised the wording of the regarding the governing of higher education institutions in 2003 (Fla. Const. art. IX, § 7), and FLBOG received complete authority to oversee institutions that fall under the state’s higher education system (Carvajal, 2021; McGuinness, 2016). Whereas in Massachusetts, Texas, and Virginia, institutions are managed through statewide coordinating boards, such as the State Council for Higher Education in Virginia (SCHEV) (SCHEV, n.d.; State Council of Higher Education for Virginia, 2019), which is the governing body that aids in policy implementation (Carvajal, 2021).

North Carolina and Montana were the first two states to enact an excess hour policy; however, they were also the first two states to repeal their excess hours’ policies (Montana Board
of Regents of Higher Education, 2001; Repeal Tuition Surcharge, 2019; Tuition Surcharge, 2019). A distinct lack of quantitative or qualitative research associated with either of these state policies exists, and policymakers did not decide to repeal the policy based on any empirical evidence. Rather, the decision to repeal the policy occurred in 2002 after several legislators spoke with students who voiced concerns over the effects of this policy specifically for nursing and transfer students (Carvajal, 2021). Students felt this policy hindered their ability to meet their educational objectives (Carvajal, 2021; Montana Board of Regents of Higher Education, 2001).

More recently, North Carolina legislators have elected to repeal the excess hours policy as of July 2019 with the approval of S.B. 225 (Repeal Tuition Surcharge, N.C. 2019). Again, policymakers reversed the policy on the basis that the cap on credit hours created an additional hurdle for students, especially students that transferred to an institution in North Carolina. Like the Montana repeal, no empirical research supported these claims in the report presented from N.C. Fiscal Research Division (2012) other than to say that the policy created an additional challenge for students to complete their degree (Carvajal, 2021). However, upon further review of student data from four public institutions in the University of North Carolina (UNC) System, Ross (2019) determined that there was no inordinate amount of impact for transfer students as it related to the tuition surcharge fee (Carvajal, 2021).

Although policymakers repealed this initial legislation, these founding pieces of legislation became the basis for other states to follow (Kramer et al., 2018). The key variables to craft the policy became (a) a tuition surcharge, (b) a credit hours threshold, and (c) how to calculate the hours that counted towards the threshold. At its inception, the North Carolina excess hours policy charged a 25% tuition surcharge for any credit hours exceeding 140-credit hours for a four-year program (Carvajal, 2021). Beginning in 2010, the tuition surcharge
increased to 50% but the credit hours threshold remained the same (Carvajal, 2021; N.C. Fiscal Research Div., 2012; Ross, 2019). In 1996, Montana’s excess hours’ policy incurred a much higher tuition surcharge, at a 120% tuition, with a credit hours threshold varying from 144 to 170 credit hours for three different cohorts of students (Carvajal, 2021). In the 1999-2000 academic year, the excess hours’ credit hour threshold became 170 hours for all affected students with a tuition surcharge of 100%, most likely to minimize confusion among incoming students regarding the effect of the policy. Table 6 displays the various surcharges and thresholds in Montana and North Carolina.

Table 6
Excess Credit Hour Surcharge and Thresholds in North Carolina and Montana

<table>
<thead>
<tr>
<th>State</th>
<th>Tuition Surcharge</th>
<th>Excess Hours Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Carolina</td>
<td>1994-2009 AY / 25%</td>
<td>140 credits for 4-year program or 110% for a 5-year program</td>
</tr>
<tr>
<td></td>
<td>2009-2010 AY / 50%</td>
<td></td>
</tr>
<tr>
<td>Montana</td>
<td>120%</td>
<td>1996-1999 AY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prior to autumn of 1996 cohort 170 Credit Hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Autumn of 1996 cohort 150 credit hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Autumn of 2000 cohort 144 credit hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1999-2002 AY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>170 credit hours</td>
</tr>
</tbody>
</table>

AY = Academic Year.


Although excess hours policies are no longer active in Montana or North Carolina, the following states do have active excess hours legislation, Arizona, Florida, Massachusetts,
Nevada, Texas, Utah, Virginia, and Wisconsin (Kramer et al., 2018; Nguyen, 2017; Ross, 2019). The next section of the literature review discusses the excess hours’ policy for the state of Florida. The state of Utah’s excess hours’ policy is the oldest functioning legislation dating back to 1997 (Utah State Board of Regents, 1996), while the state of Nevada is the state that has most recently chosen to enact an excess hour’s policy as of 2014 (Nevada Board of Regents, 2013). Table 7 summarizes the excess hours’ surcharge policies in chronological order. In addition to the appropriate legal source for the policy, the table includes the constitutional and statutory implementation sources as well (Carvajal, 2021).

Table 7

<table>
<thead>
<tr>
<th>Enacted Legislation</th>
<th>State</th>
<th>Legal Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Utah</td>
<td>Utah Constitution - Article X § 4 Establishment of State Board of Regent; Powers,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>duties, and authority, Utah Code Ann. §53B-1-103</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excess Credit Hours Surcharges, Utah BOR R 515</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Laws Ch. 15A § 9</td>
</tr>
<tr>
<td>1999</td>
<td>Texas</td>
<td>Tuition for Repeated or Excessive Undergraduate Hours Tex. Educ. Code Ann. §54.014</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UW System Regen Policy Document 4-15 (formerly 021)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UW System Admin. Policy 805 (formerly F44)</td>
</tr>
</tbody>
</table>
Each state has specific requirements to determine the excess hours’ surcharge, such as in Utah, where the excess hours credit hours’ threshold is 180 credit hours (Utah State University, 1998). This threshold was higher than its ancestor states of North Carolina and Montana, and Utah revised its threshold twice from 135% to a 125%. The reduction to 125% was the result of a
report from the state of Utah’s Office of Legislative Auditor General that suggested the revision to reinforce the excess hours’ policy (2011; Carvajal, 2021). Inversely, the state of Massachusetts implemented its policy with a low credit hours threshold of 118% of the credit hours needed to complete a degree program (University of Massachusetts Boston, 1998).

Opting to take a more measured approach where the governing bodies of Arizona, Texas, Virginia, and Wisconsin which enacted credit hours thresholds between 145 and 165 credit hours (Carvajal, 2021). The Wisconsin and Texas legislatures each implemented an excess hour’s policy that allowed for a 165 credit hours threshold. In 2005, the legislators in Texas elected to reduce the credit hours threshold to 150 credit hours (“An Act: Relating to the formula funding and tuition charged for certain excess credit hours”, 1999; Carvajal, 2021; H.B. No 1172: “Relating to policies and measures to promote timely graduation…”, 2005; Tuition and fees policies for credit instruction, 2019). In Virginia, the state enacted a 125% threshold that amounted to 150 credit hours for a 120-hour baccalaureate program. Arizona, similar to the initial Montana surcharge structure, implemented three differing credit hours thresholds among three cohorts of students, and therefore holding undergraduate students enrolled during financial “years 2006-2007, 2007-2008, and after 2007-2008 subject to a 155, 150, and 145 credits threshold, respectively” (“Annual appropriation; enrollment audit; expenditure; balance; salaries” 2020; Carvajal, 2021, p. 40). As a side note, Arizona is the only state that chooses to utilize the fiscal year, rather than the academic year, to identify the cohort to which the surcharge applies and the number of credits to calculate the maximum credit hour threshold (Carvajal, 2021).

Regarding tuition surcharge, many the states have charged an additional 100% of tuition, as part of the surcharge policy for credit hours more than the maximum threshold. Nevada and
Arizona offers students a lower tuition surcharge at a 50% and a 20% tuition surcharge in each state, respectively (Arizona Board of Regents, 2006c). Table 8 illustrates the variety in tuition surcharges among the states with excess hours policies.

Table 8
Excess Credit Hour Surcharge and Threshold Comparison, Excluding Florida

<table>
<thead>
<tr>
<th>State</th>
<th>Tuition Surcharge&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Credit Hours Threshold&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td>Utah</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Texas</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Virginia</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Arizona</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nevada</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Percentage based on undergraduate tuition  
<sup>b</sup>Number or percentage of credits total credits, after which a student will be assessed the excess hours surcharge


Most of the state policies, except for Utah and Wisconsin, have exemptions regarding transfer students and transfer work brought to the student’s new institution. However, no such allowance exists for FTIC or incoming freshman students. Each of the eight states that have an excess hour’s policy applies this policy to incoming FTIC students, except for students who have
completed Advanced Placement (AP), Dual Enrollment courses, or the College-Level Examination Program (Kramer et al., 2018; Ross, 2019).

A lack of consistent analysis exists regarding the effectiveness of these excess credit hour policies, although, over the last two decades, educational scholars or administrators have conducted an occasional report or assessment. In 2011, the State of Utah’s Office of the Legislative Auditor General released an assessment report that showed that the excess hours’ surcharge law was determined to have “little impact on student excess credit hour behavior” (p. 37; Carvajal, 2021). In Wisconsin, the Office of Operations Review and Audit conducted a policy and program evaluation of the UW System Excess Credit Policy, per the Board of Regents of the University of Wisconsin (UW) System public board meeting agenda (Carvajal, 2021; UW Sys., 2009). The results of this report from the University of Wisconsin System noted that the number of undergraduate students exceeding the excess credit hour limit had marginally increased since the policy’s enactment in 2004 (Carvajal, 2021).

Lawmakers in Texas, Utah, and Wisconsin explicitly acknowledged that the purpose of these excess credit hour policies was to increase graduation rates and encourage timely degree completion (Carvajal, 2021; Excess credit hour surcharges, 2018; “Relating to policies and measures to promote timely graduation …”, 2005; Tuition for Repeated or Excessive Undergraduate Hours, 2019). In each of these states, the excess credit hour surcharge was designed to boost time-to-degree completion, and Texas even went so far as to state this policy, “relating to the policies and measures to promote timely graduation of students” (“Relating to policies and measures to promote timely graduation of students from public institutions of higher education”, Tex. 2005, para. 1). The Office of Operations Review and Audit in Wisconsin clearly stated that the excess credit hour policy was, “adopted to help reduce the amount of time
it takes a student to earn a degree” (UW Sys., 2009, p. 200). These excess credit hour policies aimed to encourage students to complete their degree program requirements more efficiently. However, in 2018, Kramer et al. concluded a research study for the American Educational Research Association (AERA) related to the impact of excess hours policies on degree completion. Kramer et al. (2018) researched the effects of excess credit hours policies on 506 public four-year institutions across the United States over a 14-year timeframe from 2000 to 2013, to measure the intended and unintended effects of the policy. Kramer and colleagues highlighted a research method of the “generalized difference-in-difference” approach, which can be used to evaluate the relationships in policy analysis by comparing variations in differing groups over time, such as before and after the implementation of a policy (Bertrand et al., 2004; Carvajal, 2021; Kramer et al., 2018, p.5).

One weakness of Kramer and colleagues’ (2018) study was the lack of student-level data, even though the study reviewed institutions throughout the nation. The results of this study indicated that the excess credit hour surcharges do not have a significant impact on student’s degree completion, but Kramer et al.’s (2018) key finding was that excess hour’s policy did not become a very real consequence for students until they had advanced further into their academic careers (Carvajal, 2021; Kramer et al., 2018).

Ross (2019) conducted a similar study, which reviewed student-level data in the University of North Carolina system of higher education, as it relates to the excess credit hours surcharge. Utilizing student-level data, Ross (2019) identified students from the four institutions in the UNC four-year public system, who were more likely to experience the effects of an excess credit hour policy. According to Ross’ (2019) study, “Minority students, especially Black and Hispanic males with lower than average pre-college achievement, as well as those students
majoring in STEM fields” were found more likely to be assessed the tuition surcharge for exceeding the excess credit hours threshold (p. 3) also supported the notion through the course of the research study that excess credit hour laws or policies should be considered a financial penalty rather than a financial incentive, which is contrary to how the state legislatures advertise the policy to the students and the general public.

The State of Florida Excess Hour Policy

In 2004, the State of Florida legislature requested a report from the OPPAGA regarding strategies to decrease the cost of higher education at Florida public institutions (Kramer et al., 2018; OPPAGA, 2004; OPPAGA, 2006). This report provided the assessment that tuition costs were lower than average across the state’s public institutions, state funding for education was on the decline, and there was a rapidly growing number of students graduating with “excess” attempted credits to meet degree or graduation requirements (OPPAGA, 2004). The report also indicated that “the large amount of excess hours students accumulate drives up the cost of higher education” (OPPAGA, 2004, p. 3). These variables made it plausible for the State of Florida legislature to consider implementing an excess credit hours policy, especially when the OPPAGA report noted that, in the number of excess credit hours taken by undergraduate students during the 2002-2003 and 2004-2005 academic years, the cost to the state of Florida was $62 million dollar each year (Carvajal, 2021; OPPAGA, 2004). The OPPAGA report referred to North Carolina’s excess hours policy, which was still active during this period and demonstrated that this educational legislation could potentially provide a structure for implementing this type of policy in Florida.
In 2009, the State of Florida legislature communicated its intentions to undergraduate students in the SUS, “who enrolled in a state university for the first time in Fall 2009 and thereafter, and maintained continuous enrollment, to complete a baccalaureate degree in the most efficient way possible”, with the implementation of section 1009.286 of the Florida Statutes (“Additional student payment for hours exceeding…”, 2009; Carvajal, 2021). In 2009, based on the Florida Board of Governors authority provided by the 2003 revisions for the state constitution, the FLBOG amended regulation BOG 7.003 “Fees, Fines, and Penalties”, and operationalized section 1009.286 of the Florida Statutes. These actions and approvals required that there would be additional student payment required for credit hours that exceeded baccalaureate degree program completion requirements, also known as the Excess Credit Hour Surcharge policy (“Additional student payment for hours exceeding…”, 2009; Carvajal; 2021). The FLBOG estimated revenue of $7.6 million for the 2009-2010 fiscal year, and $7.7 million for the 2010-2011 fiscal year, with the notion that students would rather pay the additional tuition surcharge than stop out of school (Carvajal, 2021; Florida Senate, 2009).

Since its implementation, the excess hours’ policy has been revised numerous times, producing, “four cohorts of undergraduate students who are subject to different eligibility criteria” and tuition surcharge costs, based on when they began their academic career at a college or university in Florida (Carvajal, 2021, p.46). Additionally, the Florida legislature, seemingly, reversed some of the previous rigidity by allowing state universities to refund the tuition surcharge for up to 12 credit hours to any FTIC student who completes a bachelor's degree program within four years after their original or initial enrollment period (“Additional student payment for hours exceeding…”, 2019).
A few states, including Texas and Arizona, have modified their excess hours’ policies over the years, with Texas making its current policy firmer, by reducing the threshold of credit hours a student can accrue. Florida is the only state that altered its policy three times and, therefore, subjected four cohorts of students to various tuition surcharge percentages and credit hour thresholds (“Additional student payment for hours exceeding…,” 2011, 2012, 2019).

Interestingly, Florida is the only state that increased or reverted its excess credit hours threshold to a larger percentage or back to the previous 120% of degree program hours (Carvajal, 2021). Table 9 displays the different tuition surcharge rates and excess credit hours thresholds, determined by the State of Florida legislature.

Table 9

<table>
<thead>
<tr>
<th>Tuition Surcharge</th>
<th>Credit Hours Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>X</td>
</tr>
<tr>
<td>50%</td>
<td>2009-2010 and 2010-2011 cohorts – 120%</td>
</tr>
<tr>
<td>X</td>
<td>2011-2012 cohort – 115%</td>
</tr>
<tr>
<td>X</td>
<td>2012-2019 cohorts – 110%</td>
</tr>
<tr>
<td>X</td>
<td>2019 (summer) and after cohorts – 120%</td>
</tr>
</tbody>
</table>

Additionally, Florida has one of the lowest credit hours thresholds for excess credit hours for 2012-2019 cohort at 110% credit hour threshold, except for Massachusetts at a threshold of 118% of degree program completion (Carvajal, 2021; Kramer et al., 2018; Ross, 2019). In the 2009-2010 and 2010-2011 academic years, the tuition surcharge was 50% of tuition and 120% (i.e., 144 credit hours) of the credit hours needed to complete a degree program. From 2011 to 2012, this tuition surcharge increased to 100% of tuition and this percentage remains the current tuition surcharge rate. However, in 2019, the threshold of allowable excess hours did increase from 110% (i.e., 132 credit hours) to 120% (i.e., 144 credit hours).
In 2010, the FLBOG provided an update regarding excess hours, which indicated that institutions in the SUS noted an improvement among graduation rates between the 2000 and 2004 cohorts of students (Carvajal, 2021). The report provided the cohorts with a six-year timeframe and only included FTIC students (Carvajal, 2021). During this same period, the FLBOG also reported that the number of students graduating with more credit hours than needed to complete a bachelor’s degree program has also increased (Carvajal, 2021; FLBOG, 2009, 2010). State of Florida legislators utilized the data in this report as a justification for the implementation of an excess hour policy, even though graduation rates improved despite students’ accumulation of excess credit hours (FLBOG, 2009, 2010). Table 10 displays the current tuition surcharge and excess hours threshold.

*Table 10*

*Excess Credit Hour Surcharge and Threshold Comparison, Including Florida*
Additionally, a clear division exists between attempted hours and earned credit hours.

The excess hours’ threshold in the SUS in the State of Florida include all attempted credit hours (Carvajal, 2021). However, Arizona, Massachusetts, and Wisconsin only include earned hours in the excess hours count. Regarding attempted hours, the Florida legislature specified that failed, withdrawn, or repeated courses are included in the calculation of the excess hours’ threshold (Florida Legislature, 2020; Kramer et al., 2018; Ross, 2019). The Florida legislature specifically
discussed several exceptions to the excess credit hours threshold, if the coursework encompasses an accelerated or remedial designation. This includes courses or programs such as Advanced Placement (AP), Advanced International Certificate of Education Program (AICE), International Baccalaureate (IB), DSST (DANTES), Defense Language Proficiency Test (DLPT), and College-Level Examination Program (CLEP) exams (Articulated acceleration mechanisms, 2019; Carvajal, 2021). Finally, the State of Florida also makes a concession in the excess hours’ threshold, for a repeated course, if the student has remunerated the repeated course fee or surcharge (Fees for repeated enrollment in college credit courses, 2019). Florida also has the distinction of providing a second financial incentive or motivator for FTIC students through the ability to refund 12 credit hours of excess hours tuition surcharges to students who complete their baccalaureate program within four years from the time they began college. This policy may aid in the assessment of efficiency from the institutional perspective (Florida Legislature, 2019; Kramer et al., 2018).

Currently, the only extant empirical literature is from a study that addresses the excess hours’ surcharge policies in Florida for FTIC students (Nguyen, 2017). Nguyen examined the effect of excess hours policies on graduation or degree completion rates and found a positive relationship between the excess hours law and degree completion (Carvajal, 2021; Nguyen, 2017). Similar in structure and method to Kramer et al.’s (2018) approach, Nguyen used a different approach to review data from fourteen admission cohorts, beginning in the Summer of 2005 to the Fall of 2011 (Carvajal 2021; Nguyen, 2017). The findings indicated a positive correlation and no variance in excess hours accrual between students who were eligible for financial aid and those who were not (Carvajal, 2021; Nguyen, 2017). Nguyen noted that
choosing to investigate FTIC students rather than transfer students, who were excluded from the study, could had an effect over the results (Nguyen, 2017).

Finally, most of the existent literature regarding excess hours policies or similar accountability policies typically provide an institutional perspective, with a review of performance funding or the performance-based structure to provide incentives or punishments at the institutional level (Hagood, 2019; Hillman et al., 2014). In the limited research that is available on excess hours policies, a preponderance of the scholarly literature available has provided mixed results regarding the intended and unintended outcomes of excess credit hour policies, especially as it pertains to degree completion. Further research of this excess credit hour legislation has been deemed necessary to provide additional insight into the efficiency of this policy in the state of Florida and the potential impact on degree completion among students with specific demographic characteristics (Hillman et al., 2018; Kramer et al., 2018; Nguyen, 2017; Ross, 2019).

Theoretical Framework

Dating back to 1949, Lasswell utilized the term “policy sciences” in American literature, to discuss review and analyzation of policy text (Taylor, 1997, p. 23). In 1987, Ozga identified the area of research in educational policy analysis as “policy sociology,” defining it as being “rooted in the social science tradition, historically informed and drawing on… illuminative techniques (Taylor, 1997. p. 23). Additionally, in 1987, Grace crafted the term “policy scholarship” to review to policy analysis for schools in the United Kingdom. Although each of these terms and definitions for policy analyzation is slightly varying in meaning and
understanding, most policy scholars and those interested in policy analysis draw from Foucault’s theories of discourse (Taylor, 1997).

In addition to the various terms and wide array of terminology that are related to policy analysis, another issue with a clear-cut method of analysis arises. Several educational scholars, such as Ball and Maguire (1994) and Fulcher (1989) commented that policymaking is a “messy” and complex field of study, but that the existing tools to analyze policy are “blunt and irrelevant” (Taylor, 1997, p. 24). Fulcher (1989) emphasized that the search for a “theoretical model in policy literature…inadequacy of most off that literature and that most of it conveyed ‘no sense of the political struggles involved in developing and implementing policy’” (Taylor, 1997, p.24).

In 1985, Prunty coined the term “critical policy analysis,” universally used in the education field (Taylor, 1997, p. 23).

Critical policy analysis or CPA is a major research methodology and framework in the field of sociology of education developed in the late 1980s (Ball, 1993; Rata, 2014). CPA emerged as a reaction to the often-politicized New Sociology of Education (NSOE) (Rata, 2014). New Sociology of Education emphasized the large-scale political workings of an industrial system, and NSOE provided the belief that this system resulted in the inequitable issues in education between multiple generations (Rata, 2014). These resulting inequities left many sociologists of education at an impasse, in that they were unable to utilize their theoretical analysis to “determine what should be done in education practice (Hirst, 1966, p. 48: Rata, 2014, p. 347). One of the critiques of the NSOE method was the absence of a relational link between what was occurring at the international level with the events that were happening at the national level and at the more granular local level of school practice (Rata, 2014). Ball in a 1993 article entitled, What is Policy? Texts, Trajectories, and Toolboxes, was one of the first educational
scholars to note that “policy research” is a challenging field to define, as the word “policy” and its meaning is frequently taken for granted. The word “policy being used to describe very different things at points in the same study” (Ball, 1993, p. 10). Ball (1993) reported that the meaning of policy may affect how investigators conduct research and how the researcher may interpret what is discovered, and therefore Ball describes “policy as text” and “policy as discourse” (p.10).

Ball’s (1993) idea of “policy as text” refers to the ways policy is seen or “encoded” by the creating body or authoritative figure(s), and this encoding involved negotiation and interpretation by the policy crafters, which illustrates how the governing body believes the policy would be viewed or understood by others (p. 11). Additionally, the policy is also “decoded” by various “actors interpretations” and connotations, however, these meanings or definitions are comprised of the “history, experiences, skills, resources, and context,” and so the view associated with the understanding of the policy can change based on background factors that impact the meaning or understanding of the policy. Ball (1993) noted that authors are not always able to tools to attempt to ensure that policy’s text and meaning and clearly conveyed (p. 11). Ball also discussed that the idea of “policy as discourse,” as a “discourse” determines “what can be said, and thought, but also about who can speak, when, where, and with what authority” (1993, p. 14). So only certain entities or authorities can craft or create that policy, which aligns with the basic idea of policymaking. However, it is interesting to note the limitations of “policy as discourse” in that certain entities or organizations are the ones able to craft policy, which means that it is possible that only certain voices or perspectives are presented during the initial creation of the policy (p. 14). See figures 1 and 2 below.
Figure 1
Graphical Illustration of Critical Policy Analysis from Ball, 1993

Figure 2
Graphical Illustration of Critical Policy Analysis Concerns from Diem et al, 2014
The critical policy analysis approach shifts the traditional policy analysis paradigm by increasing the involvement of empirical research to examine how education policy shapes the practice side of education (Rata, 2014). The objective of CPA is to provide context to policy within the historical and political surroundings that were occurring during the creation of the policy (Eppley, 2009, p. 1). The main driver of CPA is the emphasis on examining potentially inconsistent nature of the policy, the variation between what the policy intends to do and what the policy actually does and how the policy interplays with power relationships (Cahill, 2015; Diem et al., 2014; Eppley, 2009). Further investigation as to what is meant by “power relationships” explores how marginalized groups come to be marginalized via policy implementation and how the distribution of wealth and capital, either in an advantageous or disadvantageous manner, can be sustained through various policy applications (Cahill, 2015, p. 303). Eppley (2009) noted that CPA stems from the political realm as such an examination of policy focuses on the “origins” and “consequences” with emphasis on justice and equity and due to the embedding of the political nature of the analysis the review should initiate from a “moral” or “ethical” viewpoint (Eppley, 2009, p. 1).

Cahill (2015) grounded in Ball’s (1993) theory related to policy analysis and the complexity of policy analysis in terms of policy as text, policy as discourse, and policy effects that highlights three levels of review and interpretation and comprise a framework that can be utilized to define the social-cultural nature of policymaking (p. 304). The first level or strand tying this theory together is the “micro-produced text” which considered the policy document, legislation, or the transcript in its “linguistic essence” (Cahill, 2015, p. 304). The second thread of this framework is “meso-negotiated text,” which is known as the space in which ideologies and grandiose are constructed between both the policy constructors and the policy consumers,
the policy begins to take on meaning and in the inverse people or populations begin to interpret
the policy (Cahill, 2015, p. 304). The final tie in this framework is the “macro-enacted text,”
which refers to the fact that the text is influenced by the producers of the text, the interpreter of
the text, and society’s overall conception of the policy’s purpose, and the policy is legitimized by
the same producers, interpreters, and society as a whole (Cahill, 2015, p. 304).

CPA emphasizes five major concerns, (a) the difference between policy language or
policy symbolism and policy in practice, (b) the policy, the reasoning for the creation of the
policy, including what problem it was intended to resolve, and the development of the policy
over time, (c) to how power, resources and knowledge are distributed, (d) social stratification
looking at the over-arching outcome the policy may have on relationships of “inequality” and
“privilege”, and (e) the examination of how members of non-dominant groups who resist the
structural processes of being dominated or oppressed (Diem et al., 2014, p. 1072). CPA also
tends to emphasize two main features of the approach which are (a) the complicated systems and
surrounding in which the policy is created and implemented and (b) and that the CPA lends itself
to qualitative research, but it is not limited to this realm of research (Diem et al., 2014, p. 1073).

One of the critiques of CPA is that is mostly part of qualitative studies. However, there is
no specific indication that it must be only used in qualitative studies (Worsham et al, 2021). The
lack of qualitative perspective in this research study on the Excess Credit Hour Surcharge policy
may affect the interpretation of the policy’s overall success in terms of the effectiveness of the
stated objectives of “timely degree completion” and “efficient” use of course credit hours (State
of Florida, 2021). However, the ability of the CPA approach to aid in determining the impact of
what the policy “says” versus what the policy “does” for the student at LMU is essential to
ensure that students are receiving equitable educational opportunities to earn their baccalaureate degree (Diem et al., 2014; Kahill, 2015, p. 303; Whorsham et al., 2021).

Chapter Two Summary

Accountability has a long and storied history in higher education and maintaining this over-arching principle at all levels of the institution is critical to the perceived success of the institution from the lens of legislators and policymakers. Since the mid-1940s, accountability and transparency in higher education have garnered ever-increasing scrutiny, as students, parents, and stakeholders have voiced concern over rising costs and value associated with a college education. Concern for accountability became such a large issue that the federal government developed a “regulatory triad” involving (a) state agencies monitoring institutions, (b) the accreditation of post-secondary institutions, and (c) for institutions to remain in good standing regarding student loans (Delisle, 2019). This “regulatory triad” was an attempt to raise the level of accountability for institutions, rather than an accountability measure that directly affects the student. As the quality assurance of institutional accountability became inconsistent, legislators moved a portion of the responsibility and accountability directly to students (Delisle, 2019). A thorough review of new policy initiatives must happen before implementation, particularly fiscal policies that directly affect students.

Higher education institutions are often at a crossroads regarding which higher power they serve, such as students, families, industry professionals, policymakers, community stakeholders, or legislators. Instead of all working in unison towards the goal of graduating students and degree completion for the respective benefit of each of the groups, institutions behold a
multitude of objectives. In the frenzy to meet the needs of many, institutions and state governing bodies can be insular in their problem-solving methodology. Information and ideas are meant to be shared, and while what works at one institution may not work at another, it is critical that state legislators and higher education administrators consistently assess their institutional objectives and analyze local and state policies. Doing so ensures that institutions meet the intended objectives of these policies, and these policies do not have any unforeseen consequences. In utilizing the approach of Critical Policy Analysis (CPA) readers can discern if discrepancies exist between what the policy intends to do and what it actually does, and how these variations in policy implementation through the lens of CPA, affect others.

Increased graduation rates in STEM disciplines are vital to maintaining a competitive presence around the globe. However, it is equally important to ensure that new policy initiatives meet their intended target and do not harm students who may already be in precarious positions regarding their academic pursuits (Nguyen, 2017). It is appropriate and imperative that policymakers review and analyze the excess hours’ policy to determine the effective nature of the policy and ensure that it is meeting the goals and objectives of legislators and higher education administrators. By encouraging review and analysis as higher education institutions implement these policies, they could develop alternative strategies that are potentially more effective in increasing the number of graduates who earn a baccalaureate degree in STEM disciplines.
CHAPTER THREE: METHODOLOGY

Introduction

As the cost of higher education continues to experience exponential growth, student and institutional responsibility and accountability grow in tandem. The cost of tuition and fees in a public four-year institution has increased from $2,942 to $9,500 from 1985 to 2015 with dollar amounts adjusted for inflation, resulting in a 223% percent increase in just a portion of the cost of attendance, with only meager gains or increases to family income (Kramer et al., 2018). Since the early 1990s, state legislatures have begun requiring students to bear more of the burden and responsibility for efficiently completing their degree with the imposition of additional costs associated with tuition for any student that accrues an excess of hours (Grove & Southern Regional Education Board, 2007; Kramer et al., 2018). In 2009, the State of Florida elected to implement Fla. Stat. § 1009.286 and the associated regulation from the BOG Fla. BOG 7.003, in which Florida public four-year institutions place the responsibility of efficiency firm on the side of the institution and student for all students granted admitted to a State University in the Fall of 2009 and after (Carvajal, 2021).

A limited number of empirical research studies have investigated if there is any correlation between excess hours’ policies and baccalaureate degree completion (Carvajal, 2021; Kramer et al., 2018, Nguyen, 2017; Ross, 2019). Currently, a few research studies exist that evaluate the efficiency of the policy in terms of baccalaureate degree completion and the minimization of credit hour accrual, while also examining student demographics to compare and contrast if the excess hours surcharge policies positively or negatively impact a particular group or grouping of students. In 2018, Kramer et al. reviewed the effectiveness of the excess hours’
surcharge policy in increasing the number of students earning a bachelor’s degree using institutional data to conduct a mock experiment that found no significant positive relationship or impact of the excess hours’ policies on degree completion, the study also confirmed that students at post-secondary institutions which adopted excess hours policies experienced higher levels of college debt (Carvajal, 2021; Kramer et al., 2018).

Ross (2019) conducted a study in the state of North Carolina, reviewing student-level data from four higher education institutions within the state. The student-level data included demographic data points such as gender, ethnicity and race, residency status, and graduation information (Ross, 2019). Ross’s conclusions indicated that excess hours’ policies or legislation did not improve degree completion rates and determined that the excess hours policy was a financial consequence or penalty for students. As Kramer et al.’s (2018) corroborated, Ross (2019) concluded that students at excess hours institutions experience higher levels of college debt, especially for vulnerable student populations that may fail to persist to degree completion.

Carvajal (2021) and Nguyen (2017) completed recently studies related to excess hours policies in the state of Florida. Carvajal’s study investigated the transfer student population to evaluate the effectiveness of the excess hours’ policy in terms of baccalaureate degree completion. The study determined that there was a statistically significant relationship between transfer students and improved graduation rates for a bachelor’s degree (Carvajal, 2021). Nguyen’s (2017) study reviewed first-time-college students (FTIC) and found a similar correlation and positive relationship between the excess hours policy and students completing their bachelor’s degree. Each of these studies examined a different classification of student transfer vs. FTIC.
The objective of this study is to determine the effectiveness of the excess hours' surcharge policy at LMU. In Florida, the legislation associated with excess hours applied to all students who matriculated to a Florida public two-year and four-year institution from 2009 and after. Students who attended the institution before 2009 were exempt from this excess hour policy and thus the control group in this study to aid in determining average-time-to-degree. This study can compare students who attended college before 2009 to students who attended LMU in July of 2009 and after to estimate policy effectiveness. Additionally, each academic cohort or academic year will be analyzed to determine average-time-to-degree among the academic cohorts for 2009 and after. Examining this cross-section of data among the individual academic year(s) will also provide additional information and feedback on the effective nature of the excess credit hours policy, in terms of increasing or decreasing average-time-to-degree. Creswell (2002) notes that “quantitative research is the process of collecting, analyzing, interpreting, and writing the results of a study” (Williams, 2007, p. 65). Depending on the outcome and results of the study, it is hopeful that the findings from quantitative research can be predictive, explanatory, or confirming, in terms of providing additional insight after statistical analysis is conducted (Creswell, 2003).

**Research Questions**

The aim of this research study is to determine if the excess credit hour policies and legislation is meeting the intended goal of the State of Florida, which is to decrease time to degree completion at public four-year institutions and reduce the cost of attendance to students. Related to this student outcomes are the following research questions:
1. What is the relationship, if any, between the Excess Credit Hour Surcharge policy and FTIC student data, in the mechanical or aerospace engineering discipline at a Large Metropolitan University, as it relates to the demographic variables of, (a) gender, (b) ethnicity and race, or (c) GPA?

2. What relationship, if any, does the Excess Credit Hour Surcharge policy have on degree completion data, among FTIC students in the mechanical and aerospace engineering discipline at a Large Metropolitan University?

The chapter will describe the method used to investigate the research questions with specific information describing the variables selected, population, data collection methods, method of data analysis, and discussion and evaluation of the research method.

Methodology and Approach

In a review of Performance Based-Funding Metrics, Cornelius and Cavanaugh (2016) asserted that “the Florida Legislature and Board of Regents [i.e. former name, now Board of Governors] have effectively turned the Florida State University System (SUS) into an enormous laboratory, because [the] policy is, ultimately, an experiment.” (p. 184). Cornelius and Cavanaugh (2016) reported that the experiment that is this policy is, “one that the researcher can only study and observe, but not control” (p. 184). This quantitative study was designed to investigate the potential relationship between legislation that has already been approved into law, and the effective nature of the policy for FTIC students that have graduated while the policy has been implemented at four-year public institutions in the State of Florida. Lord asserted (1973) that the causal-comparative or ex post facto method research design is an “alternative method”
Rationale for Methodology and Approach

The ex post facto or causal-comparative research design may be employed when the experimental method may be impractical due to constraints related to time, money, or effort, or in some cases, the experimental method could be immoral or unethical (Lord, 1973). For example, it would not be ethical to stage a fatal incident involving an aircraft to determine the cause of the crash (Lord, 1973). In this case, utilizing the ex post facto or causal-comparative approach is necessary and appropriate to determine the relationship between a hypothetical “crash” and the underlying cause of the aircraft failure (Lord, 1973). Since the excess credit hours policy has already been approved, implemented, and currently has the potential to affect college-bound students with few exceptions, the ex post facto research design is appropriate based on the fact that the policy cannot be “removed” from a student’s academic record, or selectively applied. The causal-comparative research design does not “control the variable factors,” but rather makes “observations under normal field conditions and discovers the cause of observed phenomena” (Lord, 1973, p. 4). Tuckman (1964) defined the ex post facto research
design, as “an experiment in which the researcher examines the effects of a naturally occurring treatment after that treatment has occurred… the experimenter attempts to relate this after-the-fact treatment to an outcome or dependent measure” (Lord, 1973, p. 5). In this quantitative investigation, the naturally occurring “treatment” is the excess credit hours policy, and the outcome would be if this policy does reduce the students average time-to-degree-completion (Lord, 1973, p. 5).

A weakness of the ex post facto or causal-comparative method is that the hypotheses are extremely flexible, and the relationship may exist but may not be the only relationship that is discovered or may not be determined to be the most critical (Lord, 1973). A vulnerability of the ex post facto study is if the study is missing the elements of “control” and “randomization” of the independent variables that a normal experiment might have (Lord, 1973). Isaac and Michael (1971) noted that the strengths of the ex post facto methodology, are when the nature of the study limits the ability of the researcher to utilize other “more powerful” experimental methods, and when the factors or constraints associated with the study are not able to be controlled to directly analyze the cause-and-effect relationship (Lord, 1973, p. 10).

As the excess credit hours policy is legislation that has already been implemented in the State of Florida, it is difficult to comprise a control group, as all students after the 2009-2010 academic year were potentially exposed to the treatment (i.e., the Excess Credit Hour Surcharge policy). While the policy did not affect all students in the same manner based on the accumulation of credit hours, all students had the equal opportunity to be affected by the policy and its consequences. This exposure to the policy makes the ex post facto or causal-comparative research design an appropriate selection for this quantitative research study.
Research Setting

The researcher conducted this quantitative study at one of the 12 public four-year institutions in the State of Florida. Approximately 70,000 students attend this university, and this institution has an undergraduate student population that comprises about 85% of the total enrollment (Office of Institutional Knowledge Management, 2022; National Center for Educational Statistics, n.d). This post-secondary institution offers over 100 bachelor’s degree programs in a wide variety of disciplines ranging from education, health sciences, engineering, fine arts and performance, natural and social sciences, and business (Office of Institutional Knowledge Management, 2022; National Center for Educational Statistics, n.d). Eighty-four percent of this institution’s total undergraduate population is under 24 years old class, and an estimated 55% of the undergraduate students at this institution are female (Office of Institutional Knowledge Management, 2022; National Center for Educational Statistics, n.d). Of the total, the undergraduate and graduate population at this institution, 46% of the population are Caucasian, 28% are Hispanic, 11% are African American, 6% are Asian, 4% are multiracial, and 0.1% each for American Indian/Alaskan Native and Native Hawaiian/Other Pacific Islander (Office of Institutional Knowledge Management, 2022; National Center for Educational Statistics, n.d). Additionally, 91% of the students were in-state residents, and 71% of the undergraduate student attendees received financial aid. The faculty to student ratio is 26:1 with 72% of the students maintaining full-time enrollment. The average six-year graduation rate is 73% (Office of Institutional Knowledge Management, 2022; National Center for Educational Statistics, n.d).
Participants

The sample for this study consists of 1,124 FTIC graduates from LMU with excess credit hours out of 2,542 cases. These students matriculated to a Florida four-year public university as a freshman-level student in the mechanical and aerospace engineering discipline beginning in the 2009-2010 academic year through the 2018-2019 academic year. To be defined as a freshman-level student at this institution, a student must have no more than 30 semester credit hours earned through accelerated programs, such as involvement in dual enrollment, advanced placement courses, or the International Baccalaureate program during their students’ high school career. An admission decision for freshman applicants is based on high school GPA, SAT or ACT scores, and any applicable college credit. This study excluded transfer students to prevent skewing the data or the results based on the number of credit hours completed at their previous institution.

Data Collection Methods

The researcher obtained student information from the Office of Institutional Knowledge Management at the university. The researcher utilized a de-identified data set for the purpose of this investigational study through the Office of Institutional Knowledge Management. The Office of Institutional Knowledge Management provided this data set to the researcher’s faculty advisor for security purposes. The Office of Institutional Knowledge Management de-identified the data and provided with a case identification number, thus avoiding cross-referencing. Outlined below are pertinent variables associated with the research study:
Independent Variable

For the purposes of this investigational student there will be multiple independent variables:

1. The first independent variable will review degree competition data, based on the average time to degree metrics and will review if there is a pattern or trend for increase or decrease in degree completion. This study also analyzed time-to-degree data to see if time-to-degree increased or decreased in both the pre-and-post academic year cohorts, as it relates to excess hours. This study will review multiple degrees attainment statistics such as (a) degree completion and (b) time-to-degree metrics because of the specific wording of the Excess Credit Hour Surcharge policy, as well as providing a comprehensive picture related to degree attainment statistics and terminology.

2. Additionally, this quantitative study also examined the second grouping of independent variables outlining various demographic characteristics (a) gender, (b) race and ethnicity, (c) and GPA.

Dependent Variable

This study treated student cases that were effected by the Excess Credit Hour Surcharge policy and exceeding the maximum number of credit hours or exceeding the threshold as the dependent variable. The students affected by the excess hours’ surcharge policy received two forms of treatment in the form of notification of the policy by LMU and the assessment of the surcharge upon exceeding the credit hours threshold, as stated in the policy. Within the data set,
identified students exceeding the excess credit hours threshold had an additional column that identified these cases as in the excess hours’ category, and this column listed the number of hours each student exceeded his or her excess credit hours threshold. Table 11 provides the specific credit hour metrics concerning the excess hour threshold.

Table 11
Excess Credit Hour Surcharge Percentage and Credit Hour Threshold, Florida

<table>
<thead>
<tr>
<th>Excess Hours Cohort</th>
<th>Threshold Percentage</th>
<th>(^a)Credit Hours Threshold</th>
<th>(^b)Credit Hours Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2011</td>
<td>120%</td>
<td>153.6 Credit Hours</td>
<td>144 Credit Hours</td>
</tr>
<tr>
<td>2011-2012</td>
<td>115%</td>
<td>147.2 Credit Hours</td>
<td>138 Credit Hours</td>
</tr>
<tr>
<td>2012-2019</td>
<td>110%</td>
<td>140.8 Credit Hours</td>
<td>132 Credit Hours</td>
</tr>
<tr>
<td>2019 &amp; After</td>
<td>120%</td>
<td>153.6 Credit Hours</td>
<td>144 Credit Hours</td>
</tr>
</tbody>
</table>

\(^a\) Based on a 128 Credit Hour STEM Degree Program
\(^b\) Based on a 120 Credit Hours Degree Program

Notification of the Policy

Florida statute 1009.286 mandates that state universities and state colleges establish a procedure to inform students of the excess hours’ surcharge policy at least twice during their academic career (a) the first notification is sent when a student begins or enrolls at a State of Florida institution, and a (b) second notification is sent as the student approaches the excess hours “threshold” or a minimum number of credit hours required to complete a degree. The student Orientation Session reviews the excess hours’ policy before students registering in courses for the first time at the institution (Office of the Registrar, 2022). Additionally, students at LMU have an “Excess Hours Counter” on their student account that keeps track of their excess hours limit or threshold and how many credit hours they have accrued (Office of the Registrar,
Finally, the student receives an excess hour’s email at the start of each term alerting them when their “Excess Hours Counter” updates on their student account, and to review their accumulated credit hours each semester (Office of the Registrar, 2022).

**Excess Hour Surcharge Limit**

A student’s initial term of admission to the institution determines a credit hour “maximum” or limit, and what the surcharge rate will be for each credit hour that exceeds the limit. The surcharge cost is based on the tuition costs alone and does not include student fees. The per-credit cost used for the surcharge assessment is the tuition rate for the academic year during which a student could encounter excess credit hours or their credit hour limit (Office of the Registrar, 2022). Table 12 summarizes the various levels of the credit hours limits or thresholds and the various surcharges.

**Table 12**

*Excess Credit Hour Tuition Surcharge Percentage and Threshold, Florida*

<table>
<thead>
<tr>
<th>Tuition Surcharge</th>
<th>Credit Hours Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>2009-2010 and 2010-2011 cohorts – 120%</td>
</tr>
<tr>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>2011-2012 cohort – 115%</td>
</tr>
<tr>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>2012-2019 cohorts – 110%</td>
</tr>
<tr>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>2019 (summer) and after cohorts – 120%</td>
</tr>
</tbody>
</table>

**Data Analysis Methods**

This study will analyze cohorts of students dating back to the 2003-2014 academic year, paying special attention to the implementation years or revisions to the excess credit hours policy (i.e., 2009-2010, 2011-2012, 2012-2019, and 2019-beyond). Additionally, this study requested
information on cohorts before 2009 to create a control group. The sample for this study included graduates who were classified as FTIC students in the mechanical and aerospace engineering program at LMU (n=6,692) beginning in the 2003-2004 academic year through the 2019-2020 academic year, and an additional sub-set population of students who accrued excess hours were specifically analyzed (n=1,124). The analytical data set includes nineteen (19) cohorts of graduated students, representing students both pre-and-post category for the Excess Credit Hour Surcharge policy. A review of the demographic characteristics for students both pre-2009 and post-2009 helped to create a control and treatment group to analyze the effectiveness of the excess hours’ policy. The study utilized the Statistical Package for Social Sciences (SPSS), version 28.0 (IBM, 2021). This method of analysis employed the use of a one-way Analysis of Variance or ANOVA statistical calculation to analyze the data. This study used ANOVA to analyze the relationship between degree completion and the independent variables of (a) gender, (b) race and ethnicity, and (c) Grade Point Average (GPA). The statistical test of Analysis of Variance or ANOVA allowed a pre-cohort and post-cohort analysis to determine if the degree complete increased or decreased during the time before the implementation of the Excess Credit Hour Surcharge policy and the period directly following policy implantation. The ANOVA was selected for each variable of (a) gender, (b) race and ethnicity, or (c) GPA due to having one categorical independent data point, and a numerical or continuous dependent variable (One-way ANOVA in SPSS Statistics, 2022).

This study categorized the = student data used for analysis into three specific areas: demographic characteristics, admissions-related (i.e., FTIC), and average time to degree information. The first category consisted of student’s gender, and ethnicity and race. The second category included the term of admission (i.e. academic year) and declared major. The final
category provided information on the total number of credit hours earned at the time of graduation, overall GPA, graduation term, and time to degree.

This study included a multi-step analysis process to determine if the excess hours’ surcharge policy influenced a student’s time to degree completion statistics. This analysis included a review of the descriptive statistics (a) gender, (b) ethnicity and race and coded as female = 1, male = 0. For each ethnicity and race being displayed the coding was follows, White = 1, Hispanic/Latino = 2, Black/African American = 3, Asian = 4, American Indian/Alaska Native/Native Hawaiian/Pacific Islander = 5, Multi-racial = 6, International = 7, and Not Specified = 8. It also specified with an “excess credit hours” column which indicated the students that exceeded the excess hours threshold and by how many credit hours they must exceed the specified threshold. See Table 13 for more information on the specified credit hours threshold. Table 13 below for the specified numeric value associated with exceeding the excess hours’ threshold in the State of Florida.

**Table 13**

*Excess Credit Hour Surcharge Percentage and Credit Hour Threshold, Florida*

<table>
<thead>
<tr>
<th>Excess Hours Cohort</th>
<th>Threshold Percentage</th>
<th>a Credit Hours Threshold</th>
<th>b Credit Hours Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2011</td>
<td>120%</td>
<td>153.6 Credit Hours</td>
<td>144 Credit Hours</td>
</tr>
<tr>
<td>2011-2012</td>
<td>115%</td>
<td>147.2 Credit Hours</td>
<td>138 Credit Hours</td>
</tr>
<tr>
<td>2012-2019</td>
<td>110%</td>
<td>140.8 Credit Hours</td>
<td>132 Credit Hours</td>
</tr>
<tr>
<td>2019 &amp; After</td>
<td>120%</td>
<td>153.6 Credit Hours</td>
<td>144 Credit Hours</td>
</tr>
</tbody>
</table>

a Based on a 128 Credit Hour STEM Degree Program  
b Based on a 120 Credit Hours Degree Program

The researcher coded and analyzed the de-identified data set to reflect these categories (and if students met these specified criteria) to determine if these students were able to reduce their time to graduate/degree completion.
Study Limitations

The methodology of this study had limitations that fall into three subsets: data constraints, threats to external validity, and the issue of generalizability.

Data Constraints

The student data utilized for this study consists of FTIC or freshman students at one of the 12 state universities. While the same governing body (i.e., Florida Board of Governors) and the same state legislation oversee all 12 of these institutions, each institution presents with differentiating qualities or experiences and services a diverse student population that can vary from institution to institution. This study only explored FTIC or freshman interaction with the excess hours’ policy, and this can lead to potential bias, as students admitted to the state universities under the FTIC or freshman designation are typically considered to be “high achieving” students because of a very competitive admissions criteria (Nguyen, 2017). As such, this selection of FTIC or freshman students is not a proper representation of all students in the SUS. Finally, this study reviewed the degree completion data, and was the average time to degree increased or decreased based on policy implementation.

Threats to External Validity and Generalizability

A mild concern for external validity exists within this study because of the limited data set and specified major selection, which may cause difficulty when attempting to generalize this study at other institutions or with other student populations. As freshman admissions is an exceptionally specified process, the generalizability of this study limits to freshman students at
public universities that may have similar characteristics as the institution where this study took place. The replication of this study at a more diverse or different institution may provide a solution for the issues of generalizability.

Chapter Three Summary

The purpose of this quantitative study is to investigate the relationship between FTIC students’ degree completion rates and the State of Florida excess hours’ policy. The control group encompassed FTIC students admitted to LMU before 2009, as the Excess Credit Hour Surcharge policy does not affect students admitted before this academic year. The study utilized a data analysis method of an ANOVA to determine the relationships between variables, as well as the cause and effect of this excess hour policy implementation on degree completion and average time to degree among students at LMU. The ANOVA was selected for each variable of (a) gender, (b) race and ethnicity, or (c) GPA due to having one categorical independent data point, and a numerical or continuous dependent variable (Laerd, 2022).

The purpose of this quantitative study is to determine if the excess hours’ surcharge policy is an effective tool to encourage or enable students to graduate in a timelier fashion in the state of Florida. This study examined the relationship between the excess hours’ policy and freshman level students in the mechanical and aerospace engineering majors at LMU) to see if this policy meets the intended objective of reducing the amount of time required for a student to graduate, and as a secondary component of this study was an investigation to see if students of various demographic characteristics and backgrounds were more or less affected by the implementation of the policy, and if students were able to graduate on time.
This chapter reviewed the research design and method, along with the data analysis and rationale for the selection of the data method. This chapter also discussed a review of the research questions, as well as the research setting, participants and selection of participants, variables, and any study limitations and delimitations. Through the analysis of the data and this study will determine if the State of Florida’s excess hours surcharge policy has increased the number of students graduating more efficiently, as it relates to credit hours and a review of the descriptive statistics will further analyze if any demographic statistics affect the effective nature of the excess hours’ policy. Policy implementation should only be considered the first step in the process of making policy, as continuous review and analysis of the policy outcomes and objectives needs to be conducted to determine if the policy is meeting the intended goal of reducing the average time to degree metric in terms of degree completion and improving efficiency in the use of credit hours for students at State of Florida institutions.
CHAPTER FOUR: RESULTS

Introduction

The objective of this investigational study is to determine if a relationship exists between the excess hours’ surcharge policy and the variables of (a) gender, (b) race and ethnicity, (c) GPA, and (d) degree completion or average time to degree. This study analyzed the comparison of students who exceeded the excess hour’s threshold in relation to the independent demographic variables of race and ethnicity, gender, and GPA. Additional analysis was also conducted to determine if students who exceeded the excess hour’s threshold were able to decrease or increase the independent variable of degree completion, reviewing both the time-to-degree metrics among students classified as having excess hours. The confirmation of any statistically significant relationship between (a) race and ethnicity, (b) gender, (c) GPA, and (d) degree completion and the dependent variable of excess hours may provide higher education administrators, legislators, students, and community stakeholders additional insight into the functionality and success of the Excess Credit Hour Surcharge policy. In this chapter, the researcher used selected variables for analysis and then utilize this analysis to answer the two research questions posed at the initiation of this exploratory study.

Research Question One

Research question one: What is the relationship, if any, between the Excess Credit Hour Surcharge policy and FTIC student data, in the mechanical or aerospace engineering discipline at a Large Metropolitan University, as it relates to the demographic variables of, (a) gender, (b) ethnicity and race, or (c) GPA?
H₀: There is not a significant relationship between the Excess Credit Hours Surcharge policy and First-Time-in-College (FTIC) student data, in the mechanical or aerospace engineering discipline at a Large Metropolitan University as it relates to the demographic variables of, (a) gender, (b) ethnicity and race, or (c) GPA (H₀: \( \mu_1 = \mu_2 \)).

H₁: There is a significant relationship between the Excess Credit Hours Surcharge policy and First-Time-in-College (FTIC) student data, in the mechanical or aerospace engineering discipline at a Large Metropolitan University, as it relates to the demographic variables of, (a) gender, (b) ethnicity and race, or (c) GPA (H₁: \( \mu_1 \neq \mu_2 \)).

To analyze sub-questions (a), (b), and (c) that are presented in research question one, a one-way ANOVA will be the selected statistical test for parts (a) and (b), and (c). The ANOVA was selected for each variable of (a) gender, (b) race and ethnicity, or (c) GPA due to having one categorical independent data point, and a numerical or continuous dependent variable (One-way ANOVA in SPSS Statistics, 2022). The next section examines the descriptive statistics for research question one, followed by the inferential statistical tests and results.

**Descriptive Statistical Analysis**

This study analyzed the independent variables of gender, race and ethnicity, and GPA in correlation with the dependent variable of the excess credit hours. Research question one specifically examines if a relationship exists between the accrual of excess credit hours and (a) gender, (b) race and ethnicity, and (c) GPA. The sections below detail the descriptive and inferential statistical results for research question one:
**Research questions one**: What is the relationship, if any, between the Excess Credit Hours Surcharge policy and FTIC student data, in the mechanical or aerospace engineering discipline, at a Large Metropolitan University, as it relates to the demographic variables of, (a) gender, (b) ethnicity and race, or (c) GPA?

*Excess Credit Hours and Gender*

Most graduates in the pre-existing data set were classified as “male.” Because of the specification in the data set of mechanical and aerospace engineering majors and graduates, this bias in the data is common, as a significant percentage of students in these two academic programs would also classify as “male.” Currently, at LMU 83% of the students in the mechanical and aerospace engineering majors (i.e., active students) are male, while an estimated 17% are female (University of Central Florida, 2022). Table 14 includes the sample size of each gender, the associated percentages for gender, and the interaction of gender as it relates to excess credit hours. See Table 14 below:

*Table 14*

*Descriptive Statistics for Gender and Excess Credit Hours*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N = Students</th>
<th>M = Excess Credit Hours</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female (1)</td>
<td>189</td>
<td>19.25</td>
<td>14.722</td>
</tr>
<tr>
<td>Male (0)</td>
<td>935</td>
<td>15.19</td>
<td>12.881</td>
</tr>
<tr>
<td>Total</td>
<td>1124</td>
<td>15.87</td>
<td>13.288</td>
</tr>
</tbody>
</table>
This study used race and ethnicity as one category in the pre-existing data set from the office of Institutional Knowledge Management. Most of the graduates in the data set identified as White, followed by Black or African American, then Hispanic or Latino, and Asian. While the smallest group of graduates were those who identified as American Indian or Alaska Native, Middle Eastern or North African, and Native Hawaiian or Other Pacific Islander including very few participants for each level of enrollment. The descriptive statistics indicate that Black/African American students on average have accrued the least number of excess credit hours at 13.83 hours, followed by White students at 15.21 hours, and Hispanic/Latino students with 15.73 hours. Table 15 presents the descriptive statistics on race and excess credit hours, as follows.
Table 15
Descriptive Statistics for Credit Hours and Race and Ethnicity

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M = Excess Credit Hours</th>
<th>SD</th>
<th>Std. Error</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>White = 1</td>
<td>664</td>
<td>15.21</td>
<td>12.251</td>
<td>0.475</td>
<td>14.28</td>
<td>16.15</td>
<td>0</td>
<td>67</td>
</tr>
<tr>
<td>Hispanic/Latino = 2</td>
<td>262</td>
<td>15.73</td>
<td>13.711</td>
<td>0.847</td>
<td>14.06</td>
<td>17.40</td>
<td>0</td>
<td>76</td>
</tr>
<tr>
<td>Black/African American = 3</td>
<td>40</td>
<td>13.83</td>
<td>13.16</td>
<td>2.081</td>
<td>9.62</td>
<td>18.03</td>
<td>0</td>
<td>47</td>
</tr>
<tr>
<td>Asian = 4</td>
<td>78</td>
<td>18.48</td>
<td>16.774</td>
<td>1.899</td>
<td>14.70</td>
<td>22.26</td>
<td>0</td>
<td>95</td>
</tr>
<tr>
<td>American Indian/Alaska Native/Native Hawaiian/Pacific Islander = 5</td>
<td>5</td>
<td>19.20</td>
<td>11.077</td>
<td>4.954</td>
<td>5.45</td>
<td>32.95</td>
<td>6</td>
<td>33</td>
</tr>
<tr>
<td>Multi-Racial = 6</td>
<td>48</td>
<td>20.38</td>
<td>17.12</td>
<td>2.471</td>
<td>15.40</td>
<td>25.35</td>
<td>1</td>
<td>75</td>
</tr>
<tr>
<td>International = 7</td>
<td>15</td>
<td>17.73</td>
<td>12.314</td>
<td>3.179</td>
<td>10.91</td>
<td>24.55</td>
<td>0</td>
<td>46</td>
</tr>
<tr>
<td>Not Specified = 8</td>
<td>12</td>
<td>23.25</td>
<td>14.117</td>
<td>4.075</td>
<td>14.28</td>
<td>32.22</td>
<td>2</td>
<td>49</td>
</tr>
<tr>
<td>Total</td>
<td>1124</td>
<td>15.87</td>
<td>13.288</td>
<td>0.396</td>
<td>15.09</td>
<td>16.65</td>
<td>0</td>
<td>95</td>
</tr>
</tbody>
</table>

95% Confidence Interval for Mean

Excess Credit Hours and GPA

Table 16 displays the descriptive statistics for the dependent variable of excess credit hours and the independent variable of GPA for those students that have accrued excess. The average number of excess hours accrued by students affected by the Excess Credit Hour Surcharge policy was 15.868, and the average GPA among students affected by the policy was 3.302. See table 16 below.
Table 16

Excess Credit Hours and GPA

<table>
<thead>
<tr>
<th>Variables</th>
<th>M = Excess Credit Hours</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess Credit Hours</td>
<td>15.868772242</td>
<td>13.288425654</td>
<td>1124</td>
</tr>
<tr>
<td>Degree GPA</td>
<td>3.30264</td>
<td>.390513</td>
<td>1124</td>
</tr>
</tbody>
</table>

Figures 3 and 4 provide a brief visual description of the distribution of the degree GPA (i.e., the GPA at the time of graduation), as well as the distribution of excess hours.
Figure 3

Histogram of GPA

Figure 4 displays an additional histogram with the distribution of excess hours among the graduated students affected by the excess hours policy.
Inferential Statistical Analysis

The more advanced statistical analysis of the data included a one-way ANOVA, and a linear regression were utilized to explore the relationship between the dependent variable of the Excess Credit Hour Surcharge policy or “excess credit hours” and the independent variable(s) of (a) gender, (b) race and ethnicity, (c) GPA and (d) degree completion or average time to degree as it related to the research questions proposed in chapter three.

Excess Credit Hours and Gender

A one-way ANOVA was the specific method of analysis to determine if a relationship existed between gender and the dependent variable of excess credit hours, with gender being the independent variable and excess hours serving as the dependent variable. The one-way ANOVA
statistical analysis indicated that female graduates are more likely to accrue excess credit hours versus male graduates. The one-way ANOVA indicated that the relationship between gender and excess hours is statistically significant at < .001. See Table 17 for the data on the one-way ANOVA.

Table 17

ANOVA: Gender and Excess Credit Hours

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2597.965</td>
<td>1</td>
<td>2597.965</td>
<td>14.895</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Within Groups</td>
<td>195703.909</td>
<td>1122</td>
<td>174.424</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>198301.874</td>
<td>1123</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Excess Credit Hours and Race and Ethnicity

This study analyzed race and ethnicity as an additional independent variable that in correlation with excess credit hours. The analysis used ANOVA to determine the relationship between the independent variable of race and ethnicity and the dependent variable of excess credit hours. With a significance of 0.030, the relationship was determined not to be statistically significant. Table 18 displays the analysis of the ANOVA.

Table 18

ANOVA: Excess Credit Hours and Race and Ethnicity

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2725.996</td>
<td>7</td>
<td>389.428</td>
<td>2.222</td>
<td>0.030</td>
</tr>
<tr>
<td>Within Groups</td>
<td>195575.878</td>
<td>1116</td>
<td>175.247</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Excess Credit Hours and GPA**

GPA was the final variable analyzed in the data set of graduates who had accrued excess hours during their time at LMU. In this statistical analysis, a one-way ANOVA was the statistical test selected with GPA serving as the independent variable and excess hours as the dependent variable. The “predictor” variable in a one-way ANOVA is the constant (in this case GPA). However, the graduate’s final GPA is not an exact fit for a predictor variable, because it presents a calculation after students complete their time at LMU. The one-way ANOVA indicated that there was a statistically significant relationship between GPA and Degree GPA. Table 19 shows the relationship between GPA and excess credit hours.

**Table 19**

*ANOVA: GPA and Excess Credit Hours*

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3446.008</td>
<td>1</td>
<td>3446.008</td>
<td>19.842</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Residual</td>
<td>194855.866</td>
<td>1122</td>
<td>173.668</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>198301.874</td>
<td>1123</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Excess Credit Hours  
b. Predictors (constant), Degree_GPA
Research Question Two

Research questions two: What relationship, if any, does the Excess Credit Hour Surcharge policy have on degree completion data, among FTIC students in the mechanical and aerospace engineering discipline at a Large Metropolitan University?

\( H_0: \) There is not a significant relationship between the Excess Credit Hours Surcharge policy and degree completion data, among First-Time-in-College (FTIC) students in the mechanical and aerospace engineering discipline at a Large Metropolitan University. 

\( H_0: \mu_1 = \mu_2).\)

\( H_1: \) There is a significant relationship between the Excess Credit Hours Surcharge policy and degree completion data, among First-Time-in-College (FTIC) students in the mechanical and aerospace engineering discipline at a Large Metropolitan University. \( H_1: \mu_1 \neq \mu_2).\)

Graduation rates, time-to-degree, and degree completion are all terminology used in higher education when referring to a student earning their degree. While these terms are not interchangeably, this study may use these terms in the following ways:

1. Most of this research study references the term “degree completion,” as this phrasing mirrors the language used by the State of Florida Legislator when referring to the Excess Credit Hour Surcharge policy. Degree completion will refer to the completion of a baccalaureate degree program. (State of Florida, 2021; University of Arkansas, 2022).

2. Time-to-degree metrics refer to the time elapsed and is the total time in calendar years, between initial enrollment in a postsecondary institution and successive degree attainment. This data point was examined to see if there is a historical trend in terms of time-to-degree increasing or decreasing based on an analysis of the pre-policy and post-
policy data. However, this data point was the only data point utilized, as a student’s continuous enrollment in courses, regardless of full-time or part-time status, could skew this measurement (Institutional Knowledge Management, 2022; National Student Clearing House, 2022).

For consistent language, this research study used the language provided by the Florida Legislator to refer to “degree completion”, as the other terms also refer to graduation or earning a baccalaureate degree, they may be used to refer to certain data points, measurements, or results, as needed. The descriptive statistics for research questions 2 are as follows:

**Research question 2:** What relationship, if any, does the Excess Credit Hour Surcharge policy have on degree completion data, among FTIC students in the mechanical and aerospace engineering discipline at a Large Metropolitan University?

**Descriptive Statistical Analysis**

*Excess Credit Hours and Degree Completion*

Each of the deidentified student cases in the data set who were affected by the Excess Credit Hour Surcharge policy began as an aerospace or mechanical engineering major at LMU, the same number of students (N=1,124) completed or graduated from an aerospace or mechanical engineering major. Table 20 displays the descriptive statistics on the average number of hours accrued by the students impacted by the Excess Credit Hour Surcharge policy. Given that this data listed graduates of the aerospace and mechanical engineering programs, the study did not analyze the variable of degree completion in the table below.
Table 20

Descriptive Statistics for Excess Credit Hours Post-Surcharge Policy

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess Credit</td>
<td>1124</td>
<td>.0000000000</td>
<td>95.0000000000</td>
<td>15.868772242</td>
<td>13.288425654</td>
</tr>
<tr>
<td>Hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>1124</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The study also conducted statistical analysis on the students affected by the Excess Credit Hour Surcharge policy and Calendar Academic Years to Degree or Average Time to Degree. The “Calendar_AcadYears_To_Degree” data is provided by the Office of Institutional Knowledge Management at a Large Metropolitan University (2022). This metric or variable calculates the number of semesters a student takes to complete their degree, and then converts that number into an average number of “years” based on the semester they began at the institution and the semester they graduated. The “Calendar_AcadYears_To_Degree” metric is displayed in the data set, as 2.XX, 3.XX, 4.XX, 5.XX, 6.XX, 7.XX or 8.XX. While the average total of accrued excess credit hours remains the same at 15.868, the average time to degree statistic indicates the post-surcharge policy mean is 4.485 academic calendar years to complete a degree program. Table 21 displays the excess credit hours and “Calendar AcadYears to Degree” or average time to degree. Table 21 notes the variable of “Calendar AcadYears to Degree” as “degree completion” for ease of terminology and understanding. See table 21 below.
Table 21
Excess Credit Hours and Degree Completion Post-Surcharge Policy

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess Credit Hours</td>
<td>1124</td>
<td>0.0000000</td>
<td>95.0000000</td>
<td>15.86877224</td>
<td>13.2884256</td>
</tr>
<tr>
<td>Calendar_AcadYears_To_Degree</td>
<td>1124</td>
<td>2.66666666</td>
<td>4.485468564</td>
<td>7</td>
<td>0.874812352</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>1124</td>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

In comparison, data from academic years 2003-2009 before the Excess Credit Hours Surcharge policy was also reviewed to see if the average time to degree or if “Calendar_AcadYears_To_Degree” increased or decreased during the pre-policy time among aerospace and mechanical engineering graduates. Table 22 below provides details on the pre-policy cohorts of graduated students (n=622). Based on the descriptive statistics which analyzed the pre-surcharge policy graduates “Calendar_AcadYears_To_Degree.” The mean provided the average time to degree completion for the pre-policy graduates, as 4.795 academic calendar years, so the post-surcharge policy graduates did reduce their average time to degree to 4.485. Table 22 indicates the variable of “Calendar AcadYears to Degree” as “degree completion” for ease of terminology and understanding. See table 22 below.

Table 22
Excess Credit Hours and Degree Completion Pre-Surcharge Policy

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calendar_AcadYears_To_Degree</td>
<td>622</td>
<td>2.33333333</td>
<td>10.6666666</td>
<td>4.79581993</td>
<td>1.07223638</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>622</td>
<td></td>
<td></td>
<td>57</td>
<td>00</td>
</tr>
</tbody>
</table>
Excess Credit Hours and Degree Completion

A linear regression was the method of analyzation between the variables of “excess credit hour” and “Calendar_AcadYears_to_Degree.” The “Calendar_AcadYears_to_Degree”. The statistical analysis of a linear regression was the selected test since the study attempted to model the relationship between two continuous or numerical variables (Linear Regression Analysis using SPSS, 2022). The data is provided by the Office of Institutional Knowledge Management at a Large Metropolitan University. This metric or variable calculates the number of semesters a student takes to complete their degree, and then converts that number into an average number of “years” based on the semester they began at the institution and the semester they graduated. The “Calendar_AcadYears_To_Degree” metric is displayed in the data set, as 2.XX, 3.XX, 4.XX, 5.XX, 6.XX, 7.XX or 8.XX. The variable of “excess credit hours” specifically analyzing students that are affected by the Excess Credit Hours Surcharge policy, beginning in 2009 and beyond, and provides further analyzation on students that have accrued excess credit hours during their academic career at LMU. There was no statistically significant relationship between “excess credit hours” and “Calendar_AcadYears_to_Degree.” The tables below outline the linear regression and statistical analysis of the variables. Table 23 notes the variable of “Calendar AcadYears to Degree” as “degree completion” for ease of terminology and understanding. See below.

Table 23

<table>
<thead>
<tr>
<th>Model Summary of Excess Credit Hours and Degree Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
</tbody>
</table>

95
Table 23 indicates a low degree of correlation between “excess credit hours” and “Calendar_AcadYears_To_Degree” at .007, additionally the R square indicates that .000 or 0% of the variation in dependent variable can be explained by the independent variable. Table 24 displays a significance of .827 which means that this regression model is not statistically significant, as it is not less than 0.05. Unfortunately, this means that these variables are not an ideal or good fit for this type of model. Tables 24 and 25 indicate the variable of “Calendar_AcadYears_To_Degree” as “degree completion” for ease of terminology and understanding. See below.

Table 24

**ANOVA of Excess Credit Hours and Degree Completion**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>1</td>
<td>8.452</td>
<td>0.048</td>
<td>.827b</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>1122</td>
<td>176.732</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1123</td>
<td>176.732</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Excess Credit Hours

b. Predictors (Constant), CALENDAR_ACADYEARS_TO_DEGREE

Table 25

**Coefficients of Excess Credit Hours and Degree Completion**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95.0% Confid. Interval for B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>16.314</td>
<td>2.072</td>
<td>7.872</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95.0% Confid. Interval for B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td></td>
<td>7.872</td>
<td>.001</td>
<td>12.247</td>
</tr>
</tbody>
</table>
Listed above is Table 25, and it does appear that there is statistical significance among the coefficients, with the significance showing a value of less than .001, which allows us to predict “excess credit hours” from “Calendar_AcadYears_To_Degree”, and if “Calendar_AcadYears_To_Degree” significantly contributes to the regression model.

Chapter Four Summary

The researcher posed two hypothetical questions related to the Excess Credit Hour Surcharge policy. Research question one, considered if demographic variables moderated the relationship between the accrual of excess credit hours, and the independent variables of (a) gender (b) race and ethnicity, and (c) GPA. The research hypothesized that a statistically significant relationship may exist between excess credit hours and (a) gender, (b) race and ethnicity, and (c) GPA. The study used ANOVA to determine a statistically significant relations existed between gender and excess credit hours. A second analysis of ANOVA was employed to determine if there was a statistically significant relationship between race and ethnicity and excess credit hours, and the statistical results indicated that the relationship between the two variables was not statistically significant. The study used a final ANOVA to analyze if there was a statistically significant relationship between GPA and excess credit hours, the ANOVA determined that there was a statistically significant relationship between the independent variable of GPA and the dependent variable of excess credit hours.
Research question two evaluated if there was a statistically significant relationship between excess credit hours and degree completion or average time to degree. In higher education degree completion is a complex term and can be defined in multiple ways. For the purposes of this study degree completion was defined as a student who began in either the aerospace or mechanical engineering discipline at LMU and graduated with a bachelor’s degree in aerospace or mechanical engineering. Based on these specific parameters the Institutional Knowledge Management office at LMU was able to provide the metric of “average time to degree” known as “Calendar_AcadYears_To_Degree” for each student affected by the Excess Credit Hour Surcharge policy. For research question two, a pre-policy cohort and a post-policy cohort were analyzed for descriptive statistics, and it was determined that “average time to degree” data point decreased in the post-policy period, which indicates that the Excess Credit Hour Surcharge policy has reduced the time to degree statistic which was the intention of the Florida Legislature with the inception of this policy.

Research question two also examined the inferential statistics associated with the variables of excess credit hours and “Calendar_AcadYears_To_Degree” which provided the continuous data of that can also be known as average time to degree. The “Calendar_AcadYears_To_Degree” data is provided by the Office of Institutional Knowledge Management at a Large Metropolitan University (2022). This metric or variable calculates the number of semesters a student takes to complete their degree, and then converts that number into an average number of “years” based on the semester they began at the institution and the semester they graduated. The “Calendar_AcadYears_To_Degree” metric is displayed in the data set, as 2.XX, 3.XX, 4.XX, 5.XX, 6.XX, 7.XX or 8.XX. A linear regression was the selected measure of analysis. The statistical analysis of a linear regression was the selected test since the
study attempted to model the relationship between two continuous or numerical variables (Laerd, 2022). Based on the data analysis performed in the regression model it does appear that there is statistical significance among the coefficients, with the significance showing a value of less than .001, which allows us to predict “excess credit hours” from “Calendar_AcadYears_To_Degree”, and if “Calendar_AcadYears_To_Degree” significantly contributes to the regression model.

In conclusion, the data analysis did not seem to confirm or align with previous research studies that have been conducted on the Excess Credit Hour Surcharge policy. However, the research questions were appropriately answered via statistical analysis. It is possible that the selection of majors or disciplines caused a skew or bias within the data, as the students demographics matched well among previous student or graduate populations at LMU, but it is probable that this student population was not diverse enough to align with previous studies on the topic of excess hours. Further concerns, constraints, and areas of future research will be discussed in the final chapter.
CHAPTER FIVE: CONCLUSION AND DISCUSSION

Overview

At the close of 2007, the United State of America began to feel the effects of an economic downturn known as the “Great Recession” (EPI, 2012; Rich, 2013). The Great Recession presented a significant change to the average American’s financial stability due to the impact the recession had on the global market and subsequent economies, in an unprecedented eight trillion-dollar financial loss (EPI, 2012; Rich, 2013). As of January 2009, financial institutions and markets began to return to pre-recession conditions. However, these improvements were not enough to stave off concerns about the health and robust nature of state and federal budgets. Depillis (2017) noted that higher education funding is often a vulnerable area in the budgetary approval process, for both the state and the federal budgets that undergo intense scrutinization and are frequently subject to financial cuts or decreased funding levels.

While the ever-changing and challenging economic constrains are certainly not new, there is a renewed emphasis on educational costs in association with student or institutional outcomes, as it relates to accountability in higher education (Cohen & Kisker, 2010). States across the nation utilize various techniques and strategies to provide transparency and accountability at their post-secondary institutions. In the state of Florida, performance-based factors such as degree completion, graduation rates, and time to degree contribute to accountability measures for the institution. These accountability measures related to the economic and benefits to society that higher education provides, as well as, the cost to students and stakeholders and the expenditures of the state government and legislature (Gillmore & Hoffman, 1997; Hillman et al., 2014; Rubin & Hopgood, 2018; Schudde & Bernell, 2019).
In addition to increased levels of accountability, students have seen exponential growth in terms of the costs associated with attending a college or university (Fricke, 2018; Kramer et al., 2018; Ross 2019). These cost increases are associated, in part, with budget cuts in federal and state funding for higher education (Hillman et al., 2018; OPPAGA, 2004). Oftentimes higher education officials must pass on the deficit in state funding to students and families by increasing tuition and fees, which is a standard approach to resolving any funding gaps within post-secondary institutions (Martin, 2020; Mitchell et al., 2019). As a result, state officials, students, and other community shareholders often advocate in favor of legislative measures to hold public colleges and universities accountable for the growing expenditures and societal benefits of a college education. However, it is important to note, that institutions cannot simply increase the tuition rate or the cost per credit hour at will, but through a specific process that relates to state regulations overseen in collaboration with the Board of Governors, Regents, or Trustees depending on the state governance structure for higher education institutions.

Finally, a general sense exists among legislators that students should be held responsible for academic progress and efficiency when earning a baccalaureate degree, especially as it relates to earning a degree with the minimum number of hours and not exceeding or taking excess hours to earn a degree (Grove & Southern Regional Education Board, 2007). Excess hours are credit hours that a student accrues beyond what is required to complete a bachelor’s degree (Gillmore & Hoffman, 1997). The Florida state legislature specifically acted in 2009, to implement an Excess Credit Hour Surcharge policy with the adoption of section 1009.286 of the Florida Statutes, henceforth Fla. Stat. § 1009.286. This legislation holds students accountable for a tuition rate surcharge for accumulated excess credit hours (State of Florida, 2012).
When viewing this Excess Credit Hour Surcharge policy implementation throughout higher education, one lens through which to view the policy is the CPA approach. CPA developed as a major research methodology and framework in the field of sociology of education in the late 1980s (Ball, 1993; Rata, 2014). The main driver of CPA is the emphasis on examining the potentially inconsistent nature of the policy, the variation between what the policy intends to do and what the policy says it will do, and how the policy interplays with power relationships (Cahill, 2015; Diem et al., 2014; Eppley, 2009). Further investigation as to what is meant by “power relationships” explores how marginalized groups come to be disregarded via policy implementation and how the distribution of wealth and capital, either in an advantageous or disadvantageous manner, can be sustained through various policy applications (Cahill, 2015, p.303). This exploratory quantitative analysis contrasting FTIC students, degree completion and various student demographic data (i.e., gender, ethnicity and race, and GPA) in collaboration with the CPA viewpoint, will provide additional insight and scholarship in the realm of higher education and the associated practice of policy creation and analysis.

**Review of the Study**

This confirmatory study discusses the primary results yielded during the data analysis process. The quantitative research study utilized a de-identified data set provided by the Office of Institutional Knowledge Management at LMU (2022). This chapter reviewed the demographic characteristics of (a) gender, (b) race and ethnicity, and (c) GPA and the relationship of these demographic variables to the accrual of excess credit hours, per the parameters of the Excess Credit Hour Surcharge policy implemented in the State of Florida. Additionally, this study analyzed the relationship between excess credit hours and degree completion or average time to
degree to determine the level of impact the excess credit hours policy has on degree completion. The chapter examined the theoretical and practical implications of the Excess Credit Hour Surcharge policy. Finally, the chapter explored the applicable limitations of this research study and suggestions for future research endeavors. The research questions that directed these discussion points are as follows:

1. What is the relationship, if any, between the Excess Credit Hour Surcharge policy and FTIC student data, in the mechanical or aerospace engineering discipline at a Large Metropolitan University, as it relates to the demographic variables of, (a) gender, (b) ethnicity and race, or (c) GPA?

2. What is relationship, if any, does the Excess Credit Hour Surcharge policy have on degree completion data, among FTIC students in the mechanical and aerospace engineering discipline at a Large Metropolitan University?

**Principle Findings**

The study deconstructed the above research questions into separate components for the analysis of the relationship between each variable. The list below presents the breakdown of the variables and questions:

**Research Question One**

Research question addressed specific demographics among graduates in the mechanical and aerospace engineering discipline that were affected by the Excess Credit Hour Surcharge policy. The section below describes these findings and relationships.
Excess Credit Hours and Gender

When reviewing the resulting data analysis as it relates to the relationship between excess credit hours and gender, the data indicated there was a statistically significant relationship, and that male graduates accrued less excess credit hours than female graduates. This variable in the data set is potentially vulnerable to bias since male graduates outnumbered female graduates in the data set at an approximate rate of eight male graduates to a single female graduate. Although, the overwhelming number of male graduates is fairly “normal” for the aerospace and mechanical engineering disciplines. This metric correlates with the student population data for the mechanical and aerospace engineering discipline at LMU, which designates that 83% of the enrolled student population at LMU is male (Institutional Knowledge Management, 2022). The afore-mentioned data point about male versus female graduates may help to explain some of the bias within the data set. This clear skew of the distribution of male versus female graduates could have influenced the data outcomes, and the data may not show an accurate assumption of who (i.e., female vs. male) amasses more excess credit hours.

Excess Credit Hours and Race and Ethnicity

The variables of race and ethnicity were analyzed in association with excess credit hours, and the analysis of the data indicated that African American Black students accrued the least number of excess credit hours, with White students accruing the second least amount of hours, and finally with Hispanic/Latino students rounding out this variable or category by having the third least amount of excess credit hours. The relationship between the variables of race and ethnicity and excess hours was determined to not be of statistical significance.
Excess Credit Hours and GPA

There was determined to be a statistically significant relationship between the variables of GPA and excess credit hours. The average GPA was 3.302 among students who accrued excess credit hours. This data point regarding GPA was higher than the researcher had hypothesized and appeared to indicate that not passing or repeating courses during the accrual of excess hours was not the main driver of this statistic. The ANOVA indicated that the relationship between GPA and excess hours was statistically significant.

Research Question Two

Research question two investigated if degree completion increased or decreased among graduates of the mechanical and aerospace engineering discipline due to the Excess Credit Hour Surcharge policy. The section below describes these findings and relationships.

Excess Credit Hours and Degree Completion

The average time to degree metric provided continuous data based on when a student began at LMU (i.e., first semester) and when they graduated or completed their degree (i.e. last semester). The data analysis of this data point indicated that the average time to degree decreased among students who had accrued excess credit hours after the implementation of the Excess Credit Hour Surcharge policy. This study compared this data to the average time to degree statistic for students who graduated before the policy’s implementation. This metric or variable calculates the number of semesters a student takes to complete their degree, and then converts
that number into an average number of “years” based on the semester they began at the institution and the semester they graduated. The “Calendar_AcadYears_To_Degree” metric would be displayed in the data set, as 2.XX, 3.XX, 4.XX, 5.XX, 6.XX, 7.XX or 8.XX. The findings indicated that the pre-policy figure of 4.795 and a post-policy figure of 4.485. The average time to degree metric was reduced and met the intended objective of the State of Florida Legislature.

**Limitations**

*Major Specific Population*

The data contained in the data set displayed some bias based on the majors selected for review (i.e., aerospace and mechanical engineering). Additionally, due to the major populations selected, the data set had an unusually large number of male graduates versus female graduates. While this was common for a STEM discipline, it may have caused reporting issues in terms of the results. A more comparable sample in terms of distribution of female versus male graduates would potentially be beneficial in future research. Also, it is possible that expanding the majors reviewed or selected for data analysis may aid in providing more generalizable results that can be applied in a broader sense to minimize policy effects on students.

*Average Time to Degree Metric*

Additionally, there may have been some idiosyncrasies when reporting the degree completion data, in that the “Calendar_AcadYears_To_Degree” or the average time to degree was the variable used for analysis. The “Calendar_AcadYears_To_Degree” data is provided by
the Office of Institutional Knowledge Management at a Large Metropolitan University (2022).
This metric or variable calculates the number of semesters a student takes to complete their
degree, and then converts that number into an average number of “years” based on the semester
they began at the institution and the semester they graduated. The
“Calendar_AcadYears_To_Degree” metric would be displayed in the data set, as 2.XX, 3.XX,
4.XX, 5.XX, 6.XX, 7.XX or 8.XX.

This study emphasized earlier that a student can choose to take as many or as few courses
as they prefer, and that LMU does not specify how many courses a student must complete in a
term. Therefore, it is possible for a student to take one or two classes a semester, which would
affect their time to degree average. The “Calendar_AcadYears_To_Degree” also did not consider
a student’s status of full-time versus part-time, or if the student is “away” from the institution for
any reason. Finally, an even more critical influence on student course progression that affected
“Calendar_AcadYears_To_Degree” may also be the impact of COVID-19 and the shift to virtual
or online learning, which is a challenging change to an engineering curriculum and student
learning, at large. When reviewing the data set, the data analysis reviewed and removed outlier
values among the time to degree data to provide a better analysis. However, the variable of
average time to degree is a less than ideal statistic for analyzing if degree completion improved
after the implementation of the Excess Credit Hour Surcharge policy.

*Single Site/One Institution*

Although this study may hold significant value for the institution referred to in this study,
there is a broader population and more institutions that may benefit from a larger scope.
Similarly, to the comments related to the majors selected for this study, it is possible that
conducting this research study at a single institution was not ideal for providing a broad-spectrum perspective as to how the Excess Credit Hour Surcharge policy has impacted students. Most institutions in the State of Florida follow the same basic guidelines regarding the Excess Credit Hour Surcharge policy, and it would have potentially been beneficial to have an additional institution available to compare and contrast the data and results.

**Implications**

*Critical Policy Analysis*

The CPA approach looks to highlight if there is any existing difference between what the policy “says” and what the policy “does” (Ball, 1993; Diem et al., 2014). The theoretical framework, as it relates to the research questions, does display the overarching objective of the Excess Credit Hours Surcharge policy, which is to provide efficient degree completion among students and graduates. The results of research question two confirmed that degree completion, in terms of average time to degree has decreased since the implementation of the policy. While this decline in the average time to degree metric may be influenced by a variety of factors, a comparison of data before policy implementation versus post-excess credit hours policy does indicate that the average time to degree has expedited since the inception of the policy. In this case, what the policy “says” and what it “does” are similar in nature and objective (Ball, 1993; Diem et al., 2014).

Additionally, CPA also examines the “power relationships” and how marginalized groups come to be marginalized via policy implementation, as the distribution of wealth and capital, either in an advantageous or disadvantageous manner, can be sustained through various policy
applications (Cahill, 2015, p. 303). Based on the results on the demographic information, it does appear that African American/Black graduates were the least affected by the Excess Credit Hour Surcharge policy, which was a surprising data point. It was also noted that white graduates and male graduates did not suffer any adverse effects of the Excess Credit Hour Surcharge policy implementation, which again was a fairly “standard” result based on the composition of the data set, but also could speak to the “power relationships” in terms of policy interaction and implementation.

Policy Implications

The results of the data analysis appear to indicate that the Excess Credit Hour Surcharge policy did meet the objective of reducing students’ and graduates’ average time to a degree based on a review of pre-and-pose policy data. Additionally, it also appears that the policy did have a varying effect on students and graduates with specific demographic characteristics. While these results were not what was expected, in terms of overall degree efficiency, or who was anticipated as being positively or negatively affected by the Excess Credit Hour Surcharge policy, it does appear that the policy is meeting the intended goal of students being more efficient with their credit hours usage, and time during their collegiate career.

Recommendations for Future Research

Qualitative Research

This confirmatory research study would potentially benefit from adding a qualitative element, such as student or administrator interviews or feedback. While the quantitative data
provides metrics that the Excess Credit Hour Surcharge policy is meeting the intended objective, it would be valuable to see how students and/or higher education administrators view the implementation of this policy. Qualitative feedback from various affected populations may provide additional insight on how the excess hours policy affects student academic choices or institutional decision-making, in terms of program offerings or promotion of certain activities. Providing these details and descriptions directly from affected parties may provide an alternative perspective and further investigation of the thoughts and feelings that that resulted from the policy implementation and success since being implemented. It is one thing for a policy to be effective based on the data, but an in-depth look at the policy outcomes via an interview or questionnaire may provide more background information on how various affected entities feel about the nature and effectiveness of the policy.

*Consistent Policy Analysis*

Future research would benefit from consistent analyzezation of the Excess Credit Hour Surcharge policy, and a set monitoring schedule. Information on this policy and if the policy objectives had been met was in limited supply. If researchers choose to review this policy on a regular basis, they may help legislatures continually confirm that this policy is helpful in encouraging students to graduate in a more timely or efficient manner. Additionally, a consistent research schedule would also ensure that the policy has no unintended positive or negative outcomes, as discussed in the Critical Policy Analysis approach.
“Calendar_AcadYears_to_Degree / Average-Time-to-Degree Metric

Unfortunately, the “Calendar_AcadYears_To_Degree” or average time to degree metric was not an ideal variable for measurement purposes, due to several reasons outlined in the limitations section of this study. Although this was the most readily accessible variable for measurement, future research would benefit from a more detailed metric of measurement that accounts for a student’s time at the university provides a more in-depth measurement of this time. It may help to couple this metric with actual student feedback or qualitative analysis about their time at the institution, and if there were any semesters that they were not a full-time student, or they were away from the institution.

Examining Other Populations

It is also possible that examining additional populations of students or graduates may be helpful to broaden the scope and potential for the generalization of finding for this quantitative research study. This study examined FTIC students at LMU. This was a purposeful sample to ensure that students did not arrive at LMU with an excess of credit hours, as this excess may have caused a potential bias among the results. However, it may be important to incorporate the Transfer student population, as well as more students choosing to attend a state or community college before attending a four-year institution (Chen, 2021). Additionally, providing diversification of majors or programs for future analysis relating to the Excess Credit Hours Surcharge policy may be valuable, to see if majors are vulnerable to students accruing excess credit hours. Finally, it may also be pertinent to include and exclude a specific type of FTIC student for a review of the excess hours’ policy, as most students tend to arrive at their institution with some type of college-level credits (i.e., dual enrollment, AP, or IB). Finding a control
mechanism for earned credit before arrival at a four-year institution could be beneficial to compare the data in a more purified manner.

Additionally, expanding the scope of majors may also allow for a more critical analysis of the demographics characteristics among students who have and have not accrued excess hours. A primary driver of this research study was to determine if a specific types of students or students with characteristics were more or less affected by the Excess Credit Hour Surcharge policy, by diversifying the analyzed student population this may be able to better examine the defining characteristics among students who are affected by the Excess Hours policy.

Final Conclusions

Every researcher hopes that his or her research questions and the resulting data analysis will provide significant insight into the problem or problems presented for investigation. Based on a comparison of the pre-and-post policy data, the Excess Credit Hour Surcharge policy is meeting the intended objective of reducing the average time to a degree among graduates in the mechanical and aerospace engineering discipline at LMU. Additionally, the data analysis indicated there is a significant relationship between the demographic characteristics of gender and GPA, as to who is more affected by the Excess Credit Hour Surcharge policies with female graduates accruing more excess credit hours than male graduates. Although, the data set utilized in this study exudes some bias based on the majors or disciplines selected for analysis, as the population of graduates skewed toward male graduates versus female graduates. This metric correlates with the student population data for the mechanical and aerospace engineering discipline at LMU, which designates that 83% of the enrolled student population at LMU is male
The variable of race and ethnicity in correlation with the excess credit hours did not note a statistically significant relationship. However, the descriptive statistics indicated that Black/African American students on average have accrued the least number of excess credit hours, followed by White students, and Hispanic/Latino. Again, it should be noted that this metric aligns with the specified majors, in terms of the racial and ethnic breakdown of enrolled and active students in the program, as approximately 52% of the students identify as White or Caucasian (Institutional Knowledge Management, 2022). Further analysis did indicate that Latino and African American graduates were more affected by the legislative policy, after accounting for a potential bias in the data. A statistically significant relationship was the result of the conducted data analysis for gender and GPA. In terms of degree completion or average time to degree, this metric was reduced from pre-policy to post-policy, so the objective of have students graduate in a more “timely” manner or more quickly was met, per the results of the statistical analysis.

However, none of the resulting data points aligned with the preexisting literature on the Excess Credit Hour Surcharge policy, in terms of who is “generally” affected by the accrual of excess credit hours (Baker, 2020; Kramer et al., 2018). Again, this deviation from the existing literature and data analysis may be the result of only reviewing the mechanical and aerospace engineering disciplines. It is possible that an expanded analysis of multiple majors or review of a larger sub-section of students affected by the Excess Credit Hour Surcharge policy would provide results that associate more closely with previous research study analyses and literature.
Excess hours policies have been in existence since the early to mid-1990s with the original policy being implemented in North Carolina. The State of Florida began examining the possibility of an Excess Credit Hour Surcharge policy in the mid-2000s. In 2004, a report was commissioned from OPPAGA, and that report detailed several strategies for reducing the growing costs of supplementing higher education throughout the state (Carvajal, 2021; Kramer et al., 2018; OPPAGA, 2004; OPPAGA, 2006). This report provided the assessment that tuition costs were lower than average across the state’s public institutions, state funding for education was on the decline, and there was a rapidly growing number of students graduating with “excess” attempted credits to meet degree or graduation requirements (Carvajal, 2021; OPPAGA, 2004). The report also indicated that “the large amount of excess hours students accumulate drives up the cost of higher education” (OPPAGA, 2004, p. 3). The above reasoning made it possible for the state legislator to consider the implementation of an Excess Credit Hour policy, especially when the OPPAGA report noted that the estimated cost to the State of Florida in 2002-2003 and 2003-2004 academic year was expected to be 124 million dollars over the course of both years (OPPAGA, 2004). The OPPAGA report referred to North Carolina’s excess hours policy, which was still active during this period and demonstrated that this legislation could potentially provide a structure for implementing this type of policy in Florida.

In 2009, the State of Florida legislature communicated its intentions to undergraduate students in the SUS, “who enrolled in a state university for the first time in Fall 2009 and thereafter, and maintained continuous enrollment, to complete a baccalaureate degree in the most efficient way possible”, with the implementation of section 1009.286 of the Florida Statutes (“Additional student payment for hours exceeding…”, 2009; Carvajal, 2021). The FLBOG is the governing body of Florida’s public post-secondary state university institutions. In 2009, based on
the Board of Governors ‘constitutional authority, the BOG amended regulation BOG 7.003 “Fees, Fines, and Penalties”, an operationalized section 1009.286 of the Florida Statutes, and approved that there would be additional student payment required for credit hours that exceeded baccalaureate degree program completion requirements, also known as an excess hour’s surcharge (“Additional student payment for hours exceeding…”, 2009; Carvajal, 2021). The FLBOG estimated revenue of $7.6 million for the 2009-2010 fiscal year, and $7.7 million for the 2010-2011 fiscal year, with the notion that students would rather pay the additional tuition surcharge than stop out of school (Florida Senate, 2009). Ultimately, the legislation was enacted during the economic downturn of the Great Recession and was hoped to encourage students to graduate in a more “timely” manner, which would reduce the burden on the state by reducing the number of students enrolled (EPI, 2012; Russon, 2016). Based on the overarching objective of graduating more students and reducing the time-to-degree metric, the policy succeeds in meeting its intended goals.

However, a distinct lack of scholarly research exists on Excess Credit Hour policies and the stated policy objectives. Although research is being actively conducted to close this gap in the literature (Carvajal, 2021, Kramer et al., 2018, Nguyen, 2017, Bryan, 2021). Unfortunately, a handful of governmental reports, academic journals, and doctoral dissertations are at a disadvantage when it comes to surmounting the widening breach, between what is known about excess credit hour policies, how they are implemented, and the actual success rate, depending on the objective of the policy. Additionally, given that policymakers crafted this policy at the state governance and legislative level, some consider the policy language to be vague and open-ended. In the State of Florida, the policy legislation makes it clear that the specified goal is to be more “efficient” with degree completion, although, there is no precise language as to how degree
completion or efficiency is defined (State of Florida, 2022). Though higher education and State of Florida institutions may be able to use the ambiguous definitions and policy objectives to their advantage, the lack of clear language means that data collection and reporting can be challenging, and this means that legislators and higher education administrators are not receiving updated metrics about how this excess credit hour policy impact collegiate students and families.

Although this research study did not reflect similar results to previously conducted research studies, a majority of the research on excess credit hour policies indicates that the policy is not effective in improving “timely” graduation or degree completion (Carvajal, 2021; Kramer et al., 2018; Nguyen, 2017; State of Florida, 2022). Various researchers noted that an excess hour policy did not significantly improve degree completion statistics (Carvajal, 2021; Kramer et al., 2018; Nguyen, 2017). Additionally, researchers also noted that certain groupings of students or students with certain demographics were potentially more likely to accrue excess hours (Carvajal, 2021; Kramer et al., 2018; Nguyen, 2017). This research study at LMU documented some of these same concerns, but because of the existing demographic skew of the sample, it did not report the same results. As mentioned in the limitations section above, it is possible that diversification of majors or disciplines selected at LMU may lead to data analysis and results more closely aligned with the previously conducted research studies and would provide further support for the discussion regarding the effectiveness of Excess Credit Hour policies. State sponsored or supported research to explore the effectiveness of Excess Credit Hour policies may benefit the state, the student, and higher education institutions throughout the State of Florida, by providing real data and analysis on the success of the Excess Credit Hours legislation. This research and data may then allow the state and institution to have further discussions on the Excess Credit Hour Surcharge policy, and potentially adjust the language and the policy that will
assist future students in their pursuit of higher education. Gerado Gonzalez (2001) in an echo of Horace Mann’s 1848 statement on the power of education asserts, “Education is the great equalizer in a democratic society, and if people are not given access to a quality education then what we are doing is creating an underclass of people who will challenge our very way of life” (Growe & Montgomery, 2003). Higher Education can create opportunities and pathways to all types of students, and it truly can change the trajectory of a student’s future possibilities and aspirations. It is admirable that the State of Florida would like to encourage more students to graduate quickly, and potentially accumulate less debt while doing so, but looking at the far-reaching consequences of the policy implementation process and how policies can affect students and associated stakeholders in an uneven manner is a critical portion of the enactment process (Baker, 2020). The State of Florida and the legislature have an obligation to ensure equal access and an opportunity for success among all college-bound students that this state serves. It is imperative that future and continued research is conducted on the topic of Excess Credit Hour policies to ensure that these policies are meeting the specified goals and stated objectives, without hinderance to students in higher education.
APPENDIX A – IRB NOTIFICATION
Notification of Not Human Research Determination

To: Lynn Grabenhorst
Link: STUDY00003989
P.I.: Lynn Grabenhorst
Title: Excess Hours - Dissertation
Description: The committee reviewed this submission and assigned a determination of Not Human Research. For additional details, click on the link above to access the project workspace.
APPENDIX B – PERMISSION TO USE
Hi Lynn,

Thank you for reaching out. I hope you too are having a good day so far. You have my full permission to use the data. Wish you the best of luck with your dissertation!

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In-person walk-in hours: typically Monday through Friday from 8:30 am to 4 pm.
Virtual walk-in hours: typically Monday through Friday 8:30 am - 12 pm; 1:30 pm - 4 pm.

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Hi Lynn,

Thank you very much for your kind words and for reaching out. Yes, you have my permission to utilize the tables and you can use my information for proper attribution 😊.

Good luck in your dissertation and please don’t hesitate to contact me if you have questions; I am happy to help.

Thank you,

Lucero.

Lucero M. Carvajal, Ed.D.
(she/her/hers)
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