ABSTRACT

LEWIS, MOLLY MEACHUM. Exploring “No-Loan” Policies in Community Colleges: An Analysis of Factors that Predict Opting Out of the Federal Student Loan Program (Under the direction of Dr. Paul Umbach).

Community colleges provide a pathway for millions of students, particularly those from underrepresented backgrounds, to earn a degree, credential, or diploma leading to increased social mobility (Dawson et al., 2021). While community colleges have traditionally been more affordable compared to other higher education institutions, decreases in state support, rising tuition and fees, and decreases in the purchasing power of local, state, and federal aid have caused students to seek ways to close their financial aid gap (Spica & Biddix, 2021). One way students close this gap is through federal student loan programs, which provide a way for students to borrow money at low interest rates. However, many community colleges have opted out of the federal student loan program (i.e. adopted a “no-loan” policy). Nationally, nearly 10% of all community colleges have adopted a “no-loan” policy, preventing nearly 1 million students from borrowing (TICAS, 2016). This lack of access may prevent students from taking more college credits (Wiederspan, 2016) or choosing nonfederal student loans such as private loans and alternate forms of credit to finance their education (TICAS, 2014).

Despite the effects of “no-loan” policies on student outcomes, there is little research examining the factors that inform the decision to opt out of the federal student loan program. This study aimed to start the conversation in the literature by analyzing the differences between states with a high percentage of “no-loan” community colleges and examining the factors associated with a community college adopting a “no-loan” policy.

This study analyzed data from 967 community colleges (two-and four-year institutions) from all 50 states from 2002-2019, using multiple data sources including the Integrated

Postsecondary Education Data System, the State Higher Education Finance Grapevine Report, the Education Commission of the States, and the National Student Loan Data System, and other sources. Using these data sources, I conducted a series of descriptive statistics and linear probability modeling with fixed-effects and time-fixed effects to examine the differences between states that have a high percentage of "no-loan" community colleges and those that do not as well as the factors that are associated with a community college adopting a "no-loan" policy.

Overall, my findings indicate that there are discernible patterns between states that have a high percentage of "no-loan" community colleges and those that do not. In addition, the cohort default rate, amount of state support for higher education, the published tuition and fees, the percentage of students borrowing nonfederal student loans, and year dummy variables were associated with a community college adopting a "no-loan" policy. However, the findings, while statistically significant, had small effect sizes, indicating that there is a complex relationship between a college adopting a "no-loan" policy and the financial factors at play. Policymakers, college administrators, and researchers could find use in the research findings and implications, particularly when deciding to adopt a "no-loan" policy at their community college or to continue a "no-loan" policy.

Exploring “No-Loan” Policies in Community Colleges: An Analysis of Factors that Predict Opting Out of the Federal Student Loan Program

by
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DEDICATION

I dedicate this dissertation to my family: my husband Dean, son Drake, and Baby Boy Lewis due March 30th 2025. You make my world go round. This work is for each of you, with all my love.

BIOGRAPHY

Molly “Erin” Lewis has worked in education since 2010 when she began her career by teaching in a bilingual high school in Spain. Upon returning to the U.S. in 2011, she taught English as a Second Language (ESL) and English as a Foreign Language (EFL) courses at community colleges in North Carolina. While completing her master’s degree at NC State, Erin began teaching at the Agricultural Institute (AGI) at NC State University, where she worked for 10 years. She taught first-year writing, co-led and chaperoned multiple study abroad programs, and developed and co-created multiple courses, programs, and initiatives including the AGI Internship Program. In 2019, she started her PhD in Higher Education Administration at NC State studying part-time. Since 2023, Erin has served as the director of Professional Studies at Appalachian State University where she teaches multiple courses, oversees curriculum development, student support, and program management. Her research interests include workforce and soft skill development in higher education, higher education policy, governance, and finance. When not working, Erin enjoys spending time with her family and friends.

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CHAPTER 1: INTRODUCTION

Since their growth and expansion in the 1960s, community colleges have played an important role in educating U.S. citizens (Baum et al., 2013). Because most community colleges are open access, they educate a large share of underrepresented groups in higher education including low-income, first-generation, minorities, and adult learners over the age of 25 (Dawson et al., 2021). Despite ebbs and flows in enrollment (Ursch, 2014), the number of enrolled students and degrees earned remains significant. During the 2020-2021 school year, 8.9 million students were enrolled in community colleges, representing 41% of all undergraduates (Community College Research Center [CCRC], n.d.).

Although community college tuition is generally lower than tuition at a four-year college on average, community college students face increasing burdens in paying for their education (CCRC, 2021). Decreases in state support, rising tuition and fees, as well as a decline in Pell Grant purchasing power have led to students turning to other methods to pay for college (Spica & Biddix, 2021). In turn, federal loans are more frequently used to fund college expenses (Gross et al., 2010; Hillman, 2014; Linsley, 1997; McKinney et al., 2021; Spica & Biddix, 2021). According to the Community College Research Center (2021) Policy Fact Sheet, 48% of community college students who started the school year in 2003 borrowed within 12 years of entry. This is an increase in eight percentage points from 1996. Despite the increase in the number of borrowers, community college students borrow in smaller amounts than four-year colleges overall. Hanson (2023b) notes the average amount borrowed is $5,530 for community college students compared to $32,714 for public four-year colleges (Hanson, 2023c).

Given both the decrease in state and local support and the fact that community college students have some of the lowest incomes to pay for college (The Institute for College Access

and Success [TICAS], 2009), it is not surprising that community college students increasingly rely on student loans (McKinney & Burridge, 2015). However, despite the need for federal student loans (even small loan amounts), an increasing number of community colleges no longer participate in the federal student loan program (nationally around 10%), preventing nearly 1 million students access to federal student loans (TICAS, 2016). Students who lack access to federal loans are also more likely to be Black, Hispanic, and Native American, which adds to concerns of unequal educational attainment for these students (Hermes, 2008; TICAS, 2016). Colleges that do not participate in the federal student loan program are often referred to "no-loan" colleges or colleges with "no-loan" policies.

Statement of the Phenomenon

Community colleges have few institutional resources to support their missions and instead rely heavily on local, state, and federal aid (CCRC, 2022b). For example, in the fiscal year (FY) 2017, community colleges received 17% of total revenue from net tuition and fees; 20% from local revenue; 33% from state revenue; and 18% of their total revenue from federal aid (CCRC, 2022b). Federal aid includes federal student loans, grants (including Pell Grants), scholarships, work study and other programs (U.S. Department of Education [USDE] (n.d.b) and are authorized under Title IV of the Higher Education Act of 1965 through the U.S. Department of Education (Bouchrika, 2024; USDE, n.d.b.). Eligibility to disburse aid under Title IV requires that higher education institutions attain and retain certain criteria including state authorization, accreditation, and admissions standards (Federal Student Aid, n.d.).

The use of federal student loans as part of students' financial packages has long been a source of vigorous debate, particularly for community college students (Dunlop, 2013; Marx & Turner, 2019; Wiederspan, 2016). On the one hand, federal student loans have helped increase

enrollment across higher education institutions, especially community colleges (Kim, 2007), and access to federal student loans points to positive outcomes for these students (Dunlop, 2013; McKinney & Burridge, 2015; Rothstein & Rouse, 2011; Wiederspan, 2016). On the other hand, the increased rates of borrowing have led to issues of delinquency and default, resulting in serious implications for social mobility (Freyberg, 2022; McKinney et al., 2021). While federal financial aid programs are necessary for many students to afford a postsecondary education (Lucca et al., 2019), institutional eligibility and participation in these federal aid programs is a privilege not a right. The federal government can withdraw any higher education institution from using federal aid programs if the institution does not meet certain standards such as offering quality degree programs, preparing students for gainful employment, and adhering to institutional fiscal responsibility requirements (Hegji, 2023).

The U.S. Department of Education provides multiple metrics for accountability of these federal aid programs, which allows higher education institutions to be Title IV eligible. One such accountability metric is the cohort default rate (CDR). The CDR is intended to evaluate institutional quality and the capacity of higher education institutions' ability to administer federal student loans (Hegji & Bryan, 2023). It measures the percentage of students who default on a federal student loan before the end of the third fiscal year[1] after entering repayment (TICAS, 2018). Default is defined as a lack of payment for at least 270 days after starting repayment (Miller, 2017). If a higher education institution has a CDR of 30% in any single year, it must "develop a default prevention plan" (TICAS, 2018, p. 1). Any higher education institution with a

[1] In 2012, the U.S. Education Department (ED) began tracking three-year CDRs instead of two-year (Dembicki, 2021).

CDR of 30% or more for three consecutive years or 40% or more in a single year-can face penalties such as not being able to provide student loan access or even having the opportunity to offer Pell Grants revoked (TICAS, 2018).

Rather than face the risk of losing access to federal student aid because of a high CDR, many community colleges have turned away from participating in the federal student loan program (TICAS, 2014, 2016; Wiederspan, 2016). In particular, the fear of being sanctioned and losing access to administer Pell Grants is of acute concern (Douglas-Gabriel, 2016). Approximately one in four community college students receive a Pell Grant (Hillman, 2022) and thus losing access to this aid would certainly mean closure for many community colleges. The fear of losing access to Pell Grant aid is so high that nine community colleges in California rejected hundreds of thousands of dollars of state aid because accepting the state aid would have required the colleges to provide access to federal student loans (Zinshteyn, 2018).

In addition to concerns regarding high CDRs, there are three other reasons found in the literature that community colleges provide for not participating in the federal student loan program. Community college administrators argue that it is unethical to allow students to undertake student loan debt, particularly if they are unable to pay it back (Dunlop, 2012; McKinney & Burridge, 2015; Thomas, 2014). As one community college district chancellor notes, “Our whole point is to provide free tuition and fees and scaled-up services so students can graduate and go to work, not to borrow money” (Zinshteyn, 2018). Another administrator stated, “We found that the majority of students were just borrowing the money to borrow it, because it was there, when they really didn’t need it for their education expenses” (Redden, 2008).

Third, administering the federal student loan program is cost-prohibitive and institutions may want to allocate those resources elsewhere. For instance, during the 2012-2013 school year,

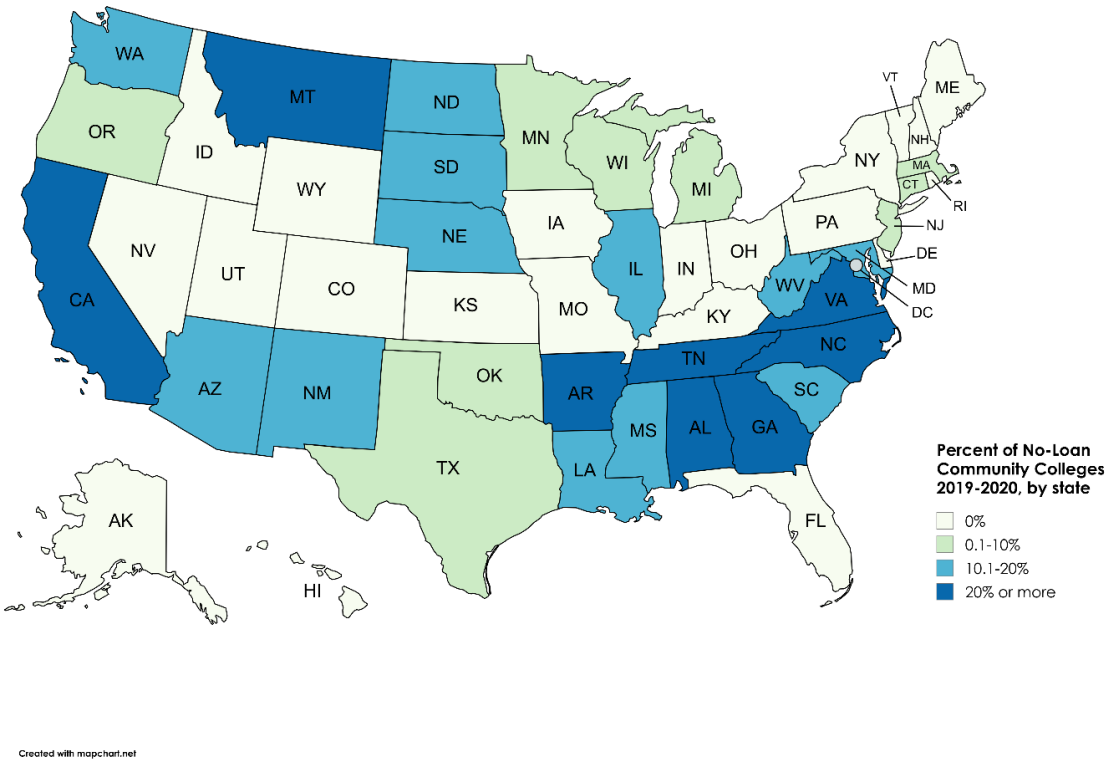
Central Piedmont Community College (CPCC) in Charlotte, North Carolina was required to pay back $235,000 on behalf of students who had taken out loans and subsequently dropped out of college. Additionally, the college reported that it was costing $300,000 a year to administer these loans to students (Thomas, 2014). The college cited these numbers as part of the reason why it later opted out of the federal student loan program in 2014.

Finally, community college leaders see community college as an affordable option and do not see the need to offer student loans (Dunlop, 2013). One college administrator in Texas stated, "We don't want to get them [community college students] more indebted, because tuition is low here. If students absolutely need to borrow for college, they can take out state loans through the Texas Higher Education Coordinating Board" (Hermes, 2008). Another administrator from Mississippi added, "In our situation, the cost of tuition is more than covered by Pell funds" (Hermes, 2008).

Community colleges that do not participate in the federal student loan program are also known as "no-loan" community colleges or community colleges with "no-loan" policies (Hillman, 2012, 2013). Eight states have more than 20% of community colleges with "no-loan" policies and five of those states are in the southeast (see Figure 1 below). TICAS (2016) reported that from 2015-2016, community colleges in 32 states opted out of the federal student loan program. This shows that despite the need for federal student loans at the two-year level, many community colleges have decided to adopt "no-loan" policies.

Figure 1

Percent of No-Loan Community Colleges from 2019-2020, By State



Source: U.S. Department of Education [USDE] Integrated Postsecondary Education Data System (IPEDS) and author's calculations.

Purpose of the Study and Research Questions

The purpose of this study was to analyze factors that will inform whether or not a community college will opt out of the federal student loan program. This research is guided by the following questions and sub questions:

1. What are the financial (e.g. tuition and fees, state support, cohort default rate) and demographic differences (e.g. governance and rurality) between states that have a high percentage of "no-loan" community colleges and those that do not?
2. What are the factors (financial and demographic) that inform a community college to adopt a "no-loan" policy?

Significance

Given the associated risks with high CDRs and other reasons given (McKinney & Burridge, 2015), it may seem justified that community colleges opt out of the federal student loan program. However, denying access to federal student loans to community college students also has consequences (McKinney & Burridge, 2015). Without access to federal student loans, community college students may be more likely to take out private loans, use credit cards, take fewer classes, or drop out entirely (TICAS, 2009; Wiederspan, 2016). Community college students who do not have federal student loan access are less likely to borrow and transfer to a four-year institution (Dunlop, 2013). In addition, access to federal student loans is associated with an increase in borrowing and the number of credits taken at the community college (Wiederspan, 2016). Increasing the number of credits is associated with an increased chance of degree completion which leads to higher earning potential (Levesque, 2018). Furthermore, minority students are more likely to be affected by "no-loan" community colleges (TICAS, 2016). For example, in Alabama, 61% of Black students lacked federal loan access compared to 34% of White students (Douglas-Gabriel, 2016).

Previous studies on "no-loan" policies at community colleges are sparse and tend to focus on student outcomes such as enrollment and persistence. Both Dunlop (2013) and Wiederspan (2016) found that community college enrollment and persistence increased when students had access to federal student loans. Marx and Turner (2019) found that loan access improved community college student GPAs by 0.6 points. In addition, students earned an additional 3.7 credits and were 11 percentage points (178 percent) more likely to transfer to a four-year public institution. Adding to this research, Barr et al. (2021) found that students from a large community college who borrowed less performed worse academically and ultimately were

associated with an increased likelihood of default after five years. However, there is little to no empirical research addressing the factors that inform community colleges to opt out of the federal student loan program in the first place. What information is available regarding community college "no-loan" policy adoption comes from non-scholarly periodicals such as The Chronicle of Higher Education, Inside Higher Ed, Forbes, The Washington Post, local business magazines and other publications. The lack of scholarly research demonstrates how understudied this topic is. This study will add to the literature regarding community college student loan debt and "no-loan" community colleges in two ways.

First, this research aims to provide insight on some of the four key assumptions previously discussed and how they inform whether a community college adopts a "no-loan" program. This may be of particular concern for community colleges and policymakers. If the CDR is associated with "no-loan" policy adoption, then community colleges can take steps to reduce it. Previous research (see Charles et al., 2016; Hillman, 2015b) has noted how institutions can reduce their CDR including student success initiatives, financial aid counseling and literacy courses, and other strategic actions. Policymakers can gain a better understanding of the implications of a "no-loan" community college, particularly given that previous research shows that minority students are disproportionately affected by "no loan" policies (TICAS, 2016) and that these policies negatively affect student outcomes such as persistence and enrollment (Barr et al., 2021; Dunlop, 2013; Wiederspan, 2016). For example, if community colleges with a high number of Pell Grant recipients opt out of the federal student loan program, this could affect outcomes such as time to degree completion. Policymakers could enact guidelines on how best to support students who are affected by these policies.

Second, it is important to understand the broader context and trends of "no-loan" policies across the United States. Current understandings of why community colleges opt out of the federal student loan program are limited (Dunlop, 2012), despite the implications for hundreds of community colleges and their students. There is some scholarship on two-year students as well as institutional characteristics that contribute to student loan default and the effects of these phenomena on federal student loan participation (see Christman, 2000; Hillman, 2015b, and Njoku, 2023 for a review) but this study aimed to look at "no-loan" policy adoption across the United States more broadly. Because student loan problems (e.g. default) persist and because there has been an increase in the number of "no-loan" community colleges, it was important to explore what descriptive statistics are available and how these "no-loan" colleges compare to similar institutions with loan programs as well as the long-term effects of such policies. This would provide a foundation for future studies.

Overview of Methods

This study employed descriptive statistics and multivariable linear probability models with fixed effects (LPMFE) and time fixed effects to examine factors that inform a community college to adopt a "no-loan" policy. There were two parsimonious models, one informed by existing literature and one informed from the results of the descriptive statistics. I also used one-year time lags of the independent variables since the decision to opt out of the federal loan program is a delayed response. The dependent variable was binary, coded as 1=the college opts out of the federal loan program and 0=the college does not opt out. This was coded based on the number of students who took out loans. If zero (0) students took out a loan, the variable was coded as one. If even one student took out a loan, then the variable was coded as zero.

I used multiple data sources including Integrated Postsecondary Education Data System (IPEDS) from the National Center for Education Statistics (NCES); Education Commission of the States (ECS); State Higher Education Executive Officers Association (SHEEO) State Higher Education Finance Report; U.S. Department of Education's (USDE) Federal Student Aid (FSA); and LendEdu (Luthi, 2024) in order to create a panel dataset from 2002-2019, a time when a majority of "no-loan" policies were adopted.

To improve the predictive validity of the models, the sample consisted of all U.S. colleges looking specifically at ones that have opted out of the federal student loan program and comparing them to colleges that have remained enrolled in the federal loan program. The sample consisted of U.S. degree-granting two and four-year colleges including associate's and certificates as well as degree-granting, not primarily baccalaureate or above. In addition, only Title IV participating; Title IV and U.S. service institutions (NCES publications) were included.

Overview of Results

Results from the first research question indicate that there are noticeable differences in states that have a higher percentage of "no-loan" community colleges and those that do not. Results from the models indicate that the cohort default rate, percentage of first-time, full-time students awarded state/local grant aid, state support for higher education, percentage of first-time, full-time students taking out a nonfederal student loan, and published tuition and fees inform whether a community college will adopt a "no-loan" community college; however, the effect sizes for the results are very small. Further, the dummy year variables showed statistically significant and larger effect sizes in the adoption of a "no-loan" policy. This confirms that there are complex and nuanced factors in "no-loan" policy adoption at the community college level.

Results of the sensitivity analyses and robustness checks both confirm and contradict some of the findings from the main models.

Overview of Discussion

In the discussion, I provide an overview of the results as well as explanations for the results found in chapter four. I also discuss the results of the sensitivity analyses and robustness checks. I conclude with implications for policymakers and administrators, limitations of the study, and suggestions for future research.

Summary

The purpose of chapter one is to provide an overview of the topic of "no-loan" policies at community colleges, which remains an understudied topic despite its importance as both a research topic and for policy implications. Community colleges are a vital part of the higher education landscape, and the ability for students to enroll in these institutions is of paramount importance. Moreover, an increasing number of community college students need access to federal student loans to complete their education. However, nearly 10% of community colleges across the U.S. do not participate in the federal student loan program (TICAS, 2016).

There are four reasons commonly cited as to why community colleges choose to opt out of the federal student loan program. These are the threat of sanctions due to a high CDR; the ethics of allowing students to take on student loan debt; the amount it costs for colleges to provide loans and be financially responsible for student loan default; and the actual need given how affordable community colleges are compared to four-year institutions. Very few studies have addressed the factors that describe whether a community college adopts a "no-loan" policy. Thus, the remainder of this dissertation will explore this phenomenon. Chapter two focuses on the literature related to "no-loan" policy adoption as well as a description of the theory of change

used in the study. Chapter three describes the methods, model, assumptions, and limitations for this study. Chapter four includes the results of the main models, sensitivity analyses, and robustness checks. Chapter five provides a discussion of the results, limitations, and the implications for policymakers and future research.

Definitions of Terms

For this study, a "no-loan" policy is a practice in which a higher education institution does not participate in the federal student loan program. As a result, the higher education institution does not offer federal student loans as part of the financial aid package for a student. Other important terms are as follows:

Cohort Default Rate: The cohort default rate (CDR) is determined by the percentage of borrowers who default within two years of entering repayment of certain Federal Family Education Loans (FFELs) and/or William D. Ford Federal Direct Loans (Direct Loans) (USDE, 2020). If the CDR is 30% or more for three years or if the CDR is more than 40% in a single year, the school may lose access to Direct Loan and Federal Pell Grant program eligibility (USDE, 2020).

Community College: An accredited, public institution of higher education that primarily offers associate degrees (Morgan-Petty, 2023).

Dual enrollment: A program that enrolls high school students in college courses for credit, specifically excluding Advanced Placement and International Baccalaureate credit (IPEDS; Taylor & Pretlow, 2015). However, dual enrollment programs vary across states and institutions in terms of implementation, funding, and types of programs.

Federal financial aid: Funding provided by the federal government including Pell Grant, subsidized/unsubsidized loan options, and work-study funds.

Federal Pell Grant: Federal funds used to help low-income students pay for college authorized through the Higher Education Act (Morgan-Petty, 2023). A college may award the money to a student's account, directly to the student, or a combination of both methods (BigFuture, n.d.). To qualify for a Pell Grant, a student must demonstrate financial need through the Free Application for Federal Student Financial Aid (FAFSA) form. In addition, except under exceptional circumstances, the grant does not have to be repaid (Federal Student Aid, n.d.b).

Federal student loan: A loan backed by the federal government. There are four loan types: Direct Subsidized Loan; Direct Unsubsidized Loan; Direct PLUS Loans; and Direct Consolidation Loans. Subsidized loans are based on demonstrated financial need and have smaller borrowing limits (up to $5,500 annually) whereas unsubsidized loans have larger borrowing limits (up to $20,500). In subsidized loans, the U.S. Department of Education pays the interest while the student is in school, up to six months after a student leaves school, and during a period of deferment (Federal Student Aid, n.d.c). In unsubsidized loans, the student is responsible for all interest accrued as soon as the loan is disbursed (Federal Student Aid, n.d.d). Direct PLUS loans are loans that parents take out on behalf of their dependent students (Federal Student Aid, n.d.c). Direct Consolidation Loans allow anyone who has student loans to combine their loans into a single loan (Federal Student Aid, n.d.c).

Federal work-study (FWS): One of the oldest forms of federal financial aid, pre-dating both Pell Grants and federal loans (Scott-Clayton, 2018, 2021). Federal work-study (FWS) allows students with unmet financial aid to work on campus 10-15 hours per week. However, FWS is not a common financial aid source at the community college level. Instead, FWS programs are found in selective, larger, private institutions based on past funding patterns (Scott-Clayton, 2018, 2021).

Financial aid gap: The monetary difference between a student's financial aid package and the actual cost of college (Cairns, 2023). There are several reasons for a student's financial aid gap including institutional resources and type of institution, availability of resources, application date of FAFSA, and a lack of family support (Cairns, 2023).

Full-time equivalent (FTE): A FTE is an estimate of student attendance. It is calculated by adding up the credits of all enrolled students at a specific level and then dividing that number by the number of credits that constitute a full-time load (University of San Diego, n.d.). This measurement of enrollment can affect the funding a community college receives (Ullrich, 2023).

Institutional resources: The availability of "sufficient human, financial, information, physical, and technological resources and capacity to support its mission" (Boston University, n.d.).

Loan default: Student loan default occurs when a payment is not made on a student loan in at least 270 days after the loan enters repayment, generally six months after graduation or stopping attendance (U.S. Department of Education, 2016). There are several negative consequences of student loan default including collections, garnishment, inability to obtain future federal aid, and others. In addition, loan default is not eligible for bankruptcy, nor does it have a statute of limitations (Hillman, 2015b).

"No-loan" community college: A community college that does not participate in the federal student loan program, thereby denying its students the option to finance their education through federal student loans.

Nonfederal student loan: Any loan not issued by the federal government and reported in IPEDS. These loans can be issued by banks, credit unions, state agencies, or individual institutions (USDE, n.d.c.).

Open Access: An admissions policy (or process) in which prospective students (of all ability levels) are able to attend with often the only requirement being a high school diploma or GED (Mullin, 2017; Ross & National Journal, 2014).

Pell Grant purchasing power: Also known as buying power, the amount of goods and services a currency can buy (Hayes, 2024). In this case, how much money a student using a Pell Grant can put towards her education.

Rurality: Describes the area in which a school is located and is defined by the distance it is to another urban area or cluster (NCES, n.d.). There are three types of rurality: fringe (less than or equal to 5 miles from an urban area or less than or equal to 2.5 miles from an urban cluster); distant (more than 5 miles but less than 25 miles from an urban area or more than 2.5 miles but less than 10 miles from an urban cluster); or remote (more than 25 miles from an urban area or 10 miles from an urban cluster) (NCES, n.d.).

State support: Funding sources available from a state that contribute to an institution's operating funds (National Center for Science and Engineering Statistics, n.d.).

State student loan: A state-sanctioned loan available to residents and students attending a higher education institution located within that participating state. Requirements, interest rates, and borrowing amounts vary, particularly from federal student loans (Williams-Wyche, 2019). Because these are loans not offered through the federal government, they are considered private loans.

CHAPTER 2: LITERATURE REVIEW

Introduction

Many community colleges are opting out of the federal student loan program at a moment when these loans are needed more than ever. By denying student loan access, these "no-loan" community colleges deny some of the neediest students an opportunity to earn a degree (TICAS, 2016). This literature review covers research on "no-loan" policies at both community colleges and four-year universities[2]. The goals of this literature review are as follows, to show that community colleges occupy a special place in the higher education landscape, to understand what mechanisms allow for funding of community colleges, and to demonstrate how "no-loan" policies operate at the community college level, which is radically different from four-year institutions. I first provide a brief overview of the history of community colleges before moving to the funding sources of community colleges including local, state, and federal, and governance structures. I will further describe the federal student loan program, particularly at the community college level. Next, I outline the problems with student loans including debt and default, which provides context for some colleges' decision to adopt a "no-loan" policy. I then summarize research on "no-loan" policies at both four-year and two-year schools. Much of the literature of "no-loan" colleges focuses on the student outcomes at highly selective and elite universities. There is little empirical research on why community colleges decide to opt out of the federal student loan program or what factors inform opting out. I conclude with the theoretical

[2] For this study, "community college" refers to public, degree-granting institutions not primarily baccalaureate or above and associate's and certificates. Four-year colleges in this context mean both public and private degree-granting four-year colleges and universities.

foundation for the study, which draws on theory of change and incorporates rational choice theory and bounded rationality.

Review of Community Colleges

For this study, community colleges are defined as public institutions that award primarily associate's degrees in all fifty states. In this study I include both two- and four-year institutions. In this sample, some states have only one community college[3] (Alaska, Delaware, Rhode Island, Vermont) and some have over 45 (Texas (59), Illinois (48), North Carolina (59), and California (115). For a full list of the number of community colleges in each state, see Appendix A.

Today, public community colleges remain "critical entry points to higher education" (Li & Katri, 2024, p.4) and provide educational opportunities for many underrepresented minorities and socioeconomic backgrounds. The emphasis on workforce training and a shorter time to graduation make community colleges an attractive option for many students (Ali-Coleman, 2019) particularly in a post-industrial economy where there is an increasing need for a postsecondary education (Carnevale & Smith, 2018). In addition, community colleges also provide pathways to four-year institutions (Baime & Baum, 2016). Based on wide program offerings and open-access policies, community colleges enroll a large number of students. As of fall 2021, over 10.2 million students were enrolled in community colleges, representing 35% of all undergrads nationwide (Lloyd, 2023). Community colleges were not originally designed to serve the diverse populations they do today; however, through a series of government

[3] In addition, these counts exclude branch campuses or additional multi-campuses, which serve large populations of students but all under the same accreditation as this would dramatically increase the number of community colleges.

interventions and initiatives, community colleges have changed over time to meet the needs of students.

Brief History of Community Colleges

While the first public, independent, two-year college was founded in 1901, these institutions did not increase in size and number until the 1930s (Dury, 2003). These colleges (known as "junior colleges" during this time) were founded first as preparatory programs designed to allow select students to transfer to four-year universities (Grubbs, 2020; Ullrich, 2023). During the Great Depression and beyond, these two-year institutions expanded their course offerings and admissions to include vocational education to improve the local workforce (Morgan-Petty, 2023).

President Truman's Commission of 1947 was the first time a president established a committee to review the status and nature of the U.S. higher education system, and it was instrumental in expanding student access to community colleges (Thelin, 2004). The commission put forth ambitious benchmarks for educating over 4.5 million students by 1960 as well as advancing access and equity to underserved populations (Gilbert & Heller, 2013). In addition, the commission sought to replace the term "junior college" with "community college" as they felt that it more appropriately represented the goals and functions of these educational institutions. These institutions were to provide vocational training and be fully integrated into their local communities (Gilbert & Heller, 2013). However, the commission made clear that community colleges were to be locally controlled, organized to fit within the state and serve the interests of their communities and their states (Gilbert & Heller, 2013). This in turn led to the many diverse community college systems we see today (Gibson-Benninger, 1997; Quinterno, 2008).

The expansion and recognition of community colleges, as advocated by President Truman's Commission of 1947, set the stage for a rapid increase in their numbers during the 1950s and 1960s. These newly created institutions were specifically designed to enroll students who might not have otherwise attended (Goldrick-Rab, 2010), particularly veterans, minorities, low-income students, women, and other populations (Grubbs, 2020). As a result of this enrollment growth, these institutions needed additional funding strategies to support the diverse student populations. While two-year colleges were initially supported by tuition and fees, local taxes, and state revenues (Cohen & Brawer, 1996), the newly passed Higher Education Act of 1965 dramatically changed the way that community colleges were funded by providing Pell Grants and Work Study programs (Tollefson, 2009). The 1960s also saw a dramatic increase in the number of community colleges with an average rate of one college opening each week during this decade (Trainor, 2015).

During the 1970s community colleges saw large increases in enrollment, especially part-time enrollment (Morgan-Petty, 2023) as well as increases in federal funding and trade skills programs (Dury, 2003; Grubbs, 2020). The 1980s and beyond have seen community colleges continue to diversify their programs and seek alternate funding sources. Colleges have introduced bachelor's degree offerings and dual enrollment options while still offering vocational training, adult education, and four-year transfer options (Dury, 2003). Concurrent with these academic programming and enrollment changes, tuition and fees as well as federal funding have continued to have a greater role in community college revenue (American Association of Community Colleges [AACC], 2024). Decreases in state and local funding have caused community colleges to seek alternate funding sources (Mitchell et al., 2018) including an

increase in the number of public-private partnerships and alternative funding sources (Maas, Rao, Taylor and Associates, 1994).

A Brief Overview of Differences Between Community Colleges and Four-Year Universities

Community colleges differ from four-year institutions (both public and private) in several important ways. First, community colleges are typically open-admission institutions and must accept students with a demonstrated high school diploma (Grove, 2020) Four-year institutions (particularly private elite and highly selective public institutions) require other admissions standards including letters of recommendation, personal essays, and standardized test scores. Community colleges provide more access to educational opportunities through open admissions policies but also highlight the financial need that many of these students have.

Enrollment demographics between two-and four-year colleges vary as well, which highlights the differences in students' background, needs, and abilities. Community college students may be dual-enrolled (i.e. enrolled high school students who take community college courses), traditional students, or post-traditional/non-traditional students. The ability for different kinds of students to enroll in community colleges allows for more post-secondary educational opportunities, which can lead to social mobility (Yuen, 2020).

Student demographics also differ between community colleges and four-year institutions. Most students enrolled at a community college come from the local community (Kolbe & Baker, 2018). However, most traditional-age students attend four-year public institutions. As of fall 2021, four-year colleges enroll 43.3 percent of traditional age college students compared to 18.5 percent at community colleges (Hanson, 2024). Community colleges, however, enroll more underrepresented minorities than four-year colleges and students of various socioeconomic backgrounds. According to Dembicki (2022), Hispanic students comprised about 28 percent of

community college students in 2020 and about 19 percent of public four-year college students. Black students are slightly more represented at community colleges (12.7%) vs public four-year colleges (11.5%). Students from lower socioeconomic status are also more likely to attend community college (Yuen, 2020) and qualify for Pell Grants (Morgan-Petty, 2023). Two-year college students are more likely to be independent. About 45 percent of public two-year college students are considered financially dependent on their parents whereas 67 percent of public four-year college students are financially dependent (CCRC, 2024). The diversity of community college enrollment also means that these students may have different needs, abilities, and resources to complete their degree. Community colleges must provide targeted and "high-touch" services and learning opportunities such as intensive advising, tutoring, and other forms of support to help with student success (Whissemore, 2021). However, community colleges have limited funding sources available to support these services and learning opportunities (Edgecombe, 2022).

With respect to funding, community colleges are almost entirely dependent on state appropriations and tuition and fees to support their programs and services. Federal funding for community colleges is disbursed mainly as federal financial aid and research grants (Edgecombe, 2022). Other institutions, particularly highly selective public and elite institutions, are able to draw from state appropriations, tuition and fees, large endowments, research grants, and other forms of capital to fund their programs and services (Edgecombe, 2022). While four-year colleges also use a large percentage of federal funding in the form of federal financial aid for students, four-year colleges also receive a higher percentage and dollar amount of federal grants and have access to federal contracts as a source of revenue (USAFacts, 2023). Further, the federal government tends to prioritize funding for four-year colleges and universities in part

because, in general, public universities are well established. In 2018, the U.S. government gave $149 billion worth of investments to higher education including student aid (65%), federal grants (27%), and federal contracts (8%) (USAFacts, 2023). Funding differences between two-and four-year institutions help contribute to the different reasons these institutions have for adopting "no-loan" policies as well as the different outcomes of "no-loan" policies. In this next section, I will briefly cover how community colleges are funded, which helps explain why they do not have the resources to offer grant aid to offset the financial aid gap.

Funding Community Colleges

The U.S. higher education system remains decentralized and prioritizes relationships between states and their public higher education institutions (UniCEN, 2020). In fiscal year 2017, community colleges received 33 percent of their revenue from the state, 17 percent from tuition and fees, 20 percent from local sources, and the rest from self-supporting operations and other sources. Only 18 percent of their revenue came from the federal government (Stauffer et al., 2019). As state appropriations have decreased over the past 20 years, the role of federal funding, including programs like Federal Work-Study, Pell Grants, and the federal student loan program, has become increasingly significant (Edgecombe, 2022). During the 2000–2001 academic year, proportional funding sources for two-year associate-degree-granting institutions were as follows: tuition and fees (19.5%), federal government (5.4%), state governments (44.6%), local governments (19.5%), private gifts and grants (1.2%), endowment earnings (0.1%), educational activities (0.7%), auxiliary enterprises (0.4%), and other current income (3.6%) (NCES, 2005 as cited in Tollefson, 2009). Thus, federal funding went from only 5.4% in 2000-2001 to 18% in 2017. Today, public two-year colleges receive less than half the revenue for education-related purposes per full-time-equivalent (FTE) student than public four-year

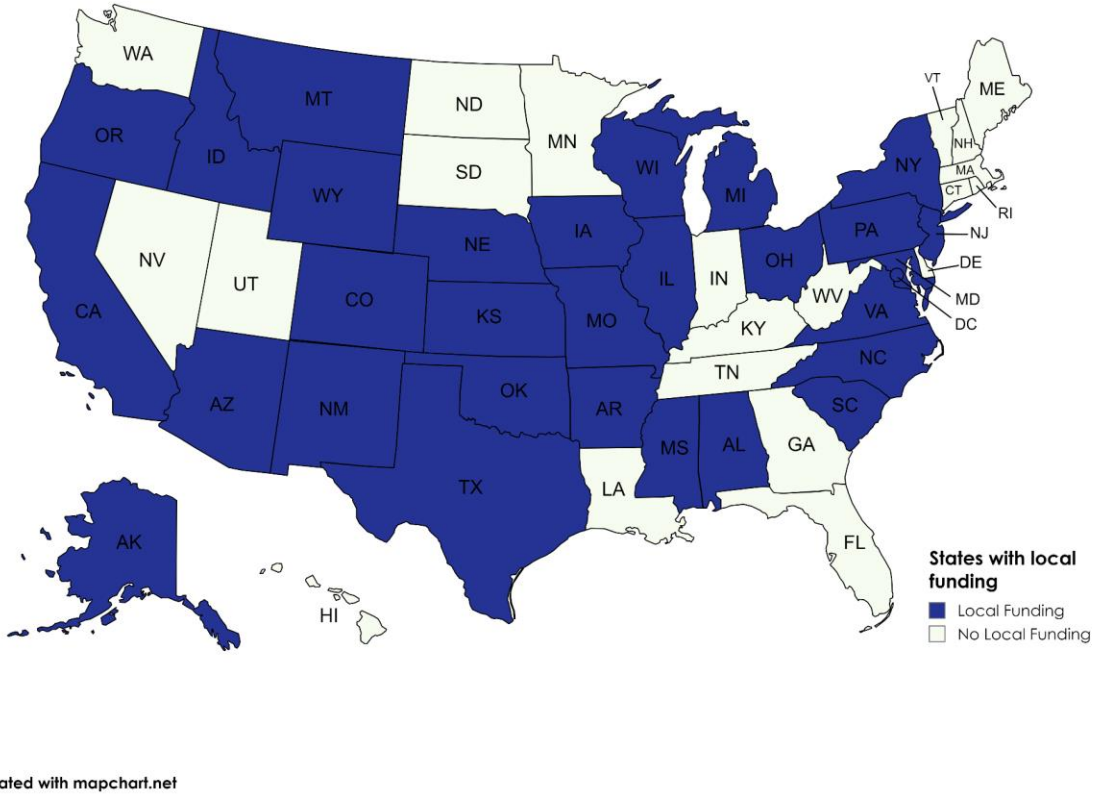
colleges at the state level ($8,700 vs. $17,500) (Yuen, 2020). Overall, community colleges receive less funding per student despite educating the neediest students (Kolbe & Baker, 2018). As state funding dwindles and colleges become more reliant on federal funding, community colleges face increasing financial pressure to educate and provide services for their students with less money. Local funding sources provide some relief but are not uniformly distributed across the country.

Local Funding

While state and federal funding play a critical role in supporting community colleges, local funding sources have historically been used to support community colleges and provide financial stability (Gilbert & Heller, 2013; Schwartz, 2019). However, there are large disparities in local funding access. Some states provide a significant amount of local funding and others provide almost nothing. According to Bombardieri (2020), twenty-four states provide $11.5 billion in local tax appropriations, thirteen states have no local funding for any public college (four-year or two-year), and in the remaining thirteen states some community colleges receive some local appropriations, but most do not. This echoes what Hardy and Katisnas (2008) found, which is that local appropriations ranged from zero in twelve states to over 40% in six states (as cited in Tollefson, 2009). See Figure 2 for a map of states with local funding for community colleges, which shows that most states offer some local funding. These disparities in local funding affect not only the economic health of a community college but also institutional access and quality (Bombardieri, 2020). Nevertheless, local appropriations can be a major source of revenue for many community colleges with only tuition and fees and state appropriations making up a larger share (Ortagus et al., 2022; Schwartz, 2019).

Figure 2

Number of States with Local Funding for Community Colleges in FY 2018



Note: Many states that have local funding also have state loans. From Ortagus et al. (2022, August). *The revenue implications of community colleges' reliance on local funding*. (Working Paper). https://static1.squarespace.com/static/5d9f9fae6a122515ee074363/t/639a4d24d478053d45f601f9/1671056677780/ISPaper_RevImplicationsofCCCollegesRelianceLocalFunding.pdf

State Funding

State funding for community colleges is important and the variability of the funding in the U.S. affects how these colleges operate (Mitchell et al., 2018). All community college state systems receive some funding (Markham, 2008); however, the amount of appropriations each state provides vary widely. According to the State Higher Education Executive Officers Association (SHEEO), less than one quarter (22.8%) of state higher education fiscal support is used to support public two-year college operating funds. Four states provide more than 30

percent (New Hampshire, Washington, California, and Delaware) and four other states spend less than 10 percent (Vermont, New Jersey, Texas, and Iowa) (Phillippe, 2022). The variability of state funding for higher education, particularly community colleges, can be attributed to several factors including governance, policymaking, and advocacy (Candelaria, et al. 2022; Tollefson, 2009), indicators of economic health of the state (Weerts & Ronca, 2012), as well as the competing and varied priorities of each state (Heller, 1999; Tollefson, 2009).

States have a variety of tools available to support higher education institutions including state appropriations, often through funding and performance-based formulas (see Kelchen et al., 2024; Mullin & Honeyman, 2007 for a review), student aid programs including merit and need-based scholarships, promise programs, and some states even offer student loans (National Association of Student Financial Aid Administrators [NASFAA], n.d.). The variability of state support can lead to highly variable state budgets for community colleges, which can affect student outcomes. In general, states with higher funding levels see more positive outcomes for students (Lingo et al., 2021). For example, Chakrabarti et al. (2018) note that increases in state appropriations led to better financial outcomes for community college students and an increased likelihood of attending graduate school. Increases in state financial aid have also led to increases in community college enrollment (Heller, 1999).

Governance Structures and Tuition Setting Authority

Governance is the process of making and enforcing decisions while considering the various needs and desires of internal and external stakeholders (Amey et al., 2008). Because there is no federal community college system, each state has its own choice of governance structure (Schuetz, 1999). As a result, these governance structures have formed over time because of complex political, historical, and cultural factors (Tandberg, 2013). For simplicity,

community college state governance can be grouped into three categories: consolidated governing boards (most centralized), coordinating boards, and higher education service agencies “planning agencies" (least centralized) (Hammond et al., 2020). In addition, community college governance structures may be incorporated into the structures employed in four-year colleges or K-12 systems or may they be different (Schuetz, 1999). Each of these structures can influence how a state handles various financial and regulatory practices (Tandberg, 2013). Over time, state-level community college governance structures have become more centralized (Hammond et al., 2020), meaning that the state or system office has more control over individual community colleges (Kater & Burke, 2022). This points to the role that financial contribution has as community colleges tend to become more decentralized as local funding increases (Garrett, 1993). This relationship is important because it directly affects a college’s ability to provide educational opportunities for its students. In addition, decentralization allows more opportunity for colleges to make decisions that are more responsive to the local community.

Of the eight states with 20 percent or more community colleges adopting a “no-loan” policy, three of the eight have state systems or boards of higher education (Georgia, North Carolina, and Tennessee), which are more centralized, and are closely located to one another in the southeast. However, three other states (Arkansas, Montana, and Nebraska) have local community college boards, which are more decentralized, and are not closely geographically located. California and Alabama have independent state governing and coordinating boards respectively. However, none of these states have state boards of education as the primary governance model, which is the most centralized governance model in this study. This suggested that the governance structure may inform a community college’s decision (ability) to adopt a “no-loan” policy and thus warranted further investigation. The benefits and drawbacks of each

structure is beyond the scope of this literature review; however, each of these structures affects the tuition-setting authority of community colleges, which may inform “no-loan” policy adoption.

Tuition is one of the few ways that a community college has to raise revenue, yet state legislatures have considerable control over community colleges' ability to set tuition and fees[4]. Generally, state policy makers make decisions about preferences for the levels of tuition and financial aid in the states (Doyle, 2012) in addition to other stakeholders (Li & Katri, 2024). At the most centralized level, a state-wide entity is responsible for setting tuition at all institutions in that state, which can lead to uniformly set prices and streamlined decision-making. At the most decentralized level, each institution sets its own rate but typically with some legislative guardrails to prevent excessive tuition rates (Li & Katri, 2024). One would expect community colleges to strategically set their tuition and fees to maximize revenue (Frederick et al., 2012). However, since many community colleges are centrally governed, there is less autonomy in changing tuition and fees despite the fact that community colleges are more agile and responsive to community needs (Amey et al., 2008).

Tuition and Fees at Community Colleges

Despite the need for and importance of community colleges, these institutions and their students face significant financial barriers due to reductions in state funding. At community colleges, on average states reduced funding by 12% from 2001-2011 (Hiltonsmith, 2015), with

[4] State legislatures can also require community colleges to opt into the federal student loan program. Willoughby (2011) provides an overview of one such controversial law in North Carolina, which is no longer on the books.

state-spending-per-student remaining well below pre-recession levels (Mitchell et al., 2018; SHEEO, 2022). Budget cuts at these institutions have far-reaching implications because they rely heavily on federal and state appropriations (AACC, 2022; Li & Katri, 2024). As a result, decreases in support have led to increased tuition, cuts to academic programs and services, and other cost-saving initiatives (Hiltonsmith, 2015; Koeze & Russell, 2022; Mitchell et al., 2018).

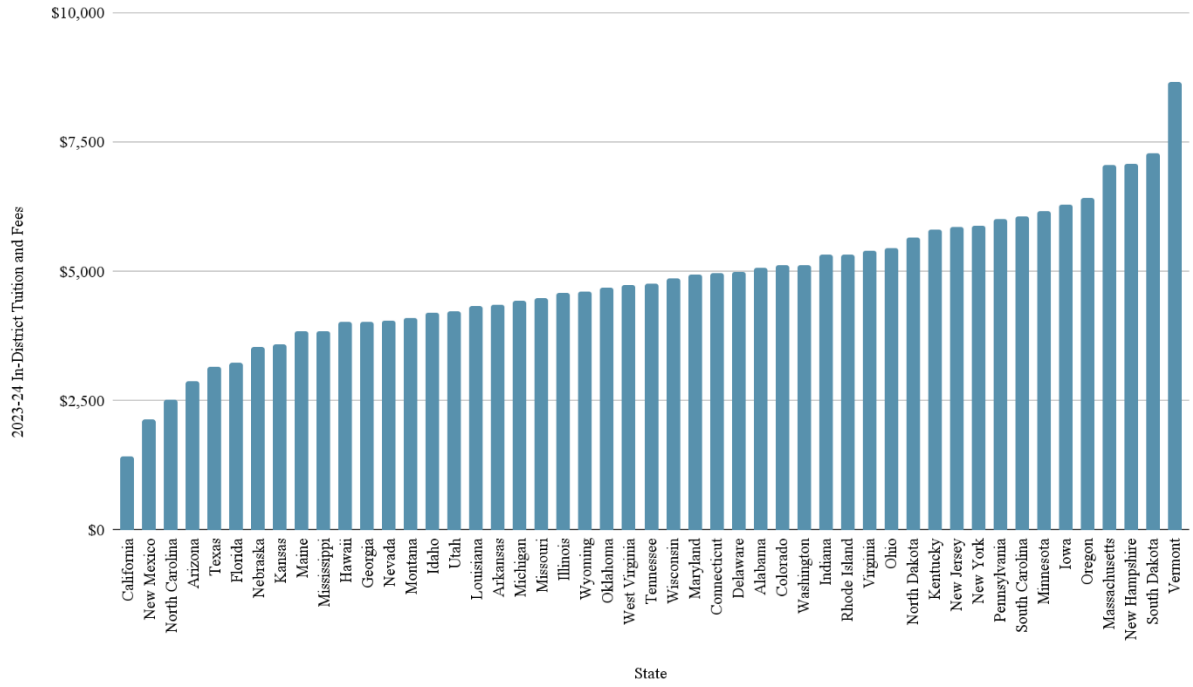
Community college students often feel the brunt of these measures. For example, average tuition and fees were approximately 18 percent higher during the 2019-2020 academic year than during the 2010-2011 academic year for two-year institutions in constant 2020-2021 dollars (National Center for Education Statistics, 2021). Most recent numbers from CollegeBoard (2023) show that the average published tuition and fees for full-time in-district students at public two-year colleges is $4,831 and the median is $4,767 during the 2021-2022 school year. In addition, 19 states have tuition and fees over $5,000. For a full list of two-year in-district tuition and fees by state see Figure 3, which lists the average in-district tuition and fees at public two-year colleges from least to most expensive by state.

Additionally, students still need to cover the costs of housing, transportation, or additional funds needed for school supplies; thus, published tuition and fees do not fully capture the cost of attendance. For low-income and minority students, who are more likely to attend community college, these numbers are particularly life-altering. According to TICAS (2017), on average, U.S. families with an income of $30,000 or less would need to spend 50% of their income to attend a community college. Given that many community college students are financially independent, these financial barriers can hinder academic success and place an enormous burden on low-income students and their families (King, 2002). Without being fully

funded, students may choose to attend part-time, which delays their entry into the workforce resulting in lost earning power, or not attend college at all (King, 2002).

Figure 3

Average 2021-2022 In-District Tuition and Fees at Public Two-Year Institutions, by State



Note. California has the most community colleges (102), and Vermont is one of several states that have only one. Average published tuition and fees for full-time in-district students at public two-year colleges range from $1,430 in California and $1,950 in New Mexico to $8,600 in Vermont during the 2021-2022 school year (Ma & Pender, 2021). Source: From CollegeBoard (2023). *Trends in college pricing and student aid.* research.collegeboard.org/trends

Dual Enrollment

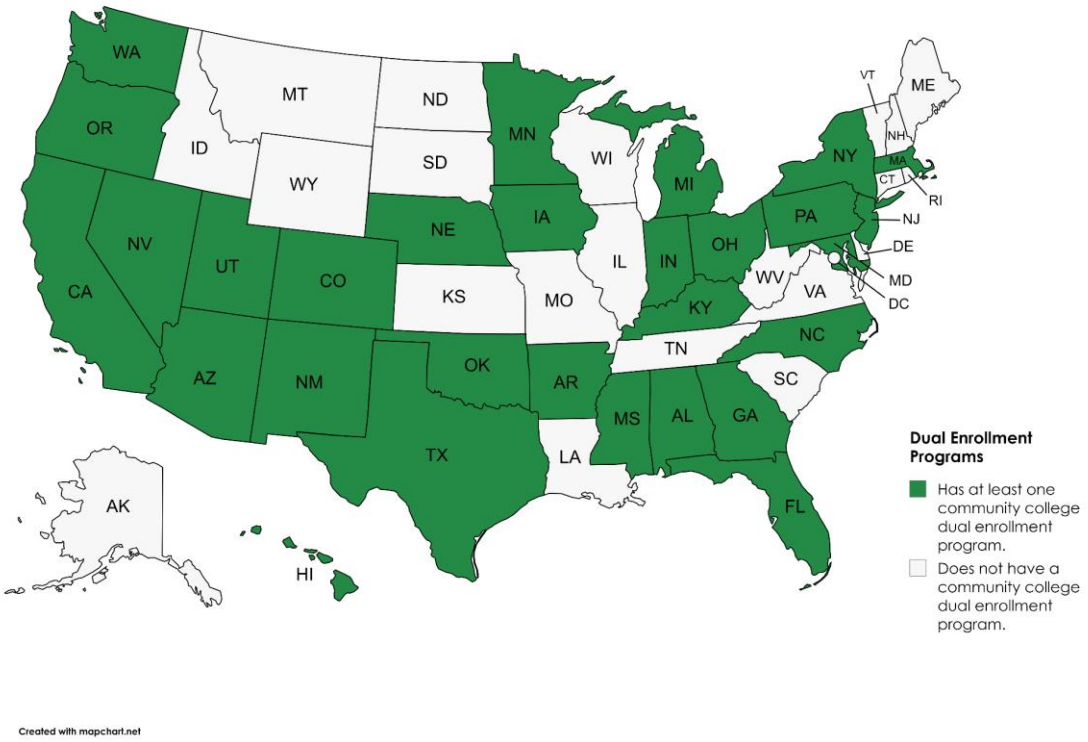
Dual enrollment programs, also known as early college programs, allow high school students to earn college credit. These programs started in the 1980s and have grown increasingly popular (NISOD, n.d.). Today, over 80% of public high schools across the U.S. offer dual enrollment, most offered in partnership with public two-year colleges and local school districts (Ryu et al., 2024). In these cases, students can earn an associate degree or up to two years of

college credit toward a bachelor's degree (Griffith, 2008). Research has shown positive effects of dual enrollment programs. These programs have been shown to help students graduate high school and help with the transition from high school to college (see Taylor & Pretlow, 2015). Figure 4 provides a map of which states offer at least one dual enrollment program.

Dual enrollment provides an example of the challenges of financing dual enrollment at community colleges and the benefits of enrolling more high school students. Challenges in financing dual enrollment vary by state. Some states require students to pay tuition and fees whereas others do not. For example, Colorado, North Carolina, and Texas mandate that students are not charged tuition costs. California and Pennsylvania do not require schools (dual enrollment programs) to pay students' tuition but allow schools to pay if they can/so wish. In Michigan, dual enrollment programs are required to cover tuition fees equivalent to the state funding they receive for the time students spend on postsecondary coursework (Griffith, 2008). However, for most community colleges, dual enrolled students do not bring in the same funding as for non-dual enrolled students (Belfield et al., 2023). At the same time, dual enrollment programs may stave off the enrollment cliff. For example, two-year institutions saw an increase in enrollment post-Covid due to the increase in dual enrollment (Knox, 2023). As a result, it's possible that community colleges that have a large dual enrollment base may choose to opt out of the federal student loan program. These students would not take out student loans, yet the college retains a high level of enrollment. At any rate, dual enrollment is an important variable to consider.

Figure 4

Dual Enrollment Programs Offered by State



Note. Some states have dual enrollment programs but the schools that benefit are four-year colleges and universities and were eliminated from this sample. These include Alaska, Connecticut, Delaware, Louisiana, and Tennessee. Missouri and Alaska did not have information about their early college programs and were eliminated from the list.
https://www.ecs.org/clearinghouse/77/72/7772.pdf
https://www.dpi.nc.gov/documents/advancedlearning/cihs/2024-25-cihs-list/download?attachment

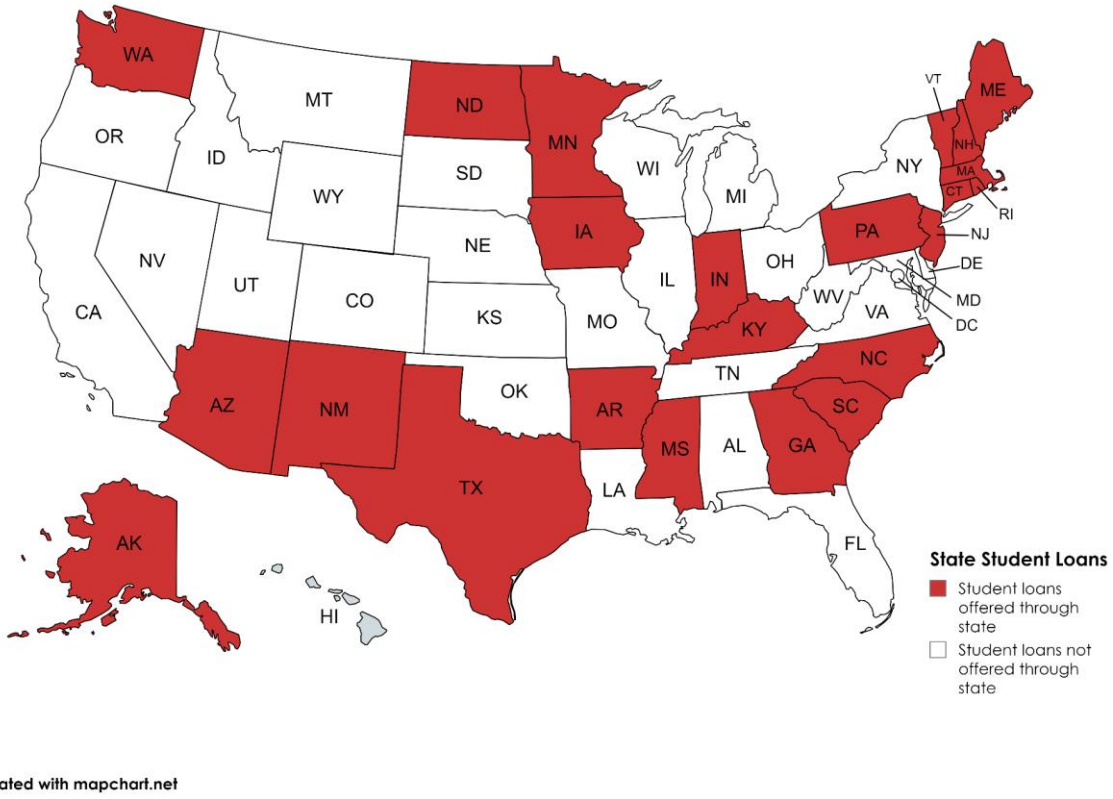
Loans at the State Level

One understudied but important topic is the number of states that offer educational loans at the state level (see Figure 5 below). Nearly half of all states offer student loans through non-profit and state-run agencies. The size, scale, and scope of these loan programs varies by state. Nearly all state loan programs require that the borrowers be a resident of that state and/or attend a public non-profit institution in that state (Luthi, 2024). Several programs offer parent loans as

well (Alaska, Arkansas, Indiana, Iowa, Kentucky, Maine, North Carolina, Pennsylvania, Rhode Island, South Carolina, Texas, and Vermont).

Figure 5

State-Sponsored Student Loan Programs, Offered by State



Note. From Luthi, B. (2024, February 1). *State student loans*. LendEDU. https://lendedu.com/blog/state-student-loans/ For a complete list of state student loan programs see Appendix D.

Depending on the state loan program, some are more comparable to federal loans than others. Interest rates vary from as low as a 1% fixed rate (Georgia) to as high as a 11.029% variable rate (New Hampshire). Some states have income-based repayment (Rhode Island), and some allow for complete loan forgiveness if the borrower completes a degree and works in a high-demand field such as teaching or medicine (e.g. Arizona, Mississippi, and North Carolina).

The amount awarded varies widely, however. One loan program, the AzLEAP, allows a maximum award of $2,500 per academic year whereas the annual full-time enrolled undergraduate student can borrow up to $24,000 per year (up to $96,000 aggregate) through the Alaska Supplemental Education Loan (ASEL). It's important to note that because these loans are not offered through the federal government (with federal government benefits), they are considered private loans (Luthi, 2024) and may not have the same protections that federal student loans offer such as deferment, forbearance and loan forgiveness options.

State student loans also have different means-tested ways to administer the loans to students. Some require students to complete a FAFSA (Arizona) or demonstrate financial need (Massachusetts, Texas) to disburse the loan either directly through the state or a state-authorized agency. For a complete list of state loan programs, interest rates, and descriptions see Appendix B.

It's possible that some community colleges that do not participate in the federal student loan program direct students to their state loan programs. Texas offers a compelling example of the effects of a state loan program. In 2014-2015, the Hinson-Hazlewood College Access Loan (HHL-CAL), which is the Texas state loan program, disbursed over $114 million to all higher education students (Fernandez et al., 2017). This substantial disbursement provides insight into the outlook that some college administrators may have. One financial aid director at South Texas College stated, "If students absolutely need to borrow for college, they can take out state loans through the Texas Higher Education Coordinating Board" (Hermes, 2008). Up 10% of Texas's community colleges do not participate in the federal student loan program.

Federal Funding, A Brief Overview

Community college funding is driven in part by federal financial aid policy. Recommendations from the Truman Commission of 1947 demonstrated that the federal government has been invested in higher education access and equity in part through the expansion of community colleges (Gilbert & Heller, 2013). According to Dynarski, Page, and Scott-Clayton (2022), the Higher Education Act of 1965, "enshrined a significant federal role in college finance in the United States, establishing core federal grant, loan, and work-study programs that remain the foundation of U.S. student aid" (p.1). Nevertheless, as higher education institutions have grown in size and number and as state governments have invested less in higher education, the relationship between the federal government and higher education institutions have changed (Pew Trust, 2019). As a result, community colleges may rely more heavily on federal funding for support and students must turn to federal aid to finance their education. The federal government provides a variety of aid to college students including work-study programs, grants (most notably Pell Grants), and loans (Federal Student Aid, n.d.). In 2015-2016, the federal government disbursed $100 billion of undergraduate student loans annually, which dwarfed the amounts dedicated to federal work-study programs ($1 billion annually) and Pell Grants ($28 billion annually) (Scott-Clayton, 2017). These numbers highlight the government's role in facilitating higher education access through various financial aid programs as well as the outsized role that loans play in financing a student's education. In this next section, I will briefly cover the federal work-study program and the Pell Grant program.

Work Study Programs

Federal work-study (FWS) programs are one of the first forms of federal aid and pre-date both Pell Grants and loans (Scott-Clayton, 2021). For students who have unmet financial need, FWS programs provide opportunities for students to work 10-15 hours per week on campus,

allowing them to earn a wage and gain new skills (Scott-Clayton, 2021). However, despite their long history, these programs are underused at community colleges (Baum, 2019; Scott-Clayton, 2021). Community college students are less likely to receive FWS aid than students at private colleges because FWS aid is still funded to institutions (not directly to students), and the program is historically associated with highly selective institutions (Baum, 2019; Scott-Clayton, 2021). According to Scott-Clayton (2017), a low-income student at a private four-year institution has nearly a 50 percent chance of receiving FWS, compared to just a five percent chance for a low-income student at a community college. Because of past funding patterns, it seems unlikely that FWS will increase at the community college level in the near future. While FWS aid is underutilized at community colleges, Pell Grants are an important part of a community college student's aid package. During the 2015-2016 school year, 36 percent of students in an associate degree program received a Pell Grant (Sparks, 2023).

Pell Grants

Federal grant aid is one of the most important types of aid community colleges receive, and most of the federal grant aid comes in the form of Pell Grants (AACC, 2022). The Higher Education Act Reauthorization of 1972 created what are now known as Pell Grants (Heller, 1999). These grants originally awarded $47.52 million to approximately 170,000 students during its first year. Today, Pell grants serve about 7 million students annually, 2.5 million of whom are community college students (Dembicki, 2022) with a total of $25.9 billion of the $36.5 billion in total federal grant aid in 2021-2022 (Sparks, 2023).

Pell Grants are awarded to students who demonstrate significant financial hardship (U.S. Department of Education, n.d.), typically students whose family income is less than $30,000 (Fulciniti, 2022). According to the Congressional Research Service, 97% of Pell Grant recipients

had a total family income at or below $60,000 in the academic year 2020-2021 (Hegji, 2023). Community colleges have also seen a rise in the percentage of Pell Grant recipients, from 33.5% in the academic year 2015-2016 to 42% in 2017-2018, overtaking four-year public and private universities (CCRC, 2022a).

While Pell Grants have been shown to increase access and equity for community college students (Protopsaltis & Parrott, 2017; Sparks, 2023), they often do not fully cover many students' financial needs. During its inception in the 1970s, the maximum Pell Grant awarded could fully cover the cost of a public two-year college (DoublePell, n.d.). For four-year colleges, during the same time, Pell Grants could cover about three-fourths of tuition, fees, and room and board; however, that coverage has declined to one-third in inflation-adjusted 2018 dollars (Katsinas et al., 2023). In addition, Katsinas et al. (2023) note that in 2019-2020 few qualifying students receive the full Pell Grant amount ($6,195) even when their Expected Family Contribution (EFC) was $0.

Furthermore, the Pell Grant's purchasing power has been decreasing since 1990, despite increases in their maximum in 2000 and 2008 (Umbricht, 2016). This decline reflects what Katsinas et al. (2023) call the "volatility" of Pell Grant aid (p.293). As the authors argue, Pell Grant aid is volatile because its funding is tied to a federal budget that has competing and changing priorities. They note, "unlike Social Security and the federal Guaranteed Student Loan Program, four of five Pell dollars are discretionary and require Congress' annual approval" (p.296). This "volatility" can affect funding for educational pathways that students take, leaving them with fewer, safer options for funding their education.

Loans

While federal loan programs have had several iterations since their inception, today there are four types of loans, Direct Subsidized, Direct Unsubsidized, Direct PLUS, and Direct Consolidation. These four programs function under the umbrella of the Federal Student Loan Program also known as the William D. Ford Federal Direct (Direct Loan) Program, which is funded through the U.S. Department of Education. PLUS loans allow parents to borrow money for their dependent undergraduate students and consolidation loans allow borrowers to combine multiple loans into a single loan (Federal Student Aid, n.d.c.). This leaves the remaining two types of Direct Loans: subsidized and unsubsidized. Both types of loans require students to complete a Free Application for Student Aid (FAFSA; Dunlop, 2012). Subsidized loans are available to students with demonstrated financial need (Federal Student Aid, n.d.) and students pay interest once the loans enter repayment (Davidson-Davie College, n.d.). Unsubsidized loans, however, are not awarded based on demonstrated financial need and the loans begin accruing interest during all periods (Federal Student Aid, n.d.) Table 1 summarizes the borrowing limits for dependent and independent students as well as the fixed interest rate for each loan program. These amounts show modest amounts and a low fixed interest rate compared to private loans.

Table 1

Federal Student Loan Programs, Loan Amount Limits, and Interest Rates, 7/1/2022-6/30/2023

	Dependent Students (except students whose parents are unable to obtain PLUS Loans)	**Independent Students (and dependent undergraduate students whose parents are unable to obtain PLUS Loans)**	**Fixed Interest Rate**
First-Year Undergraduate Annual Loan Limit	$5,500-No more than $3,500 of this amount may be in subsidized loans.	$9,500-No more than $3,500 of this amount may be in subsidized loans.	4.99%
Second-Year Undergraduate Annual Loan Limit	$6,500-No more than $4,500 of this amount may be in subsidized loans.	$10,500-No more than $4,500 of this amount may be in subsidized loans.	4.99%
Third Year and Beyond Undergraduate Annual Loan Limit	$7,500 per year-No more than $5,500 of this amount may be in subsidized loans.	$12,500-No more than $5,500 of this amount may be in subsidized loans.	4.99%
Graduate or Professional Student Annual Loan Limit	Not Applicable (all graduate and professional degree students are considered independent).	$20,500 (unsubsidized only).	6.54%
Subsidized and Unsubsidized Aggregate Loan Limit	$31,000-No more than $23,000 of this amount may be in subsidized loans.	$57,500 for undergraduates-No more than $23,000 of this amount may be in subsidized loans. $138,500 for graduate or professional students-No more than $65,500 of this amount may be in subsidized loans. The graduate aggregate limit includes all federal loans received for undergraduate study.	

Note. Federal Student Aid (n.d-.d). *Direct subsidized and direct unsubsidized loans*. https://studentaid.gov/understand-aid/types/loans/subsidized-unsubsidized

Much of the loan research focuses on students: who borrows (Addo et al., 2016; Dowd & Coury, 2006; Hillman, 2015a; Looney & Yannelis, 2015; Kim, 2007;), how much they borrow (Avery & Turner, 2012; Hillman, 2015a; Hillman & Orosz, 2017), why or why not they borrow (Boatman, et al., 2017; Callender & Jackson, 2005) and student outcomes for those borrowers (Herzog, 2017; Hossler et al., 2009; Kim, 2007). In this next section, I will cover a brief history of the federal student loan program. I will outline how community college students pay for college and also discuss the problems with loans, specifically student loan debt and default from both the student and community college perspective. I will then provide an overview of the research with respect to "no-loan" policies at both four- and two-year schools.

A Brief Historical Overview of Federal Student Loans

Federal student loans were not originally part of financial aid for public universities (Tucker, 2021), but today they make up a sizable portion of federal financial aid, reflecting significant shifts in policy and student enrollment over the last several decades. Harvard University offered the first student loan program in 1840 while the first student loans for public universities were not offered until the 20th century. However, it was not until the 1940s, with the passage of the GI Bill, that the federal government instituted a mechanism for providing money for people to attend college (Gitlen, 2022). The GI Bill provided nearly eight million servicemen direct financial aid for attending post-secondary institutions (Mosch, 1970).

From 1945-1970, also known as the "Golden Age of Higher Education", universities saw strong support from federal and state funding (Thelin, 2004). This is reflected in the Truman Commission (1947), which recommended expanding access to higher education and community colleges (Gilbert & Heller, 2013). Specifically, the Commission wanted community colleges to be tuition-free and supported through their state governments (Gilbert & Heller, 2013). Much of

the federal aid policy during this “golden age” focused on state support for institutions of higher education, supplying high amounts of aid, which allowed tuition and fees to remain low (Lumina, n.d.).

Until the 1950s, students had few ways to pay for a higher education save for scholarships, savings, or personal loans (Thelin, 2004). In 1958, the federal government began offering loans for students studying specific majors under the National Defense Education Act (Baker et al., 2017). This act was passed in response to the Soviet Union launch of Sputnik. The U.S. military felt it was important to have access to a steady stream of science, technology, and engineering graduates to compete in the nuclear arms race. This program was later expanded and renamed the Perkins Loans program, and these loans were used for students with exceptional financial needs and provided low-cost loans that were campus-based (Coalition of Higher Education Assistance Organizations [COHEAO], n.d.). These loans were unique because they were funded both by the federal government and the participating school. Furthermore, Perkins loans were repaid directly back to the school or loan servicer that worked directly with the school (Hutchins, 2019). However, as a result of Congressional budget cuts, the Perkins loan program ended in 2017 (Hutchins, 2019).

Through the Higher Education Act of 1965, the federal government expanded a number of programs to assist students in attending college including the creation of the Guaranteed Student Loan program (GSL) also known as the Federal Family Education Loan (FFEL)

program (Gitlen, 2022)[5]. The expansion of federal financial aid and the availability of low-cost community colleges increased higher education enrollment considerably (Linsley, 1997). As Vaughan (1985) comments, during the 1960s, low socio-economic groups were able to attend community colleges because of grants, work-study programs, and student loans. It was also during this time that the number of community colleges in the U.S. grew exponentially, at an average rate of one per week (Horz, 2021).

During the 1980s, politicians not only began to question higher education funding through federal grants but also to actively cut funding and replaced federal grants with federal loans (Hearn & Holdsworth, 2004). For some time, this proposal was attractive to all stakeholders. Students and families were able to procure low-interest loans, and the federal government was able to shift the burden of students to universities (Thelin, 2004).

Up until 2010, student loans were issued by private lenders but guaranteed by the federal government under the FFEL program (Ruddy et al., 2021). However, as a result of an increased number of college students enrolled and a tightening credit market during the Great Recession, many lenders stopped offering student loans. In response, Congress moved the responsibility of offering student loans to the federal government by phasing out and ultimately eliminating the FFEL program (Ruddy et al., 2021) and expanding the Federal Direct Loan program (Merisotis, n.d.).

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[5] There have been several name iterations including the Federal Family Education Loan program, the Guaranteed Student Loan program, and then the Robert T. Stafford Student Loan program ("Stafford Loan program") (Cochrane et al., 2008; Gitlen, 2022; Merisotis, n.d.)

Student loan growth has dramatically increased since the 1970s (Hearn & Holdsworth, 2004). In 1970-71 students borrowed $7.6 billion through education loan programs. This number reached $52.4 billion just thirty years later in 2000-2001, and just ten years later it more than doubled to $120.1 billion (Baum, 2013). As of March 2023, there are approximately 43.6 million Direct Loan borrowers (Federal Student Aid, 2023). The acceleration of student loan borrowing points to a policy shift in which students and their families are increasingly expected to pay higher education expenses. As a result, federal loans have become an essential part of many students' financial aid packages.

Paying For College

I previously overviewed funding mechanisms for community colleges including local, state, and federal funds. While the most common forms of funding are Pell Grants, their purchasing power has diminished over time (Katsinas et al., 2023) leaving community college students with financial aid gaps that need to be supplemented. Work-study programs are almost non-existent at the community college level and state and local funding vary widely (Scott-Clayton, 2021).

Even though community colleges are generally less expensive than four-year institutions, attending a community college remains a burden for low-income families. Kipp et al. (2002) found that community college is only affordable for low-income independent students if they choose to take out loans. According to TICAS (2017), on average, families earning less than $30,000 use 50% of their total family income to pay the community college net price. When the total cost of college (net price) is more than students' available resources, students must find ways to make up for the difference in this financial aid gap, which leaves state and federal loans as the primary sources for funding. However, student loans vary widely and have fewer

protections for students. Except for low tuition and fees, community colleges have little to offer students in the form of scholarships and grant aid to help them pay for colleges. Thus, many students turn to loans to supplement the financial aid gap (Cairns, 2023).

Students take out loans for a variety of reasons. As published tuition and fees continue to outpace inflation, some students take out loans to supplement their aid packages (Cho et al., 2015; TICAS, 2020). Hardy and Katsinas (2008) point out that rural community college students are more dependent on student loans than suburban and urban community college students in part because they lack reliable public transportation to attend. In this case, loan money is used to help pay for costs associated with attending community college. It should be noted that community college students are less likely than four-year students to borrow (Avery & Turner, 2012; CCRC, 2021). In addition, the overall amount needed to complete community college is much lower with some estimating less than $13,500 (CCRC, 2022a). However, student loan access is necessary for many students to attend a community college. If students do not have access to loans or choose not to borrow, they may be more likely to enroll part-time (TICAS, 2016), or they may not attend at all (Katsinas et al., 2023; TICAS, 2014). However, student loan debt is of great concern for students that do take out education loans.

Student Loan Debt and Default

At nearly $1.4 trillion in loans outstanding, student debt is now the second-largest source of household debt (after housing) and is the only form of consumer debt that continued to grow in the wake of the Great Recession (Scott-Clayton, 2018). This rapidly increasing student loan debt, particularly among community college students, has raised concerns about student indebtedness, default risk, and overall financial health. Student loan debt places substantial burdens on borrowers (Chapman & Lounkaew, 2015), including delaying marriage and having

children (Kantrowitz, 2019), burdens in accessing homeownership (Fallon, 2022), pursuing additional education (Waddell & Singell, 2011), and social mobility (Freyberg, 2022). While community college students borrow less than four-year students (Gross et al., 2010), many argue that students should not take out loans. According to Natalia Abrams, founder and president of the Student Debt Crisis Center, student debt is not worth it. "It's a difficult financial product for people to take on and there's so much dishonesty that goes on the back end," (Lee, 2023). At community colleges, Fox et al. (2017) found that “if the amount of money a student owed had negatively impacted their academics, they had increased odds of anticipating difficulty with loan repayment after graduation” (p. 126). However, as Dynarski (2014) points out, the issue is not of student debt, since the benefits of a college education outweigh the costs, but rather the issue is repayment, whereby there is a “mismatch” between when loan repayments are due and the earnings that students have after graduating (p.2). This mismatch is exacerbated when students are not able to obtain a well-paying job or if they leave college before completing their degree. Student loans are most burdensome when students don’t graduate and are saddled with debt without the higher earning power (Schichtel-Greenwood, 2018).

While student loan debt is significant, student loan default is an even more pressing issue. Student loan default occurs when a payment is not made on a student loan in at least 270 days (U.S. Department of Education, 2016). The percentage of community college borrowers who default is significant. Twenty-six percent of community college students who started during the 2003-2004 academic year defaulted within 12 years (Community College Research Center, 2021). Consequences for student loan default are severe and include negative credit reports, threats to future financial aid awards, legal action, and garnishment of tax refunds (McKinney et

al., 2021). Previous research has shown some factors that are associated with student loan default.

Gross et al. (2010) conducted a literature review of student loan default and found several factors that contributed to a higher likelihood of default. These factors included race (students of color are more likely to default, due to systemic inequalities); age (as the age of the student increases so does the default rate, possibly reflecting more financial responsibilities that older students have); family structure (each dependent increases default by 4.5%, likely due to increased financial strain); and other factors. The authors note that earlier descriptive analyses found community college students were more likely to default than four-year students; however, these differences disappeared once accounting for borrowing behaviors, student background characteristics, and institutional resources were considered. In addition, the authors do not find that student loan default reflects the institutional quality or degree program. Instead, the authors observe that the contentious relationship surrounding federal student aid and college prices reflect the student loan default rate.

While Gross et al. (2010) found that institutional factors disappeared when accounting for other factors, Hillman (2014) identified other factors that influenced student loan default. These factors include where a student enrolled (for-profit vs. non-profit), whether students earned a degree, and whether students obtained gainful employment post-graduation. Regardless of the multiple factors that influence student loan debt and default in higher education, the increase has caused concern among lawmakers, causing them to implement accountability measures, such as the cohort default rate, to mitigate the rising default rates across institutions.

Community Colleges and Federal Student Loan Accountability

As loans became increasingly commonplace in the 1980s, the federal government sought to ensure that taxpayers and students received a good return on investment (Hillman & Orosz, 2017). Beginning with reauthorizations of the Higher Education Act in 1992, the federal government sought protections for students who had taken out loans, particularly those that had defaulted (Linsley, 1997). One accountability metric is the cohort default rate (CDR), which measures the percentage of borrowers who defaulted on their loans over a three-year period. To encourage schools to improve their CDR, the federal government instituted penalties for schools that had a CDR of 30% or more for three years or a one-year default rate of 40% (TICAS, n.d.). These penalties include a suspension and a freeze on the school's ability to offer any federal aid, including Pell Grants (U.S. Department of Education. (2020). At community colleges, the inability to offer Pell Grants severely limits their ability to serve underrepresented communities because Pell Grants constitute a significant portion of the aid offered to students (AACC, 2022).

Recent CDR statistics from the Department of Education indicated that 15.9% (n = 116,647) of community college borrowers who entered federal loan repayment in 2013 had defaulted by 2016 (USDE, 2020)[6]. But when examining a repayment window longer than three years, several studies found that closer to 30% of community college borrowers had eventually defaulted (Campbell & Hillman, 2015; Field, 2010). These findings suggest the federal CDR for community colleges does not fully capture the long-term hardships many borrowers experience after leaving higher education. Whether it is from sincere efforts to protect their students from

[6] Due to the student loan repayment pause beginning in 2020 and ending in 2023, I did not include CDR for these years (which would be 0).

future financial hardships and/or concerns over federal accountability sanctions that would result from a high CDR, many community colleges have chosen to not make federal loans available to their students. In 2015-16, nearly 1 million community college students nationally (approximately 9% of all students in the sector) were unable to borrow federal loans because their college had opted out of the federal student loan program (TICAS, 2016). Community colleges that do not participate in the federal student loan program are also known as "no-loan" community colleges or community colleges with "no-loan" policies (Hillman, 2012, 2013). In this next section, I will discuss "no-loan" policy research for both highly selective institutions and community colleges.

"No-Loan" Policy Research

"No loan" policy research tends to focus on elite institutions (see Hillman, 2012, 2013; Linsenmeier, et al., 2006). This may be in part because community colleges do not highly publicize opting out of the federal student loan program. In addition, a key difference between "no-loan" policies at community colleges and four-year colleges are the funding substitutions available and reason for "no-loan" policy adoption. Community colleges depend heavily on state appropriations and do not have the institutional resources to replace loans with grant aid. However, four-year colleges that have undergone "no-loan" policies (also known as loan-reduction initiatives or loan replacement grants) can do so. For example, Princeton announced in 1998 that all loans would be replaced with grant aid funded in part by a capital campaign that ended in 2000, the growth and size of the endowment during the 1990s, and the unrestricted operating funds provided for by alumni (Tilghman, 2007).

Elite and highly selective institutions tend to adopt "no-loan" policies to increase the enrollment of students from low socioeconomic backgrounds, and Hillman (2012) and Rosinger

et al., (2019) found that “no-loan” programs increased the economic diversity of highly selective and elite colleges. Similarly, Waddell and Singell (2011) examined the effects of “no-loan” programs at public flagship universities in select states with respect to low-income student enrollment. These states introduced targeted need-based aid to in-state low-income students and found that these programs enroll more low-income students. Zhu et al. (2021) also found increased enrollment of low-income students at a public university. These studies use quasi-experimental methods to test their hypotheses.

In another example, Ortagus and Kramer (2022) examined the effects of “no-loan” program participation and graduate school enrollment for low-income students. Using difference-in-differences, regression discontinuity, and propensity score matching, they found that graduate school enrollment of low-income, first-generation students increased between 25%-65% after introduction of “no-loan” programs. Assan (2021) also examined the effects of a “no-loan” policy at a Selective State University (SSU) on student outcomes, specifically on how students spent their time. In this study, the SSU covered the costs of attendance for first-generation, low-income students. Using survey data and propensity score matching analysis, the author found that students who are not using loans could spend less time working and more time engaged in other activities to support educational aspirations. To summarize, current literature suggests highly selective and elite higher education institutions enact “no-loan” policies to increase enrollment from underrepresented minorities and low socio-economic groups.

Qualitative scholarly research has yielded interesting results from the decision-making perspective. In one example, Braxton (2017) conducted a comparative qualitative case study of four private liberal arts colleges to understand the policies and practices that enabled these colleges to adopt “no-loan” policies. The author, however, found that students may still borrow

for several reasons including participating in study abroad, bypassing a work-study job, or sending money back home. In addition, Braxton (2017), found that two of the four colleges retracted their "no-loan" policies due to endowment losses coupled with internal and external budget constraints against the backdrop of the Great Recession and consequent credit crisis.

In another qualitative dissertation, DeRousie (2014) conducted an exploratory study reviewing the diffusion of four innovations in higher education, one of which were "no-loan" financial aid policies. The author examined factors that contributed to a "no-loan" financial aid policy adoption, looking specifically at which institutions adopted this policy and at what rate. DeRousie (2014) found 59 schools adopted a "no-loan" policy from 1999-2009. Most of these schools are large public or private research universities located in the Northeast and Midwest. These institutions were driven to adopt "no-loan" policies to increase the number of low-income students attending and reduce the cost of attendance. The first adopter was Princeton in 1998 (though Harvard is most often cited) and other institutions quickly followed suit. However, DeRousie (2014) notes that the Great Recession of 2008 and subsequent economic downturn severely restricted the likelihood of "no-loan" policy adoption. This points to the importance of the economic viability for institutions that adopt a "no-loan" policy and replace loans with grant aid. While these studies provide valuable insights into "no-loan" policy research, they are limited to four-year institutions.

"No-Loan" Policy Research at Community Colleges

"No-loan" policies at community colleges remains an understudied topic, particularly from a research perspective. Information regarding these policies tends to come from non-profit organizations and non-scholarly sources, with few research articles devoted to the topic. For example, TICAS published two reports (2014, 2016) arguing that all community college students

should have access to federal student loans and that not offering student loans puts students at risk of not completing a degree. They also provided recommendations for colleges to make their loan programs more successful. Recommendations included offering more financial aid counseling and prorating federal student loans based on attendance. The Project on Student Debt published an issue brief in 2008 that also argued for the use of federal student loans at community colleges in part because of the low-interest rates, minimal fees, and ease of access (Cochrane et al., 2008). Non-scholarly sources include national news publications, which comment on the lack of access to federal student loans as well as local papers such as the Charlotte Business Journal, which commented on Central Piedmont Community College withdrawing from the federal student loan program. Non-scholarly sources, such as national and local news publications provide context and highlight specific cases of "no-loan" policies, which provide foundational concepts to explore in academic research. However, they do not provide the rigorous analysis found in academic research.

Similar to "no-loan" policy research in other institutions, most of the quantitative research regarding "no-loan" policies at community colleges tend to highlight effects on student outcomes. In the most recent paper, Wiederspan (2016) exploited the variation of loan policies of 50 community colleges in a single state. Using a combination of fixed-effects and instrumental variable strategies, Wiederspan evaluated the effects of loan receipts on education outcomes such as credits attempted and completed, persistence to a degree, and transfer to a four-year university (p.88). Wiederspan found that for Pell-eligible students, access to student loans is associated with a 7.6 point increase in borrowing; an increase in the number of credits taken in the first year and an increase in the number of credits taken overall (19 more credits); however, the transfer rate was not statistically significant.

Similarly, Dunlop (2013) used federal loan participation as an instrument to estimate the treatment effect on student-level outcomes. Rather than focusing on a single state, Dunlop (2013) used the Beginning Postsecondary Student Study of 2004 (BPS:04/09), a national representative sample. They focused on a lack of access to loans and found that limiting loan access decreases loan borrowing and hinders transfer to four-year colleges. However, access to federal student loans is associated with an increase in borrowing by $262 a year, an increase in the likelihood of transferring to a four-year college but had no effect on the number of credits taken the first year. While these two studies examined the effects of loan access on student outcomes, there remains unanswered questions about the factors that inform community colleges to opt out of the federal loan program. These unanswered questions could potentially limit policymakers' and college administrators' abilities to support student success.

Dunlop (2012) provides the most comparative study to my topic in their dissertation, "The Impact of Financial Aid and College Quality on Educational Attainment". The author assumes loan access is random by evaluating the relationship between loan access, student characteristics, and community college characteristics to examine student outcomes based on loan access. The author notes that this assumption (loan access is random) would be violated if loan availability affected students' choice in community college (i.e. students choose a community college based on loan availability) and if student characteristics affected community colleges' decision to offer loans (i.e. community colleges adopted "no-loan" policies due to students' characteristics). Through a series of descriptive analyses using U.S. Department of Education college-level loan default rate data, the author compares the average cohort default rate of community colleges that adopted "no-loan" policies versus ones that did not and found only three of the 55 community colleges that stopped offering loans in 2004 had cohort default

rates above 25%[7]. In addition, the author compares community colleges that ceased to offer loans versus ones that always offer loans. The default rates of these colleges (both "no-loan" and not) had similar default rates over the twenty-year period examined. Dunlop (2012) also notes the affordability of community colleges and finds the cost of attendance is over $10, 000 per year thus finding the administrators' argument of "college affordability" is not supported. They end their rationale that student loan access is random with a discussion of interviews they conducted in a single state. Based on these findings, Dunlop (2012) argues that student loan access is randomly distributed throughout the country. They also found loan access has a statistically significant positive effect on students' total loan amount and educational attainment.

While Dunlop (2012)'s study provides valuable insights into the relationship between loan access and student outcomes, it may not fully account for the multiple and complex factors that inform "no-loan" policy adoption. For example, Dunlop (2012) does not fully examine the effects of other characteristics on student loan access. Instead, the author only focuses on the cohort default rate and the average cost of attendance as predictors for opting a "no-loan" policy. This oversimplifies the factors that inform federal student loan access. This study aims to improve upon Dunlop (2012) by examining other factors that could affect student loan access. Cohort default rates are certainly an important part but there could also be other programs or effects not captured in the descriptive analyses conducted.

[7] The CDR has had various thresholds since its inception as an accountability metric in 1990. Most recently, a high CDR was defined as 25% or higher from 1994 until 2008. In 2008, this number was adjusted to 30%. Source: https://crsreports.congress.gov/product/pdf/R/R47874

Theoretical Foundation

Understanding why a community college opts out of the federal loan program is critical since federal loans are one of the few ways community college students can pay for their education outside of grants or scholarships. A review of the literature finds that financial decision-making has been a recurring challenge over the decades for these institutions (see Jackson & Glass, 2000; Lewis, 1989; Stevenson & Walleri, 1981; Trent & Pollard, 2019 for an overview). This research uses a theory of change which is informed by the literature, rational choice theory (Posner, 1997), and bounded rationality (Simon, 1957, 1997). These theories provide additional support for community college decision making. I will first discuss rational choice theory and bounded rationality and how these theories work together with theory of change. I next will discuss the theory of change, unpacking the diagram used for this research study.

Rational Choice Theory and Bounded Rationality

Rational choice theory originates from a neoclassical microeconomic model (Rosinger, 2017), which means the theory primarily uses supply and demand as a driving force in valuing goods and services (Kenton, 2023). Using this economic theory, we can understand people's goals, strategies for obtaining those goals, and ultimately people's behavior (Shapiro, 2017). In other words, rational choice theory provides a way to understand choices and strategies people employ when making decisions using a cost-benefit analysis.

Rational choice theory primarily uses supply and demand as a driving force in valuing goods and services (Kenton, 2023; Rosinger, 2017). This theory provides a framework for understanding people's goals, strategies for obtaining those goals, and behavior (Shapiro, 2017).

In other words, rational choice theory provides a way to understand choices and strategies people employ when making decisions using a cost-benefit analysis.

A cost-benefit analysis of attending college is often understood from a student point of view, providing that students consider direct (e.g. tuition and fees) and indirect costs (e.g. foregone earnings) of attending an institution against perceived and real benefits of attending (Rosinger, 2017). By the same rationale, community colleges also consider the direct and indirect costs of offering federal student loans. Institutions (acting through individuals) use a cost-benefit analysis to decide whether or not to offer federal student loans. For instance, during the 2012-2013 school year, Central Piedmont Community College in Charlotte, North Carolina was required to pay back $235,000 on behalf of students who had taken out loans and subsequently dropped out of college. Additionally, it was costing the college $300,000 a year to administer these loans to students (Thomas, 2014). The college cited these numbers as part of the reason for why it later opted out of the federal student loan program in 2014. In this case, the direct costs of repayment and administering the federal loan program outweighed the perceived and real benefits of offering federal student loans to students.

In addition, the cohort default rate also factors into the thought process of offering student loans (or not). As the increased threat of losing access to Pell Grants becomes a reality, community college administrators may choose to end federal student loan access than risk losing access to Pell Grants, which are crucial to many community college students. Therefore, rational choice theory trades potential future losses (Pell Grants) with losses to federal student loan access.

While rational choice theory provides a strong foundation for understanding decision-making based on a cost-benefit analysis, bounded rationality offers a more nuanced approach

that acknowledges the limits of human decision making. Rational choice theory assumes that decision-makers will explore all possible outcomes, engage in a strict comparative analysis, and choose the best option (Ganti, 2023; Thompson, 2011). Instead, most decisions are made by what Herbert Simon (1947, 1957, 1997) calls “bounded rationality”. Bounded rationality acknowledges that administrative decision-making is limited because it lacks both complete knowledge of choices and that administrators base current decisions on future outcomes, which requires creative thinking (Simon, 1997). In other words, decision-makers are bound within limits of rationality of what they understand.

In rational choice theory, administrators may examine direct and indirect costs such as the case with Central Piedmont Community college mentioned above. The college cited specific direct costs as rationale for adopting a “no-loan” policy; however, it’s not clear if administrators considered long-term implications or explored other ways to lower costs while maintaining loan access. Through these implications and contexts we can better understand how bounded rationality might have influenced the decision. However, it can be difficult to empirically measure the extent of bounded rationality nor fully capture the role of external pressures (e.g. local, state, and federal economic and political influences) on institutional decisions.

In bounded rationality, there are other contexts that must be considered. For example, administrators may have uncertainty about future financial aid policies at the local, state, and federal level. There are also time constraints where administrators may feel pressured to make decisions quickly. Finally, there are organizational contexts where administrators must make decisions within the confines of their institutional culture, local economic and political climate, and governance model.

In bounded rationality, Simon (1997) states that decision-makers "satisfice" or, in other words, choose actions that are "good enough" (Mintrom, 2016). According to Mintrom (2016), "Satisficing typically involves rapid elimination of alternatives in a hierarchical fashion, meaning that certain decision-paths are completely ignored, and opening the risk that any chosen action may be significantly less desirable than others that were not considered" (p.14). Or as Cohen and Brawer (1996) note, "administrative decisions are made in the *context* [emphasis added] of committees, memoranda, and persuasion"(p.95). While many community colleges cite the CDR and threat of sanctions as a reason to stop offering federal student loans, the reality is that most community colleges were not in danger of violating the default rate when they opted out (Cochrane et al., 2008; Dunlop, 2013). Nevertheless, the threat of sanctions; the uncertainty of students' ability to pay back loans; and the lack of administrative support in counseling students who take out loans can lead community college leaders through a decision-making process to opt out of federal student loans in the interest of the college. In this study, bounded rationality provides a more nuanced approach to the decision-making process that institutions use when opting out of the federal student loan program.

Theory of Change

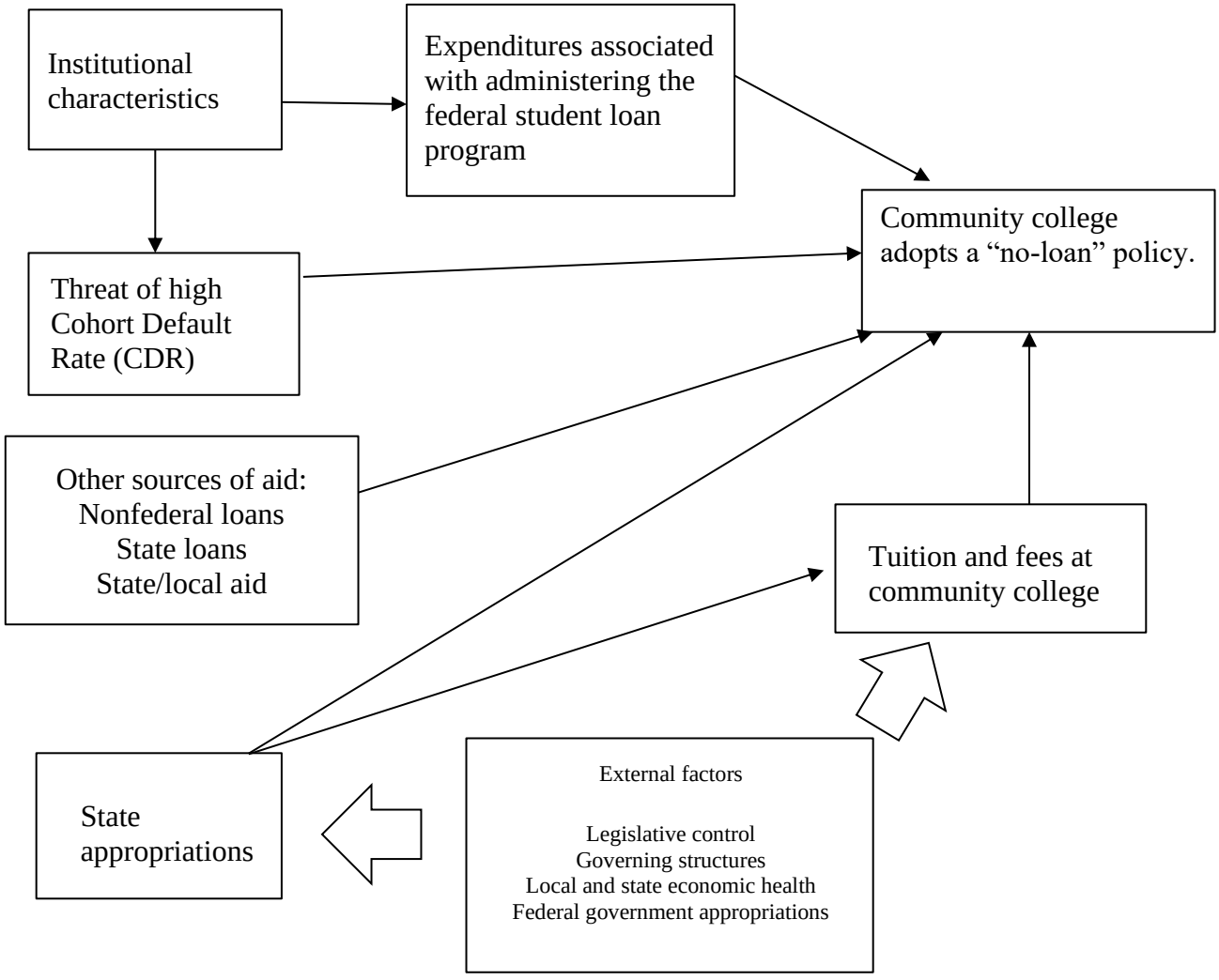
Drawing on the available literature, rational choice theory, and bounded rationality, this study uses theory of change as its theoretical framework. Theory of change came to prominence in the 1990s originating from theory-driven evaluation (Reinholz & Andrews, 2020). It was then popularized by Weiss (1995) and can be defined as "a method that explains how a given intervention, or set of interventions, are expected to lead to a specific development change, drawing on a causal analysis based on available evidence" (United Nations Development Group, n.d., p.4). Theory of change allows for underlying assumptions in a change to become explicit

and is “essentially a comprehensive description and illustration of how and why a desired change is expected to happen in a particular *context* [emphasis added]” (Center for Theory of Change, n.d., para.1).

A diagram of the theory of change is represented in Figure 6. This theory of change offers direction for this study’s design, and the diagram’s simplicity allows for flexibility in the model.

Figure 6

Theory of Change for “No-Loan” Policy Adoption at Community Colleges



The bottom of the figure shows external factors to the decision-making process. These external factors may be associated with other factors that contribute to a community college adopting a "no-loan" policy, and they should be controlled for in the study. Legislative control and governing structures can affect community college funding and therefore tuition and fees. Regardless of legislative and governing structure, community colleges are highly dependent on state and local appropriations for revenue (Mitchell et al., 2018). Federal government appropriations may also affect the tuition and fees of a community college as the increase in federal funding leads to increases in tuition and fees (Robinson, 2017). Previous research has found that some community college administrators believe that students do not need to take out federal loans because community colleges have low tuition and fees (Dunlop, 2012). Other community colleges have high tuition and fees (see Figure 3 for a full list), not to mention other costs associated with attending college, and it is necessary for students to supplement their grant aid packages with federal student loans.

The body of the theory of change figure shows the four main reasons that community colleges adopt a "no-loan" policy based on prior research. The most common reason, the threat of a high cohort default rate (CDR) can work by itself or concurrently with other factors. The number of community colleges that have a high CDR (defined as a CDR of 30% or more for three years or a one-year CDR of 40%) is small (Cochrane & Szabo-Kubitz, 2011; Dunlop, 2012). Dunlop (2012) found that only 3.6% of community colleges have a CDR over 15% during the 2003-2004 school year. Moreover, for community colleges that do reach the CDR limit, they do have the option to appeal the decision and/or come up with a plan of action (U.S. Department of Education, 2020). Therefore, many community colleges are not in danger of losing their

federal funding; however, even the *threat* of losing funding is enough to cause community colleges to opt out.

Based on available research, albeit limited, the upper left part of the diagram shows that institutional characteristics can affect the cohort default rate. Hillman (2015b) found that institutions that served diverse student bodies were at risk of a high CDR and subsequent sanctions. Additional research indicates that the number of Pell Grant recipients and the institutional location are positively associated with the cohort default rate (Inge, 2017; Ishitani & McKitrick, 2016).

Institutional characteristics can also affect tuition and fees. For example, community colleges that have a high number of distance education programs may see a change in revenue from fees associated with these degree programs (Poulin & Straut, 2017). If revenues decrease, then colleges may need to increase enrollment in order to make up the difference. Increases in enrollment may mean increases in aid to students, meaning that community colleges need to be able to offer federal student loans. Because of the relationship between student characteristics and this study, institutional characteristics include enrollment, rurality, Pell Grant information, student services information and institutional capacity.

Another reason that community colleges adopt a "no-loan" policy is the costs or expenditures associated with implementing a loan program (Thomas, 2014), which is indicated at the top of the diagram. State appropriations can indirectly affect expenditures because of budget limitations for staffing and services (Mitchell et al., 2018).

Tuition and fees directly and indirectly affect a community college adopting a "no-loan" policy as noted at the bottom of the diagram. This is in part because published tuition and fees at the community college level are influenced by several other factors including external factors

(previously discussed), state aid programs, state and local appropriations, and institutional characteristics. State aid programs such as promise programs may decrease the stated tuition and fee pricing. This can lead to fewer students needing loans and may also lead community college administrators to think that loans are not necessary to offer to students. In addition, tuition and fees can be increased to off-set the decrease in state and local appropriations (Mitchell et al., 2018).

Another reason cited for adopting "no-loan" policies at the community college level is the "ethics" of allowing students to take out more loan money than needed (Dunlop, 2012). However, this can be difficult to fully capture. I discuss this limitation in more detail in chapter five.

Summary

In this chapter, I briefly covered the extensive network of financial aid for community college students including local, state, and federal funding as well as state governance structure and tuition-setting authority for states and community colleges. I also provided a deeper look at the history of federal student loans and federal student loan use in community colleges including debt and default. I reviewed the extant "no-loan" policy literature at both four-year and two-year colleges. While the research is limited, much of the literature surrounding "no-loan" policies at community colleges point to positive outcomes for students with loan access (Dunlop, 2013; Marx & Turner, 2019; TICAS, 2016; Wiederspan, 2016). I concluded with a theory of change based on previous research on "no-loan" community colleges, a review of documents pertaining to "no-loan" policy adaptation, with rational choice theory and bounded rationality (Simon, 1997) theoretical underpinnings. In this next chapter, I'll cover the proposed methodology of the study including data, sample, variables, linear regression modeling, and limitations.

CHAPTER 3: METHODOLOGY

Overview

The purpose of this study was to analyze the factors that inform whether a college will opt out of the federal student loan program (i.e. adopt a "no-loan" policy). I used descriptive statistics and linear probability models with fixed effects and time fixed effects (LPMFE) to help answer this question. This study used a panel dataset from 2002-2019 of all public two-and four-year institutions that primarily award associate degrees.

The research questions that guide this inquiry are as follows:

1. What are the financial (e.g. tuition and fees, state support, cohort default rate) and demographic differences (e.g. governance and rurality) between states that have a high percentage of "no-loan" community colleges and those that do not?
2. What are the factors (financial and demographic) that inform a community college to adopt a "no-loan" policy?

This chapter describes the data sources and sample used in the study. The variables of interest are defined and operationalized. This chapter also covers missing data, multiple imputation, the models used, and assumptions. I conclude the chapter with a discussion of limitations, delimitations, ethical issues, and a summary.

Data Sources and Sample

I used multiple data sources for this study. To determine which community colleges have opted out of the federal student loan program (i.e. the dependent variable), I used federal student loan data from the Integrated Postsecondary Education Data System (IPEDS) from the National Center for Education Statistics (NCES).

With IPEDS, I used the 2022 data collection date and selected the following criteria to find colleges. I first limited my sample to Title IV participating; Title IV and U.S. service institutions (NCES publications). This was appropriate since Title IV signifies that community colleges collect different data as required by federal funding. Next, I limited my sample to all fifty U.S. States and did not include colleges in Washington D.C. or other jurisdictions. I also limited my sample to public four-year and two-year institutions because of the way that some states categorize community colleges. This is also reflected in the institutional category that I selected which included degree-granting, associate's and certificates; degree-granting, not primarily baccalaureate or above. With these limitations, I had 1,005 colleges. However, after further review, I removed institutions that did not fit the demographic (e.g. colleges that served only incarcerated adults and four-year university branch campuses)[8]. This left me with 997 colleges. Upon further review, I limited the dataset to colleges where the highest degree earned was an associate regardless of institutional sector and level (two-or four-year public colleges)[9]. For the full panel dataset (2002-2019), I ended up with 967 institutions. Appendix A provides a count of the number of community colleges in each state.

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[8] In Alabama, J.F. Ingram State Technical College's student population is all incarcerated adults and would not be eligible for Pell Grants or any other financial aid. In addition, during the merge of the different data collections, I eliminated other colleges that would not fit the demographic such as branch campuses, like Pitt-Titusville

[9] This is for several reasons. First, over time community colleges may be eliminated or consolidated with others. For example, in Alabama, Coastal Alabama Community College was formed in 2017 through the consolidation of Alabama Southern Community College (located in Monroeville, Thomasville and Gilbertown), Faulkner State Community College (located in Bay Minette, Fairhope and Gulf Shores) and Jefferson Davis Community College (located in Atmore and Brewton) (Coastal Alabama Community College, n.d.). Second, it helped ensure that these were primarily community college-type institutions.

IPEDS was also used to measure institutional characteristics including financial and demographic, such as the price of tuition and fees, rurality, Pell Grant enrollment, overall enrollment, and other variables. In addition, I used IPEDS data and the State Higher Education Executive Officers Association (SHEEO) State Higher Education Finance Report to gather information about the nature of financial support for these institutions (2022).

Cohort default rate (CDR) data for this study was gathered during through the U.S. Department of Education's Federal Student Aid (FSA) website using archived three-year CDR information (2022) from 2000-2020[10]. Finally, I used LendEdu (Luthi, 2024) to determine which states have state loan programs. These loans are considered nonfederal (e.g. private) because they are not administered through the federal government and instead are administered through state agencies and nonprofits. Therefore, the federal government does not track these loans in the same way they do federal student loans.

Variables of Interest

Dependent Variable

The dependent variable is whether a community college opts out of the federal student loan program and is coded as 1 if the college opts out (adopt a "no-loan" policy) or 0 it does not. The federal government does not maintain a list of community colleges that do not participate in the federal student loan program (M. Williams, personal communication, Sep.22, 2023; TICAS, 2014). Therefore, I used a proxy to determine the colleges that opted out, which is when the number of students taking out a loan is zero (0). If the number of students taking out a loan is

[10] Because of the student loan repayment pause beginning in 2020, some have argued the cohort default rate has been rendered meaningless after 2020 (Knott, 2023).

zero, then I assume that the school does not offer federal student loans (coded as 1=opts out of the federal loan program). It is possible that a community college offers a loan, but no students partake (Dunlop, 2012); however, this seems unlikely given the increased costs of college, the large number of students enrolled, and the varied financial situations of community college students (CCRC, 2021).

The federal government tracks two metrics for the number of students taking out a federal student loan: full-time, first-time undergraduates and all undergraduates. Full-time, first-time students were tracked throughout the entire panel dataset (2002-2019). Starting in 2008, the federal government started to keep track of both the number of undergraduates receiving loans and the number of full-time, first-time undergraduates seeking federal loan aid. To determine which community colleges do not participate in the federal student loan program, I used the number of full-time, first-time undergraduate students receiving federal student loan aid for the main model. However, the introduction of a broader metric in 2008 provided an opportunity for a robustness check. The frequencies for the number of schools that opted out in 2019 can be seen in Appendix C.

Independent Variables

This study used two models to explain the factors that inform a community college adopting a "no-loan" policy. The first model (restricted model) is informed by the literature surrounding "no-loan" colleges. The independent variables for this model are as follows: the cohort default rate; the percentage of first-time, full-time students awarded state and local aid; the average amount of state and local grant aid awarded to first-time, full-time students; the total number of dollars allocated to higher education, adjusted for cost of living provided for by each state (in millions of dollars); the of full-time first-time undergraduates awarded other student

loans; the average amount of other student loans awarded to full-time first-time undergraduates; student service expenses per FTE (GASB); the salaries, wages, and benefits for student services as a percent of total expenses for student services (GASB); and published tuition and fees for the academic year.

The second model (unrestricted model) is informed by the descriptive statistics I employed during this study. The independent variables for this model are as follow: the cohort default rate; the total number of dollars allocated to higher education, adjusted for cost of living provided for by each state (in millions of dollars); the percent of full-time first-time undergraduates awarded other student loans; the average amount of other student loans awarded to full-time first-time undergraduates; the financial capacity of an institution; published tuition and fees for the academic year; the degree of urbanization of a school; the percent of full-time, first-time students awarded a Pell Grant; the average amount of Pell Grant awarded to full-time, first-time students; the percent of all undergraduates awarded a Pell Grant; the average amount of Pell Grant awarded to all undergrads; the governance model; the 12-month full-time equivalent enrollment; and the grand total of dual enrollment (age under 18). Table 2 provides a summary of the variables used, their descriptions, and data sources.

Table 2

Variables for Restricted and Unrestricted Models, Definitions, and Sources

Variable Label	Description/Definition	Data Source
Restricted Model		
Official CDR	Official Cohort Default Rate	FSA
Percent State/Local Grant Aid	Percentage of students receiving state/local grant aid-full-time/first-time	IPEDS
Average Amount State/Local Grant Aid	Average amount of state/local grant aid received/first-time full time	IPEDS
State Support for Higher Education (COLI) (in millions of dollars)	The total number of dollars allocated to higher education, adjusted for cost of living provided for by each state. This variable is a state-level aggregate.	SHEEO and Author's Calculations
State Student Loan	The presence of student loans offered at the state level and available to community college students (binary variable)	LendEDu
Percent Nonfederal Loans	Percent of full-time first-time undergraduates awarded other student loans	IPEDS
Average Amount of Nonfederal Loans	Average amount of other student loans awarded to full-time first-time undergraduates	IPEDS
Student Services	Student service expenses per FTE (GASB)	IPEDS
Percent Total of Student Services	Salaries, wages, and benefits for student services as a percent of total expenses for student services (GASB)	IPEDS
Tuition and Fees	Published tuition and fees for the academic year	IPEDS
Unrestricted Model		
Official CDR	Official Cohort Default Rate	FSA
Percent State/Local Grant Aid	Percentage of students receiving state/local grant aid-full-time/first-time	IPEDS
Average Amount State/Local Grant Aid	Average amount of state/local grant aid received/first-time full time	IPEDS

Table 2 (continued).

Pell Percentage	Percent of full-time first-time undergraduates awarded Pell grants	IPEDS
Average Pell	Average amount of Pell grant aid awarded to full-time first-time undergraduates	IPEDS
State Support for Higher Education (COLI) (in millions of dollars)	The total number of dollars allocated to higher education, adjusted for cost of living provided for by each state.	SHEEO and Author's Calculations
State Student Loan	The presence of student loans offered at the state level and available to community college students (binary variable)	LendEDu
Average Amount of Nonfederal Loans	Average amount of other student loans awarded to full-time first-time undergraduates	IPEDS
Percent Nonfederal Loans	Percent of full-time first-time undergraduates awarded other student loans	IPEDS
Student Services	Student service expenses per FTE (GASB)	IPEDS
Percent Total of Student Services	Salaries, wages, and benefits for student services as a percent of total expenses for student services (GASB)	IPEDS
Tuition and fees	Published tuition and fees for the academic year	IPEDS
Rurality	The degree of urbanization of a school. Varies from large city to rural remote area, based on the school's geographic location.	IPEDS
Governance	The governance structure of a college. Based on a continuum from centralized to decentralized.	ECS
Headcount	12-month full-time equivalent enrollment	IPEDS
Dual	Grand total of dual enrollment (age under 18)	IPEDS

Cohort Default Rate

One of the most compelling reasons community colleges cite for federal student loan elimination is the cohort default rate (CDR; Dunlop, 2012, 2013; Wiederspan, 2016). The CDR is determined by the percentage of borrowers who default within three years of entering repayment (USDE, 2022). This continuous variable was used in both the restricted and unrestricted models and was calculated by the Federal Student Aid office (FSA) through the U.S. Department of Education.

From the cohort fiscal year (CFY) 1989-2010, the CDR was defined as the percentage of borrowers who defaulted within two-years of repayment. This "two-year" CDR was used to determine Title IV institutional eligibility. Colleges that went above 25% were required to create plans to reduce their CDR (Hillman, 2015b). Beginning in CFY 2011-2020, the "three-year" CDR was used to determine Title IV eligibility (U.S. Department of Education, 2020). The CDR is determined by one of two formulas, depending on how many borrowers entered repayment in a fiscal year on specific FFEL and Direct Loan programs[11] (Hegji & Bryan, 2023).

The CDR in its simplest form is defined by the following equation:

$$\text{Cohort default rate} = \frac{\text{Borrowers who defaulted}}{\text{Borrowers entering repayment in fiscal year}} \quad (1)$$

State and Local Grant Aid

State and local grants are reported to IPEDS and include grant funds, merit scholarships, and other forms of financial assistance such as tuition waivers (refunded by the state). Local

[11] One formula is for colleges with 30 or more borrowers, and the other formula is for colleges with fewer than 30 borrowers (Hegji & Bryan, 2023).

grant aid includes scholarships and other forms of funding given directly to the student (NCES, n.d.c.). These continuous variables (both the percentage of first-time, full-time students and the amount awarded) were included in the study in both the restricted and unrestricted models. I theorize that states with higher levels of state and grant aid funding sources may be associated with higher rates of "no-loan" policy adoption.

State Support and Governance Models

To calculate state support for higher education (total number of dollars), I used data from the SHEEO Grapevine report (2024). I also calculated the total number of dollars allocated to higher education while adjusting for the cost of living (COLI) provided by each state. The COLI is used by SHEEO Grapevine report and is calculated annually by the Council for Community and Economic Research and reflects the general economic conditions in different states (SHEEO, n.d.). It seems that states with high levels of state support can choose not to offer federal loans (Schichtel-Greenwood, 2018). For this continuous variable, I calculated it in millions of dollars for ease of interpretation. I included this variable in both the restricted and unrestricted models.

The governance structure of each state higher education system was calculated by the Education Commission of the States (ECS) (McCann, 2022) and was coded from most centralized to least centralized. This categorical variable was included in the unrestricted model. It was not directly cited in the literature as a reason to adopt a "no-loan" policy; however, it's possible that highly centralized forms of governance affect individual community colleges' decision to opt out of the federal student loan program.

Pell Grants

Pell Grants are a type of federal financial grant aid awarded to students that demonstrate exceptional financial aid need (FSA, n.d.b.). Nearly 40% of community college students receive a Pell Grant (CCRC, n.d.). Therefore, the threat of losing access to Pell Grants (a potential consequence of a high CDR) is of grave concern for community college administrators since many Pell Grant recipients attend community colleges (Wiederspan, 2016). In this study, I conducted descriptive statistics on Pell Grant information including the percentage of full-time, first-time students awarded a Pell Grant and the average amount awarded. I also included this variable in the unrestricted model.

Tuition and Fees

I included published in-state tuition and fee rates charged by each community college. If community colleges have a high rate of tuition and fees, I would expect that federal student loans would be available for these students since it would be difficult to pay for an education without them. Conversely, states that have lower than average published tuition and fees may have more community colleges that opt out of the federal student loan program. This continuous variable was included in both the restricted and unrestricted models.

Enrollment

Enrollment includes full-time equivalent enrollment (FTE) and dual enrollment. Enrollment information was captured by IPEDS and the definitions are as follows. Full-time equivalent enrollment provides a standardized measure to account for both full-time and part-time students. It is calculated by adding the number of full-time students with the estimated full-time equivalent of part-time students. Part-time students are converted to full-time equivalent through a multiplication factor based on the institution control and level and the student level.

Dual enrollment is the number of students under the age of 18 enrolled in college courses while pursuing a high school diploma or equivalent. It does not include students enrolled in credit-by-exam courses (e.g. AP or IB). Community college that participates in dual-enrollment Early College programs allow high school students to enroll and earn college credit (typically an AA or AS degree). All enrollment numbers are captured in the fall of the academic year. Since students who do not have access to loans tend to go part-time (TICAS, 2014), I would expect that community colleges with a higher number of FTE enrollment to offer federal student loans. I included the FTE variable in the unrestricted model and used the dual enrollment variable in a robustness check.

Rurality

Using IPEDS' definition, I will include the institution's locale based on geographic location and population density of the area. Rural students tend to be more dependent on student loans (Hardy & Katsinas, 2008); therefore, community colleges may be more likely to offer loans if they are in a rural area. This categorical variable was included in the unrestricted model. IPEDS has four categories (city, suburb, town, and rural) each with a label of large, midsize, small, and fringe. For ease of interpretation, I consolidated the categories into city, suburb, town, and rural. This can be seen in Table 3 below.

Table 3

Rurality Categories for Educational Institutions

Label	Description
City	Large: Territory inside an urbanized area and inside a principal city with population of 250,000 or more. Midsize: Territory inside an urbanized area and inside a principal city with population less than 250,000 and greater than or equal to 100,000. Small: Territory inside an urbanized area and inside a principal city with population less than 100,000.
Suburb	21 = Suburb: Large: Territory outside a principal city and inside an urbanized area with population of 250,000 or more. 22 = Suburb: Midsize: Territory outside a principal city and inside an urbanized area with population less than 250,000 and greater than or equal to 100,000. 23 = Suburb: Small: Territory outside a principal city and inside an urbanized area with population less than 100,000.
Town	31 = Town: Fringe: Territory inside an urban cluster that is less than or equal to 10 miles from an urbanized area. 32 = Town: Distant: Territory inside an urban cluster that is more than 10 miles and less than or equal to 35 miles from an urbanized area. 33 = Town: Remote: Territory inside an urban cluster that is more than 35 miles of an urbanized area.
Rural	41 - Rural: Fringe: Census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster. 42 = Rural: Distant: Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster. 43 = Rural: Remote: Census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster.

Note. National Center for Education Statistics. (n.d.b). *Locale classifications.* Education Demographic and Geographic Estimates.
https://nces.ed.gov/programs/edge/Geographic/LocaleBoundaries

Expenditures

As a proxy for expenditures (costs) associated with administering a federal loan program, I looked at the student service expenses per FTE and the salaries, wages, and benefits for student services as a percentage of total expenses for student services. Student services include admissions and registrar activities and activities that contribute to the students' well-being and development outside of formal instruction. The first variable provides a standardized measure of student services spending, which allows for comparisons across institutions. For example, the average student services spending per FTE student was $1,360 with the top 1% spending over $5,100 per FTE student. These variables were included in the restricted and unrestricted models.

State Loan Program

There will also be a dummy variable to demonstrate the presence of a state loan program that community college students are eligible for. This will be coded as 1=state has a loan program and 0=the state does not have a loan program. It's possible that the presence of state loan programs offset the need for students to take out federal loans. Since these are private loans, they do not face the same federal sanctions if students default. In addition, it means these loan amounts and number of borrowers are not captured in IPEDS. Therefore, I made the assumption that the presence of a loan program could affect federal student loan access. See Figure 4 for a visual representation of state loan access and see Appendix B for a list of states with loans including borrowing amounts, interest rates, and other relevant information.

Nonfederal Student Loans

Nonfederal student loans include loans made from private, state, or institutional sources (USDE, n.d.c). Nonfederal student loans are measured in two ways. First, there is the percentage of first-time, full-time students who take out a nonfederal student loan. Second, is the average

amount of nonfederal loan the first-time, full-time student takes out. These variables were not captured until 2011 in IPEDS and thus have a significant amount of missingness in the data.

Institution Level Fixed Effects and Time Fixed Effects

This study used individual (college) fixed effects and year fixed effects. The individual fixed effects were used because I wanted to focus on the differences between colleges while controlling for characteristics that do not change over time such as location. Year fixed effects are important to control for time trends and specific shocks that might affect all colleges such as a recession or changes in financial aid policy.

Research Approach

This research used descriptive statistics and two multivariable linear probability models with fixed effects (LPMFE) and time fixed effects in Stata 18.5 to examine the predictive factors associated with a community college opting out of the federal student loan program. Fundamentally, this research aims to provide a measure of decision-making, which is a complicated process. Previous research has examined the effects of "no-loan" policies at community colleges (Dunlop, 2012, 2013; TICAS, 2016; Wiederspan, 2016) but have not systematically provided reasoning why "no-loan" policies are employed in the first place. What research is available focuses on highly publicized decisions by elite institutions as they adopt "no-loan" policies (see Bauer-Wolf, 2022, DeRousie, 2014, and Tilghman, 2007 for examples).

Descriptive Statistics

Descriptive research can be used as a foundation for other research or as a stand-alone research method. As Loeb et al. (2017) discuss, "There are times when descriptive analysis stands on its own as research—particularly when findings focus on identifying undocumented

phenomena, identifying hidden patterns in large datasets, or diagnosing real-world needs that warrant policy or intervention" (p.3). However, as Horwitz and Keysar (2019) note:

> Data alone are not descriptive research because data are not purposeful: data dumps, all-purpose data dashboards, and generic tables of summary statistics may be useful for some purposes, but do not qualify as descriptive analysis. We need descriptive analysis to clarify our basic understanding of the key aspects of the new phenomenon. Descriptive research can be particularly valuable in the age of large datasets in which the volume of information may otherwise obscure recognition of basic relationships. (p.13)

The chosen theoretical framework, theory of change, works well with descriptive statistics. Theory of change demonstrates how a series of pathways leads to a particular outcome (Weiss, 1995). In this case, the outcome is whether or not a community college adopts a "no-loan" policy. Using descriptive statistics is helpful in tracking these pathways, which include the cohort default rate (CDR), state and local funding, and expenditures related to administering the federal loan program. The research will also help show whether or not the theory of change pathways aligns with the outcome.

To answer the first research question, I conducted descriptive statistical analyses on the variables of interest, comparing four groups of states categorized by the percentage of their colleges that had opted out of the federal student loan program. Group 1 was "No-Loan" states. These states had more than 20% of their community colleges opting out of the federal loan program and include Alabama, Georgia, North Carolina, Virginia, California, Montana, Tennessee, Arkansas. Group 2 was "Some Loan" states. These states had 10.1-20% of their community colleges opt out and included Arizona, Illinois, Louisiana, Maryland, Mississippi, Nebraska, New Mexico, North Dakota, South Carolina, South Dakota, Washington, West Virginia. Group 3 was "More Loan" States". These states had 0.1-10% of their community colleges opting out of the federal loan program and included Connecticut, Massachusetts, Michigan, Minnesota, New Jersey, Oregon, Oklahoma, Texas, and Wisconsin. The fourth group

was “Offers Loans” states, which meant none of their colleges opted out of the federal loan program and included states Alaska, Colorado, Delaware, Florida, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Missouri, Nevada, New Hampshire, New York, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Wyoming. These groups are summarized in Table 4 below.

Table 4

State Groupings Based on Community College “No-Loan” Adoption Rates

Group	Name	List of states	Percentage of colleges that opt out
Group 1	“No-Loan” States	Alabama, Georgia, North Carolina, Virginia, California, Montana, Tennessee, Arkansas.	More than 20%
Group 2	“Some Loan” States	Arizona, Illinois, Louisiana, Maryland, Mississippi, Nebraska, New Mexico, North Dakota, South Carolina, South Dakota, Washington, West Virginia	10.1%-20%
Group 3	“More Loan” States	Connecticut, Massachusetts, Michigan, Minnesota, New Jersey, Oregon, Oklahoma, Texas, Wisconsin	0.1-10%
Group 4	“Offers Loans” States	Alaska, Colorado, Delaware, Florida, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Missouri, Nevada, New Hampshire, New York, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Wyoming	0%

Source: IPEDS and Author’s Calculations

Linear Probability Model with Fixed Effects (LPMFE)

To answer the second research question, “What factors inform a community college to adopt a “no-loan” policy?” I used LPMFE since there are multiple independent variables and the dependent variable is binary (Stock & Watson, 2019). I completed multiple steps with this research approach.

First, I completed descriptive statistics of all variables from 2002-2019 (both in their original form and the one-year time lag) in order to observe variable distributions and structures, which ensure the correct model to use (Pearson Higher Ed., n.d.; Wang et al., 2017). I also

conducted descriptive statistics of the imputed variables used in the models as well. I then conducted a time series of variables of interest including the cohort default rate, enrollment, tuition, nonfederal student loans, Pell Grants, and state support.

Second, I conducted bivariate analyses to understand the relationship between published tuition and fees and other variables relevant to the models and the cohort default rate and other variables relevant to the models. These bivariate analyses provided helpful information on the relationships between pairs (Pearson Higher Ed., n.d.) as well as test for correlation and potential multicollinearity issues.

Finally, I conducted a LPM with fixed effects and time fixed effects analysis for the research question: what factors predict a community college to adopt a "no-loan" policy. For this research question, two models were used in this study. The first parsimonious model examines independent variables that were noted in the literature (restricted model). The second parsimonious model examined other independent variables that had potential to inform the outcome based on the descriptive analyses (second model). The variables for each of these models can be seen in Table 2. These models used the full panel dataset (2002-2019) with one-year time lags and multiple imputation. For both models, I used the proxy first-time, full-time students who did not take out student loans for the dependent variable. The dependent variable is whether a community college opts out of the federal student loan program, and it was coded as 1= opts out of the federal loan program (i.e. adopts a "no-loan" policy) or 0=did not opt out of the federal loan program (i.e. did not adopt a "no-loan" policy). I also conducted sensitivity analyses and robust checks, which I will explain in more detail in the next section.

It is important to note that the second research question does not imply causality. Rather, the research question seeks to explore associations between "no-loan" policy adoption and the

independent variables in an understudied topic. The equation (2) for the models can be seen below:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \cdots \beta_{10} X_{it} + \gamma_i + \delta_t + \varepsilon_{it} \qquad (2)$$

In this equation, Y_{it} is the dependent variable for the individual college *i* at time *t*. β_0 represents the intercept of constant term of the model, β_1 -β_{1o} represents the coefficients that measure the impact of the independent variables X_{it} for individual college *(i)* at time *t*. The term γ_i captures characteristics unique to an individual (*i*) that do not vary over time (college fixed effects), δ_t is the year fixed effects, which captures unobserved factors that do not vary over time but are constant across all colleges in a given year, and ε_{it} is the error term for individual (*i*) at time (*t*). It represents unobserved factors that affect Y_{it} but are not captured by the independent variables.

In this model, the error term is inherently heteroskedastic (Stock & Watson, 2019); therefore, I used heteroskedasticity-robust OLS standard errors for inference. The coefficients can be estimated by OLS as well as for confidence intervals and hypothesis testing (Stock & Watson, 2019). The combined fixed effects and time fixed effects help reduce potential sources of bias. I also clustered standard errors at the institutional level.

Missing Data

We do observe missing observations in the panel dataset. I will discuss the overall missing data and then specific variables of the two models as well as the process of multiple imputation.

With 967 unique ID numbers over 18 years, we would expect 17,406 observations; however, for the main panel dataset, all variables have some missingness. Approximately 5.7% of data was missing across all variables, with some variables have significant missing data

(>50%). While there is not a universal cutoff for acceptable use of missing data, missing data can introduce estimate bias (Lee & Huber, 2021).

Missingness may be due to several factors. First, institutions may not report data for certain years. While IPEDS requires reporting for Title IV funding, community colleges may not have the resources necessary to report the data. Second, there was a decrease in the number of institutions over time. For example, the number of institutions in 2002 and 2003 was 962. This number decreased to 837 institutions in 2019. This is to be expected as institutions consolidate and close. In addition, certain data variables were not collected in 2002 such as the percentage of first-time, full-time students taking out nonfederal student loans. This variable was not collected until 2011, which explains why over half (61% of the data is missing). When adjusting for the timer period after 2011 for most variables, the percentage of missing data drops considerably.

There are three types of missing data: missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR). MCAR suggests that the missing data is unrelated to variables in the dataset, observed or unobserved, and the data has an equal likelihood of being missing (van Buuren, 2018). MCAR is considered the most desirable type of missing data because it introduces no bias into the results with multiple imputation (Columbia, n.d.). However, it is frequently viewed as the most unrealistic assumption because most datasets do not have true randomness to missing data (van Buuren, 2018). MAR occurs when missing data is related to the observed variables but not the missing values themselves (van Buuren, 2018). In this case, we can use what we know about the missing data to account for the missingness (Columbia, n.d.). MNAR occurs when missing data is related to the unobserved values and when the first two assumptions are not valid (Lee & Huber, 2021). However, it is important to note that it is not possible to directly test MAR or MNAR because there is not a way

to directly compare the missing data with the unobserved data (Jiang, 2022). Instead, we can test for MCAR and then based on the results justify the assumption of MAR (Jiang, 2022).

Missingness in the Models

Most of the data reported have few variables that have significant missing data within the reported panel dataset, with most missing less than 1%. However, there are several variables that have more than 5% missing data. These variables were: the cohort default rate (18%), the percentage of first-time, full-time students taking out nonfederal student loans (61%), the average amount of nonfederal student loans (83%), the student service expenses per FTE (20%), the salaries, wages, and benefits for student services as a percent of total expenses for student services (30%), and dual enrollment (18%).

After adjusting for the year 2008, which is when many of these variables (student services per FTE; salaries, wages, and benefits as a percent of total expenses) were captured the missing data dropped to less than one percent. However, the missing data for the cohort default rate, the percentage of first-time, full-time students taking out nonfederal student loans, the average amount of nonfederal student loans, and dual enrollment remained significant. Even after adjusting for the year 2011 for the percentage of nonfederal student loans and the average amounts (the year in which the data started being collected), the percentage of missing data remained significant (51% and 8% respectively).

My next step was to test assumptions on the reason why the data was missing (MCAR, MAR, or MNAR). I conducted two tests to diagnose MCAR. I describe the process for the first variable, the cohort default rate below. This process was repeated for the other variables.

First, I compared the means for each variable in the models for observations that were missing the cohort default rate to those that were not (see Table 5 below). Second, I also

conducted the mcartest (Little MCAR Test) in Stata (Stata, 2021). From these two tests, it does not appear that the data are MCAR for any of the variables (cohort default rate, percentage of nonfederal loan borrowers, and the average amount of nonfederal loan).

First, the means between the missing and non-missing group variables are different. Second, the mcartest resulted in a p-value <0.0001, meaning that the null hypothesis that the data are MCAR is rejected. This means that listwise deletion would be unwise since it is a requirement for MCAR so as not to introduce bias in the results (Newman, 2014). The differences in means suggest that the data might be Missing At Random (MAR), as the missingness in the cohort default rate appears to be related to other observed variables. To see the MCAR results for the percentage of nonfederal student loan borrowers, the average amount of nonfederal loans, and dual enrollment see Appendix D.

Table 5

Means and Differences of Observed Variables for Observations with and without Missing Data (Official CDR)

	Mean for Observations with Missing Data =1	Mean for Observations without Missing Data=0	Standardized Difference of Means	Raw Difference of Means
Percent State/Local Grant Aid	36.71	33.55	0.129	3.16
Average Amount State/Local Grant Aid	1450.16	1463.03	-0.017	-12.87
State Support for Higher Education (COLI) (in millions of dollars)	2717.55	3041.96	-0.120	-324.41
State Student Loan	0.40	0.38	0.041	0.02
Percent Nonfederal Loans	0.65	0.65	0.00	0.00
Average Amount of Nonfederal Loans	5831.19	6117.43	-0.089	-286.24
Student Services	1775.52	1302.24	0.297	473.28
Percent Total of Student Services	67.25	67.94	-0.042	-0.69
Tuition and Fees	2626.26	2633.66	-0.046	-62.25
Pell Percentage	58.49	48.49	0.537	10.00
Average Pell	3909.39	3660.19	0.240	249.20
Rurality	3.66	3.05	0.402	0.61
Governance	4.03	3.80	0.184	0.23
Headcount	2511.00	4856.86	-0.573	2345.86

Multiple Imputation

IPEDS data is based on survey information reported each year by higher education institutions that receive Title IV funding. However, the requirements for reporting and the capacity for institutions to accurately and reliably report data varies. As we saw above, some variables have more missingness. This missingness was not MCAR but most likely MAR. Some

variables were also MNAR because collecting the information did not begin until a particular year.

Since some of the variables had a moderate amount of missing data, I opted to conduct multiple imputation to estimate missing values for four variables: the cohort default rate, the percentage of first-time, full-time students who take out nonfederal loans, the average amounts of nonfederal student loans, and dual enrollment.

Multiple imputation works by creating multiple complete datasets each with different values for missing data instead of completing a single value for each missing data point (Barger, 2023). The process uses observed data to predict possible values for the missing observations (Jiang, 2022). Multiple imputation generates multiple plausible values for the missing data. These "complete" datasets are then used collectively to estimate the final model (Azur et al., 2011).

To complete the multiple imputation for this study, I used the *mi impute chained* (MICE) command in Stata 18.5 with predictive mean matching (PMM), with k-nearest neighbors (KNN) set to 5. I used this command because my missing data is mostly continuous and it's unclear if the data pattern is monotone. PMM and KNN are helpful for continuous independent variables, preserving the distribution of the observed data, and selecting which observed values to use for imputing missing data (Clark, 2016). In addition, the panel dataset employs a large sample size. As Acock (2018) suggests, since the panel dataset employs a large sample size, violations of the assumed normality may not be "too serious." Using this command, I created 50 imputed datasets which is recommended since there was some missingness over 50% (Allison, 2012). These were used to estimate my models, including sensitivity analyses and robustness checks except for the sensitivity analyses, which focused on using non-imputed data.

Limitations and Delimitations of the Study

There are several limitations to this study. First, because this study uses descriptive statistics from IPEDS for the first research question, it cannot demonstrate causality. However, this is not necessarily a limitation as descriptive statistics provide important information regarding samples that can be used in future causal research (Loeb et al., 2017). With respect to the second research question, LPM with fixed effects and time fixed effects also has limitations. While the analysis allows for ease of interpretation, the models may have heteroskedasticity. To address this, I used robust standard errors clustered at the individual (college) level when estimating the models and employed several robustness checks including different time periods and different variable specifications.

Second, there are limitations of the IPEDS data such as reporting errors and changes in definitions over time. For example, while Title IV institutions are required to report to IPEDS (Klasik & Hutt, 2018), many schools do not consistently report or do not provide all necessary information. It can be expected to find missing data at institutions with less available resources, such as community colleges. In a separate example, some colleges self-reported different rural categories (e.g. one year they reported as a town but the next year a suburb). This will create variations with the data sets. To counteract this potential skew and bias of results, I used multiple imputation for data that had a significant number of missing observations and also included several different time periods to account for other missing data.

Finally, it's possible that some states may require community colleges to opt into federal student loans (Dunlop, 2012). However, after inquiries to several state financial officers, it was not clear that any state requires federal loan participation.

The study is limited to public two-and four-year colleges that primarily award associate degrees in the U.S from the years 2002-2019. This boundary was set to focus on the specific phenomena of "no-loan" community colleges, particularly as these institutions are different from other institutions that opt out of the federal student loan program such as elite and highly selective institutions. While this delimitation may enhance the relevance for similar institutions, it will limit its generalizability to other types of institutions, such as private two-year colleges. In addition, this study does not address outcomes of "no-loan" policies at the community college level. However, this is not necessarily problematic as the purpose of the study was to engage with the factors that inform "no-loan" policies, not what happens after they are implemented.

Ethical Issues, Data Management and Security

When thinking about ethical issues in quantitative research there are several considerations. Franco et al. (2021) argues the following measures be taken: data accessibility, production transparency, and analytical transparency. In this case, data accessibility means access to IPEDS. However, there are challenges with IPEDS data. For example, even though Title IV schools are required to submit data to the federal government (Klasik & Hutt, 2018), there was missing data. In this case, making clear the reasons for what to do with missing data is of paramount importance. With respect to production and analytical transparency, I will make sure to document all steps so that the study can be replicated. Data was cleaned for consistent formatting before being merged, particularly since data came from multiple sources.

This study did not involve any human participants and used secondary data aggregated at the institutional level. Therefore, no Institutional Review Board (IRB) approval was needed. All data was stored either on a password-protected Google Drive or locally on a password-protected personal computer. Stata 18.5 was used for all data analysis.

Summary

This study used descriptive statistics and LPM with fixed effects and time fixed effects to identify factors that inform federal student loan access in public two-and four-year community colleges in the U.S. The dependent variable is a binary variable whether a community college adopts a “no-loan” policy (1 = opts out; 0 = provides loans) and the independent variables are separated into two models. The first model (restricted mode) includes both institutional demographic and financial characteristics. The second model (unrestricted model) was developed from the descriptive statistics found and included different demographic and financial characteristics. The fixed effects controlled for any institutional characteristics that do not vary over time, and year fixed effects controlled for external shocks that affect all institutions at the same time.

CHAPTER 4: RESEARCH FINDINGS

Overview

The purpose of this study was to analyze the factors that inform a community college opting out of the federal student loan program. I used descriptive statistics and linear regression modeling with individual and time fixed effects in Stata 18.5 for each research question. The research questions that guide this inquiry are as follows:

1. What are the financial (e.g. tuition and fees, state support, cohort default rate) and demographic differences (e.g. governance and rurality) between states that have a high percentage of "no-loan" community colleges and those that do not?
2. What are the factors (financial and demographic) that inform a community college to adopt a "no-loan" policy?

The first section provides descriptive statistics of all relevant variables for the panel dataset, time trends for key variables, as well as a bivariate analyses of key variables. In the second section, I provide an overview of the results of each model used to answer the second research question. The third section provides an overview of the sensitivity analyses and results. The fourth section discusses the results of the robustness checks, and I conclude with a summary of the results.

Descriptive Statistics

I conducted descriptive statistics of all relevant variables for the models for the panel dataset for 2002-2019 including the raw data (Appendix E), raw data with a one-year lag (Appendix F), and multiple imputation data (Table 6). The multiple imputation shows slight differences from the raw data due to listwise deletion for missing cases used by Stata for missing cases; however, many of the values are close.

For the raw data (no imputation, no lag), the average official cohort default rate is 11% which is below the threshold for sanctions (sanctions were a CDR above 25% from 2002-2011 for a two-year average, 30% for three years starting in 2012, or 40% for one year). For the one-year lag of the raw data, the official cohort default rate is 11.4%, and the cohort default rate is slightly higher (14.4%) for the multiple imputation dataset but still well below the threshold for sanctions.

The figures for the percentage of first-time, full-time students receiving state and local grant aid is similar among the datasets. In all datasets, less than half of all first-time, full-time students receive any state or local grant aid (33.6%-36.1%) and the average amount is between $1,461-$1,617). Interestingly, the percentage of full-time, first-time students that take out other student loans is less than 1% for all datasets. The average amount varies slightly $5,965 (raw data, one-year lag), to $5,780 (multiple imputation) to $6,085 (raw data, no imputation, no lag).

The total number of dollars for higher education (adjusted for the cost of living) in millions of dollars ranges from $62 million to over $12 billion with an average of $2.96 to $3.18 billion across all datasets. Thus, we see significant differences in the amount of state support for higher education.

Also interesting to note is the relationship between student service expenses and salaries. Student services' salaries, wages, and benefits for student services make up almost 69% of the expenses for student services (64.1% for the multiple imputation dataset). The average cost of student service expenses per FTE is $1,321 (raw data, one-year lag), $1,360 (raw data), and $1,496 (multiple imputation). In the descriptive statistics, it seems that community colleges spend a considerable amount of money on student services, compared to tuition and fees.

We see that the average published tuition and fees for the academic year were $2,626 for the raw data, with a range of $0 to over $13,400. For the raw data, one year lag the tuition and fees were $2,566 with the same range. And for the multiple imputation dataset, the average amount of tuition and fees was slightly higher at $3,008.

The percentage of first-time, full-time Pell Grant recipients is almost 50% (49.7%) and the average amount received is $3,690 for the raw dataset. For the one-year lag dataset, the average was similar (49.4%) and the amount was also similar ($3,620). The average is slightly higher for the multiple imputation dataset with 55% of first-time, full-time students receiving a Pell Grant and an average of $4,287.

As I discussed in chapter 3, we do see some missingness in the raw data. This is due to a variety of factors including certain variables not recorded by IPEDS until a particular year and certain missingness of variables. With the multiple imputation, there are slight differences between the raw data. This is because Stata uses listwise deletion for missing cases. Some of the differences may also be due to the differences between the raw data and the one-year lag.

Table 6

Descriptive Statistics, Multiple Imputation, Lagged One-Year

Variable	*M*	*SD*	95% CI	
Official CDR	14.379	0.082	14.509	14.831
Percent state/local grant aid	36.115	0.254	35.609	36.620
Average amount state/local grant aid	1617.541	8.461	1600.955	1634.128
State support for higher education (COLI) (in millions of dollars)	3183.515	30.857	3123.027	3244.003
Presence of state-loan[1]	.395	0.005	0.384	0.405
Percent nonfederal loans	0.544	0.024	0.497	0.590
Average amount of nonfederal loans	5780.207	61.401	5658.388	5902.026
Student services per FTE	1496.192	11.432	1473.78	1518.604
Salaries, wages, and benefits as percent of total expense for student services	64.059	0.169	63.726	64.391
Tuition and fees	3008.621	14.614	2979.974	3037.269
Percent Pell Grant	55.146	0.164	54.824	55.467
Average amount of Pell Grant	4287.274	6.042	4275.429	4299.118
Rurality	3.159	0.017	3.125	3.192
12-month full-time equivalent enrollment: 2008-09	4835.651	54.712	4728.402	4942.9
Dual Enrollment	680.255	10.122	660.401	700.101
Institutional Capacity (expenditures/revenues) (in millions of dollars)	50.6	0.888	48.9	52.4

Note.[1] Presence of a state loan is a binary variable and is represented as proportion. There were 50 imputations and 8585 total observations.

Time Trends

I was also interested in the trends over time for key variables in the models, which include enrollment, tuition trends, and nonfederal student loans. These time trends can help show how the variables have changed over the time of the research study as well as provide context for the data.

Enrollment

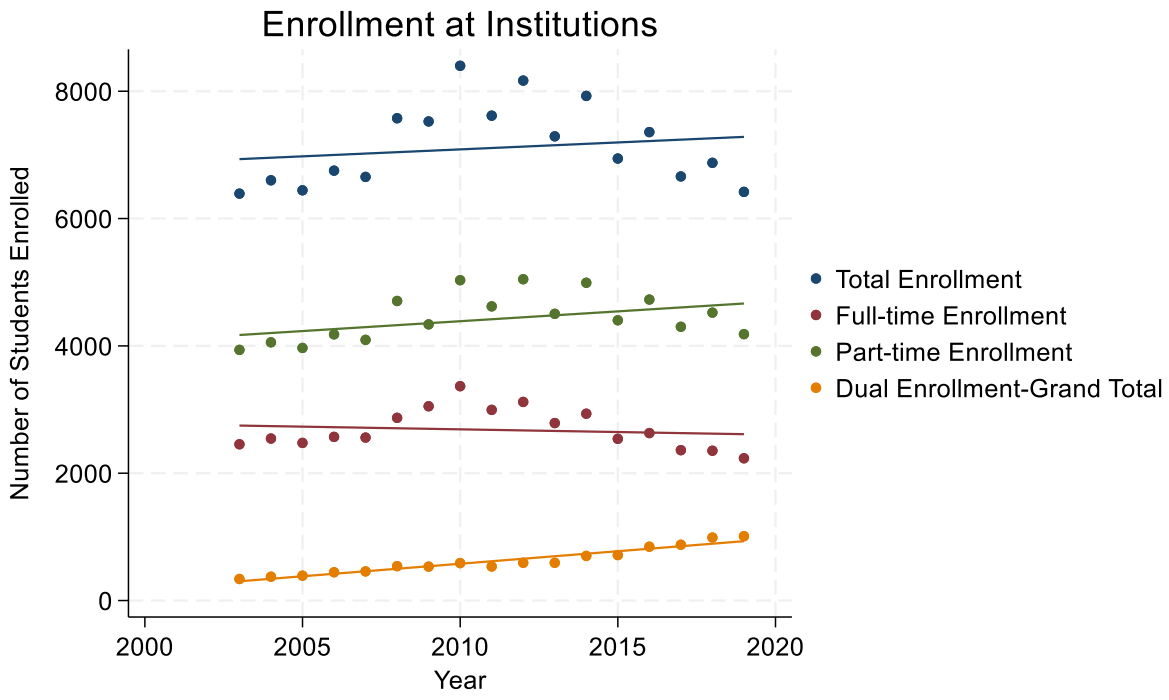
Enrollment for community colleges saw a surge during the Great Recession (2007-2009). Typically, people pursue post-secondary education during economic recessions to gain new work skills and enhance their employability (Long, 2013). The Cicero Group (2020) notes that community college enrollment grew 30% during the Great Recession (compared to 13% at four-year institutions) but then dropped by 8% after the recession ended (compared to a 2% growth in four-year institutions). This can be seen in Figures 7-8, and we see a jump between 2007-2009 for enrollment and then a decline over time except for dual enrollment. These figures also show interesting trends in community college enrollment over time. The total enrollment averages between 6,000 to 8,000 students. There are more part-time students enrolled in community colleges than full-time students and dual enrollment accounts for fewer than 2,000 students on average.

While dual enrollment accounts for fewer students overall, the number of dual enrolled students has increased significantly (see Figure 9). According to Rooth (2024), the number of dual enrolled high school students doubled from 2011 to 202. More than 1 million high school students participate in dual enrollment with community colleges offering 70% of dual enrollment programs (Belfield et al., 2023). This suggests community colleges seek to diversify their enrollment patterns and reach more students. However, the funding that community colleges

receive for dual enrolled students varies considerably with some community colleges receiving less funding for dual enrolled students (Belfield et al., 2023). This requires creative solutions to enroll students (Pierce, 2017) and highlights a tension between increasing enrollment and funding challenges.

Figure 7

Enrollment Averages by Year



Note. This binscatter plot is the average number of students enrolled across the institutions included in the study in the U.S. over time.

Figure 8

Enrollment Trends

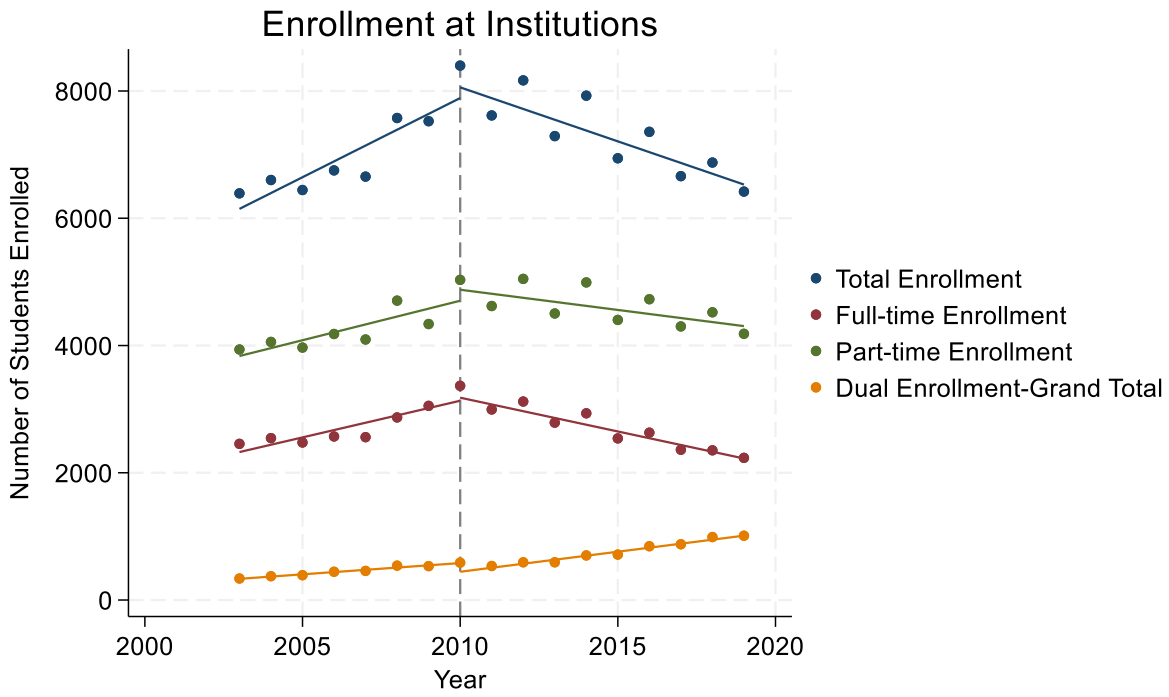
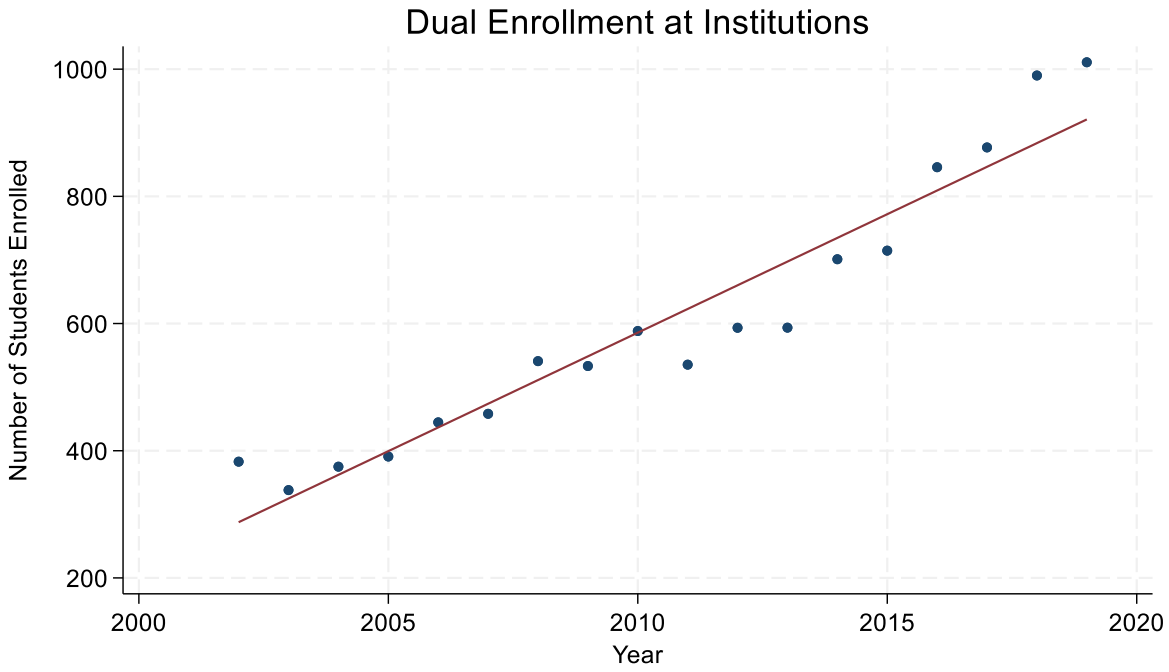


Figure 9

Dual Enrollment Trends

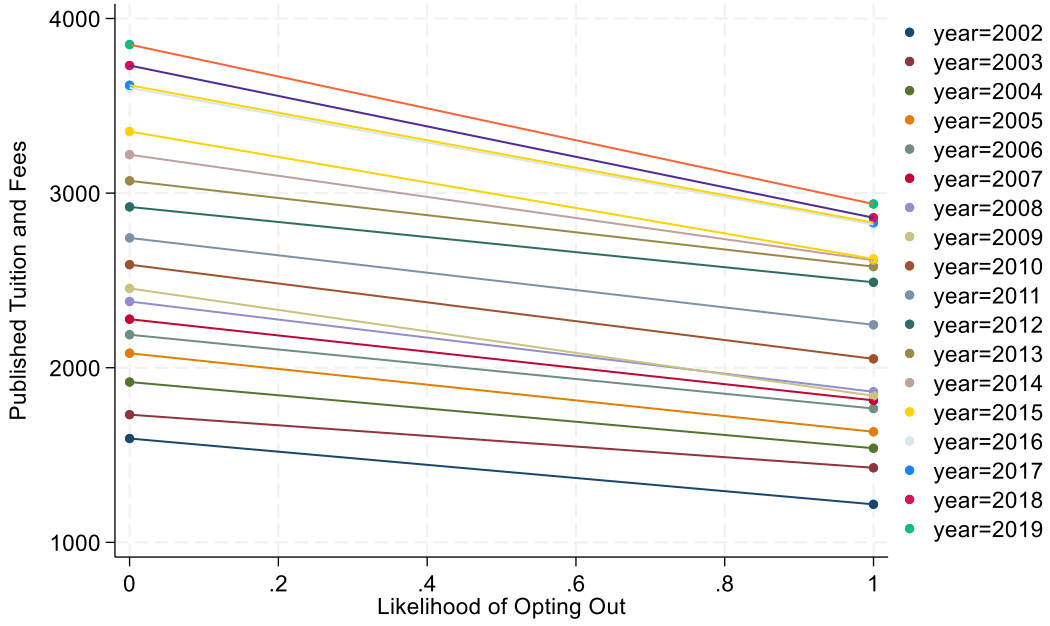


Tuition

The average tuition and fees (in dollars) has steadily increased over time. As later discussed in the models, the published tuition and fees is negatively correlated with a community college adopting a "no-loan" policy. Thus, as tuition and fees decrease, the likelihood of adopting a "no-loan" policy increases. This is seen in Figure 10 as well. As the published tuition and fees decrease over time, the likelihood of opting out (i.e. adopting a "no-loan" policy) increases.

Figure 10

Published Tuition and Fees and Likelihood of Opting Out, by Year

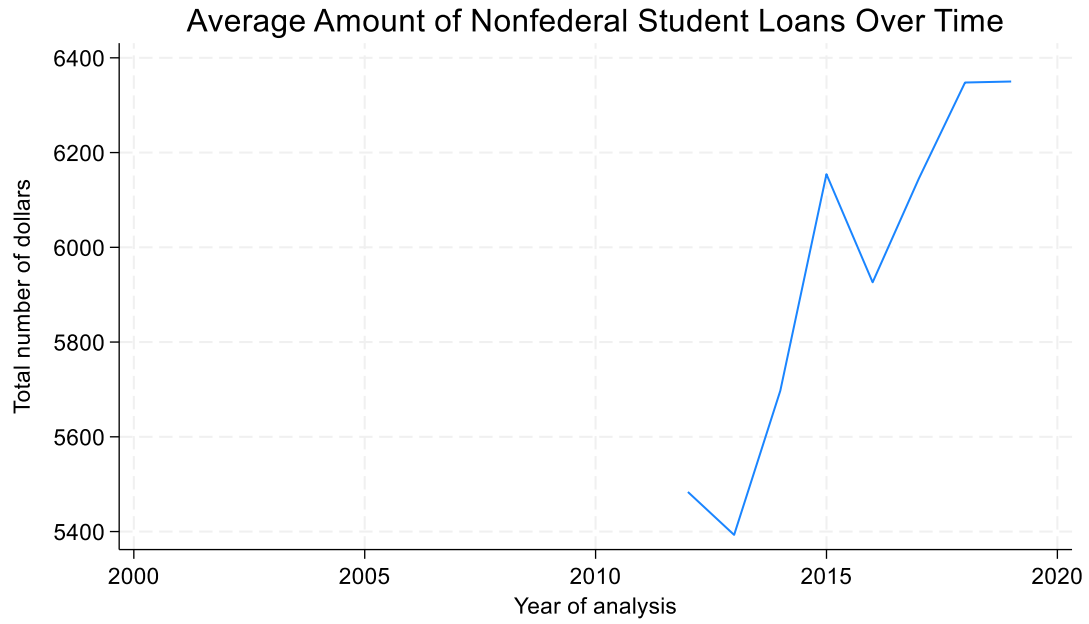


Concurrently with the average tuition and fee costs, the amount of nonfederal student loans has continued to increase. IPEDS did not start collecting data on nonfederal student loans until 2011 (as indicated in Figure 11). However, the amount of nonfederal student loans remains significant, increasing from approximately $5,500 to almost $6,400. During the same time that the federal government made changes to the CDR calculation and IDR plans, nonfederal student

loan amounts increased. This may also highlight the tension between the objectives of federal policymakers and the focus of community college administrators. In Figure 15 we see steady increases in the average amount of nonfederal student loans (for first-time, full-time students community college students). As discussed in chapter 5, this variable may be in response to community colleges adopting a "no-loan" policy (i.e. an outcome) rather than a predictor.

Figure 11

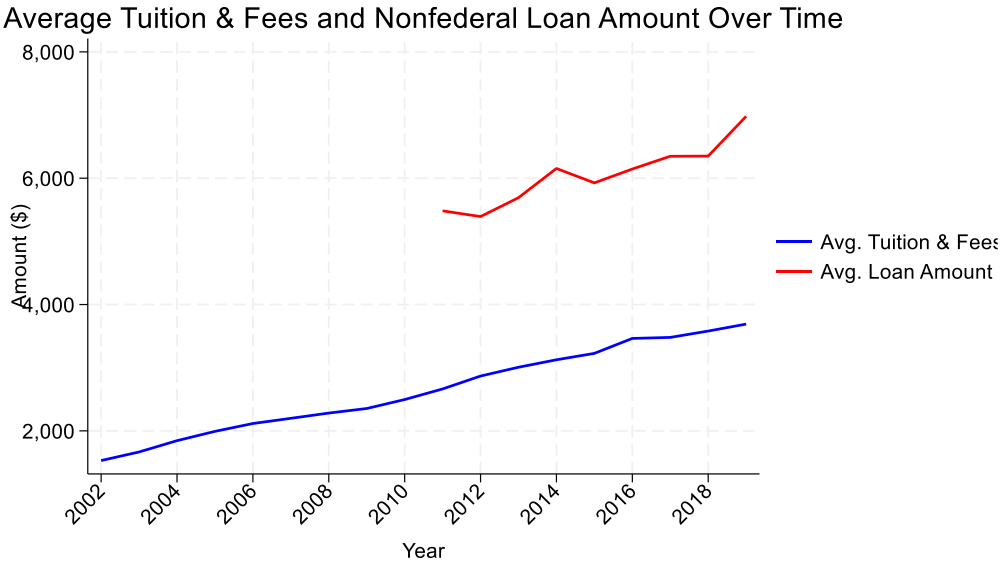
Nonfederal Loans by Year



In Figure 12, we see increases in both tuition and fees and nonfederal loan amounts. Students may take out loans to supplement the financial aid gap, which also includes paying for books, supplies, supplementing loss income, transportation or other expenses. Some college administrators have concerns that students take out more loans than necessary (Kyaw, 2022).

Figure 12

Tuition and Fees and Nonfederal Loan Amount



Research Question 1

What are the financial (e.g. tuition and fees, state support, cohort default rate) and demographic differences (e.g. governance and rurality) between states that have a high percentage of "no-loan" community colleges and those that do not?

To answer this question, I categorized states into four distinct groups based on the percentage of "no-loan" community colleges in their respective states. See Figure 1 in chapter 1 for a visualization. The state groupings are listed from Table 4 below. These groupings vary in geographic distribution. For example, the first group includes the Southeast, Far West, and Plains regions.[12] However, it is of interest to note that a majority of states that have more than 10% of "no-loan" community colleges (i.e. more than 10% of colleges that opt out of the federal student

[12] Regional delineations defined by IPEDS https://nces.ed.gov/ipeds/survey-components/4

loan program) are located in the Southeast while states that have no opt outs are located in the Mid East and New England regions.

Table 4

State Groupings Based on Community College Opt-Out Rates from Federal Student Loan

Group Number	Name of Group	List of states	Percentage of colleges that opt out of the federal loan program
Group 1	"No-Loan" States	Alabama, Georgia, North Carolina, Virginia, California, Montana, Tennessee, Arkansas.	More than 20%
Group 2	"Some Loan" States	Arizona, Illinois, Louisiana, Maryland, Mississippi, Nebraska, New Mexico, North Dakota, South Carolina, South Dakota, Washington, West Virginia	10.1%-20%
Group 3	"More Loan" States	Connecticut, Massachusetts, Michigan, Minnesota, New Jersey, Oregon, Oklahoma, Texas, Wisconsin	0.1-10%
Group 4	"Offers Loans" States	Alaska, Colorado, Delaware, Florida, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Maine, Missouri, Nevada, New Hampshire, New York, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Wyoming	0%

The average number of colleges in each group differs. In group one, the average number of colleges is 37, with 11 in Montana and 115 in California. Thus, states that have over 20% of "no-loan" community colleges also tend to have a large number of colleges located in that state. Group two, which has 10-20% of "no-loan" colleges has 18 colleges per state on average with 5 in South Dakota and 48 in Illinois. The third group (up to 10% of "no-loan" community colleges) has 24 colleges per state on average with 12 in Connecticut and 59 in Texas. Finally, the lowest rate of "no-loan" community colleges (Group 4 with 0%) has the smallest number of colleges on average (11.3). The minimum value is 1 (Alaska, Delaware, Rhode Island, and Vermont), and the maximum value is 36 (New York). Next, I will discuss the differences between these four groups based on financial variables and demographic variables.

Financial Variables

In this section, I conducted a descriptive statistical analysis of the following financial variables for each group, comparing the similarities and differences of each group. Variables were selected based on their importance to the models. I divided these variables into six groups for the purpose of this research question. The variables I examined were the cohort default rate, Pell Grants, state and local aid, state support for higher education, tuition and fees, nonfederal student loans, and institutional expenditures. I first summarize the differences between the groups and then look at each of the variables individually.

Differences Between Groups, An Overview

Group 1 ("No-Loan" States) or states that have more than 20% of their colleges opting out of the federal student loan program have some distinct descriptive statistics. These states have the highest average total funding ($4.8 billion) and the highest percentage of students receiving state and local aid (40.6%). They also have the lowest average published tuition and fees ($1,849). Interestingly, these states have the highest percentage of institutions with state-sponsored student loan programs (36.9%). This group also has the highest average amount of Pell grants awarded ($3,822 for first-time students and $3,851 for all undergraduates), which could demonstrate that students in these states have higher demonstrated financial need overall In sum, compared to other groups, these states have the lowest tuition and fees, highest state aid, highlighting a potential way that informs community colleges to opt out of the federal student loan program.

In contrast, Group 4: the states where all colleges participate in the federal student loan program (0% opt-out) have the highest average published tuition and fees ($3,268), and the highest percentage of salaries, wages, and benefits for student services as a percent of total

student service expenses (68% of total expenses). They also have the highest average cohort default rate (11.7%), which may be because none of their colleges opt out. These states have a lower percentage of students receiving state and local aid (33.9%) compared to the "No Loan" states, but a higher percentage compared to the middle two groups.

The middle two groups ("Some Loan" with 10-20% opt-out and "More loans offered" with 0.1-10% opt-out) generally fall between the two extremes in most categories. However, Group 3, the "More loans offered" group, stands out with the highest student service expenses per FTE ($1,560) and the highest percentage of institutions with student loan programs (62.9%). In sum, these two groups have a moderate approach of mixing loan offerings with other forms of aid.

Key Variables

Cohort Default Rate

The cohort default rate is somewhat consistent across the different groups (between 10-12%) but with variations in standard deviations and the maximum amount. The lowest CDR is in group 1 (10.3%) most likely because of the number of colleges that have adopted a “no-loan” policy.

Pell Grants

The percentage of Pell Grant recipients and average amounts is relatively similar across all groups. The percentage of full-time, first-time students awarded Pell Grants is slightly higher at 50.531% in Group 1. Group 1 also shows higher average Pell Grant amounts for both first-time, full-time students and all undergraduates, which suggests that students have higher demonstrated need despite lower tuition and fees. Group 3 had the highest percentage of all undergraduates awarded a Pell Grant (38.3%). These percentages could inform institutional

financial aid policies and the decision on whether or not to adopt a "no-loan" policy. If students receive a high amount of Pell Grant aid, the institution may think that students do not need access to loans since the Pell Grant could cover the cost of tuition and fees. However, as I discuss in chapter five, this may not be an accurate assessment.

State/Local Aid

The percentage of full-time, first-time students who receive state and local aid varies across the four groups. States with a high percentage of "no-loan" community colleges have an average of 41% of full-time, first-time students awarded aid and the average amount is $1,368, which is the least average amount. States that have some community colleges opting out (10.1-20%) have an average of 29% of full-time, first-time students awarded aid with $1,411. States that have a higher number of colleges that offer federal loans have a similar percentage of students awarded state and local aid with a similar average amount. The states that offer federal student loans (i.e. do not opt out) have a slightly higher average (34%) and a slightly higher average amount ($1,555).

Table 7

Distribution of State and Local Aid by State Group

Group	Name	Percentage of full-time first-time students awarded state and local aid	Average amount of state and local aid awarded
1	"No-Loan" States	41%	$1,368
2	"Some Loan" States	29%	$1,411.
3	"More Loan" States	29%	$1,548
4	"Offers Loans" States	34%	$1,555

State Support for Higher Education

State support for higher education is highest for states that have more than 20% of community colleges opting out of the federal loan program (over $4.8 billion) and states with the lowest number of "no-loan" policy colleges have the second lowest level of state support with over $1.8 billion. The lowest level of state support is group two (10.1-20% of "no-loan" colleges) with $1.672 billion dollars of support. The third group (0.1-10% of "no-loan" colleges) has $2.9 billion in state support. States in group two have the highest percentage of state loan offerings at 63%. All groups have fewer than 1% of full-time, first-time students taking out nonfederal student loans but the average amounts differ significantly. Community college students in "no-loan" states (group 4) have an average of $5,406 in nonfederal student loan borrowing amounts, with a standard deviation of $3,362 and a maximum of $22,948. The average amount of nonfederal student loans for group 2 (some loans) was $6,697 with a max of $30,220. In group 3 ("More Loan States") the average was $5,992 with a standard deviation of $3,416 with a max of $29,744. For averages of all state groups see Table 8.

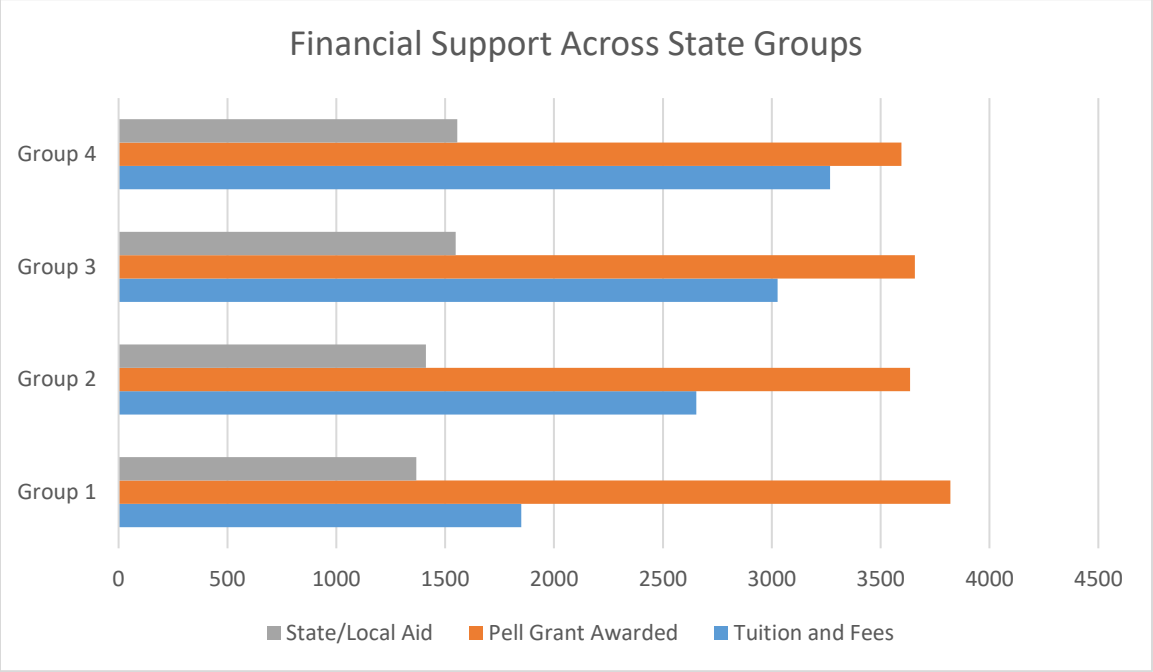
Tuition and Fees

Tuition and fees vary across the different state groups, with an increase in tuition and fees as the percentage of "no-loan" community colleges decreases. The states with the highest percentage of "no-loan" community colleges (Group 1) have the lowest average published tuition and fee rate at $1,849 while states that have no community colleges that opt out have the highest average of tuition and fees at $3,268 (Group 4). Tuition and fees for group 2 is $2,653 and for group 3 is $3,027. A comparison of published tuition and fees average, Pell Grant average award for first-time, full-time students, and average amount awarded of state/local aid for first-time, full-time students can be seen in Figure 13. This figure shows that while the amount of aid

awarded for full-time, first-time students is relatively similar (both Pell Grants and state/local aid), the average published tuition and fees varies significantly.

Figure 13

Support Across State Groupings



Nonfederal Student Loans

Nonfederal student loans include loans offered at the state level (either through a state agency), private loans, credit unions or other non-federal sponsored sources. The presence of student loans offered at the state levels varies with group 3 (0.1-10% "no-loan" policy adoption) having the highest percent (62.9) and group 2 (10.1-20%) having the lowest percent (22.2). This finding is interesting as it sheds light on the lack of federal student loan access. The average amount of nonfederal student loans awarded is highest in group 2 ($6,698) and lowest in group 1 ($5,406). However, I expected group 4 (0% of "no-loan" policy adoption) to have the lowest percentage of nonfederal student loan borrowers and amounts since these students have access to federal student loans, which tend to have better borrowing terms than nonfederal loans. These findings may help explain concerns that administrators and policymakers have of community college overborrowing (Avery & Turner, 2012).

Institutional Expenditures

Group 3 (0.1-10% of "no-loan" policy adoption) reports the highest student service expenses per FTE ($1,560), possibly indicating higher investment in student support services while group 1 (more than 20% of "no-loan" policy adoption) has the lowest ($1,273). Salaries, wages, and benefits as a percent of total expenses for student services are relatively similar, with minor variations indicating similar staffing costs across groups.

Table 8

Descriptive Statistics for State Groups 1-4, Percent of Colleges Adopting a "No-Loan" Policy

	(>20% of colleges, Group 1)	(10.1-20% of colleges, Group 2)	(0.1-10% of colleges, Group 3)	(0% of colleges, Group 4)
Variable	Mean	Mean	Mean	Mean
Official CDR	10.294	11.457	10.895	11.737
Percent Pell Grant	50.531	50.756	47.175	49.794
Average amount of Pell Grant	3821.963	3635.525	3657.522	3595.130
Percent state/local grant aid	40.618	29.216	29.266	33.935
Average amount state/local grant aid	1367.927	1411.285	1548.041	1554.541
State support for higher education (COLI; millions of $)	4827.806	1672.968	2911.269	1875.223
Presence of state-loan[1]	0.369	0.222	0.629	0.309
Percent nonfederal loans	0.443	0.681	0.848	0.689
Average amount of nonfederal loans	5406.638	6697.491	5992.144	6224.156
Student services per FTE	1272.637	1312.142	1559.529	1329.342
Salaries, wages, and benefits as percent of total expense for student services	71.021	65.016	65.989	68.031
Tuition and fees	1848.636	2652.963	3026.863	3267.765

[1]Presence of a state loan is a binary variable and is represented as proportion.

Demographics

I also conducted descriptive statistics for the four groups based on demographic institutional characteristics. These variables include state governance systems, enrollment, and

rurality. The data reveals significant variations in state governance systems for higher education across the four groups of states. States with the highest adoption of "no-loan" policies (Group 1, 20% or more) predominantly feature Independent State Boards that either coordinate (38.6%) or govern (57.6%) community colleges. In addition, these states are not governed by State Boards of Education. In contrast, states where all colleges offer loans (Group 4, 0% opt-out) show a more diverse governance structure, with notable presence of State Boards of Education (22.3%), Consolidated Governing Boards (36%), and Coordinating Boards (35.7%).

The middle groups show varying patterns, with group 3 (0.1-10% of "no-loan" policy adoption) having a high proportion of Coordinating Boards (50.6%). Interestingly, the absence of a state governance system is most prevalent in this group as well (14.1%). In sum, group 1 predominately features independent state boards both coordinating (38.6%) and governing (57.6%). Group 4 displays the most diverse governance structures with representation across State Boards of Education (22.3%), Consolidated Governing Boards (36%), and Coordinating Boards (35.7%). Group 2 features a mix of governance systems, and group 3 is characterized by a prevalence of Coordinating Boards (50.6%) and No State Governance System (14.1%). See Table 9 below for a summary.

Table 9

Governance Model Descriptive Statistics for State Groups 1-4, Percent of Colleges Adopting a "No-Loan" Policy

	(>20% of colleges, Group 1)	(10.1-20% of colleges, Group 2)	(0.1-10% of colleges, Group 3)	(0% of colleges, Group 4)
Variable	Mean	Mean	Mean	Mean
State Board of Education Coordinates and Regulates Community Colleges	0.000	0.000	0.000	0.223

Table 9 (continued).

Consolidated Governing Board for Both Two-and Four-year institutions	0.127	0.029	0.270	0.360
Coordinating Board for All Higher Education	0.121	0.213	0.506	0.357
Coordinates Locally Governed Community Colleges				
Independent State Board Coordinates Community Colleges and/or Technical Institutions	0.386	0.467	0.000	0.097
Independent State Board Governs Community Colleges	0.576	0.211	0.082	0.336
No State Governance System	0.000	0.100	0.141	0.000

Enrollment and Rurality

Group 1 (states with over 20% of "no-loan" community colleges) have the highest average full-time equivalent (FTE) fall enrollment (4,185) and 12-month FTE enrollment (4,914) among all groups. Notably, these states have the highest average number of part-time students (4,986), significantly exceeding their full-time student average (2,488). This could be a potential outcome of adopting a "no-loan" policy (see chapter 5 for implications and suggestions for future research). It also supports what Wiederspan (2016) found, which is that federal student loan access is associated with an increase in the number of credits taken in the first year for Pell-eligible students.

The middle two groups (group 2 and group 3) generally fall between these two extremes in most categories, with group 3 (0.1-10% "no-loan" policy adoption) showing the second-highest averages in most enrollment categories. Across all groups, the average rurality score ranges from 3.029 to 3.226 (on a scale of 1-6), indicating a mix of urban and rural institutions

with a slight lean towards more rural settings. See Table 10 for a summary of enrollment and rurality.

Table 10

Mean Enrollment and Rurality Descriptive Statistics for State Groups 1-4, Percent of Colleges Adopting a "No-Loan" Policy

	(>20% of colleges, Group 1)	(10.1-20% of colleges, Group 2)	(0.1-10% of colleges, Group 3)	(0% of colleges, Group 4)
Number of full-time students enrolled	2488.268	2197.367	2578.211	2646.057
Number of part-time students enrolled	4985.839	3425.769	4504.474	3738.810
Full-time equivalent fall enrollment	4184.821	3383.354	4094.468	3937.756
12-month full-time equivalent enrollment	4914.474	3948.268	4811.017	4419.009
Grand total of dual enrollment (under 18 years old)	530.328	506.307	637.817	728.861
Rurality[2]	3.105	3.226	3.029	3.132

Note. Rurality is a categorical variable (1-5), 1=City, 5=Rural

Bivariate Analysis

A correlation coefficient measures the strength and direction of two variables and can be measured between the values of -1.0 and +1.0, with the closer to an absolute value of 1 indicating a stronger relationship (Erhardt et al., 2019). I correlated the following variables pairs to examine the relationship between them. Two variables that had significance in the literature and the models: the published tuition and fees and the cohort default rate.

From the first bivariate analysis in Appendix G1, we see that the variable tuition and fees has weak correlations with several variables. For example, the percent of all undergraduates awarded a Pell Grant (0.17) and the average amount (0.05) is positive but almost zero and therefore not significant. There are moderate positive correlations with the percent of full-time,

first-time students awarded a Pell Grant (0.22) and the average amount awarded to those students (0.32) suggesting that as the percentage of full-time, first-time students awarded a Pell Grant (as well as their amounts awarded) increase, so does the published tuition and fees for the academic year. We see a moderate negative relationship between tuition and fees and state support (-0.43). In other words, as the amount of state support (adjusted for the standard of living) increases, we see a decrease in tuition and fees. Interestingly, the percentage of first-time, full-time students receiving state and local funding has an almost negligible negative effect (-0.0089); however, the amount awarded to these students is a moderate positive relationship (0.39). In other words, as the amount of state and local aid to first-time, full-time students increases there is an association with an increase in tuition and fees.

In Appendix G2, I present the correlation coefficients of the cohort default rate with other variables related to financial aid, state support, institutional capacity, and institutional characteristics. The cohort default rate has a moderate positive correlation with the percentage of first-time, full-time students awarded a Pell Grant (0.393). This suggests that Pell Grant recipients are associated with a higher CDR. State support does not have a strong association with the CDR, which suggests that the aid is not necessarily associated with a CDR. Overall, the cohort default rate has weak associations with the variables, which suggests that the cohort default rate is influenced by multiple factors. In the next section, I will discuss the results from the linear regression model with fixed effects and time fixed effects (research question 2).

Linear Regression Model with Fixed Effects and Time Fixed Effects

Research Question 2

What are the factors (financial and demographic) that inform a community college to adopt a "no-loan" policy?

I answer this question in two ways. First, I used a parsimonious model based on variables from the literature, referred to as the restricted model. The literature identifies four main reasons why a community college may adopt a "no-loan" policy (i.e. opt out of the federal student loan program). These reasons are a high cohort default rate (CDR); the ethics of allowing students to borrow; institutional expenditures associated with administering the federal student loan program; and the affordability of community college.

It can be difficult to assign proxy variables for these reasons. Thus, I made decisions on which variables to include in the model. The CDR is represented as the percentage of students who defaulted on their loans (Official CDR). The ethics of federal loan offerings is represented by the state and local funding (Percent state/local grant aid and Average amount state/local grant aid (in thousands of dollars)); the state support offered (State Support); the presence of a state loan, and the average amount of nonfederal loan awarded for first-time, full-time students, and the percent of first-time, full-time students taking out a nonfederal loan. The institutional expenditures are represented by student service expenses per FTE (GASB), and the salaries, wages, and benefits for student services as a percent of total expenses for student services (GASB). Finally, the affordability of college is represented by tuition and fees of an institution.

I used the command *mi estimate, cmdok post: xtreg* in Stata to run the models with imputed data for both models. I also ran the models without imputed data for sensitivity checks. Table 11 shows the results for the dependent variable (a community college adopting a "no-loan"

policy using first-time, full-time students as a proxy) based on 50 multiple imputations across 911 institutions over time. I used institutional fixed effects and time fixed effects with robust standard errors and compared the results without institutional effects. The main model was statistically significant overall, $F(18, 900.5) = 4.22$, $p < .001$), and the results suggest that there are several variables that are statistically significant; however, the overall effect sizes are small and were significant at different p-values. While there are variables that are statistically significant, these findings were not always significant with the various sensitivity analyses conducted. These findings suggest that there may be a more complex and context-dependent relationship between the independent and dependent variables than previously considered.

Table 11

Results from Restricted Model with Multiple Imputation

	With Fixed Effects			Without Fixed Effects		
	Coefficient	*SE*	*p*	Coefficient.	*SE*	*p*
Official CDR	-0.005***	.001	<.001	-0.005***	0.000	<.001
Percent state/local grant aid	0.001**	0	0.014	0.001***	0.000	<.001
Average amount state/local grant aid (1000s of dollars)	-0.004	0	0.464	-0.004	0.003	.304
State support for higher education (COLI; millions of $)	0.000*	0	0.064	0.001	0.003	.699
Presence of state-loan[1]		.	.	0.069***	0.018	.001
Average amount of nonfederal loans (1000s of dollars)	-0.001	0	0.396	-0.001	0.001	.299
Percent nonfederal loans	0.006**	.003	.020	0.006***	0.002	<.001
Student services per FTE (in 1000s of dollars)	-0.004	0	.523	0.009*	0.005	.054
Salaries, wages, and benefits as percent of total expense for student services	0.0002	0	.544	0.001**	0.000	.018
Tuition and fees (in 1000's of $)	-0.0357***	0	.004	-0.045***	0.005	<.001
2010b	0	.	.	0.000	.	1.000
2011	.012	.008	.114	0.017**	0.008	.038
2012	-.016	.01	.113	-0.008	0.008	.306
2013	.022*	.013	.093	0.032***	0.009	<.001
2014	.053***	.015	<.001	0.064***	0.009	<.001
2015	.069***	.016	<.001	0.082***	0.010	<.001
2016	.062***	.016	<.001	0.076***	0.010	<.001
2017	.07**	.02	.001	0.090***	0.012	<.001

Table 11 (continued).

2018	.064***	.02	.002	0.085***	0.012	<.001
2019	.051**	.021	.018	0.071***	0.012	<.001
Constant	.225***	.044	<.001	0.221***	0.032	<.001

Note. *** $p < .01$, ** $p < .05$, * $p < .10$.

[1]Presence of a state loan is a binary variable and is represented as proportion

Cohort Default Rate

The CDR has a significant negative effect, suggesting that a higher default rate in the previous year I associated with a *lower* chance of a community college adopting a "no-loan" policy. However, the effect size is very small. For every 1 percentage point increase in the official cohort default rate (CDR), the probability of a college adopting a "no-loan" policy (opting out) decreases by approximately 0.47-0.54 percentage points, holding all other factors constant.

State/Local Grant Aid Awarded

The percentage of first-time full-time students awarded state/local grant aid is associated with an increased likelihood of a college adopting a "no-loan" policy. Again, this is a statistically significant but small effect size for both fixed effects and non-fixed effects models. A one percentage point increase is associated with 0.08-0.09 percentage point increase in the likelihood of a college adopting a "no-loan" policy. This finding suggests that alternate forms of aid can inform a community college's decision to opt out of the federal loan program.

State Support

There is a marginally significant effect in the fixed-effects model ($p<.01$) with no statistical significance in the non-fixed effects model. For every million dollar increase in state support (adjusted for COLI), there is a 0.000012 percentage point increase. Since the effect is not statistically significant in the non-fixed effects model, the relationship between state support and the adoption of a "no-loan" policy may not be robust.

Nonfederal Student Loans

Nonfederal student loans include loans provided by the state, the institutional, and private companies. The percentage of students borrowing nonfederal student loans had a positive

significant effect for both fixed-effects and non-fixed effects models. A one percentage point increase in students with nonfederal student loans is associated with a 0.59-0.63 percentage point increase in adopting a "no-loan" policy. This suggests that colleges with nonfederal student loan borrowers may be more likely to opt out of the federal student loan policy.

Tuition and Fees

Higher tuition is associated with a lower likelihood of a college adopting a "no-loan" policy. For every $1,000 increase in tuition and fees, there is an associate 3.57 percentage point increase. This significant negative effect, b = -0.035742, $p < .001$ for the fixed effects model and $– b$ = 0.045496, $p < .001$) follows the descriptive statistics observed as well. States that have higher tuition and fees have a lower percentage of community colleges that opt out. However, a $1,000 increase in tuition and fees is significant given that the average is $3,008.

Years 2013-2019

The years 2013-2019 had significant year effects, which suggests that there are broader trends over time that affect the outcome. From 2014-2017 there was an increase in the likelihood of opting a "no-loan" policy but starting in 2019 there was a decrease. For example, in 2014, colleges were 5.28 percentage points more likelihood to opt out of the federal loan program compared to 2010, holding all other factors constant.

Unrestricted Model

In the second parsimonious model, I wanted to include variables that I found of interest from other analyses conducted in this study. These variables were not originally found in the literature and include the rurality of an institution, percent of full-time, first-time students awarded a Pell Grant, the average amount of Pell Grant awarded to full-time, first-time students, the governance model, and the enrollment, specifically the 12-month full-time equivalent.

In this model, similar outputs were recorded as in the first. The cohort default rate, the percent of students receiving state/local grant aid, state support for higher education, percent of students borrowing nonfederal student loans, the tuition and fees, and particular years (2014-2019) all had statistically significant but small effect sizes, similar to the restricted model.

Interestingly, Pell Grant-related variables, nonfederal student loans, institutional capacity, rurality, and 12-month FTE equivalent enrollment were not statistically significant for the outcome of interest (adopting a "no-loan" policy). The F-test also suggests that the overall model may not be statistically significant. The results can be seen in Table 12.

Overall, the results of the two models suggest that there is a complex relationship between year events, tuition and fees, state support, and the cohort default rate. Enrollment and other types of federal aid (e.g. Pell Grants) are not associated with a college opting a "no-loan" policy. In this next section, I will discuss the sensitivity analyses and robustness checks I conducted to test if the model results were different under different conditions including a different outcome, different time periods, and the use of imputed data.

Table 12

Results from Unrestricted Model with Multiple Imputation

	With Fixed Effects			Without Fixed Effects		
	Coefficient	*SE*	*p*	Coefficient.	*SE*	*p*
Official CDR	-0.002***	0.001	<.001	-0.006***	0.001	<.001
Percent state/local grant aid	0.001**	0.000	0.031	0.001***	0.000	0.06
Average amount state/local grant aid (1000s of dollars)	-0.003	0.005	0.235	-0.009**	0.004	0.025
Percent Pell Grant	-0.000	0.000	0.855	0.002***	0.000	<.001
Average amount of Pell Grant (1000s of dollars)	0.018	0.001	0.110	0.015**	0.006	0.012
State support for higher education (COLI; millions of $)	0.000**	0.000	0.021	0.000	0.000	0.151
State student loans[1]		.		0.082***	0.019	<.001
Average amount of nonfederal loans (1000s of dollars)	-0.001	0.001	0.502	-0.001	0.001	0.450
Percent nonfederal loans	0.006**	0.002	0.028	0.007***	0.002	<.001
Student services per FTE (1000s of dollars)	-0.008	0.006	0.200	0.011**	0.005	0.034
Salaries, wages, and benefits as percent of total expense for student services	0.001	0.000	0.158	0.001***	0.000	<.001
Institutional Capacity (in millions of dollars)	0.000	0.000	0.170	0.000	0.000	0.566
Tuition and fees (1000s of dollars)	-0.039***	0.014	0.005	-0.046***	0.006	<.001
Rurality[2]	-0.006	0.007	0.431	0.005	0.004	0.146
Governance[3]		.		0.061***	0.007	<.001
Headcount	-0.000	0.000	0.427	-0.000***	0.000	<.001
2011b	0.000	.		0.000	.	
2012	-0.034***	0.009	<.001	-0.040***	0.008	<.001
2013	0.007	0.011	0.525	0.003	0.009	0.737
2014	0.042***	0.013	0.001	0.040***	0.009	<.001
2015	0.047***	0.014	<.001	0.047***	0.010	<.001
2016	0.052***	0.015	0.001	0.050***	0.010	<.001

Table 12 (continued).

2017	0.064***	0.018	0.001	0.075***	0.011	<.001
2018	0.059***	0.019	0.002	0.071***	0.011	<.001
2019	0.044**	0.020	0.027	0.050***	0.012	<.001
Constant	0.182**	0.077	0.014	-0.146***	0.05	0.006

Note. *** $p < .01$, ** $p < .05$, * $p < .10$.
[1]Presence of a state loan is a binary variable and is represented as proportion.
[2]Rurality is a categorical variable (1-5), 1=City, 5=Rural
[3]Governance is a categorical variable (1-6), 1=More Centralized, 6=No Governance Model

Sensitivity Analyses

Time Period 2012-2019

In this section, I conducted several sensitivity analyses for restricted and unrestricted models with fixed effects. First, I examined each model from the years 2012-2019. Using different time periods allows for variables that were missing in the previous years (2002-2012) to be accounted for, potentially supporting the robustness and stability of the results. Similar to the previous findings, the cohort default rate, percentage of nonfederal student loans taken out, and the published tuition rate were statistically significant. Interestingly, the amount of state support for higher education was no longer statistically significant.

Table 13

2012-2019 Sensitivity Analysis

	Restricted Model			Unrestricted Model		
	Coefficient	*SE*	*p*	Coefficient	*SE*	*p*
Official CDR	-0.0028**	0.0009	.002	-0.0031**	0.0010	.002
Percent state/local grant aid	0.0005	0.0004	.224	0.0006	0.0004	.159
Average amount state/local grant aid (1000s of dollars)	-0.0044	0.0044	.312	-0.0078	0.0049	.112
State support for higher education (COLI; millions of $)	0.0000	0.0000	.606	0.0000**	0.0000	.033
Presence of state-loan[1]	Omitted	.		Omitted		
Average amount of nonfederal loans (1000s of dollars)	-0.0010	0.0009	.251	-0.0007	0.0009	.450
Percent nonfederal loans	0.0079**	0.0038	.040	0.0079**	0.0039	.044
Student services per FTE (1000s of dollars)	-0.0076	0.0067	.260	-0.0120	0.0067	.074
Salaries, wages, and benefits as percent of total expense for student services	0.0002	0.0004	.722	0.0004	0.0005	.437
Tuition and fees (1000s of dollars)	-0.0415**	0.0138	.003	-0.0454**	0.0151	.003
Percent Pell Grant	-	-	-	0.0004	0.0005	.509
Average amount of Pell Grant (1000s of dollars)	-	-	-	0.0218	0.0125	.080
Rurality[2]	-	-	-	-0.0045	0.0078	.562
Governance[3]	-	-	-	Omitted	.	
Headcount	-	-	-	0.0000	0.0000	.317
2012b	0.0000	.		0.0000	.	
2013	0.0285***	0.0069	<.001	0.0352***	0.0074	<.001
2014	0.0622***	0.0111	<.001	0.0730***	0.0124	<.001
2015	0.0813***	0.0129	<.001	0.0809***	0.0142	<.001
2016	0.0807***	0.0136	<.001	0.0907***	0.0154	<.001
2017	0.0910***	0.0178	<.001	0.1027***	0.0201	<.001
2018	0.0884***	0.0184	<.001	0.1000***	0.0209	<.001
2019	0.0848***	0.0199	<.001	0.0905***	0.0223	<.001
Constant	0.2517***	0.0484	<.001	-0.0031**	0.0010	.002

Table 13 (continued).

Note. *** $p < .01$, ** $p < .05$, * $p < .1$
[1]Presence of a state loan is a binary variable and is represented as proportion.
[2]Rurality is a categorical variable (1-5), 1=City, 5=Rural
[3]Governance is a categorical variable (1-6), 1=More Centralized, 6=No Governance Model

Three-Year Time Lag

I also conducted descriptive statistics for a three-year time lag of the restricted model variables as well as ran the regression for a three-year time lag for the restricted model. Results for the descriptive statistics and regression can be seen in Appendix H.

The descriptive statistics were similar to the outputs for the main models. For example, the official cohort default rate is 11.2%. Less than half of all first-time, full-time students receive any state or local grant aid (33.1%) and the average amount is $1,360. This seems to demonstrate that these variables do not change dramatically over time and that with a large number of observations there is not a substantial change over a short amount of time with aggregate statistics. With respect to the regression analysis, I found there were no statistically significant variables, and the overall model was not statistically significant. This suggests that community colleges that adopt a "no-loan" policy do so based on a short-term rather than waiting longer periods.

Excluding Imputed Data

Finally, I conducted LPMFE for both models without imputed data (see Table 14). Several variables had a moderate to significant amount of missing data. These included the cohort default rate (18%), the percentage of students taking out nonfederal loans (61%), the average amount of nonfederal loans (83%), the student services per FTE cost (20%), the salaries, wages, and benefits for student services as a percent of core expenses (30%), and dual enrollment (18%). After accounting for time variables (i.e. the year period in which these variables were captured, many after 2012), many of the variables no longer had significant missing data (less than 1% missing). However, the cohort default and the average amount of nonfederal loans were still significant (16% and 59% respectively).

The results of these models are somewhat consistent with the results of the main models both in terms of statistical significance and effect size. Looking at the excluded imputed data, both the restricted and unrestricted model, state support for higher education is positive and statistically significant (approximately 0.0026-0.0028 percentage point increase for every million-dollar increase). Tuition and fees were also negative and significant in both models (1.2-1.5 percentage point increase for every thousand dollars, $p<.05$). Year effects were also statistically significant and positive. In the restricted model, significant variables include the percent of first-time, full-time students borrowing nonfederal student loans (0.000001, $p<.05$). The average amount of nonfederal loans is statistically significant in the unrestricted model (0.1865 percentage point increase for every thousand dollar increase in nonfederal student loans, $p<.05$).

Without imputed data, it is easier to complete a VIF analysis for the models, which is a robustness check (Lu & White, 2014). In the restricted model, the mean VIF was 1.68 and in the second model the mean VIF was 1.64, which indicates that there is moderate correlation but still within acceptable limits (Allison, 1999). In addition, I confirmed that fixed effects were appropriate over random effects using the Hausman Test.

Listwise deletion is used in Stata with missing data, which excluded a significant portion of the data (N=448). Since there are different results, this suggests that the pattern of missingness might be important. In addition, in both models the R-squared is low and the F-test is not significant.

Table 14

Results from Restricted and Unrestricted Models, Excluding Imputed Data, One-Year Lag

	Restricted Model			Unrestricted Model		
	Coefficient	*SE*	*p*	Coefficient	*SE*	*p*
Official CDR	-0.0021	0.0019	.269	-0.0027	0.0020	0.175
Percent state/local grant aid	-0.0002	0.0003	.564	-0.0003	0.0003	0.394
Average amount state/local grant aid (1000s of $s)	-0.0005	0.0039	.902	-0.0030	0.0049	0.543
State support for higher education (COLI) (in millions of dollars)	-0.0021	0.0019	.269			
Presence of state-loan[1]		.				
Average amount of nonfederal loans (1000s of $s)	0.0029	0.0024	.224	0.0019	0.0009	.031
Percent nonfederal loans	0.0000	0.0000	.211	0.0032	0.0025	.204
Student services per FTE (1000s of $s)	-0.0122	0.0094	.194	-0.0122	0.0102	.232
Salaries, wages, and benefits as percent of total expense for student services	0.0007	0.0005	.185	0.0008	0.0005	.124
Tuition and fees (1000s of $s)	-0.0154**	0.0073	.036	-0.0117	0.0084	.163
Percent Pell Grant	-	-	-	0.0003	0.0004	.480
Average amount of Pell Grant (1000s of $s)	-	-	-	0.0101	0.0114	.377
Institutional Capacity (millions of $s)	-	-	-			
Rurality[2]	-	-	-	0.0105	0.0065	.108
Governance[3]	-	-	-			
Headcount	-	-	-	0.0000	0.0000	.317
2012b	0	.		-0.0123	0.0305	.687
2013	0.0041	0.0092	.655	0.0061	0.0634	.924
2014	0.0271**	0.0125	.031	0.0038	0.0673	.955
2015	0.0252*	0.0146	.085	0.0029	0.0660	.965
2016	0.0288**	0.0137	.035	0.0119	0.0951	.900
2017	0.0459**	0.0189	.015	0.0000	0.0912	1.000
2018	0.0355*	0.0203	.080	-0.0042	0.0865	.961
2019	0.0370*	0.0210	.078	-0.2057	0.1498	.170
Constant	0.0317	0.0537	.555	-0.0123	0.0305	.687

Table 14 (continued).

Note. *** $p < .01$, ** $p < .05$, * $p < .1$
[1]Presence of a state loan is a binary variable and is represented as proportion.
[2]Rurality is a categorical variable (1-5), 1=City, 5=Rural
[3]Governance is a categorical variable (1-6), 1=More Centralized, 6=No Governance Model

Robustness Checks

Robustness checks can be seen as a kind of "structural validity" for a model (Lu & White, 2014, p.194) or a way to check assumptions (Huntingon-Klein, n.d.). In the sensitivity analyses section, I conducted two robustness checks for this study (VIF and Hausman tests). In this section, I will discuss robustness checks I conducted for the main models. The first involved changing the outcome of interest and the second involved using different variables.

Change in the Dependent Variable

For the first robustness check, I changed my outcome of interest to include all undergraduates who took out a loan, and I also changed the time period to 2008-2019, since this outcome of interest was not captured until 2008 but kept the same specifications as the main models. Using a different outcome may induce more sensitivity to the analysis since more students are part-time than full-time. Similar to the main model, the results indicate that the cohort default rate, the percentage of students taking out a nonfederal loan, and the published amount of tuition and fees inform a community college's decision to opt out (see Table 15).

Table 15

Regression Results, Change in Outcome ("Adopting a No-Loan" Policy, All Undergrads), Restricted and Unrestricted Model

	Restricted Model (*N* = 991)			Unrestricted Model (*N* = 809)		
	Coefficient	*SE*	*p*	Coefficient	*SE*	*p*
Official CDR	-0.0045***	0.0009	<.001	-0.0044***	0.0010	<.001
Percent state/local grant aid	0.0009**	0.0004	.012	0.0008	0.0004	.051
Average amount state/local grant aid (1000s of $s)	-0.0040	0.0054	.454	0.0000	0.0000	.274
State support for higher education (COLI; millions of $)	0.0000	0.0000	.181	0.0000	0.0000	.286
Presence of state-loan (binary variable)	Omitted	.		Omitted		
Average amount of nonfederal loans (1000s of $s)	-0.0003	0.0007	.685	0.0000	0.0000	.609
Percent nonfederal loans	0.0051**	0.0025	.039	0.0060**	0.0029	.038
Student services per FTE (1000s of $s)	-0.0046	0.0048	.337	0.0000	0.0000	.160
Salaries, wages, and benefits as percent of total expense for student services	0.0005	0.0003	.103	0.0007	0.0004	.074
Tuition and fees (1000s of $s)	-0.0333**	0.0125	.007	0.0000**	0.0000	.007
Percent Pell Grant	-	-	-	0.0002	0.0005	.609
Average amount of Pell Grant (1000s of $s)	-	-	-	0.0000**	0.0000	.038
Institutional Capacity (millions of $))	-	-	-	0.0000	0.0000	
Rurality	-	-	-	-0.0075	0.0074	
Governance	-	-	-	0.0000	.	
Headcount	-	-	-	0.0000	0.0000	
2010b	0.0000	.				
2011	0.0184**	0.0067	.006			
2012	-0.0065	0.0099	.511	-0.0321***	0.0087	<.001
2013	0.0287**	0.0127	.024	0.0038	0.0111	.734
2014	0.0585***	0.0149	<.001	0.0377**	0.0132	.004
2015	0.0686***	0.0157	<.001	0.0487***	0.0137	<.001
2016	0.0699***	0.0160	<.001	0.0535***	0.0143	<.001
2017	0.0814***	0.0202	<.001	0.0680***	0.0185	<.001
2018	0.0761***	0.0205	<.001	0.0636***	0.0189	.001

Table 15 (continued).

2019	0.0608***	0.0213	<.001	0.0451**	0.0200	.024
Constant	0.1966***	0.0415	<.001	0.1632**	0.0737	.027

Note. *** $p < .01$, ** $p < .05$, * $p < .1$

[1]Presence of a state loan is a binary variable and is represented as proportion.

[2]Rurality is a categorical variable (1-5), 1=City, 5=Rural

[3]Governance is a categorical variable (1-6), 1=More Centralized, 6=No Governance Model

In the second robustness check, I wanted to check for specific variables that might not have been captured in the main models. The first variable I checked was the governance model. This variable was omitted due to multicollinearity, so I regressed a set of governance model variables with non-imputed data to see what the outcomes were. The second variable I checked was the dual enrollment variable, which I substituted for the headcount in the unrestricted model.

Governance Model

Based on prior literature (McCann,2022), states were categorized into one of the six types of governance models. Governance models affect how states organize their community colleges. They determine the administrative structures and oversight of the college systems, including their policy implementation (Quinterno, 2008). See Appendix I for a list of states with their corresponding governance structure. Because the governance variable was omitted due to multicollinearity (it does not change over time and is collinear with fixed effects), I examined each governance model separately against the dependent variable. In this case, I was interested in the extent to which the governance model predicts a community college adopting a "no-loan" policy. Similarly to the descriptive statistics, the more centralized a governance model, the less likely the college would adopt a "no-loan" policy.

A governance model with a state board that coordinates and regulates its state's community colleges was associated with a lower likelihood of opting out. This may be because state board regulations have more control over the policies of a community college and can apply them uniformly across the state. For example, Pennsylvania has a state board of education that coordinates and regulates its community colleges and has no community colleges (0%) opting out of the federal student loan program. Consolidated governing boards have a negative effect on colleges adopting a no-loan policy; however, the results are not statistically significant.

Coordinating boards for locally governed community colleges (found in states such as Arkansas, Ohio, Oklahoma, Tennessee and Texas among others) were associated with an increased likelihood of a community college adopting a "no-loan" policy. Independent state boards that coordinate institutions were found to have a negative but statistically insignificant association with adopting a "no-loan" policy. However, for institutions that are governed by independent state boards (in states such as Alabama, Arkansas, and Georgia among others) there was a strong positive relationship between opting out (i.e. adopting a "no-loan" policy) and the governance structure. This could be because the governance structure allows community colleges more independence in decision making and ability to set their own policies and priorities. If a community college has no state governance system (Arizona and Michigan were categorized this way), there was a negative but statistically insignificant effect on the likelihood of adopting a "no-loan" policy. The results of the variables can be found in Appendix J.

Dual Enrollment

I was interested to see if dual enrollment was associated with a community college adopting a "no-loan" policy. After running the model substituting the 12-month FTE equivalent headcount for dual enrollment, there was no statistical significance (Appendix K). I also regressed the dual enrollment variable with the outcome of interest (both first-time, full-time student and all undergraduate students). The outcome of interest for first-time students is statistically significant but with a small effect size. However, the outcome of interest for all undergraduate students is not statistically significant.

Summary

This study aimed to analyze the factors that predict a community college adopting a "no-loan" policy. This chapter covered the results of the descriptive statistics of the state groupings,

two main models and the results of sensitivity and robustness checks. Of the statistically significant variables, the cohort default rate was negatively associated with a community college adopting a “no-loan” policy. Tuition and fees, state support for higher education, and the percentage of students taking out nonfederal loans were positively associated with a community college adopting a “no-loan” policy. However, for all of these relationships, the effect sizes were very small. Based on the sensitivity analyses and robustness checks, the results were not always consistent. In the next and final chapter, I will discuss these findings and their implications. I will also discuss limitations, and future ideas for research.

CHAPTER 5: SUMMARY AND DISCUSSION

Overview

The purpose of this study was to analyze factors that inform a community college to adopt a "no-loan" policy. This study used a broader definition of community college and included both two-and four-year public institutions that primarily offer associate degrees, though some programs offered bachelor's degrees. The study used a panel dataset, which covered institutions in all 50 states from the years 2002-2019. Using descriptive statistics and LPME, multiple linear regression models with fixed effects and time-fixed effects, I aimed to answer the following research questions:

1. What are the financial (e.g. tuition and fees, state support, cohort default rate) and demographic differences (e.g. governance and rurality) between states that have a high percentage of "no-loan" community colleges and those that do not?
2. What are the factors (financial and demographic) that inform a community college to adopt a "no-loan" policy?

In this next section, I will discuss the results of main models. I then discuss the sensitivity analyses followed by the results of the robustness checks. I then discuss the implication for policy and practice, followed by the limitations of the research study, and suggestions for improving the model and future research.

Discussion of Results

The results of the study indicate that community colleges have specific, consistent factors that are associated with adopting a "no-loan" policy. These variables include the cohort default rate, the amount of state-funded support for higher education, and the tuition and fees. These patterns are seen in the descriptive statistics as well as in the models. However, while these

results were statistically significant in the models, they did not have large effect sizes. In addition, the sensitivity analyses conducted seemed to contradict these findings at times. In the next section, I will discuss the results of the study and potential meaning. The overall study suggests that there is a complex relationship between financial aid policy and institutional characteristics as indicated in the theory of change and literature review.

Research Question 1

What are the financial (e.g. tuition and fees, state support, cohort default rate) and demographic differences (e.g. governance and rurality) between states that have a high percentage of "no-loan" community colleges and those that do not?

The descriptive statistics for the first research question show distinct patterns among states based on their percent of "no-loan" community colleges. States were divided into four groups based on the percent of "no-loan" community colleges. Group 1 had the most (over 20% of "no-loan" community colleges) and Group 4 had the least (0% of "no-loan" community colleges).

States with the highest percentage of "no-loan" community colleges (group 1) have the highest dollar amount of state support, lowest tuition and fees, highest levels of state loans, and highest average amount of Pell Grants awarded. These states also tend to have decentralized forms of governance, have the highest FTE average, highest 12-month FTE average, and the highest number of part-time students. These states also average the greatest number of colleges (37).

However, in group 4, states that have the lowest percentage of "no-loan" colleges (0%) have the highest average tuition and fees, the highest average net price, and the highest percentage of salaries as a percent of total student services and the highest average cohort default

rate. These states also have a diverse set of governance structures with a notable presence of State Boards of Education, which is the most centralized form of governance. In addition, these states have the fewest number of colleges (12 on average).

The descriptive statistics reflect that state funding could enable colleges to opt out of the federal student loan program, the percentage of salaries as a percent of total student services is low. The high average amount of Pell Grants awarded also suggest that the student population in these states demonstrates more financial need, even accounting for lower tuition and fees in these states. Group 1 states, which include the Southeast and California, have seen continued population growth, which can help fuel community college growth (Swil, 2002). For example, from 2021-2023, the prospective student population increased 3.1% in the Southwest and 6.7% in the Southeast, while the Midwest experienced a 4.7% decline (Gardner-Cook, 2023). Finally, community colleges operate within the confines of their state governance. States with a high percentage of "no-loan" community colleges tend to have more decentralized forms of governance, which may allow them to operate more independently and make decisions within the context of their local environment.

Research Question 2

What are the factors (financial and demographic) that inform a community college to adopt a "no-loan" policy?

To answer the second research question, I conducted two parsimonious models, a restricted and an unrestricted model based on the existing literature and findings from the descriptive statistics. The following variables were associated with a college adopting a "no-loan" policy for the restricted model, the cohort default rate, the percentage of first-time; full-time students receiving state/local grant aid; state support for higher education; time (years 2014-

2019), percentage of first-time, full-time students with nonfederal student loans; and the published tuition and fees.

In the second model, I used six different variables including the percentage of first-time, full-time students receiving a Pell Grant, the average amount of Pell Grant awarded, institutional capacity (net assets) of a college, rurality, governance, and 12-month full-time equivalent for enrollment. However, these variables were not statistically significant. The models demonstrated almost identical coefficients for the cohort default rate, published tuition and fees, percentage of students borrowing nonfederal student loans, and state support for higher education. In the next section, I will summarize the results of the models and describe possible explanations.

Variable: Cohort Default Rate

One of the most interesting findings of this research study is the negative relationship between the cohort default rate (CDR) and the adoption of a "no-loan" policy. For both models, this variable was statistically significant (β=-0.004702, $p<.01$ for the restricted model and - β =0.004551, $p<.01$ for the unrestricted model). The CDR has typically been cited as a reason for community colleges to opt out of the federal student loan program (Dunlop, 2012, 2013; Wiederspan, 2016). Thus, I expected to see a positive relationship (i.e. increases in a CDR is associated with an increase in adopting a "no-loan" policy). However, for a 1 percentage point increase in the cohort default rate, there is approximately a 0.4702 percentage point decrease in the probability of an institution participating in federal student loan programs in the restricted model, all else being equal.

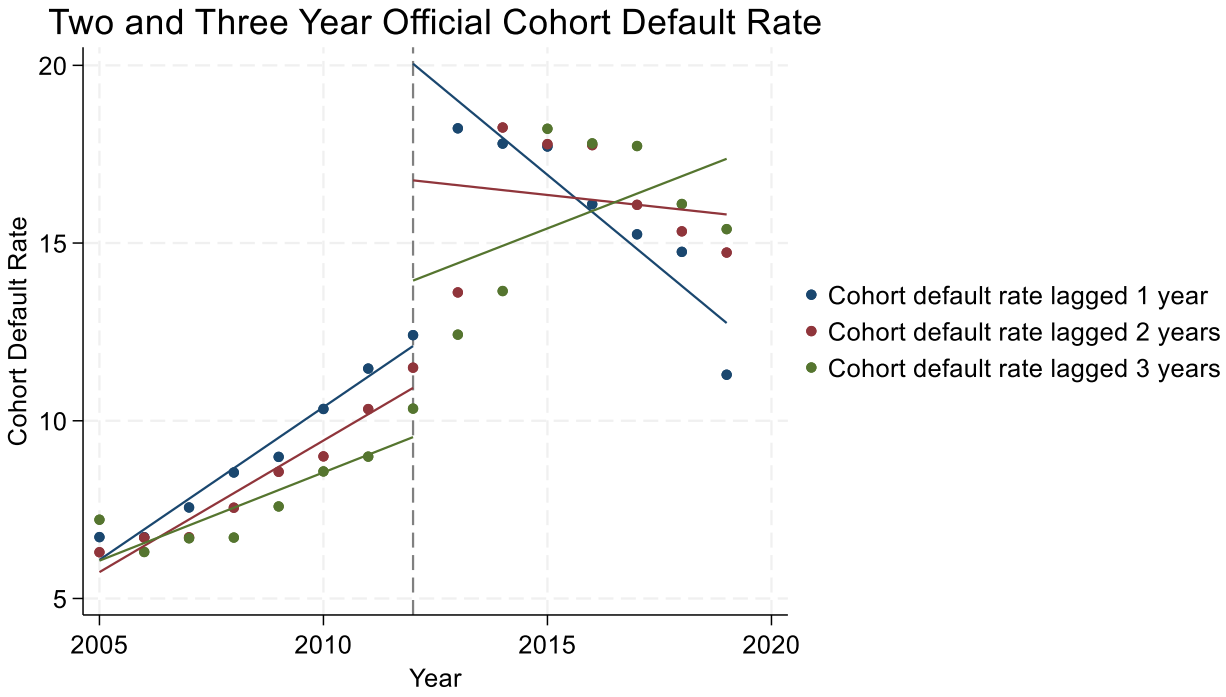
This unexpected relationship could be explained by several reasons. One reason could be that even as cohort default rates decreased, their overall rate remained high, and colleges chose to opt out rather than attempt to lower their default rates. For example, in North Carolina there

were 22 community colleges that adopted “no-loan” policies between 2012-2018, yet the CDR rates decreased (2011-2013) for all institutions except four (see table 16 below). Thus, there could be an initial “shock” of a high cohort default rate that causes administrators to opt out of the federal student loan program.

To better understand this trend, we can look at the cohort default rate over time. Figure 14 shows the CDR increasing over time until 2012, followed by a decrease. This shift in 2012 coincides with a change in how the CDR was calculated. Prior to 2012, the CDR was calculated using a two-year average. After 2012, the CDR was calculated using a three-year average. This longer time trend helps lower the CDR.

Figure 14

Two- and Three-Year Cohort Default Rates Over Time for Community Colleges (2002-2019)



Another reason is that it’s possible the CDR could not fully capture the default rate of students; thereby biasing the results. TICAS (2018) notes that two weaknesses of the CDR that

affects how the CDR is calculated. First, schools may manipulate the CDR because students postpone their repayments through deferment and forbearance, which is not counted as a default. Second, increased enrollment in income driven repayment (IDR) plans may show a decline in an institution's CDR without any meaningful changes in an institution's behavior. IDR plans have been around since the 1990s and policymakers generally have added options for students without eliminating others, providing borrowers with multiple options (Baum & Delisle, 2022). For example, there are income-contingent plans (ICR), which were available starting in 1994; Income-based repayment (IBR), which were available starting in 2009; other IDR programs such as PAYE and REPAYE, which began in 2012 and newer plans that began in 2021 (Baum & Delisle, 2022). Each of these programs have different eligibility requirements and options for repayment and loan forgiveness (Baum & Deslisle, 2022). In other words, these CDR weaknesses are ways for colleges to delay default rather than prevent it. Further research would be beneficial to more fully understand the effects of a cohort default rate and adopting a "no-loan" community college.

Table 16

"No-Loan" Community Colleges in North Carolina

College Name	Setting	CDR 2011	CDR 2012	CDR 2013	Year "No-Loan"
Bladen C.C.	Rural	0.0%	32.5%	27.3%	2012
College of the Albemarle	Town	0.0%	31.2%	17.1%	2012
Western Piedmont C.C.	City	39.9%	38.6%	29.4%	2013
James Sprunt C. C.	Rural	27.3%	25.6%	28.6%	2013
Southeastern C.C.	Rural	18.5%	27.1%	23.5%	2013
Halifax C.C.	Rural	39.5%	32.8%	27.5%	2013
McDowell Technical C.C.	Rural	0.0%	30.4%	30.4%	2013
Piedmont C.C.	Rural	0.0%	18.7%	31.7%	2013
Caldwell C.C. and Technical Institute	Suburb	28.9%	28.1%	32.3%	2013
Carteret C.C.	Town	32.0%	27.5%	23.6%	2013
Isothermal C.C.	Town	0.0%	78.9%	42.6%	2013
Mayland C.C.	Town	0.0%	50.0%	29.6%	2013
Robeson C.C.	Town	0.0%	36.6%	33.2%	2013
Vance-Granville C.C.	Town	0.0%	36.1%	23.8%	2013
Central Piedmont C.C.	City	0.0%	21.5%	20.2%	2014
Craven C.C.	City	19.8%	14.1%	22.8%	2014
Wayne C.C.	City	15.0%	22.3%	28.0%	2014
Johnston C.C.	Rural	22.1%	22.2%	22.3%	2014
Tri-County C.C.	Rural	0.0%	57.1%	28.8%	2014
Haywood C.C.	Suburb	0.0%	30.7%	25.0%	2014
Beaufort County C.C.	Rural	6.1%	28.1%	23.5%	2015
Catawba Valley C.C.	City	19.6%	24.1%	22.3%	2018

Variable: Percentage of First-Time, Full-Time Students Receiving State/Local Aid

State/local aid is broadly defined by IPEDS as grants, scholarships, waivers, fellowships or any type of financial aid that comes from state and local governments. The percentage of students receiving state/local grant aid was statistically significant in both models (β=0.000900, $p<.05$ in the restricted model and β=0.000878, $p<.05$ in the unrestricted model). While specific aid programs are not mentioned, it is possible that this variable is picking up the effects of promise programs, which are found in some form in all 50 states and offer students an opportunity to pursue higher education at little to no cost (Billings, 2018). Promise programs are "placed-based", meaning they are for specific colleges and universities or states (Chiang, 2022). In specific case studies, promise programs have been found to reduce student loan borrowing for first-time, full-time community college students (Odle et al., 2021). This suggests that promise programs may inform student borrowing behaviors more than "no-loan" policies. In addition, promise programs are not available for all student populations and are typically for high school graduates entering college for the first time (Erwin & Syverson, 2022). This could explain why the variable was statistically significant for first-time, full-time students taking out federal student loans but was not statistically significant when adjusting for all undergraduate students (one of the sensitivity analyses).

Variable: State Support

State support for higher education, adjusted for the cost of living (COLI) are statistically significant variables, but with small effect sizes. Community colleges are particularly reliant on state appropriations (Kelchen et al., 2024). As a result, higher education institutions raise tuition and fees, cut programs, and student support spending when state appropriations are cut (Monarrez et al., 2021). Increases in tuition and fees from low state funding can cause students to

pursue loans to finance their education (Schichtel-Greenwood, 2018). Thus, state support is an important consideration in "no-loan" policy adoption.

In this study, state support for higher education, adjusted for COLI, was consistent in both models (β=0.000012, $p<.1$ in the restricted model and β=0.000016, $p<.05$ in the unrestricted model) in the likelihood of a community college adopting a "no-loan" policy. However, when accounting for later years (2012-2019) in the first sensitivity analysis, state support was no longer statistically significant for the restricted model but was for the unrestricted model. Further, when not using imputed data (the final sensitivity analysis), state support was statistically more significant (β=0.00002826, $p<.05$) in the restricted model but was not as statistically significant in the unrestricted model (β=0.000025700, $p<.1$). In addition, the variable was not statistically significant when the outcome of interest was changed to all undergraduate students (first robustness check).

This suggests that state support informed "no-loan" policy adoption closer to the years before 2012, perhaps signaling that the Great Recession, and subsequent funding drops, had more of an effect than in later years during the recovery after. Another possible explanation is how state support is allocated to higher education. Traditionally, state support has been formulated with an emphasis on enrollment and institutional mission (Kelchen & Stedrak, 2016). This may benefit colleges that enroll more first-time, full-time students or FTE students. However, 12-month FTE equivalent was not a statistically significant variable in the second model. In addition, performance-based formulas for state allocations of funds have become increasingly popular (Kelchn & Stedrak, 2016). The variability of state support in statistical significance suggests that the variable has a nuanced relationship with other variables in the model or perhaps other variables not studied.

Variable: Percentage of Students with Nonfederal Student Loans

The percentage of first-time, full-time students who borrowed nonfederal student loans was found to be statistically significant for both models (β=0.0059644, p<.05 for the restricted model and β= 0.006389 p<.05 for the second model). While the effect size is small, it may be worth exploring in future research. One challenge with this outcome is that the percentage of nonfederal loan borrowers may be increasing in response to community college adopting a "no-loan" policy, rather than predicting it. In addition, nonfederal student loans is a broad category and includes private loans, state-sponsored loans, and loans offered through banks or credit unions (Federal Student Aid, n.d.f). Therefore, it can be difficult to untangle the effects of any one loan program.

Variable: Tuition and Fees

Community colleges are, on average, less expensive than other higher education institutions (CCRC, 2021). However, research has shown that tuition and fees are affected by state appropriations (Li & Katri, 2024; Monarrez, et al., 2021). For example, some community colleges have increased tuition and fees to counteract the effects of reduced state appropriations (Mitchell et al., 2018). In addition, tuition and fees are one of the few mechanisms that community colleges have at their disposal to generate revenue (Li & Katri, 2024) or risk cutting programs and lowering educational quality (Feldman & Romano, 2019).

In this study, tuition and fees were consistently significant between both models (β=-0.035742, p<.01 and β=-0.038912 p<.01 for every thousand dollars), even accounting for sensitivity analyses and robustness check in associating a community college with adopting a "no-loan" policy. In the restricted model, for every $1,000 increase in tuition and fees there was an associated 3.6 percentage point decrease in the probability of adopting a "no-loan" policy.

This result was consistent between both models and sensitivity and robustness checks. In addition, this variable also aligned in the descriptive statistics, states with the highest percentage of "no-loan" community colleges had the lowest rates of tuition and fees, highlighting its significance.

The importance of tuition and fees extends beyond "no-loan" policy adoption in community colleges and extends to student behavior. Community college students are sensitive to increases or decreases in tuition and fees, with direct effects on enrollment (Monarrez et al., 2021). Denning (2017) found that for every $1,000 decrease in tuition, community college enrollment in Texas increased by 5.1 percentage points and resulted in increased transfer rates to four-year universities. Community colleges that want to increase enrollment or keep enrollment steady must ensure that tuition and fees are not too high for students.

Opting out of the federal student loan program can also affect enrollment. In Louisiana, for example, community colleges saw a sharp decrease in enrollment after implementing "no-loan" policies. In other words, community colleges opted out of the federal student loan program, causing a precipitous drop in enrollment. As a result, they opted back into the federal student loan program the next year (TICAS, 2016). This suggests, in the absence of significant and consistent state appropriations and grant aid, tuition and fees were not affordable without federal loans.

To slightly complicate this idea, some community college administrators see the "sticker price" of community college, noting the overall low tuition and fees and argue that students do not need to take out loans (Dunlop, 2012). If community college administrators only focus on this number, they may ignore other factors that often require students to take out loans, such as living expenses, materials for classes, childcare, and other costs. This could be particularly

salient with free community college programs, which offer tuition-free education at community college but do not consider other costs associated with attending a post-secondary institution.

Variable: Years (2014-2019)

Year dummy variables had the strongest effect sizes of the models. The coefficients for these years range from 0.05 to 0.07, which suggests broader economic or sector-specific trends that potentially informed a community college's decision to adopt a "no-loan" policy, particularly between 2014-2019. There could be two possible explanations. First, it's possible that the aftershocks of the Great Recession continued to influence community colleges' decision to opt out of the federal student loan program. Most states cut funding to higher education in response to the Great Recession but never returned to original spending levels after the economic recovery (Mitchell et al., 2018; Ward et al., 2019). This may have caused colleges to cut programs, including administering federal loans, as well as decrease administrative staff.

Second, there were also several changes to federal financial aid policies during this period including changes to the cohort default rate calculation in 2012, changes to income driven repayment plans (IDR), (Baum & Delisle, 2022; Douglas-Gabriel, 2015), and changes in the strategic plan for federal student aid under the U.S. Department of Education (2015). There may also be other changes in federal financial aid policies, economic markets, or other changes not accounted for.

Results of Sensitivity Analyses

I conducted three sensitivity analyses to determine the consistency of the outcomes, particularly when excluding imputed data and different outcomes. The results of the sensitivity analyses provide important context for the results of the study.

First, I examined each model from the years 2012-2019. While the CDR, percentage of students taking out nonfederal loans, and the published tuition and fees remained statistically significant, the amount of state support (in millions of dollars) was no longer statistically significant. There are several potential reasons for this. The first reason is that there may be policy changes at the state or federal level that affect the relationship between state support and other variables. Second, the economic recovery following the Great Recession of 2008 did not see states returning to pre-recession funding levels (Mitchell, et al., 2018). State support may have been more pronounced during the recession but less so after. In addition, the Great Recession (2007-2009) saw a spike in enrollment immediately during and following the economic recession, but enrollment has since decreased (Cicero Group, 2022). For states that base community college funding on enrollment, this may have complicated the relationship between the two.

The second sensitivity analysis was to conduct a three-year time lag. This showed no statistically significant effects. This suggests that decisions with community colleges adopting a "no-loan" policy are not pronounced over time, suggesting that these decisions are made within an academic year. In addition, it may also suggest that decisions made become part of the institutional memory.

The final sensitivity analysis I conducted was to exclude imputed data. The results of this analysis were similar to imputed data. One difference was that the cohort default rate was no longer statistically significant. As this study and others (Dunlop, 2012; TICAS, 2014, 2016) have noted, the cohort default rate may be an explanation cited by community college administrators as the reason for adopting a "no-loan" policy, but few colleges were in danger of losing access to federal loans and Pell Grants. In addition, community colleges have an opportunity to put forth a

plan of action to improve their cohort default rate without losing access to federal loans or Pell Grants (Charles et al., 2016). Therefore, it is unclear why community college administrators cite the cohort default rate as a reason for adopting a "no-loan" policy if there are ways to mitigate the effects.

Results of Robustness Checks

I conducted two robustness checks for this study. The first robustness check I conducted was to change the outcome of interest to include all undergraduates who took out a loan, which changed the time of the panel dataset to 2008-2019, since this was the first year this data was captured. This resulted in similar outcomes for both models. This suggests that the variables are robust factors associated with a community college adopting a "no-loan" policy. It also suggests that between the years 2011-2019 there were significant trends affecting loan policy decisions, perhaps the aftershocks of the 2008 Great Recession were still being felt during these years. The consistency of these findings suggests that the findings may be generalizable to different community college contexts, not just those focused on first-time, full-time students. State support was no longer significant with the robustness checks, which suggests that state support is more influential for first-time, full-time students than the total student population.

The second robustness check was to examine if the outcomes for two different variables (dual enrollment and governance) changed the outcome. These variables were not originally statistically significant in the main models. However, they were patterns in the descriptive statistics. Dual enrollment has continued to increase over time, suggesting that community colleges could supplement low enrollment or students without federal loans. However, dual enrollment was also not found to be statistically significant. On the other hand, governance models examined individually were statistically significant. The more centralized forms of

governance (State Boards of Education that Coordinates and Regulates Community Colleges and Coordinating Board for All Higher Education, Coordinates Locally Governed Community Colleges) are associated with a lower likelihood of adopting a "no-loan" policy (-0.1, $p<.01$ for both). These centralized forms of governance are also noted in states that have a 0% opt out rate.

Independent state boards that govern community colleges are considered more decentralized and are associated with a higher likelihood of adopting a "no-loan" policy ($\beta=0.2$, $p<.01$). Decentralized models, particularly when one is focused solely on community colleges, allows the boards to focus on their own needs and provide specific and timely decision-making appropriate for the needs of the community colleges (Quinterno, 2008). Consolidated governing boards, independent state boards that coordinate, and states without a formal governance model were not statistically significant variables.

Implications for Policymakers and Administrators

The results of this study suggest there are multiple factors that inform the likelihood of a "no-loan" policy adoption at the community college level. For policymakers considering adopting a "no-loan" policy, it is important to understand both the global and local parameters. Institutions located in states that have a highly centralized governance model (e.g. Pennsylvania) or with few community colleges (e.g. Rhode Island) will typically be less likely to opt out. Colleges that have high tuition and fees, low levels of state support, and less access to nonfederal loans may also have difficulty implementing a no-loan policy. In addition, colleges that are interested in adopting a no-loan policy must also look to alternate forms of enrollment such as dual enrollment. Most likely, while outcomes were not the scope of this project, policy makers that adopt a no loan policy without careful consideration may see a dramatic decrease in enrollment and/or full-time enrollment. Further, the results indicate that one-time shocks to the

system (e.g. a particular high cohort default rate for one year) cause great concern for community college leaders, potentially causing them to opt out.

The results of this study will hopefully provide a foundation for predicting if a community college will opt out of the federal loan program, and what factors are most strongly associated with opting out. These results could potentially be significant for policymakers and community college administrators as well as add to the body of literature on "no-loan" scholarship. Policymakers can gain a better understanding of the implications of a "no-loan" community college, particularly given that previous research shows that minority students are disproportionately affected by "no loan" policies (TICAS, 2016) and that these policies negatively affect student outcomes such as persistence and enrollment (Barr et al., 2021; Dunlop, 2013; Wiederspan, 2016). Community college administrators will also be able to use the research for financial decision-making. Current understandings of why community colleges opt out of the federal student loan program are limited (Dunlop, 2012). This research will help inform administrators on how their community college situation compares to the national study. Finally, this research will also add to the limited scholarship on federal student loan access, which is mostly focused on elite and highly selective institutions (see Braxton, 2017; Hillman, 2013; Rosinger et al., 2019; Zhu et al., 2021 for a review).

The motivations for adopting a "no-loan" policy may vary from college to college. If administrators are concerned with student loan debt, they should ensure that students have low cost/high aid models or it's possible that students will seek alternate means to pay for the financial aid gap that is present in many colleges.

Limitations

There are several limitations to the research that must be acknowledged considering the study's findings as well as for implications for future research.

Missing data is a challenge for any researcher. While Title IV institutions are required to report to IPEDS (Klasik & Hutt, 2018), many schools do not consistently report or do not provide all necessary information. It can be expected to find missing data at institutions with less available resources, such as community colleges. In chapter three I discussed the causes of missing data. Based on MCAR tests and knowledge, I assume that the missing data is MAR. To help with the validity of the results, I conducted several robustness checks. The main restricted model explained 81% of the variance (rho=.8115), which means that 81% of the variance is due to differences across institutions. The F-test is also significant (Prob F>0), which suggests the model is statistically significant. However, there are concerns of the missing data (RVI=0.5503 and FMI=0.5490), which suggests that there is some uncertainty introduced by the imputation process.

This study relied on multiple proxies, which limit the results. This study relied on the outcome of interest to be a proxy for opting out of the federal student loan program. I coded the dummy variable as 1=opt out/adopts a "no-loan" policy if zero students were reported taking out a federal student loan. It is possible that the community college offered a loan, but no one borrowed (Dunlop, 2012), but this seems unlikely given the increased costs of college and the decrease in grant aid purchasing power. It would also be difficult to extract this information with the data sources I have.

Variables related to institutional capacity to administer the loans are also a potential limitation. Community colleges had cited concerns with the ability to administer federal student

loans at their schools (Thomas, 2014) but this can be difficult to tease out. In this study, I used three variables: student service expenses per FTE (GASB), salaries, wages, and benefits for student services as a percent of total expenses for student services (GASB), and net assets as proxies for institutional capacity. Student services is a broad category that encompasses any category that is not related to instruction (IPEDS). This can include not only admissions, registrar activities but also student activities, cultural events, and student organizations (NCES, n.d.c). Given the broad definition, this variable might not be as precise, which may also explain why they were not statistically significant.

Another limitation is related to both the theory of change and one of reasons from the literature in the adoption of "no-loan" policies. The theory provided in this study does not fully capture the "ethics" of borrowing. Community college administrators cited that it was not "ethical" to allow students to take out loans they do not need (i.e. they feel that students are overborrowing) (Dunlop, 2012). However, this was not fully captured in the theory of change, in part, because it is difficult to quantify the reason. One proxy variable used was the percent and average amount of state and local grant aid; however, there may be better variables that serve as a proxy for this reason. I discuss this further in my recommendations for future research.

Another potential limitation is the use of COLI to adjust for state support for higher education instead of the Higher Education Cost Adjustment (HECA). SHEEO developed the Higher Education Cost Adjustment (HECA) to estimate inflation in the costs paid by colleges and universities. This is calculated based on the Employment Cost Index (ECI) and the Gross Domestic Product Implicit Price Deflator (GDP IPD). This adjustment may provide a stronger result for the state support variable because it measures the inflation that higher education institutions pay rather than the overall economic conditions of the state.

Finally, some states may require community colleges to opt into federal student loans. I have not found any states that require this except for North Carolina, which occurred in 2011. In this case, the North Carolina state legislature required loan participation (2011-2012) before rescinding the order (Willoughby, 2011). Based on conversations with a sampling of community colleges and state loan administrators as well as a cursory research search, I did not find any indication that states required federal loan participation. Had I found any states that required loan participation, I would have excluded these states as it would have biased the results. In addition, I ran the restricted and unrestricted models excluding Group 4 (states that had 0% of "no-loan" policy adoption) and found that the cohort default rate, the average amount of state and local aid, the state support for higher education, and the percentage of nonfederal student loan borrowers were statistically significant (see Appendix L). This further indicates robust findings.

Suggestions for Future Research

This study aims to contribute to the growing literature of federal student loan policy and community colleges, particularly regarding federal student loan access. While this study is one of the first to examine the factors that inform a community college adopting a "no-loan" policy, much work needs to be done to understand the decision-making-process. A qualitative or mixed methods study could help better understand community college leaders' decision to opt out of the federal student loan program. For example, narrative inquiry with in-depth interviews or surveys could provide additional information not previously discussed in the literature. For example, some community college administrators stated that it was unethical to offer students loans. This can be difficult to measure quantitatively; however, I assigned multiple variables (percent and average amount of state/local grant aid) to try to capture some of the meaning behind the "ethics" of offering federal student loans. Qualitative research questions would include understanding the

nuances behind the decision-making process, such as what does “ethical” federal student loan borrowing look like? Questions surrounding the financial savings of not participating in the federal student loan program would also be of interesting. For example, what specific factors demonstrate savings (e.g. lower staff costs, not paying a third-party to administer the federal student loan, etc.). Finally, to what extent does the state legislature’s concerns regarding student loan debt influence these policies? It’s possible that some of the adoption of “no-loan” policies are driven at the state level.

In another example, policy diffusion may be of interest. DeRousie (2014) found that a majority of large public and private research institutions adopted “no-loan” policies between 1999-2009 and they attributed this adoption rate to innovation diffusion across states in the northeast and Midwest. In other words, administrators adopted a kind of mimetic isomorphism in adopting a “no-loan” policy. However, most community colleges seem to adopt “no-loan” policies between 2012-2019 and are located primarily in the southeast. Policy diffusion remains an understudied topic in community colleges, so it’s not clear how this may play a role in community college adoption of “no-loan” policies. Further research into this phenomenon could provide useful explanations to the adoption “no-loan” policies in community colleges.

Further, a case study examining one state with a high percentage of “no-loan” community colleges could clarify what drives the decision-making process, particularly when some colleges opt out and others do not within the same state. In particular, the commonly cited reason of a high cohort default rate would be interesting to explore further. As shown in the study, the CDR was a statistically significant variable but its relationship to adopting a “no-loan” policy was not in the direction that I originally thought. In addition, there may be other motivations for why a community college adopts a “no-loan” policy. For example, increased regulatory burdens on

individual institutions, such as increased reporting requirements, the effects of increased programs (e.g. income-driven repayment plans), changes to the cohort default rate calculations, additional requirements of technology, software, and cybersecurity and others could potentially explain an increase in “no-loan” policy adoption in a particular state.

There are also several other variables that were not considered but could be beneficial for future research. These variables include community college baccalaureate programs, state loans, and promise programs. An increasing number of community colleges offer bachelor degree programs (also known as CCB) (TICAS, 2014), and nearly half of all states have at least one CCB (Community College Baccalaureate Association, Bragg & Associates, 2024). This relatively new phenomenon allows community college students to pursue four-year bachelor degrees at the community college level, typically in programs related to health sciences and business (CCBA, n.d.). This variable was not included in the analysis because many CCBs were not available until after 2018, and most community college adopted “no-loan” policies between 2012 and 2019. In other words, the variable would not have enough time and information to see an effect. However, it would be interesting for policymakers to consider if their community colleges opt out of the federal loan program. If they want to add CCB programs (most likely in business, nursing, or another related field) they will need to provide students with more access to financial aid.

State loans are also an important yet understudied topic. Nearly half of all states offer some sort of state loan through non-profit or state-run agencies (Luthi, 2024). These loans are considered private loans since they are not offered through the federal government (Luthi, 2024). This study included the presence of a state loan, coded as a dummy variable (1=state has a state-sponsored loan, 0=state does not have a state-sponsored loan). This variable was omitted in the

analysis due to multicollinearity. However, the percentage of students borrowing nonfederal student loans was significant, so it's possible that state loans were a factor. We also do not know the extent that these loan options are presented to students. In addition, it was difficult to obtain data on each state's loan policies including disbursement and default. Additional studies that focus on private loans and/or state loans would be helpful. These variables are difficult to obtain data on but are alternate sources of funding and could provide insights into community college students' decisions to fund their education outside of federal student loans. Again, in each of these situations, a qualitative perspective could provide valuable insight.

Another consideration for future research is the presence of "promise programs". This variable was initially omitted because of the large swath of programs that exist and the varying program requirements and benefits to students even within the same state. Previous research has found that promise programs reduce federal loan borrowing for full-time, first-time students (Odle et al., 2021), which is the target student population for promise programs. However, there is debate on the overall effectiveness of these programs. For example, it is not clear that promise programs help increase the number of students attending college or if they are "redistributing students who would have attended four-year schools to community colleges" (Perna et al., 2018 as cited in Gurantz, 2020, p.119). More research could be conducted focusing on this phenomenon to determine its impact on "no-loan" policy adoption. Again, a case study, such as Tennessee, which has a state-wide promise program would be interesting to examine with respect to community college decision making.

Conclusion

Community colleges have a special role in educating millions of students in the U.S., particularly students that would not have otherwise attended (Goldrick-Rab, 2010). However,

nearly 10% of community college students nationally lack access to federal student loans. This access is even more pronounced in minority student populations (TICAS, 2016). There are some studies that examined the impact of community colleges that do not participate in the federal student loan program (i.e. adopt a "no-loan" policy) on student outcomes (see Dunlop, 2013; Wiederspan, 2016; TICAS, 2014, 2016). However, few studies have examined what factors inform a community college to adopt a "no-loan" policy.

The purpose of this study was to shed light on factors that inform a community college to adopt a "no-loan" policy. One of the first of its kind to focus specifically on community colleges and federal student loan access. The study found discernible patterns of states with high percentages of "no-loan" community colleges through descriptive statistics as well as financial factors that inform a community college to opt out; however, the complexity of the results based on sensitivity analyses, robustness checks, and the topic itself suggest more research is needed to tease out this nuanced and complicated decisions. As community colleges continue to play an important role in higher education access concurrent with the ever-evolving relationships between federal aid policies, understanding these dynamics will be critical for future researchers, policymakers, and student access.

REFERENCES

Acock, A. C. (2018). *A gentle introduction to Stata* (6th ed.). Stata Press.

Addo, F. R., Houle, J. N., & Simon, D. (2016). Young, Black, and (still) in the red: Parental wealth, race, and student loan debt. *Race and Social Problems, 8*(1), 64-76. https://doi.org/10.1007/s12552-016-9162-0

Ali-Coleman, K. Z. (2019). Essential pathways: an examination of how community colleges compromise their unique contribution to American higher education. *Higher Education Politics & Economics, 5*(1), 54-69. http://doi.org/10.32674/hepe.v5i1.1141

Allison, P. D. (1999). *Multiple regression: A primer*. Pine Forge Press, Thousand Oaks, CA.

Allison, P. D. (2012 November 9). *Why you probably need more imputations than you think.* Statistical Horizons. https://statisticalhorizons.com/more-imputations/

American Association of Community Colleges. (2022). *Fast Facts 2022.* https://www.aacc.nche.edu/wp-content/uploads/2022/05/AACC_2022_Fact_Sheet-Rev-5-11-22.pdf

American Association of Community Colleges. (2024). *Fast Facts 2024.* https://www.aacc.nche.edu/wp-content/uploads/2024/02/Fast_Facts_2024.pdf

Amey, M. J., Jessup-Anger, E., & Jessup-Anger, J. (2008). Community college governance: What matters and why? *New Directions for Community Colleges, 141*. 1-98. https://doi.org/10.1002/cc.310

Assan, S.K.M. (2021). *Impact of an institutional no-loan policy on student time use and engagements* [Doctoral Dissertation, University of Florida]. https://ufdcimages.uflib.ufl.edu/UF/E0/05/80/48/00001/Assan_S.pdf

Avery, C. & Turner, S. (2012). Student loans: Do college students borrow too much--or not enough? *Journal of Economic Perspectives, 26*(1). 165-192. http://doi.org/10.1257/jep.26.1.165

Azur M. J., Stuart, E. A., Frangakis, C., & Leaf, P. J. (2011). Multiple imputation by chained equations: what is it and how does it work? *International Journal of Methods in Psychiatric Research, 20*(1). 40-49. http://doi.org/10.1002/mpr.329

Baime, D. & Baum, S. (2016). *Community colleges: multiple missions, diverse student bodies, and a range of policy solutions.* Urban Institutes. https://files.eric.ed.gov/fulltext/ED570475.pdf

Baker A. R., Andrews B. D., & McDaniel A. (2017). The impact of student loans on college access, completion, and returns. *Sociology Compass*, *11*(6). 1-11. https://doi.org/ 10.1111/soc4.12480

Barger, R. W. (2023). *The impact of co-admissions agreements on two-year to four-year transfer student success: A difference-in-differences study*. [Doctoral dissertation, North Carolina State University]. NC State University Libraries. https://www.lib.ncsu.edu/resolver/1840.20/41122

Barr, A., Bird, K. A., & Castleman, B. L. (2021). The effect of reduced student loan borrowing on academic performance and default: Evidence from a loan counseling experiment. *Journal of Public Economics, 202,* 1-12. https://doi.org/10.1016/j.jpubeco.2021.104493

Bauer-Wolf, J. (2022, November 22). What changed in 2 years since Grinnell said it would try no-loan financial aid. *Higher ED Dive.* https://www.highereddive.com/news/what-changed-in-2-years-since-grinnell-said-it-would-try-no-loan-financial/636766/

Baum, S. (2013, October). *The evolution of student debt in the U.S.: An overview.* The Urban Institute. https://www.upjohn.org/stuloanconf/Baum.pdf

Baum, S. (2019, March 19). *Rethinking federal Work-Study.* Urban Institute. https://www.urban.org/sites/default/files/2019/03/21/2019_03_19_work_study_fact_sheet.pdf

Baum, S. & Delisle, J. (2022, February). *Income-driven repayment of student loans: Logic, history, and the need for reform*. Center on Education Data and Policy. https://www.urban.org/sites/default/files/2022-04/Income-Driven%20Repayment%20of%20Student%20Loans.pdf

Baum, S., Kurose, C., & McPherson, M. (2013). An overview of American higher education. *The Future of Children*, *23*(1), 17-39. https://files.eric.ed.gov/fulltext/EJ1015198.pdf

Belfield, C., Jenkins, D., & Fink, J. (2023 February). *How can community colleges afford to offer dual enrollment college courses for high school students at a discount*? CCRC. https://ccrc.tc.columbia.edu/media/k2/attachments/community-colleges-afford-dual-enrollment-discount.pdf

Bennett, C., Evans, B., & Marsicano, C. (2021). Taken for granted? Effects of loan-reduction initiatives on student borrowing, admission metrics, and campus diversity. *Research in Higher Education*, 62, 569-599.

Bidwell, A. (2016, June 29). *Report: Many community college students blocked from federal loans.* National Association of Student Financial Aid Administrators. https://www.nasfaa.org/news-item/9034/Report_Many_Community_College_Students_Blocked_From_Federal_Loans

BigFuture (n.d.). *What is a Pell Grant?* https://bigfuture.collegeboard.org/pay-for-college/scholarships-grants-loans/what-is-a-pell-grant

Billings, M. (2018, September 18). *Understanding the design of college promise programs, and where to go from here.* Brookings. https://www.brookings.edu/articles/understanding-the-design-of-college-promise-programs-and-where-to-go-from-here/

Billings, M. S., Li, A. Y., Gándara, D., Acevedo, R., Cervantes, D., & Turcios-Villalta, J. (2023). Financing promise programs: Where the money comes from and where the money goes. In D. A Smith, C. M. Cain, & J. N. Friedel (Eds.), *Free college: Budgets, mission, & the future. New directions for community colleges* (pp. 9–23). John Wiley & Sons, Inc. https://doi-org.prox.lib.ncsu.edu/10.1002/cc.20583

Blaikie, N. (2003). Descriptive analysis – univariate: looking for characteristics. In *Analyzing Quantitative Data* (pp. 47-88). SAGE Publications Ltd, https://doi.org/10.4135/9781849208604

Boatman, A., Evan, B. J. & Soliz, A. (2017). Understanding loan aversion in education: Evidence from high school seniors, community college students, and adults. *AERA Open, 3*(1). 1-16. https://doi.org/10.1177/2332858416683649

Bombardieri, M. (2020, October 28). *Tapping local support to strengthen community colleges.* Center for American Progress. https://www.americanprogress.org/article/tapping-local-support-strengthen-community-colleges/

Boston University. (n.d.). *Standard 7: Institutional resources.* https://www.bu.edu/accreditation/neche-standards-and-committees/standard-7-institutional-resources/

Bouchrika, I. (2024, Feb. 8). *What is a Title IV school? A guide to funds & eligibility requirements in 2024.* Research.com. https://research.com/education/what-is-a-title-iv-school

Braxton, S. O. (2017). *The financial implications of no-loan policies at private elite liberal arts colleges*. (Publication No. 10283611) [Doctoral dissertation, The University of Pennsylvania.] ProQuest Dissertation & Theses Global.

Callender, C. & Jackson, J. (2005). Does the fear of debt deter students from higher education? *Journal of Social Policy, 34*(4). 509-540. 10.1017/S004727940500913X

Cairns, H. (2023, March 1). *A guide to funding the financial aid gap.* CollegeRaptor. https://www.collegeraptor.com/paying-for-college/articles/financial-aid/gapping-college-admissions/

Campbell, C. & Hillman, N. (2015, September). A closer look at the trillion: Borrowing, repayment, and default at Iowa's community colleges. *Association of Community College Trustee.* ERIC. https://files.eric.ed.gov/fulltext/ED611020.pdf

Candelaria, C. McNeill, S., & Shores, K. (2022, August 11). *What drives increases in state funding for education?* Brookings Institute. https://www.brookings.edu/articles/what-drives-increases-in-state-funding-for-education/

Carnevale, A. P. & Smith, N. (2018). *Balancing work and learning: Implications for low-income students: Executive summary.* Georgetown University Center on Education and the Workforce. https://files.eric.ed.gov/fulltext/ED590711.pdf

Center for the Theory of Change. (n.d.). *What is Theory of Change?* https://www.theoryofchange.org/what-is-theory-of-change/

Chakrabarti, R., Gorton, N., & Lovenheim, M.F. (2018, September). The effect of state funding for postsecondary education on long-run student outcomes. https://economics.yale.edu/sites/default/files/lr_effects_of_state_appropriations_-_9-2018.pdf

Chapman, B. & Lounkaew, K. (2015). An analysis of Stafford loan repayment burdens. *Economics of Education Review, 45*(1). 89-102. http://dx.doi.org/10.1016/j.econedurev.2014.11.003

Charles, K. D., Sheaff, S. Woods, J., & Downey, L. (2016). Decreasing your student loan cohort default rate: Leading a college-wide change initiative at Mohave Community College. *Community College Journal of Research and Practice, 40*(7). 597-606. http://doi.org/10.1080/10668926.2015.1125814

Chiang, T. Jr. (2022). College promise programs: Additive to student loan debt cancellation. *Perspectives on Urban Education, 20* (1). 1-8. https://urbanedjournal.gse.upenn.edu/archive/volume-20-issue-1-fall-2022/college-promise-programs-additive-student-loan-debt-cancellation

Cho, S. H., Xu, Y., & Kiss, D. E. (2015). Understanding student loan decisions: A literature review. *Family and Consumer Sciences Research Journal, 43*(3). 229-243. http://doi.org/10.1111/fcsr.12099.

Christman, D. E. (2000). Multiple realities: Characteristics of loan defaulters at a two-year public institution. *Community College Review, 27*(4). 1-78. https://doi.org/10.1177/009155210002700402

Cicero Group. (2022, June). Enrollment trends during the Great Recession: What can we learn? https://cicerogroup.com/wp-content/uploads/2020/06/EnrollmentTrendsDuringRecession.pdf

Clark, F. (2016, September 12). *mi impute chained with predictive mean matching (PMM) for categorical variables* Statalist: The Stata Forum. https://www.statalist.org/forums/forum/general-stata-discussion/general/1356391-mi-impute-chained-with-predictive-mean-matching-pmm-for-categorical-variables

Coalition of Higher Education Assistance Organizations. (n.d.). *Federal Perkins loan program overview*. https://coheao.com/federal-perkins-overview/

Coastal Alabama Community College. (n.d.). *Coastal Alabama Community College history*. Coastal Alabama Community College. https://www.coastalalabama.edu/about/history/

Cochrane, D. F., Shireman, R., & Sivashankaran, S. (2008) *Denied: Community College Students Lack Access to Affordable Loans* (Issue Brief No.1). The Pew Charitable Trusts. https://www.issuelab.org/resources/8971/8971.pdf

Cochrane, D. F. & Szabo-Kubitz, L. (2011). *Still denied: How community colleges shortchange students by not offering federal loans.* Issue Brief. The Project on Student Debt. https://files.eric.ed.gov/fulltext/ED523088.pdf

Cohen, A. M. & Brawer, F. B. (1996). *The American community college* (3rd ed). Jossey-Bass. https://files.eric.ed.gov/fulltext/ED389384.pdf

CollegeBoard (2023). *Trends in college pricing and student aid*. https://research.collegeboard.org/trends

Columbia Mailman School of Public Health. (n.d.). *Missing data and multiple imputation.* Columbia University Irving Medical Center.

https://www.publichealth.columbia.edu/research/population-health-methods/missing-data-and-multiple-imputation

Community College Baccalaureate Association, Bragg & Associates. (2024, April 3). *Watch them grow: The evolution of community college baccalaureate degrees in the United States.* https://www.accbd.org/wp-content/uploads/2024/04/Watch-Them-Grow-4.22.24.pdf

Community College Research Center. (n.d.). *Community college FAQs*. Community College Research Center, Teachers College, Columbia University. https://ccrc.tc.columbia.edu/Community-College-FAQs.html

Community College Research Center. (2021). *Community colleges and student debt: Policy fact sheet.* Community College Research Center, Teachers College, Columbia University. https://ccrc.tc.columbia.edu/media/k2/attachments/community-colleges-student-debt.pdf

Community College Research Center. (2022a). *Community college FAQs*. Community College Research Center, Teachers College, Columbia University. https://ccrc.tc.columbia.edu/community-college-faqs.html

Community College Research Center. (2022b, February). *Public funding of community colleges.* Community College Research Center, Teachers College, Columbia University. https://ccrc.tc.columbia.edu/media/k2/attachments/public-funding-community-colleges.pdf

Community College Research Center. (2024). *Community college FAQs.* Community College Research Center, Teachers College, Columbia University. https://ccrc.tc.columbia.edu/community-college-faqs.html

Davidson-Davie Community College. (n.d.). *Federal and North Carolina Student Aid Programs.* https://www.davidsondavie.edu/financial-aid/types-of-financial-aid/

Dawson, R. F., Kearney, M. S., & Sullivan, J. X. (2021, April 7). *Why expanded student supports can improve community college outcomes and boost skill attainment*. Brookings Institute. https://www.brookings.edu/blog/brown-center-chalkboard/2021/04/07/why-expanded-student-supports-can-improve-community-college-outcomes-and-boost-skill-attainment/

Dembicki, M. (2021 September 29). *Default rates continue downward trend.* Community College Daily. https://www.ccdaily.com/2021/09/default-rates-continue-downward-trend/

Dembicki, M. (2022, November 15). *DataPoints: Enrollment by race/ethnicity.* AACC. https://www.ccdaily.com/2022/11/datapoints-enrollment-by-race-ethnicity-2/

Denning, J. T. (2017). College on the cheap: Consequences of community college tuition reductions. *American Economic Journal: Economic Polic*y *9*(2): 155–88. https://www.jstor.org/stable/26156403

DeRousie, J.C. (2014). *An exploration of the diffusion and adoption of four innovations in higher education*. [Doctoral dissertation, The Pennsylvania State University]. https://etda.libraries.psu.edu/files/final_submissions/10437

DoublePell, (n.d.). The case for doubling the Pell Grant https://doublepell.org/wp-content/uploads/2021/06/Double-Pell-Mini-Policy-Paper.pdf

Douglas-Gabriel, D. (2015, September 15). *Fewer people are defaulting on federal student loans.* The Washington Post. https://www.washingtonpost.com/news/grade-point/wp/2015/09/30/fewer-people-are-defaulting-on-federal-student-loans/

Douglas-Gabriel, D. (2016, July 1). *The surprising number of community college students without access to federal student loans.* The Washington Post. https://www.washingtonpost.com/news/grade-point/wp/2016/07/01/the-surprising-number-of-community-college-students-without-access-to-federal-student-loans/

Dowd, A. C. & Coury, T. (2006). The effect of loans on the persistence and attainment of community college students. *Research in Higher Education, 47*. 33-62. https://doi.org/10.1007/s11162-005-8151-8

Dowd, A. C., Rosinger, K. O., Fernandez Castro, M. (2020). Trends and perspectives on finance equity and the promise of community colleges. In L. Perna (Ed.), *Higher education: Handbook of theory and research* (vol 25, pp.517-588). Springer, Cham. https://doi-org.prox.lib.ncsu.edu/10.1007/978-3-030-31365-4_7

Doyle, W. R. (2012). The politics of public college tuition and state financial aid. *The Journal of Higher Education, 83*(5), 617-647. https://www.jstor.org/stable/23256879

Dunlop, E. R. (2012). *The impact of financial aid and college quality on educational attainment* (Order No. 3528588). Available from ProQuest Dissertations & Theses Global. (1041307125). https://proxying.lib.ncsu.edu/index.php/login?url=https://www.proquest.com/dissertations-theses/impact-financial-aid-college-quality-on/docview/1041307125/se-2

Dunlop, E. (2013). *What do Stafford loans actually buy you? The effect of Stafford loans access on community college students. National Center for Analysis of Longitudinal Data in Education Research.* Working Paper No.94. American Institutes for Research. https://caldercenter.org/sites/default/files/2024-11/erinWP.pdf

Dury, R. L. (2003). *Community colleges in America: A historical perspective*. ERIC. https://files.eric.ed.gov/fulltext/EJ876835.pdf

Dynarski, S. (2014, September). *An economist's perspective on student loans in the United States.* (ES Working Paper Series). https://www.brookings.edu/wp-content/uploads/2016/06/economist_perspective_student_loans_dynarski.pdf

Dynarski, S., Page, L. C., & Scott-Clayton, J. (2022, July). *College costs, financial aid, and student decisions.* (Working Paper #30275). https://www.nber.org/papers/w30275

Edgecombe, N. (2022). *Public funding of community colleges.* Community College Research Center. https://ccrc.tc.columbia.edu/media/k2/attachments/public-funding-community-colleges.pdf

Erhardt, E.B., Arnholt, A.T., & Dierker, L. (2019). *Passion driven statistics.* https://statacumen.com/teach/S4R/PDS_book/

Erwin, B. & Syverson, E. (2022, August 25). *Education commission of the states.* https://www.ecs.org/wp-content/uploads/State-Information-Request_College-Promise-Programs.pdf

Fain, P. (2015, September 28). *Small loans, big problems.* Inside Higher Education. https://www.insidehighered.com/news/2015/09/28/four-surprising-findings-debt-and-default-among-community-college-students

Fallon, K. (2022, September 14). *How student loan debt affects the racial homeownership gap.* Housing Matters. https://housingmatters.urban.org/articles/how-student-loan-debt-affects-racial-homeownership-gap

Federal Student Aid, (n.d.). *Title IV program volume reports.* The U.S. Department of Education. https://studentaid.gov/data-center/student/title-iv#award-year-summaries

Federal Student Aid (n.d-a). *Chapter 1 institutional eligibility*. U.S. Department of Education. https://fsapartners.ed.gov/knowledge-center/fsa-handbook/2020-2021/vol2/ch1-institutional-eligibility

Federal Student Aid (n.d-b). *Federal Pell grant program.* U.S. Department of Education. https://studentaid.gov/help-center/answers/topic/glossary/article/federal-pell-grant-program

Federal Student Aid (n.d-c). *Federal student loans.* U.S. Department of Education. https://studentaid.gov/understand-aid/types/loans#fast-facts

Federal Student Aid (n.d-d). *Direct subsidized and direct unsubsidized loans.* The U.S. Department of Education. https://studentaid.gov/understand-aid/types/loans/subsidized-unsubsidized

Federal Student Aid (n.d.-e). *What does net price mean for college costs?* U.S. Department of Education. https://studentaid.gov/help-center/answers/article/what-does-net-price-mean-for-college-costs

Federal Student Aid. (n.d.-f) *Federal versus private loans*. U.S. Department of Education. https://studentaid.gov/understand-aid/types/loans/federal-vs-private

Federal Student Aid, (2023, June 20). *(GENERAL-23-50) Federal Student Aid Posts Quarterly Portfolio Reports to FSA Data*. U.S. Department of Education. Center https://fsapartners.ed.gov/knowledge-center/library/electronic-announcements/2023-06-20/federal-student-aid-posts-quarterly-portfolio-reports-fsa-data-center

Feldman, D. H. & Romano, R. M. (2019). Drivers of community college costs and prices. *Change: The Magazine of Higher Learning, 51*(3). 21-27. https://doi-org.prox.lib.ncsu.edu/10.1080/00091383.2019.1606583

Fernandez, C., Fletcher, C., & Klepfer, K. (2017, January). *State of student aid and higher education in Texas.* ERIC. https://files.eric.ed.gov/fulltext/ED579941.pdf

Field, K. (2010, July 11). *Government vastly undercounts defaults.* The Chronicle of Higher Education. https://www.chronicle.com/article/government-vastly-undercounts-defaults/

Fox, J. J., Bartholomae, S., Letkiewicz, J. C. & Montalto, C. P. (2017). College student debt and anticipated repayment difficulty. *Journal of Student Financial Aid, 47*(2). 111-135. http://doi.org/10.55504/0884-9153.1576

Franco, J., Lee, C., Vue, K., Bozonelos, D., Omae, M., & Cauchon, S. (2021). *Introduction to Political Science Research Methods*. LibreTexts Social Sciences. The Academic Senate for California Community Colleges Open Educational Resources Initiative (OERI). https://socialsci.libretexts.org/Bookshelves/Political_Science_and_Civics/Introduction_to_Political_Science_Research_Methods_(Franco_et_al.)

Freyberg, F. (2022, August 26). *Nick Hillman on a federal plan to forgive student loan debt.* PBS Wisconsin. https://pbswisconsin.org/news-item/nick-hillman-on-a-federal-plan-to-forgive-student-loan-debt/

Fulciniti, F. (2022, September 19.) *Pell Grant eligibility and requirements: Do you qualify?* PrepScholar. https://blog.prepscholar.com/pell-grant-eligibility-and-requirements-do-you-qualify

Ganti, A. (2023, May 27). *Rational choice theory: What it is in economics, with examples.* Investopedia. https://www.investopedia.com/terms/r/rational-choice-theory.asp

Gardner-Cook, R. (2023, December 8). *How do demographic shifts intersect with college search trends in your region?* EAB. https://eab.com/resources/blog/enrollment-blog/how-demographic-shifts-intersect-college-search-trends/

Garrett, R. L. (1993). A profile of state community college system characteristics and their relationship to degrees of centralization. *Community College Review, 20*(5). 6-15. https://doi.org/10.1177/009155219302000502

Gibson-Benninger, B. S. (1997). *A state without a system: Historical analysis of Pennsylvania community colleges.* Pennsylvania State University. ERIC. https://files.eric.ed.gov/fulltext/ED407032.pdf

Gilbert, C. K. & Heller, D. E. (2013). Access, equity, and community colleges: The Truman Commission and federal higher education policy from 1947 to 2011. *The Journal of Higher Education, 84*(3). 417 – 443. https://www.jstor.org/stable/23486834

Gitlen, J. (2022, May 2). *A look into the history of student loans.* LendEDU. https://lendedu.com/blog/history-of-student-loans

Goldrick-Rab, S. (2010). Challenges and opportunities for improving community college student success. *Review of Educational Research, 80*(3). 437-469. https://doi.org/10.3102/0034654310370163

Griffith, M. (2008, March). *Issues in funding early & middle college high schools.* Education Commission of the States. https://www.ecs.org/clearinghouse/77/72/7772.pdf

Gross, J. P. K., Cekic, O., Hossler, D., & Hillman, N. (2010). What matters in student loan default: A review of the research literature. *Journal of Student Financial Aid, 39*(1). 19-29. https://doi.org/10.55504/0884-9153.1032

Grove, A. (2020, April 30). *Open admissions at colleges and universities.* ThoughtCo. https://www.thoughtco.com/open-admissions-policy-788432

Grubbs, S. J. (2020) The American community college: History, policies and issues. *Journal of Educational Administration and History, 52*(2), 193-210. http://www.doi.org/10.1080/00220620.2019.1681385

Gurantz, O. (2020). What does free community college buy? Early impacts from the Oregon Promise. *Journal of Policy Analysis and Management, 39*(1), 11-35. http://doi.org/10.1002/pam.22157

Hammond, L., Baser, S., & Cassell, A. (2020). The relationships between state community college governance centralization and local appropriations. *Higher Education Politics & Economics, 6*(1), 20–38. https://doi.org/10.32674/hepe.sv6i1.1734

Hanson, M. (2021, December 19a). *Student loan default rate.* EducationData. https://educationdata.org/student-loan-default-rate

Hanson, M. (2021, December 27b). *Average cost of community college*. EducationData. https://educationdata.org/average-cost-of-community-college

Hanson, M. (2022, June 12). *Average cost of college & tuition.* EducationData. https://educationdata.org/average-cost-of-college

Hanson, M. (2023, June 5a). *Pell Grant statistics.* EducationData. https://educationdata.org/pell-grant-statistics

Hanson, M. (2023, October 12b). *Average cost of community college.* EducationData.org, https://educationdata.org/average-cost-of-community-college

Hanson, M. (2023, December 8c). *Average student loan debt for a bachelor's degree.* EducationData.org, https://educationdata.org/average-debt-for-a-bachelors-degree

Hanson, M. (2024, January 10). *College enrollment & student demographics.* EducationData.org. https://educationdata.org/college-enrollment-statistics

Hardy, D.E. & Katsinas, S.G. (2008). Patterns in student financial aid at rural community colleges. *NASFAA Journal of Student Financial Aid, 38*(1), 40- 52. https://files.eric.ed.gov/fulltext/EJ905710.pdf

Hayes, A. (2024, April 17). *Understanding the purchasing power and the consumer price index.* Investopedia. https://www.investopedia.com/terms/p/purchasingpower.asp

Hearn, J. C., & Holdsworth, J. M. (2004). The shift from grants to loans. In E. P. St. John & M. D. Parsons (Eds.), *Public Funding of Higher Education: Changing Contexts and New Rationales* (pp. 40-59). The Johns Hopkins University Press.

Hegji, A. (2023, February 8). *Institutional eligibility for participation in Title IV student financial aid programs.* (CRS Report No. R43159). Congressional Research Service. https://sgp.fas.org/crs/misc/R43159.pdf

Hegji, A. & Bryan, S. L. (2023, December 12). *Cohort default rates and HEA Title IV eligibility: Background and analysis* (R47874). Congressional Research Service. https://crsreports.congress.gov/product/pdf/R/R47874/2

Heller, D. E. (1999). The effects of tuition and state financial aid on public college enrollment. *The Review of Higher Education, 23*(1), 65–89. https://doi.org/10.1353/rhe.1999.0023

Heller, D. E. (2022, May 10). Pell Grants fall far short of original goal to make college more affordable. *ASBMBTODAY.* https://www.asbmb.org/asbmb-today/careers/051022/pell-grants-fall-far-short-of-original-goal

Hermes, J. J. (2008, April 17). *One-quarter of community colleges do not offer federal loans, study finds.* The Chronicle of Higher Education. https://www.chronicle.com/article/one-quarter-of-community-colleges-do-not-offer-federal-loans-study-finds-700/

Herzog, S. (2017). Financial aid and college persistence: Do student loans help or hurt? *Research in Higher Education 59,* 273-301. https://doi.org/10.1007/s11162-017-9471-1

Hillman, N. (2012). Economic diversity among selective colleges: Measuring the enrollment impact of "no-loan" programs. *Institute for Higher Education Policy.* ERIC. https://files.eric.ed.gov/fulltext/ED534615.pdf

Hillman, N. W. (2013). Economic diversity in elite higher education: Do no-loan programs impact Pell enrollments. *The Journal of Higher Education, 84*(6), 806–833. http://www.jstor.org/stable/ 43694534

Hillman, N. W. (2014). College on credit: A multilevel analysis of student loan default. *Review of Higher Education, 37*(2), 169-195. http://doi.org/10.1353/rhe.2014.0011

Hillman, N. W. (2015a). Borrowing and repaying student loans. *Journal of Student Financial Aid 45*(3), 34-48. https://doi.org/10.55504/0884-9153.1588
Available at: https://ir.library.louisville.edu/jsfa/vol45/iss3/5

Hillman, N. (2015b). Cohort default rates: Predicting the probability of federal sanctions. *Educational Policy, 29*(4). 559-582. http://doi.org/10.1177/0895904813510772

Hillman, N. (2022, June). *Pell access and completion series part I: Community college*. The Institute for College Access. ERIC. https://files.eric.ed.gov/fulltext/ED623192.pdf

Hillman, N. & Orosz, K. (2017). Introduction: Connecting Student Loan Research and Federal Policy. *ANNALS, AAPSS, 671*(1), 8-18. http://doi.org/10.1177/0002716217704162

Hiltonsmith, R. (2015, May 5). *Pulling up the higher-ed ladder: Myth and reality in the crisis of college affordability.* Dēmos. https://www.demos.org/sites/default/files/publications/Robbie%20admin-bloat.pdf

Hinkman, M. (n.d.). *NC community college system colleges participating in the Direct Loan program 2019-2020.* [Unpublished raw data]. NC Community College System.

Horwitz, I. & Keysar, A. (2019). Guest editors' introduction to this special issue on methodology. *Contemporary Jewry, 39,* 9–14. https://doi.org/10.1007/s12397-019-09290-6

Horz, C. (2021, June 18). *History and background: Community colleges.* Education Writers Association. https://ewa.org/issues/higher-ed/history-and-background-community-colleges

Hossler, D., Ziskin, M., Gross, J. P. K., & Kim, S., Çekiç, O. (2009). Student aid and its role in encouraging persistence. In Smart, J.C. (ed), *Higher education: Handbook of theory and research* (vol 24., pp.389-425). Springer, Dordrecht. https://doi.org/10.1007/978-1-4020-9628-0_10

Huntington-Klein, N. (n.d.). *Robustness tests: What, why, and how*. https://www.nickchk.com/robustness.html

Hutchins, A. (2019, July 24). *What happened to the federal Perkins loan?* U.S. News. https://www.usnews.com/education/blogs/student-loan-ranger/articles/2019-07-24/what-happened-to-the-federal-perkins-loan

Inge, B. (2017). *Factors associated with federal student loan default among borrowers in a statewide system of community and technical colleges*. [Doctoral dissertation, University of Louisville]. *Electronic Theses and Dissertations*. Paper 2864. https://doi.org/10.18297/etd/2864

Irwin, V., De La Rosa, J., NCES; Wang, K., Hein, S., Zhang, J., Burr, R., Roberts, A., AIR; Barmer, A., Bullock Mann, F., Dilig, R., & Parker, S (2022). *Condition of education 2022*. https://nces.ed.gov/programs/coe/pdf/2022/cuc_508.pdf

Ishitani, T. T., & Kamer, J. A. (2019). Institutional characteristics and expenditures: Their effects on graduation rates at three different types of community colleges. *Community College Journal of Research and Practice, 44*(9), 644–656. https://doi.org/10.1080/10668926.2019.1630026

Ishitani, T.T. & McKitrick, S.A. (2016). Are student loan default rates linked to institutional capacity? *Journal of Student Financial Aid*, *46*(1). 17-37. ERIC. https://files.eric.ed.gov/fulltext/EJ1097302.pdf

Jackson, K. L., & Glass, J. C., Jr. (2000). Emerging trends and critical issues affecting private fund-raising among community colleges. *Community College Journal of Research and Practice*, *24*, 729 – 744.

Jiang, Y. (2022). [Lecture notes on missing data]. STA 210, Duke University. https://www2.stat.duke.edu/courses/Spring23/sta210.001/slides/missing-data.html#1

Kantrowitz, M. (2019, June 28). *Student loan debt causes delays in achieving major financial goals.* Saving for College. https://www.savingforcollege.com/article/student-loan-debt-causes-delays-in-achieving-major-financial-goals

Kater, S.T. & Burke, D. (2022, October 7). Getting to shared governance: New perspectives for implementing governance. *New Directions for Community Colleges, 2022*(200). 37-50. https://doi.org/10.1002/cc.20548

Katsinas, S. G., Keeney, N. E., Bray, N. J., & Kelly, P. J. (2023). Declining Pell support at community colleges since the Great Recession. *Journal of Educational Finance, 48*(3), 289-305. https://muse.jhu.edu/article/883919

Kelchen, R., Lingo, M., Baker, D. J., Rosinger, K., Ortagus, J., & Wu, J. (2024). A typology and landscape of state funding formulas for public colleges and universities from 2004 to 2021. *The Review of Higher Education 47*(3), 281-314. https://doi.org/10.1353/rhe.2024.a921604

Kelchen, R., & Stedrak, L. J. (2016). Does performance-based funding affect colleges' financial priorities? *Journal of Education Finance*, *41*(3), 302–321. http://www.jstor.org/stable/44162557

Kenton, W. (2023, May 28). *Neoclassical economics: What it is and why it's important.* Investopedia. https://www.investopedia.com/terms/n/neoclassical.asp

Kim, D. (2007). The effect of loans on students' degree attainment: Differences by student and institutional characteristics. *Harvard Educational Review*, *77*(1), 64–97. https://doi.org/10.17763/haer.77.1.n14t69l0q8292784

Kipp, S. M., Price, D. V., & Wohlford, J. K. (2002). Unequal opportunity: Disparities in college access among the 50 states [Monograph]. *Lumina Foundation for Education, 4*(3), 1-71. https://folio.iupui.edu/bitstream/handle/10244/272/monograph.pdf?sequence=1

Klasik, D. & Hutt, E.L. (2018). Bobbing for bad apples: Accreditation, quantitative performance measures, and the identification of low-performing college. *The Journal of Higher Education.* 1-35. https://doi.org/10.1080/00221546.2018.1512804

Knott, K. (2023, October 3). *National cohort default rate hits 0%*. Inside Higher Education. https://www.insidehighered.com/news/quick-takes/2023/10/03/national-cohort-default-rate-hits-zero-percent

Knox, L. (2023, May 12). *Grasping for a foothold on the enrollment cliff.* Inside Higher Education. https://www.insidehighered.com/news/business/revenue-strategies/2023/05/12/grasping-foothold-enrollment-cliff

Kolbe, T. & Baker, B. D. (2018). Fiscal equity and America's community colleges. *The Journal of Higher Education. 90*(1). 111-149. https://doi-org.prox.lib.ncsu.edu/10.1080/00221546.2018.1442984

Koeze, E. & Russell, K. (2022, August 26). *The toll of student debt in the U.S.* NY Times. https://www.nytimes.com/interactive/2022/08/26/your-money/student-loan-forgiveness-debt.html

Kyaw, A. (2022, September 29). *Report identifies community college student needs and issues.* Diverse Education. https://www.diverseeducation.com/institutions/community-colleges/article/15300923/report-identifies-community-college-student-needs-and-issues

Lag Regression Models. (n.d.). https://digfir-published.macmillanusa.com/psbe4e/psbe4e_ch13_11.html

Lallmann, C. & Ellis, N. (2022, December 26). *What are 'Promise Programs' and how can they help make college more affordable?* PBS NewsHour. https://www.pbs.org/newshour/education/what-are-promise-programs-and-how-can-they-help-make-college-more-affordable

Lee, R. (2023, September 24). *Student loans: "Higher education is worth it but not the loans," expert says*. Yahoo Finance. https://finance.yahoo.com/news/student-loans-higher-

education-is-worth-it-but-not-the-loans-expert-says-153035304.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAMZ32TNykqQ8XalotPoy-tXM0gOc6I1wVaiyg3Sex_-ZUlr8Am3hVdqVhTnc-hUjCxbFMXTkrl7_Coq-9lcjFdpw0mEeZ7fsSvLVQJrOh3LPJEyEKDL7Krn7lDCynlteosmXgTB6kqBx1PShoripZwG9SRuOaw1lNCHlsr3yA3V

Lee, J. H. & Huber, J. C. (2021). Evaluation of multiple imputation with large proportions of missing data: How much is too much? *Iranian Journal of Public Health, 50*(7), 1372-1380. https://doi.org/10.18502/ijph.v50i7.6626

Levesque, E. M. (2018, October 8). *Improving community college completion rates by addressing structural and motivational barriers.* Brookings Institute. https://www.brookings.edu/articles/community-college-completion-rates-structural-and-motivational-barriers/

Lewis, M. D. (1989). *The role of the community college president: A review of the literature from 1969-89*. Long Beach City College. ERIC. https://files.eric.ed.gov/fulltext/ED307947.pdf

Li, A. Y., & Katri, P. (2024). Does tuition-setting authority determine whether tuition increases at community colleges with new promise programs? *The Journal of Higher Education (Columbus)*, 1-30. https://doi.org/10.1080/00221546.2024.2301914

Lingo, M. Kelchen, R., Baker, D. J., Rosinger, K., Ortagus, J., & Wu, J. (2021). *The landscape of state funding formulas for public colleges and universities*. Working Paper. InformEdStates. https://static1.squarespace.com/static/5d9f9fae6a122515ee074363/t/61bbb8eebd907c6e6

accdb51/1639692527480/ISPaper_TheLandscapeofStateFundingFormulasforPublicColleges.pdf

Linsley, C. B. (1997). The underpinnings of student aid. *New Directions for Institutional Research*, 5-23. https://doi-org.prox.lib.ncsu.edu/10.1002/ir.9501

Linsenmeier, D. M., Rosen, H. & Rouse, C. E. (2006). Financial Aid Packages and College Enrollment Decisions: An Econometric Case Study. *The Review of Economics and Statistics, 88*(1). 126-145. https://doi.org/10.1162/rest.2006.88.1.126

Lloyd, A. (2023, April 19). *Celebrating our nation's community colleges*. Homeroom. https://blog.ed.gov/2023/04/celebrating-our-nations-community-colleges/

Loeb, S., Morris, P., Dynarski, S., Reardon, S., McFarland, D., & Reber, S. (2017, March). Descriptive analysis in education: A guide for researchers. U.S. Department of Education. ERIC. https://files.eric.ed.gov/fulltext/ED573325.pdf

Long, B.T. (2013). The financial crisis and college enrollment: How have students and their families responded? In Jeffrey Brown and Caroline Hoxby, Eds. *How the financial crisis and Great Recession affected higher education.* Forthcoming from University of Chicago Press. https://scholar.harvard.edu/files/btl/files/blong_-_the_financial_crisis_and_college_enrollment_-_july_2013.pdf

Looney, A. & Yannelis, C. (2015). *A crisis in student loans?: How changes in the characteristics of borrowers and in the institutions they attended contributed to rising loan defaults.* Brookings Papers on Economic Activity. 1-89. https://doi.org/10.1353/eca.2015.0003

Lu, X. & White, H. (2014). Robustness checks and robustness tests in applied economics. *Journal of Econometrics, 178*(1), 194-206. https://doi.org/10.1016/j.jeconom.2013.08.016

Lucca, D. O., Nadauld, T., & Shen, K. (2019). Credit supply and the rise in college tuition: Evidence from the expansion in federal student aid programs. *The Review of Financial Studies, 32*(2), 423–466. https://www.jstor.org/stable/48616966

Lumina. (n.d.). *Partnering with campuses and states*. Lumina. https://www.luminafoundation.org/history-of-federal-student-aid/chapter-two/

Luthi, B. (2024, February 1). *State student loans.* LendEDU. https://lendedu.com/blog/state-student-loans/

Ma, J. & Pender, M. (2021, October). *Trends in college pricing and student aid 2021.* College Board. https://research.collegeboard.org/media/pdf/trends-college-pricing-student-aid-2021.pdf

Maas, Rao, Taylor and Associates (1994). *Where are we going? Planning assumptions for community colleges.* ERIC. https://files.eric.ed.gov/fulltext/ED381190.pdf

Marcus, J. (2023, April 3). *Community colleges face law enrollment, dismal completion rates.* PBS NewsHour. https://www.pbs.org/newshour/education/community-colleges-face-low-enrollment-dismal-completion-rates

Markham, J. J. (2008). *An exploration of community college state funding patterns in the Southern Regional Education Board states* (Order No. 3315189). Available from ProQuest Dissertations & Theses Global. (230855612).

Marx, B. M. & Turner, L. J. (2019). Student loan nudges: Experimental evidence on borrowing and educational attainment. *American Economics Journal: Economic Policy, 11*(2), 108-141. https://doi.org/10.1257/pol.20180279

McCann, M. (2022, Jan. 26). *Education Governance Dashboard (archive).* Education Commission of the States. https://www.ecs.org/education-governance-dashboard-archive/

McGuinness, A. (2014, January 28). *Community College Systems Across the 50 States*. Nevada Legislative Committee to Conduct an Interim Study Concerning Community Colleges. https://www.leg.state.nv.us/interim/77th2013/committee/studies/commcolleges/other/28-january-2014/agendaitemvi,nationalcenterforhighereducationmcguinness.pdf?rewrote=1

McKinney, L., & Burridge, A., (2015). Helping or hindering? The effects of loans on community college student persistence. *Research in Higher Education,* 56, 299-324. http://doi.org/10.1007/s11162-014-9349-4

McKinney, L., Gross, J. P., Burridge, A., Inge, B., & Williams, A. (2021). Understanding loan default among community college students. *Community College Review, 49*(3), 243–271. https://doi.org/10.1177/00915521211001467

Merisotis, J. (n.d.). *Growth of federal student loans.* Chapter 1: How Did We Get Here? The Lumina Foundation. https://www.luminafoundation.org/history-of-federal-student-aid/chapter-one/

Miller, B. (2017, December 14). *Who are student loan defaulters?* CAP 20. https://www.americanprogress.org/article/student-loan-defaulters/

Miller-Adams, M., Hershbein, B., Timmeney, B., McMullen, I., & Husiman, K. (2022). *Promise programs database*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, Promise: Investing in Community. www.upjohn.org/promise/database.

Mintrom, M. (2016). Herbert A. Simon, Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization. In M. Lodge, E.C. Page, & S.J. Balla (Eds.), *The Oxford Handbook of Classics in Public Policy and Administration* (pp.12-21). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199646135.013.22

Mitchell, M., Leachman, M., Masterson,K., & Waxman, S. (2018, October 4). *Unkept promises: State cuts to higher education threaten access and equity.* Center on Budget Policy and Priorities. https://www.cbpp.org/sites/default/files/atoms/files/10-4-18sfp.pdf

Monarrez, T., Hernandez, F., & Rainer, M. (2021, July 8). *Impact of state higher education finance on attainment.* Urban Institute. https://www.urban.org/research/publication/impact-state-higher-education-finance-attainment

Morgan-Petty, M. (2023). *Financial aid as a predictor for retention of first-year Black male community college students*. [Doctoral dissertation, Walden University]. https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=12822&context=dissertations

Mosch, T. R. (1970). *The G.I. Bill: A precedent in educational and social policy in the United States* [Doctoral dissertation, University of Oklahoma]. The University of Oklahoma ProQuest Dissertations & Theses. https://www.proquest.com/openview/df7f01b7fc6144074dae8461958f27a4/1.pdf?pq-origsite=gscholar&cbl=18750&diss=y

Mullin, C. M. (2017, October). *When less is more: Prioritizing open access.* American Association of Community Colleges. ERIC. https://files.eric.ed.gov/fulltext/ED579759.pdf

Mullin, C. M. & Honeyman, D. S. (2007). The funding of community colleges: A typology of state funding formulas. *Community College Review, 35*(2). 113-127. DOI 10.1177/0091552107306409

National Association of Student Financial Aid Administrators [NASAFAA]. (n.d.). *State financial aid programs.* https://www.nasfaa.org/State_Financial_Aid_Programs

National Center for Education Statistics. (n.d-a). *Institutional groupings in IPEDS: Considerations for data use and analysis*. Institutional Groupings in IPEDS. https://nces.ed.gov/ipeds/use-the-data/institutional-groupings-in-ipeds#top

National Center for Education Statistics. (n.d-b). *Locale classifications.* Education Demographic and Geographic Estimates. https://nces.ed.gov/programs/edge/Geographic/LocaleBoundaries

National Center for Education Statistics. (n.d.-c) *Student financial aid.* Survey Components. https://nces.ed.gov/ipeds/survey-components/

National Center for Education Statistics (n.d.-d) *Average institutional net price FAQs.* Reporting Tools. https://nces.ed.gov/ipeds/report-your-data/faq-average-net-price

National Center for Education Statistics. (2021). *Price of attending an undergraduate institution.* Condition of Education. U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/programs/coe/indicator/cua.

National Center for Science and Engineering Statistics. (n.d.). *State support for higher education per full-time equivalent student.* State Funding for Higher Education. https://ncses.nsf.gov/indicators/states/indicator/state-support-for-higher-education-per-fte-student

National Institute for Staff and Organizational Development. (n.d). *Community College Timeline.* https://www.nisod.org/2018/04/19/community-college-timeline/

Newman, D. A. (2014). Missing data: Five practical guidelines. *Organizational Research Methods, 17*(4). 372-411. https://doi.org/10.1177/1094428114548590

Njoku, E. O. (2023). Managing factors that correlate to high cohort default rate at public 2-year community colleges in Michigan. *Journal of Financial Risk Management, 12*(4). https://doi.org/10.4236/jfrm.2023.124018

Northwestern. (n.d.). *Work-Study Program*. Northwestern. https://undergradaid.northwestern.edu/work-study/about/history.html

Odle, T. K., Lee, J. C., Gentile, S. P. (2021). Do promise programs reduce student loans? Evidence from Tennessee promise. *The Journal of Higher Education, 92* (6). 847-876. http://doi.org/10.1080/00221546.2021.1888674

Office of the Historian and the Clerk of the House's Office of Art and Archives. (n.d.). *National Defense Education Act*. History, Art, & Archives. https://history.house.gov/HouseRecord/Detail/15032436195

Ortagus, J. C., Baker, D., Rosinger, K., Kelchen, R., Morales, O., & Lingo, M. (2022, August). *The revenue implications of community colleges' reliance on local funding.* (Working Paper). https://static1.squarespace.com/static/5d9f9fae6a122515ee074363/t/639a4d24d478053d45f601f9/1671056677780/ISPaper_RevImplicationsofCCCollegesRelianceLocalFunding.pdf

Ortagus, J. C. & Kramer, D. A. II. (2022). The impact of no-loan program participation on the likelihood of graduate school enrollment among low-income, first-generation students. *Education Finance and Policy, 17*(1), 81-104. http://doi.10.1162/edfp_a_00328

Pat Obi. (2021, March 28). *Panel Data Regression 1of9 - Introduction* [Video]. YouTube. https://www.youtube.com/watch?v=T7Dmp8a7IU0&list=PL6Y8SvWdPo08HEFH0aysLYoYkcWxptKXs

Pearson Higher Ed. (n.d.). *Chapter 7 modeling relationships of multiple variables with linear regression.* https://www.pearsonhighered.com/assets/samplechapter/0/2/0/5/0205019676.pdf

Pew Trust. (2019, October 15). *Two decades of change in federal and state higher education funding.* Pew. https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2019/10/two-decades-of-change-in-federal-and-state-higher-education-funding

Phillippe, K. (2022, February 12). *DataPoints: State and local funding*. Community College Daily. https://www.ccdaily.com/2022/02/datapoints-state-and-local-funding/

Phipps, R. A., Shedd, J. M., Merisotis, J. P. & Carroll, C. D. (2001, June). *A classification system for 2-year postsecondary institutions.* National Center for Education Statistics. https://nces.ed.gov/pubs2001/2001167.pdf

Pierce, D. (2017). *The rise of dual enrollment.* AACC. https://www.mtsac.edu/president/cabinet-notes/2016-17/ccjournal_Rise_of_Dual_Enrollment_Apr-May_2017.pdf

Posner, R. A. (1997). Rational choice, behavioral economics and the law. *Stanford Law Review*, *50*, 1551-1575. https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=2879&context=journal_articles

Poulin, R. & Straut, T. T. (2017, February). *Distance education price and cost report.* WICHE Cooperative for Educational Technologies (WCET) ERIC. 1-79. https://files.eric.ed.gov/fulltext/ED588914.pdf

Protopsaltis, S., & Parrott, S. E. (2017, July 17). *Pell grants—A key tool for expanding college access and economic opportunity—Need strengthening, not cuts*. Center on Budget and Policy Priorities. https://www.cbpp.org/sites/default/files/atoms/files/7-27-17bud.pdf

Quinterno, J. (2008). Community colleges in North Carolina: What history can tell us about our future. *North Carolina Insight, 22*(4), 58–78. https://nccppr.wpengine.com/wp-content/uploads/2017/02/Vol.22No.4Vol23No.1.pdf

Redden, E. (2008, April 16). *Many community colleges opt out of loan programs.* Inside Higher Ed. https://www.insidehighered.com/news/2008/04/17/many-community-colleges-opt-out-loan-program

Reinholz, D .L., & Andrews, T. C. Change theory and theory of change: what's the difference anyway?. *International Journal of STEM Education* 7, 2 (2020). https://doi.org/10.1186/s40594-020-0202-3

Rooth, L. (2024 August 15). *Is dual enrollment a growing opportunity for higher ed?* Gray DI. https://www.graydi.us/blog/graydata/is-dual-enrollment-a-growing-opportunity-for-higher-ed

Rosinger, K. (2017). Federal policy efforts to simplify college-going: An intervention in community college enrollment and borrowing. *THE ANNALS OF THE AMERICAN ACADEMY*, 671, 114–131. https://doi.org/10.1177/0002716217698664

Rosinger, K., Belasco, A. S., & Hearn, J. C. (2019). A boost for the middle class: An evaluation of no-loan policies and elite private college enrollment. *The Journal of Higher Education,* 90(1), 27–55. 10.1080/00221546.2018.1484222

Ross, J. & National Journal. (2014, June 23). *Is open-access community college a bad idea?* The Atlantic. https://www.theatlantic.com/politics/archive/2014/06/is-open-access-community-college-a-bad-idea/431052/

Rothstein, A. C. & Rouse, C. E. (2011). Constrained after college: Student loans and early-career occupational choices. *Journal of Public Economics* 95(1-2), 149-163. https://doi.org/10.1016/j.jpubeco.2010.09.015

Ruddy, S., Akabas, S., & Miller, K. (2021, November). *Student debt and the federal budget: How student loans impact the U.S. fiscal outlook.* Bipartisan Policy Center. https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2021/11/Student-Debt-and-the-Federal-Budget.pdf

Ryu, W., Schudde, L., & Pack-Cosme, K. (2024). Dually noted: Examining the implications of dual enrollment course structure for students' course and college enrollment outcomes. *American Educational Research Journal,* 61(4), 803-841. https://doi-org.prox.lib.ncsu.edu/10.3102/00028312241257453

Schichtel-Greenwood, S. (2018). *Does it matter where you borrow?: The impact of student loan borrowing and state higher education funding structures on community college persistence* [Master's thesis, State University of New York at Buffalo]. (ProQuest No. 10822068). https://www.proquest.com/openview/bbfce2714b74e217b4bf413d09c1dbe6/1?pq-origsite=gscholar&cbl=18750

Schuetz, P. (1999). *Shared governance in community colleges* (ED433077). ERIC. https://files.eric.ed.gov/fulltext/ED433077.pdf

Schwartz, N. (2019, October 3). *Property taxes lift community college revenue as enrollment ebbs*. HIGHER ED DIVE. https://www.highereddive.com/news/property-taxes-lift-community-college-revenue-as-enrollment-ebbs/564319/

Scott-Clayton, J. (2017, June 22). *Federal Work-Study: Past its prime, or ripe for renewal?*. Brookings Institute. https://www.brookings.edu/articles/federal-work-study-past-its-prime-or-ripe-for-renewal/

Scott-Clayton, J. (2018, January 11). *The looming student loan default crisis is worse than we thought*. Brookings Institute. https://www.brookings.edu/articles/the-looming-student-loan-default-crisis-is-worse-than-we-thought/

Scott-Clayton, J. (2021) *Community colleges and student debt.* Community College Research Center. https://ccrc.tc.columbia.edu/media/k2/attachments/community-colleges-student-debt.pdf

Shapiro, I. (2017). Rational choice theory [Video]. SAGE Research Methods. https://dx.doi.org/10.4135/9781473976177

Simon, H. A. (1947). *Administrative behavior; a study of decision-making processes in administrative organization* Macmillan.

Simon, H. A. (1957). *Administrative behavior; a study of decision-making processes in administrative organization* (2nd ed.). The Free Press.

Simon, H. A. (1997). *Administrative behavior; a study of decision-making processes in administrative organization* (4th ed.). The Free Press.

Sparks, D. (2023, May). *Pell Grants and community college students.* Community College Research Center. https://ccrc.tc.columbia.edu/media/k2/attachments/pell-grants-community-college-students.pdf

Spica, E. & Biddix, J. P. (2021). Prices they pay: Academic achievement and progress to graduation barriers experienced by community college students due to the cost of course

materials. *Innovative Higher Education*, (46), 643-662. https://doi-org.prox.lib.ncsu.edu/10.1007/s10755-021-09557-7

State Higher Education Executive Officers Association [SHEEO] (2022). *State higher education finance FY 2021*. https://shef.sheeo.org/wp-content/uploads/2022/06/SHEEO_SHEF_FY21_Report.pdf

State Higher Education Executive Officers Association. (2024). *Grapevine fiscal year 2024*. SHEEO. https://shef.sheeo.org/grapevine/?cn-reloaded=1

State Higher Education Executive Officers Association. (n.d.). *Data definitions*. SHEF: State Higher Education Finance. https://shef.sheeo.org/data-definitions/#data-adjustments

Stauffer, A., Oliff, P., Foard, C., Thiess, R., Reese, M., Samms, B., Bryant, M., Pontari, L., Spence, E., & Einsiedler, J. (2019). *Two decades of change in federal and state higher education funding: Recent trends across levels of government.* The Pew Charitable Trusts. https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2019/10/ two-decades-of-change-in-federal-and-state-higher-education-funding

Stock, J. H. & Watson, M. W. (2019). *Introduction to econometrics* (4th ed.). Pearson.

Stevenson, M. R. & Walleri, R. D. (1981). Financial decision making in a period of retrenchment. *New Directions for Community Colleges*, 83-93. https://doi-org.prox.lib.ncsu.edu/10.1002/cc.36819813509

Sullivan, P. (2010). What is affordable community college tuition?: Part I. *Community College Journal of Research and Practice, 34*(8). 645-661. https://doi-org.prox.lib.ncsu.edu/10.1080/10668920903527126

Swil, W. S. (2002, July 1). Higher education and new demographics: Questions for policy. *Change: The Magazine of Higher Learning, 24*(4). 14-23. https://doi-org.prox.lib.ncsu.edu/10.1080/00091380209604731

Tandberg, D. A. (2013). The conditioning role of state higher education governance structures. *The Journal of Higher Education, 84*(4), 506–543. http://www.jstor.org/stable/23486804

Taylor, J. L. & Pretlow, J. (Eds.). (2015). *Dual enrollment policies, pathways, and perspectives.* Jossey-Bass. ProQuest Ebook Central, https://ebookcentral.proquest.com/lib/ncsu/detail.action?docID=1896012.

The Institute for College Access and Success. (n.d.). *Cohort default rate.* https://ticas.org/our-work/accountability/cohort-default-rates/

The Institute for College Access and Success. (2009, October). *Getting with the program: Community college students need access to federal loans.* https://ticas.org/files/pub_files/getting_with_the_program.pdf

The Institute for College Access and Success. (2014, July). *At what cost? How community colleges that do not offer federal loans put students at risk*. ERIC https://files.eric.ed.gov/fulltext/ED560035.pdf

The Institute for College Access and Success. (2016, June). *States of denial: Where community college students lack access to federal student loans.* https://ticas.org/files/pub_files/states_of_denial.pdf

The Institute for College Access and Success. (2017, April). *A state-by-state look at college (un)affordability*. https://ticas.org/files/pub_files/college_costs_in_context.pdf

The Institute for College Access and Success. (2018, January 22). *CDR: What is it good for? Absolutely something.* https://ticas.org/files/pub_files/cdr-what_is_it_good_for.pdf

The Institute for College Access and Success. (2020, October.). *Student debt and the class of 2019.* https://ticas.org/wp-content/uploads/2020/10/classof2019.pdf

Thelin, J. R. (2004). *A history of American higher education*. Baltimore, MD: The Johns Hopkins University Press.

Thomas, J. (2014, March 7). *CPCC opts out of federal student loan program*. Charlotte Business Journal. http://www.bizjournals.com/charlotte/news/2014/03/07/cpcc-opts-out-of-federal-student-loan-program.html

Thompson, K. A. (2011). *Satisficing: A decision-making strategy for school choice*. [Doctoral dissertation, University of North Dakota]. UND Scholarly Commons, Theses and Dissertations 1196. https://commons.und.edu/theses/1196

Tilghman, S. M. (2007). Expanding equal opportunity: The Princeton experience with financial aid. *Harvard Educational Review, 77*(4). 435-441. https://doi.org/10.17763/haer.77.4.3708507785212383

Timoneda, J. C. (2021). Estimating group fixed effects in panel data with a binary dependent variable: How the LPM outperforms logistic regression in rare events data. *Social Science Research, 93*, 1-12. https://doi.org/10.1016/j.ssresearch.2020.102486

Tollefson, T. (2009). Community college governance, funding, and accountability: A century of issues and trends. *Community College Journal of Research and Practice*, *33*, 386-402. http://doi.org/10.1080/10668920802580481

Trainor, S. (2015, October 20). *How community colleges changed the whole idea of education in America.* Time Magazine. https://time.com/4078143/community-college-history/

Trent, M. P. & Pollard, D. P. (2019). Implementing ethical decision-making: Strategies for today's community college presidents. *New Directions for Community Colleges,* 65-74. https://doi-org.prox.lib.ncsu.edu/10.1002/cc.20339

Tucker, C. L. (2021). *The relationship between financial aid advising, student loans, and student engagement for low-income community college students* [Doctoral Dissertation, Morgan State University]. https://www.proquest.com/docview/2639738130?parentSessionId=PlmbFzm8zWuB9Gi7a9ZDBiB2WBz0eny%2F82FNeMCYlb0%3D&sourcetype=Dissertations%20&%20Theses

Ullrich, L. D. (2023, December 14). *A brief community college origin story.* Federal Reserve Bank of Richmond. https://www.richmondfed.org/region_communities/regional_data_analysis/surveys/community_college/community_college_insights/2023/cc_20231214

Umbricht, M. (2016). Helping low-income and middle-income students: Pell Grants and the Higher Education Act. *Higher Education in Review*, Special Issue (1), 24–36.

UniCEN. (2020). *Introduction to the U.S. higher education system.* https://unicen.americancouncils.org/wp-content/uploads/2020/03/introduction-to-us-higher-education_en.pdf

United Nations Development Group. (n.d.). *Theory of change: UNDAF companion guidance.* https://unsdg.un.org/sites/default/files/UNDG-UNDAF-Companion-Pieces-7-Theory-of-Change.pdf

Ursch, B. (2014, February 5). *Record tech enrollment illustrates annual ebb and flow.* Lubbock Avalanche-Journal.

https://www.lubbockonline.com/story/news/education/2014/02/05/record-tech-enrollment-illustrates-annual-ebb-and-flow/15056026007/

U.S. Department of Education. (n.d.). *Types of financial aid: Loans, grants, and work-study programs.* Federal Student Aid. https://studentaid.gov/understand-aid/types

U.S. Department of Education (n.d-a). *Federal Pell Grants are usually awarded only to undergraduate students.* Federal Student Aid. https://studentaid.gov/understand-aid/types/grants/pell

U.S. Department of Education (n.d-b). *Overview of Title IV.* Federal Student Aid. https://fsapartners.ed.gov/knowledge-center/library/functional-area/Overview%20of%20Title%20IV?moderation_state=published

U.S. Department of Education. (n.d-c.). *When it comes to paying for college, career school, or graduate school, federal student loans can offer several advantages over private student loans.* Federal Student Aid. https://studentaid.gov/understand-aid/types/loans/federal-vs-private

U.S. Department of Education. (2015). *Federal student aid: Strategic plan, fiscal years 2015-2019.* Federal Student Aid. https://studentaid.gov/sites/default/files/FY1519StrategicGoals12042015.pdf

U.S. Department of Education. (2016, July 6). *Student loan delinquency and default.* Federal Student Aid. https://studentaid.gov/manage-loans/default

U.S. Department of Education. (2020, September). *Cohort default rate guide.* Federal Student Aid. https://fsapartners.ed.gov/sites/default/files/attachments/2019-06/CDRMasterFile.pdf

U.S. Department of Education . (2022, October 3). *Official cohort default rate for schools.* Federal Student Aid. https://fsapartners.ed.gov/knowledge-center/topics/default-management/official-cohort-default-rates-schools

USAFacts. (2023, March 28). *What do universities do with the billions they receive from the government?*. https://usafacts.org/articles/what-do-universities-do-with-the-billions-they-receive-from-the-government/

Vaughan, G. B. (1985). *The Community College in America: A Short History. Revised.* ERIC. https://files.eric.ed.gov/fulltext/ED255267.pdf

van Buuren, S. (2018). *Flexible imputation of missing data* (2nd ed.) Chapman & Hall/CRC.

Waddell, G. R. & Singell, L. D. Jr. (2011). Do no-loan policies change the matriculation patterns of low-income students? *Economics of Education Review, 30*, 203-214. https://pages.uoregon.edu/waddell/papers/2011_EER_Waddell-Singell.pdf

Wang, H., Peng, J., Wang, B., Lu, X., Zheng, J. Z., Wang, K., Tu, X. M., Feng, C. (2017). Inconsistency between univariate and multiple logistic regressions. *Shanghai Arch Psychiatry, 29*(2). 124–128. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5518262/

Ward, J. D., Le, C., Pisacreta, E. D. & Margolis, J. (2019, October 2). *The strategic alignment of state appropriations, tuition, and financial aid policies.* Ithaka S+R. https://sr.ithaka.org/publications/the-strategic-alignment-of-state-appropriations-tuition-and-financial-aid-policies

Weerts, D. J. & Ronca, J. M. (2012). Understanding differences in state support for higher education access across states, sectors, and institutions: A longitudinal study. *The Journal of Higher Education, 83*(2). 155-185. https://doi.org/10.1080/00221546.2012.11777238

Weiss, C. H. (1995). Nothing as practical as good theory: Exploring theory-based evaluation for comprehensive community initiatives for children and families. In J. Connell, A. Kubisch, L. Schorr & C. Weiss (Eds.), *New approaches to evaluating comprehensive community initiatives* (pp. 65-92). New York: The Aspen Roundtable Institute.

Whissemore, T. (2021, May 21). *High-touch practices keep students enrolled.* Community College Daily. https://www.ccdaily.com/2021/05/high-touch-practices-keep-students-enrolled/

Wiederspan, M. (2016). Denying loan access: The student-level consequences when community colleges opt out of the Stafford loan program. *Economics of Education Review*, 51, 79–96. https://doi.org/10.1016/j.econedurev.2015.06.007

Williams-Wyche, S. (2019, Mar). *Student loan interest rates: A survey of federal, state, and private programs* [Research brief]. Midwestern Higher Education Compact. https://www.mhec.org/sites/default/files/resources/mhec_affordability_series9.pdf

Willoughby, M. (2011). *Community colleges opt out of federal student loan program in fear of liability.* Civitas Institute. https://www.nccivitas.org/2011/community-colleges-opt-out-of-federal-student-loan-program-in-fear-of-liability/

Yuen, V. (2020, October 7). *The $78 billion community college funding shortfall.* Center for American Progress. https://www.americanprogress.org/article/78-billion-community-college-funding-shortfall/

Zinith, K. & Smith, M (20112, October). *Tuition-setting authority for public colleges and universities.* Education Commission of the States. https://www.ecs.org/clearinghouse/01/04/71/10471.pdf

Zinshteyn, M. (2018, December 9). *California community colleges reject state aid tied to allowing students to seek federal loans.* Ed Source. https://edsource.org/2018/california-community-colleges-reject-state-aid-tied-to-allowing-students-to-seek-federal-loans/605505

Zhu, Q., Choi, J., & Meng, Y. (2021). The impact of no-loan policies on student economic diversity at public colleges and universities. *Research in Higher Education, 62,* 733-764. http://doi.org/10.1007/s11162-020-09621-9

APPENDICES

Appendix A

Number of Postsecondary Institution in the United States, by State and Highest Degree Offered, (2002, 2019)

State	2002-Frequency	2019-Frequency
Alabama	23	23
Alaska	1	0
Arizona	21	20
Arkansas	22	22
California	115	100
Colorado	15	7
Connecticut	12	12
Delaware	1	0
Florida	25	1
Georgia	28	24
Hawaii	7	6
Idaho	4	3
Illinois	48	48
Indiana	2	1
Iowa	16	16
Kansas	25	25
Kentucky	16	16
Louisiana	14	14
Maine	7	7
Maryland	16	16
Massachusetts	16	16
Michigan	31	24
Minnesota	28	28
Mississippi	15	15
Missouri	14	14
Montana	11	10
Nebraska	8	8
Nevada	3	0
New Hampshire	7	7
New Jersey	19	19
New Mexico	21	19
New York	36	36
North Carolina	59	58
North Dakota	8	5
Ohio	31	18
Oklahoma	15	13
Oregon	17	17
Pennsylvania	17	17
Rhode Island	1	1

Appendix A (continued).

South Carolina	20	19
South Dakota	5	5
Tennessee	13	13
Texas	59	50
Utah	2	1
Vermont	1	1
Virginia	24	24
Washington	34	5
West Virginia	10	9
Wisconsin	17	17
Wyoming	7	7
Total	967	837

Note. This table presents data collected from Title IV institutions in the United States. Prior to academic year 2010-11, the data include only Title IV primarily postsecondary institutions.
Source: IPEDS

Appendix B

State-Specific Student Loan Programs in the United States

State	Loan	Rates (APR)	Important information
Alaska	Alaska Supplemental Education Loan	5.71% – 8.59%	Must be an Alaska resident or attend an eligible Alaska school; also offers parent and refinance loans
Arizona	Arizona Teacher Student Loan	N/A	Must be an Arizona resident who plans to teach at an Arizona public school; loan is forgivable, but must be repaid if you don't meet the work obligation
Arizona	AzLeap	N/A	Must be an Arizona resident and attend at least 1/2 time an eligible Arizona school; have substantial need as determined by FAFSA. The maximum AzLEAP award per academic year is $2,500; average amounts awarded are $1,000 for the year.
Arkansas	ASLA Student Loan	2.95% – 6.42%	Must be an Arkansas resident or attend an eligible Arkansas school; also offers parent and refinance loans
Connecticut	MyCHESLA Student Loan	6.35%	Must be a Connecticut resident or attend an eligible Connecticut state or non-profit school; also offers refinance loans
Georgia	GSFA Student Access Loan	1%	Must attend an eligible University System of Georgia, Technical College System of Georgia or private postsecondary institution in Georgia
Indiana	INvestEd Student Loan	As low as 4.60% fixed As low as 7.64% variable 3.95% – 8.01% fixed	Must be an Indiana resident; also offers parent and refinance loans
Iowa	Partnership Advance Education Loan	6.40% – 10.94% variable	Available nationwide; also offers no-cosigner graduate, parent and refinance loans
Kentucky	Advantage Education Loan	4.49% – 8.04%	Available nationwide; also offers parent and refinance loans
Maine	Maine Loan	5.99% – 7.99%	Must be a Maine resident or attend an eligible Maine school; parents can apply

Appendix B (continued).

Massachusetts	MEFA Student Loan	5.35% – 7.95%	Available nationwide; students at for-profit schools are not eligible; also offers refinance loans
	Massachusetts No Interest Loan	N/A	Must be a permanent legal resident of Massachusetts and demonstrate financial need
Minnesota	SELF Loan	6.35% fixed 7.90% variable	Must be a Minnesota resident or attend an eligible Minnesota school; Colorado and Maine residents are ineligible
Mississippi	ECSI Services Mississippi Forgivable Loan	Not disclosed	Must be in a high-demand degree program in the state of Mississippi, such as teaching, nursing and other health professions; loan is forgivable but must be repaid if you don't meet the service obligation
New Hampshire	EDvestinU Student Loan	6.25% – 9.935% fixed 8.13% – 11.029% variable	Available in 19 states; international students are eligible; also offers refinance loans
	Granite Edvance Student Loan	5.00% – 9.197% fixed 7.38% – 10.39% variable	Must be a New Hampshire resident or a resident from one of 19 states attending a New Hampshire school; New Hampshire residents qualify for an interest rate discount
New Mexico	NMEAF New Student Loan	4.39% – 5.89%	Must attend a New Mexico school
New Jersey	NJCLASS Loan	5.69% – 7.49%	Must be a New Jersey resident or attend an approved New Jersey school; also offers refinance loans
North Carolina	NC Student Assist Loan	6.70%	Must be a North Carolina resident or attend an eligible North Carolina school; also offers parent loans
North Dakota	DEAL Student Loan	6.40% fixed 6.48% variable	Must be a resident of North Dakota, South Dakota, Minnesota, Montana, Wyoming or Wisconsin or attend an eligible school in one of those states

Appendix B (continued).

Pennsylvania	PA Forward Student Loan	4.84% – 10.18%	Must be a resident of Pennsylvania or a resident of Delaware, Maryland, New Jersey, New York, Ohio, Virginia or West Virginia attending a Pennsylvania school; also offers parent and refinance loans
Rhode Island	RISLA Student Loan	4.40% – 8.99%	Available nationwide; also offers parent and refinance loans; offers an income-based repayment plan
South Carolina	South Carolina Student Loan	7.5% – 10.5%	Must be a South Carolina resident or attend a South Carolina school; also offers parent and refinance loans
Texas	Brazos Higher Education Student Loan	2.71% – 7.38% fixed 5.33% – 9.9% variable	Must be a Texas resident or attend a Texas school; also offers parent and refinance loans
	College Access Loan	5.85%	Must be a Texas resident and attend an eligible Texas school
Vermont	VSAC Student Loan	4.79% – 8.16%	Must be a Vermont resident or attend a Vermont school; also offers parent loans
Washington	Aerospace Loan	Equal to the rate for federal undergraduate loans, up to 8.25% variable	Must be accepted into the Washington Aerospace Training and Research Center

Note. Luthi, B. (2024, February 1). *State student loans.* LendEDU. https://lendedu.com/blog/state-student-loans/

Appendix C

Frequencies of Schools that Adopted a "No-Loan" Policy

vs. the Total Number of schools, 2019

Name of state where school is located	Frequency	Total Number	Percent
Alabama	11	23	47.8
Alaska	0	0	0
Arizona	3	20	15.0
Arkansas	6	22	27.2
California	22	100	22.0
Colorado	0	7	0
Connecticut	1	12	8.3
Delaware	0	0	0
Florida	0	1	0
Georgia	15	24	62.5
Hawaii	0	6	0
Idaho	0	3	0
Illinois	6	48	12.5
Indiana	0	1	0
Iowa	0	16	0
Kansas	0	25	0
Kentucky	0	16	0
Louisiana	2	14	14.2
Maine	0	7	0
Maryland	2	16	12.5
Massachusetts	1	16	6.25
Michigan	2	24	8.3
Minnesota	2	28	7.1
Mississippi	3	15	20
Missouri	0	14	0
Montana	4	10	40
Nebraska	1	8	12.5
Nevada	0	0	0
New Hampshire	0	7	0
New Jersey	1	19	5.3
New Mexico	2	19	10.5
New York	0	36	0
North Carolina	43	59	72.9

Appendix C (continued).

North Dakota	1	5	20
Ohio	0	18	0
Oklahoma	1	13	7.7
Oregon	1	17	5.9
Pennsylvania	0	17	0
Rhode Island	0	1	0
South Carolina	2	19	10.5
South Dakota	1	5	20
Tennessee	5	13	38.4
Texas	1	50	2
Utah	0	1	0
Vermont	0	1	0
Virginia	7	24	29.2
Washington	1	5	20
West Virginia	1	9	11.1
Wisconsin	1	17	5.9
Wyoming	0	7	0
Total	148	837	17.7

APPENDIX D

Table D1

Means and Differences of Observed Variables for Observations with and without Missing Data (Percentage of Nonfederal Student Loans)

	Mean for Observations with Missing Data =1	Mean for Observations without Missing Data=0	Standardized Difference of Means	Raw Difference of Means
Official CDR	8.65	15.45	-1.12	-6.80
Dual Enrollment	478.61	690.52	-0.24	-211.91
Percent State/Local Grant Aid	31.98	35.84	-0.16	-3.86
Average Amount State/Local Grant Aid	1259.02	1655.36	-0.48	-396.34
State Support for Higher Education (COLI) (in millions of dollars)	2810.60	3158.23	0.12	-347.63
State Student Loan	.37	0.40	-0.06	-0.03
Average Amount of Nonfederal Loans	.	5965.46	-	
Student Services	1130.74	1522.46	-0.41	-391.72
Percent Total of Student Services	75.62	63.58	0.85	12.04
Tuition and Fees	2105.00	3191.96	-0.80	-1086.96
Pell Percentage	43.60	57.31	-0.10	-13.71
Average Pell	3046.38	4403.29	-2.80	-1356.91
Rurality	3.07	3.20	-0.08	-0.13
Governance	3.82	3.84	-0.02	-0.02
Headcount	4555.73	4591.32	-0.01	-35.59

Table D2

Means and Differences of Observed Variables for Observations with and without Missing Data (Average Amount of Nonfederal Student Loans)

	Mean for Observations with Missing Data =1	Mean for Observations without Missing Data=0	Standard Deviation	Raw Difference of Means
Official CDR	10.61	14.88	5.16	-4.27
Dual Enrollment	511.51	822.28	1046.72	-310.77
Percent State/Local Grant Aid	33.55	33.88	23.13	-0.33
Average Amount State/Local Grant Aid	1356.20	1738.88	864.60	-382.68
State Support for Higher Education (COLI) (in millions of dollars)	3052.67	2517.09	2239.67	535.58
State Student Loan Percent Nonfederal Loans	0.36	0.47	0.50	-0.11
Student Services	1286.70	1450.04	770.34	-163.34
Percent Total of Student Services	70.88	62.69	13.34	8.19
Tuition and Fees	2303.34	3728.67	1331.48	-1425.33
Pell Percentage	48.20	54.74	12.57	-6.54
Average Pell	3450.22	4376.70	477.20	-926.48
Rurality	3.12	3.15	1.55	-0.03
Governance	3.87	3.63	1.43	0.24
Headcount	4402.84	5216.15	5659.40	-813.31

Table D3

Means and Differences of Observed Variables for Observations with and without Missing Data (Dual Enrollment)

	Mean for Observations with Missing Data =1	Mean for Observations without Missing Data=0	Standardized Difference of Means	Raw Difference of Means
Official CDR	11.98	11.32	0.0908	0.66
Percent State/Local Grant Aid	27.88	34.39	-0.3007	-6.51
Average Amount State/Local Grant Aid	1438.78	1425.94	0.0166	12.84
State Support for Higher Education (COLI) (in millions of dollars)	2448.52	3031.37	0.2303	-582.85
State Student Loan	0.50	0.36	0.2857	0.14
Percent Nonfederal Loans	0.89	0.59	0.1489	0.30
Average Amount of Nonfederal Loans	6246.14	5915.11	0.1045	331.03
Student Services	1563.19	1285.65	0.2428	277.54
Percent Total of Student Services	66.08	69.33	-0.1915	-3.25
Tuition and Fees	2988.87	2509.95	0.3456	478.92
Pell Percentage	52.77	48.95	0.2174	3.82
Average Pell	3770.33	3600.82	0.1754	169.51
Rurality	3.47	3.08	0.2546	0.39
Governance	3.67	3.85	-0.1346	0.18
Headcount	3309.43	4772.37	-0.3122	-1462.94

Appendix E

Variable Descriptive Statistics, Raw Data, 2002-2019 (N=967)

Variable Label	Obs	M	SD	Min	Max
Official CDR	14341	11.038	7.109	0	100
Percent State/Local Grant Aid	16155	33.928	23.331	0	100
Average Amount State/Local Grant Aid	15893	1461.509	772.808	62	13848
State support for higher education (COLI) (in millions of dollars)	16406	3001.127	2737.102	62.411	12140.499
State Student Loan	16406	.381	.486	0	1
Percent Nonfederal Loans	7247	.648	1.952	0	44
Average Amount of Nonfederal Loans	3180	6085.294	3277.356	125	30220
Student Services	14167	1360.1	1028.085	0	27879
Percent Total of Student Services	12444	67.851	16.446	0	100
Tuition and Fees	16052	2626.26	1361.633	0	13412
Pell Percentage	16155	49.652	17.386	0	100
Average Pell	16135	3689.848	1002.333	0	8663
Rurality	16211	3.121	1.571	1	6
12-month full-time equivalent enrollment: 2008-09	14332	4559.233	4785.167	0	74245
Institutional Capacity (expenditures/revenues) (in millions)	13139	43.83	63.63	-298.80	1,111.00
Dual	14359	594.951	818.493	1	19070

Note: “Other student loans” is a broad IPEDS category and includes all nonfederal loans made to students. It includes institutionally- and privately sponsored loans and does not include other loans made directly to parents.

Appendix F

Variable Descriptive Statistics, Raw Data One-Year Lag, 2002-2019 (N=967)

Variable	Obs	M	SD	Min	Max
Official CDR	13525	11.397	7.096	0.000	100.000
Percent state/local grant aid	15189	33.615	23.148	0.000	100.000
Average amount state/local grant aid	14934	1427.441	752.590	62.000	13848.000
State support for higher education (COLI) (in millions of dollars)	15415	2955.560	2663.638	62.411	11291.943
Presence of state-loan (binary variable)	15415	0.382	0.486	0.000	1.000
Percent nonfederal loans	6436	0.634	1.969	0.000	44.000
Average amount of nonfederal loans	2801	5965.458	3225.226	125.000	30220.000
Student services per FTE	13203	1321.277	980.737	0.000	27879.000
Salaries, wages, and benefits as percent of total expense for student services	11492	68.890	16.317	0.000	100.000
Tuition and fees	15092	2566.084	1327.844	0.000	13412.000
Percent Pell Grant	15189	49.402	17.518	0	100
Average amount of Pell Grant	15169	3620.935	970.28	0	7637
Rurality	15236	3.123	1.572	1	6
12-month full-time equivalent enrollment: 2008-09	14604	4686.7	5094.8	0.0	74245.0
Dual Enrollment	13410	566.550	766.078	1	15897
Institutional Capacity (in millions of dollars)	12287	43.93	62.42	-298.80	1,111.00

Appendix G

Table G1

Correlation Coefficients Between Published Tuition and Fees and Other Variables for Raw Data, Lagged One Year (2002-2019), N=967

Variables	(1)	(2)
Published tuition and fees for the academic year	1.000	
Percent of full-time, first-time students awarded a Pell Grant	0.22	1.000
Average amount of Pell Grant awarded to full-time, first-time students	0.32	1.000
Percent of all undergraduates awarded a Pell Grant	0.17	1.000
Average amount of Pell Grant awarded to all undergrads	0.05	1.000
The total number of dollars allocated to higher education, adjusted for cost of living provided for by each state.	-0.43	1.000
Percentage of students receiving state/local grant aid-full-time/first-time	-0.00	1.000
Average amount of state/local grant aid received/first-time full time	0.39	1.000

Table G2

Correlation Coefficients Between Cohort Default Rate and other Variables for Raw Data, Lagged One Year (2002-2019), N=967

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Official CDR	1.000														
(2) Percent State/Local Grant Aid	-0.003	1.000													
(3) Average Amount State/Local Grant Aid	0.008	0.214	1.000												
(4) State Support for Higher Education (COLI) (in millions of dollars)	0.043	0.271	0.068	1.000											
(5) State Student Loan	-0.107	0.090	-0.080	-0.115	1.000										
(6) Percent Nonfederal Loans	-0.070	0.034	-0.031	-0.081	0.132	1.000									
(7) Average Amount of Nonfederal Loans	-0.001	0.016	0.010	-0.036	-0.072	0.000	1.000								
(8) Student Services	-0.056	0.122	0.119	-0.155	-0.122	0.060	0.093	1.000							

Table G2 (continued).

(9) Percent Total of Student Services	0.109	-0.056	-0.233	0.046	0.148	-0.031	-0.074	-0.383	1.000					
(10) Tuition and Fees	-0.201	0.110	0.157	-0.410	0.173	0.166	0.101	0.265	-0.065	1.000				
(11) Rurality	0.008	-0.075	0.083	-0.095	0.010	0.105	-0.045	0.103	-0.012	0.091	1.000			
(12) Pell Percentage	0.393	0.303	0.065	0.092	0.064	0.008	-0.099	-0.032	0.067	-0.104	0.002	1.000		
(13) Average Pell	0.017	0.123	0.228	0.197	0.026	-0.061	-0.011	0.025	-0.121	-0.174	-0.034	0.271	1.000	
(14) Governance	0.129	-0.029	0.118	0.098	-0.330	-0.057	0.002	-0.035	-0.091	-0.295	-0.013	0.172	0.294	1.000
(15) Headcount	0.041	-0.046	-0.009	0.225	-0.087	-0.176	-0.029	-0.197	0.053	-0.216	-0.360	-0.087	0.061	0.056	1.000

Appendix H

Table H1

Descriptive Statistics for Three-Year Lag of Variables for Restricted Model, 2002-2019 (N=967)

Variable	Obs	M	SD	Min	Max
Cohort Default Rate	11908	11.2	7.3	0	100
Percentage of students receiving state/local grant aid-full-time/first-time	13260	33.1	22.9	0	100
Average amount of state/local grant aid received/first-time full time	13030	1361	710.9	62	13848
The total number of dollars allocated to higher education, adjusted for cost of living provided for by each state (in millions of dollars)	13491	2876.8	2548.2	62.4	10278.6
The presence of student loans offered at the state level and available to community college students (dummy variable; 1=yes)	13491	.4	.5	0	1
Percent of students awarded other student loans	4814	.6	1.9	0	44
Average amount of other student loans offered	2030	5820	3175.2	125	30220
Student service expenses per FTE (GASB)	11298	1248.4	947.2	0	27879
Salaries, wages, and benefits for student services as a percent of total expenses for student services (GASB)	9607	71.7	15.6	0	100
Published tuition and fees for the academic year	13171	2440.9	1261.8	0	13045

Note: This data was not imputed.

Table H2

Regression Results for Three-Year Lag of Variables for Restricted Model, 2002-2019 (N=967)

	Coefficient.	*SE*	*t*	*p*	[95% Conf	Interval]
Cohort Default Rate	0.001394	0.001067	1.31	0.192123	-0.000703	0.003491
Percentage of students receiving state/local grant aid-full-time/first-time	-0.000187	0.000267	-0.70	0.484470	-0.000713	0.000338
Average amount of state/local grant aid received/first-time full time	-0.000001	0.000001	-0.86	0.389992	-0.000003	0.000001
The total number of dollars allocated to higher education, adjusted for cost of living provided for by each state (in millions of dollars)	0.000005	0.000003	1.61	0.108084	-0.000001	0.000012
Average amount of other student loans offered	0.000001	0.000001	1.35	0.178767	-0.000000	0.000002
Percent of students awarded other student loans	0.000289	0.000474	0.61	0.541673	-0.000642	0.001221
Student service expenses per FTE (GASB)	-0.000010	0.000009	-1.21	0.226883	-0.000027	0.000006
Salaries, wages, and benefits for student services as a percent of total expenses for student services (GASB)	0.000360	0.000460	0.78	0.433428	-0.000543	0.001264
Published tuition and fees for the academic year	-0.000003	0.000003	-1.15	0.248759	-0.000008	0.000002
2014b	0.000000	.	.	.	.	.
2015	0.002394	0.005151	0.46	0.642336	-0.007729	0.012517
2016	0.002383	0.006265	0.38	0.703892	-0.009929	0.014694
2017	0.004181	0.008019	0.52	0.602388	-0.011579	0.019941

Table H2 (continued).

2018	0.003852	0.011433	0.34	0.736313	-0.018616	0.026321
2019	0.016681	0.018007	0.93	0.354730	-0.018706	0.052068
Constant	0.036805	0.030309	1.21	0.225268	-0.022760	0.096369

Mean dependent var	0.072707	SD dependent var	0.259727
R-squared	0.016931	Number of obs	1788
F-test	0.293029	Prob > F	0.992783
Akaike crit. (AIC)	-6257.486357	Bayesian crit. (BIC)	-6180.642416

*** *p<.01*, ** *p<.05*, * *p<.1*

Note: This data was not imputed

Appendix I

Model of Two-Year College Governance Used in Each State, 2020

State	State Board of Education	Consolidated Governing Board for Two-& Four-Year Colleges	State Governing Board Coordinates Local Two-Year Colleges	State Board Coordinates/Regulates Local Two-Year Colleges	Independent State Governing Board	Independent State Coordinating Board	No State Governance System
Alabama					X		
Alaska		X					
Arizona							X
Arkansas		X					
California						X	
Colorado					X		
Connecticut		X					
Florida	X						
Georgia		X					
Hawaii		X					
Idaho		X					
Illinois						X	
Indiana					X		

Appendix I (continued).

Iowa	X							
Kansas			X					
Kentucky					X			
Louisiana					X			
Maine					X			
Maryland				X				
Massachusetts		X						
Michigan								X
Minnesota		X						
Mississippi						X		
Missouri				X				
Montana		X						
Nebraska								X
New Hampshire					X			
New Jersey								X
New Mexico				X				
New York		X	X					
North Carolina					X			
North Dakota		X						
Ohio				X				

Appendix I (continued).

Oklahoma				X			
Oregon				X			
Pennsylvania	X						
Rhode Island		X					
South Carolina					X		
South Dakota	X						
Tennessee		X					
Texas				X			
Utah		X					
Vermont		X					
Virginia					X		
Washington						X	
West Virginia					X		
Wisconsin		X					
Wyoming						X	
Totals	4	18	2	8	12	6	4

Note. From McCann, M. (2022, Jan. 26). Education Governance Dashboard (archive). Education Commission of the States. https://www.ecs.org/education-governance-dashboard-archive/

Appendix J

Table J1

Descriptive Statistics, Governance Structure (2002-2019), N=967

Variable	Obs	M	SD	Min	Max
State Board of Education Coordinates and Regulates Community Colleges	16406	0.1	0.2	0.0	1.0
Consolidated Governing Board for Both Two-and Four-year institutions	16406	0.2	0.4	0.0	1.0
Coordinating Board for All Higher Education Coordinates Locally Governed Community Colleges	16406	0.3	0.5	0.0	1.0
Independent State Board Coordinates Community Colleges and/or Technical Institutions	16406	0.2	0.4	0.0	1.0
Independent State Board Governs Community Colleges	16406	0.3	0.5	0.0	1.0
No State Governance System	16406	0.1	0.2	0.0	1.0

Note: The sum of the means equals more than 1.0. This is because some states, such as Arkansas, Colorado, Georgia, New York, Ohio, and West Virginia, have multiple governance structures, depending how their community colleges are classified.

Table J2

Results from Regression of Governance Model on Adopting a "No-Loan" Policy (Outcome of Interest is First-Time, Full-Time Students Taking Out a Loan (Binary Variable))

	Coefficient.	*SE*	*t*	*p*	[95% Conf	Interval]
State Board of Education Coordinates and Regulates Community Colleges	-0.1***	0.0	-3.50	<.01	-0.2	-0.1
Constant	0.2***	0.0	17.30	<.01	0.2	0.2
Consolidated Governing Board for Both Two-and Four-year institutions	-0.03	0.0	-0.70	0.5	-0.1	0.0
Constant	0.2***	0.0	15.48	<.01	0.2	0.2
Coordinating Board for All Higher Education Coordinates Locally Governed Community Colleges	-0.1***	0.0	-5.01	<.01	-0.2	-0.1
Constant	0.2***	0.0	17.13	<.01	0.2	0.2
Coordinating Board for All Higher Education Coordinates Locally Governed Community Colleges	-0.1**	0.0	-2.04	0.0	-0.1	-0.0
Constant	0.2***	0.0	13.37	<.01	0.1	0.2
Independent State Board Coordinates Community Colleges and/or Technical Institutions	-0.0	0.0	-0.79	0.4	-0.1	0.0
Constant	0.2***	0.0	14.98	<.01	0.2	0.2
Independent State Board Governs Community Colleges	0.2***	0.0	7.81	<.01	0.1	0.2
Constant	0.1	0.0	9.90	0.0	0.1	0.1
No State Governance System	-0.0	0.0	-0.59	0.6	-0.1	0.1
Constant	0.2***	0.0	16.53	<.01	0.2	0.2

**** p<.01, ** p<.05, * p<.1*

Table J3

Regression Results for All Governance Models, Outcome of Interest is All Undergraduates Taking Out a Loan (Binary Variable).

	Coefficient.	*SE*	*t*	*p*	[95% Conf	Interval]
State Board of Education Coordinates and Regulates Community Colleges	-0.1***	0.0	-2.85	<.01	-0.2	-0.0
Constant	0.2***	0.0	14.60	<.01	0.1	0.2
Consolidated Governing Board for Both Two-and Four-year institutions	-0.0	0.0	-0.62	0.5	-0.1	0.0
Constant	0.2***	0.0	13.09	<.01	0.1	0.2
Coordinating Board for All Higher Education Coordinates Locally Governed Community Colleges	-0.1***	0.0	-4.80	<.01	-0.2	-0.1
Constant	0.2***	0.0	14.78	<.01	0.2	0.2
Coordinating Board for All Higher Education Coordinates Locally Governed Community Colleges	-0.1**	0.0	-2.04	0.0	-0.1	-0.0
Constant	0.2***	0.0	13.37	<.01	0.1	0.2
Independent State Board Coordinates Community Colleges and/or Technical Institutions	-0.1**	0.0	-2.04	0.0	-0.1	-0.0
Constant	0.2***	0.0	13.37	<.01	0.1	0.2
Independent State Board Governs Community Colleges	0.2***	0.0	8.84	<.01	0.2	0.2
Constant	0.1***	0.0	7.16	<.01	0.1	0.1
No State Governance System	-0.0	0.0	-0.85	0.4	-0.1	0.1
Constant	0.2***	0.0	14.06	<.01	0.1	0.2

**** p<.01, ** p<.05, * p<.1*

Appendix K

Table K1

Robustness Check, Regression Results, Dual Enrollment, Unrestricted Model (2012-2019), N=911

	First-time, Full-time Students (2002-2019), N=809			All Undergraduates (2008-2019), N=809		
	Coefficient.	*SE*	*p*	Coefficient.	*SE*	*p*
Official CDR	-0.005***	0.001	<.01	-0.004***	0.001	<.01
Percent state/local grant aid	0.000**	0.000	0.033	0.001*	0.000	0.053
Average amount state/local grant aid (in thousands of dollars)	-0.006	0.005	0.243	-0.006	0.005	0.280
Percent Pell Grant	-0.000	0.000	0.833	0.000	0.000	0.777
Average amount of Pell Grant (in thousands of dollars)	0.017	0.011	0.114	0.022**	0.011	0.045
State support for higher education (COLI) (in millions of dollars)	0.000**	0.000**	0.019	0.000	0.000	0.290
Presence of state-loan (binary variable) (omitted)	0.000	.	-	0.000	.	-
Average amount of nonfederal loans (in thousands of dollars)	-0.001	0.001	0.498	-0.000	0.001	0.606
Percent nonfederal loans	0.006**	0.003	0.027	0.006**	0.003	0.038
Student services per FTE (in thousands of dollars)	-0.008	0.006	0.203	-0.008	0.006	0.166
Salaries, wages, and benefits as percent of total expense for student services	0.001	0.004	0.154	0.001*	0.000	0.073

Table K1 (continued).

Institutional Capacity (in millions of dollars)	0.000	0.000	0.129	0.000	0.000	0.239
Tuition and fees (in thousands of dollars)	-0.039***	0.014	0.005	-0.037***	0.014	0.007
Rurality	-0.006	0.007375	0.435	-0.007	0.007	0.317
Governance (omitted)		.	-	0.000	.	-
Dual Enrollment	-0.000	0.000	0.130	-0.000	0.000	0.239
2011b	0.000	.		0.000	.	
2012	-0.034***	0.009	<.01	-0.032***	0.008***	<.01
2013	0.007	0.011	0.510	0.004	0.011	0.720
2014	0.042***	0.013	0.002	0.038***	0.013***	0.004
2015	0.049***	0.014	0.001	0.050***	0.013***	<.01
2016	0.054***	0.015	<.01	0.055***	0.015***	<.01
2017	0.067***	0.019	<.01	0.070***	0.019***	<.01
2018	0.062***	0.019	<.01	0.066***	0.019***	0.001
2019	0.048**	0.020	0.020	0.048**	0.020**	0.019
Constant	0.181**	0.074	0.014	0.161**	0.073**	0.027

**** p<.01, ** p<.05, * p<.1*

Note: With fixed effects and time-fixed effects

Table K2

Robustness Check, Regression Results, Dual Enrollment and Dependent Variable (First-time, Full-time Students), N=962 (2002-2019)

	Multiple Imputation			Without Multiple Imputation		
	Coefficient.	*SE*	*p*	Coefficient.	*SE*	*p*
Dual Enrollment	-0.015***	0.005	0.010	-0.016***	0.006	0.010
Constant	0.178***	0.003	<.01	0.209***	0.010	<.01

*** *p<.01, ** p<.05, * p<.1*

Note: With fixed effects and time-fixed effects.

Appendix L

Restricted Model, N=618 (2002-2019) Excluding Group 4 (0% No-Loan Adoption)

	Coefficient.	*SE*	*t*	*p*	[95% Conf	Interval]
Official CDR	-0.0044***	0.0012	-3.75	<.001	-0.0067	-0.0021
Percent State/Local Grant Aid	-0.0001	0.0003	-0.42	0.6754	-0.0006	0.0004
Average amount state/local grant aid (1000s of dollars)	-0.0000*	0.0000	-1.77	0.0780	-0.0000	0.0000
State support for higher education (COLI; millions of $)	0.0000*	0.0000	1.71	0.0873	-0.0000	0.0000
State Student Loan	0.0000	.	.	.	.	.
Percent Nonfederal Loans	-0.0000	0.0000	-0.58	0.5633	-0.0000	0.0000
Average amount of nonfederal loans (1000s of dollars)	0.0035*	0.0019	1.81	0.0705	-0.0003	0.0074
Student Services	0.0000	0.0000	0.06	0.9514	-0.0000	0.0000
Percent Total of Student Services	-0.0001	0.0003	-0.22	0.8227	-0.0006	0.0005
Tuition and Fees	-0.0000	0.0000	-0.92	0.3592	-0.0000	0.0000
2010b	0.0000	.	.	.	.	.
2011	-0.0020	0.0072	-0.28	0.7792	-0.0161	0.0121
2012	0.0034	0.0095	0.36	0.7158	-0.0151	0.0220
2013	0.0253*	0.0135	1.88	0.0613	-0.0012	0.0518
2014	0.0272*	0.0147	1.85	0.0655	-0.0018	0.0561
2015	0.0230	0.0146	1.57	0.1161	-0.0057	0.0516
2016	0.0211	0.0146	1.45	0.1477	-0.0075	0.0497
2017	0.0194	0.0193	1.01	0.3148	-0.0185	0.0573

Appendix L (continued).

2018	0.0131	0.0192	0.68	0.4946	-0.0246	0.0508
2019	-0.0007	0.0209	-0.03	0.9721	-0.0417	0.0402
Constant	0.1366***	0.0376	3.64	0.0003	0.0628	0.2104

Mean dependent var	.	SD dependent var	.
R-squared	.	Number of obs	5782
F-test	.	Prob > F	.
R-squared within	.	R-squared between	.

**** p<.01, ** p<.05, * p<.1*