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A MULTIPLE REGRESSION ANALYSIS OF FACTORS INFLUENCING 2-YEAR COLLEGE ENROLLMENT DURING THE COVID-19 PANDEMIC

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A MULTIPLE REGRESSION ANALYSIS OF FACTORS INFLUENCING 2-YEAR

COLLEGE ENROLLMENT DURING THE COVID-19 PANDEMIC

by

Lauren Davis

A dissertation submitted to the faculty of Coastal Carolina University
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Education
with a specialization in Higher Education Administration.

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ABSTRACT

The COVID-19 pandemic negatively impacted enrollment, a continuation of the decline ongoing since 2010. Two-year colleges are highly dependent on tuition revenue. Consequently, the pandemic exacerbated the postsecondary economic crisis, as 2-year institutions faced financial hardship amidst enrollment uncertainties. In response to the pandemic, policymakers and 2-year college leaders adapted their enrollment management efforts. However, the impact of these actions on enrollment was unknown. Using resource dependence theory, the present study aimed to understand how COVID-19 influenced 2-year colleges' acquisition of their most sustainable resource, enrollment. Separate multiple linear regression analyses explored the influence of four enrollment management efforts (shift to remote instruction, return to in-person instruction, emergency relief aid, and tuition incentives) on total 12-month enrollment using populations of public and for-profit 2-year institutions; while simultaneously controlling for student demographics, institutional characteristics, and environmental impact. The analysis demonstrated that tuition incentives and emergency relief aid positively influenced enrollment during the 2020-2021 academic year among public 2-year institutions. Comparatively, the for-profit 2-year sector was impervious to all enrollment management efforts, as increased tuition rates contributed the most influence. Across both sectors, female enrollment and rural campus location negatively influenced total enrollment. Study findings have implications for policy and practice initiatives rooted in college affordability and the initiation of support services, particularly those which address basic needs insecurity and closure of the digital divide. Moreover, this study demonstrates a need for increased accountability in the for-profit sector.

Keywords: Enrollment, Enrollment Management, 2-year college, Community College, For-profit college, Postsecondary affordability, COVID-19

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LIST OF ABBREVIATIONS

Abbreviation	Definition
AACC	American Association of Community Colleges
ARM	Assembly, Repair, and Maintenance
ARP	American Rescue Plan
ARRA	American Recover and Reinvestment Act
CARES	Coronavirus Aid, Relief, and Economic Security Act
CCB	Community College Baccalaureate
CCRC	Community College Resource Center
CDC	Centers for Disease Control and Prevention
COVID-19	Coronavirus Disease of 2019
CRRSA	Coronavirus Response and Relief Supplemental Appropriations Act
CSV	Comma-separated values
DE	Distance Education
FTE	Full-time Equivalent
GE	Gainful Employment
HEERF	Higher Education Emergency Relief Fund
IPEDS	Integrated Postsecondary Education Data System
Ln	Logarithmic
MLR	Multiple Linear Regression
NASFAA	National Association of Student Financial Aid Administrators
NCES	National Center for Education Statistics
NCSL	National Conference of State Legislators
NSCH	National Student Clearinghouse
RDT	Resource Dependence Theory
SES	Socioeconomic Status

CHAPTER 1: INTRODUCTION

Two-year college enrollment has been declining since 2010 (Juszkiewicz, 2017; National Center for Education Statistics [NCES], 2022a). As a result, these institutions have experienced declines in tuition revenue. Inadequate funding of public 2-year colleges further exacerbates financial concerns (Allegretto et al., 2022). Less revenue means fewer classes, instructors, and services: all of which are linked to further enrollment declines (Burnett, 2021; Phelan, 2014). Thus, institutions experiencing declines in enrollment risk financial hardship and institutional sustainability.

The onset of the Coronavirus disease of 2019 (COVID-19) catalyzed vulnerabilities in the 2-year sector and further exacerbated declining enrollment. The decrease in enrollment experienced during the pandemic contrasts with the 20.3% increase in enrollment at 2-year institutions during the great recession (American Association of Community Colleges [AACC], 2019). While federal policymakers moved quickly to aid institutions and college leaders pivoted operations, their actions failed to negate steep enrollment declines. Throughout COVID-19 and the subsequent economic recession, community college enrollment suffered substantially. During the spring 2021 semester, enrollment dropped 11.3% at 2-year institutions, however, enrollment only decreased by 5.9% amongst 4-year institutions (National Student Clearinghouse [NSCH], 2021). Moreover, enrollment declined for all marginalized (e.g., minority, low socioeconomic status [SES], and non-traditional) student populations at 2-year institutions (Brock & Diwa, 2021; Causey et al., 2021; Schanzenbach & Turner, 2022).

During 2020, enrollment declines were widespread, with 79% of community college presidents reporting declines in enrollment (Vasquez, 2020). The declines were seen in 90% of community colleges, with a 10% or greater decrease in enrollment for half of community

colleges (Kelderman, 2020). Subsequently, the number of public 2-year institutions has dropped by 2.7% (26 institutions) from 2019-2020 to 2020-2021 (Lederman, 2021). This statistic highlights 2-year colleges' dependency on tuition revenue and substantiates concerns about declining enrollment (Lederman, 2021). These obstacles impact the sustainability and longevity of 2-year institutions.

Two-year institutions are dependent on enrollment as a source of revenue. The novel impact of COVID-19 changed the external environment surrounding postsecondary education; necessitating new enrollment management efforts. College administrators must anticipate and interpret environmental cues, develop strategic planning efforts, and acquire the necessary resources to promote institutional sustainability (Powell & Rey, 2015). Consequently, for 2-year colleges to effectively navigate challenging times, while still serving as a viable means to upward social mobility, research is needed about the influence of COVID-19 on student enrollment during 2020-2021.

The present study contributes to existing knowledge about the pandemic's impact on postsecondary education by exploring the influence of enrollment management efforts on 2-year college enrollment during the 2020-2021 academic year. Inferential multiple linear regression (MLR) analysis modeled the variance in total 12-month enrollment among public and for-profit 2-year institutions using four independent variables: 1) shift to remote instruction, 2) return to in-person instruction, 3) emergency relief aid, and 4) tuition incentives; while simultaneously controlling for student demographics (gender, race, enrollment intensity, and low-SES), institutional characteristics (campus setting and region), and environmental impact (unemployment rate and COVID-19 state case rate).

The results suggest that tuition incentives and emergency relief aid positively impacted enrollment at public 2-year institutions. Contrary to expectations, this research did not establish a relationship between a shift to remote instruction or the return to in-person instruction and total enrollment. Thus, affordability outweighed modality preference among public 2-year students during the COVID-19 pandemic. Enrollment management efforts were not influential in the for-profit sector. As recognized brands in distance education, for-profit institutions experienced enrollment gains (NCES, 2022a). Moreover, tuition increases demonstrated the highest level of influence on total enrollment. Consequently, for-profit institutions managed enrollment by marketing themselves as leaders in remote instruction on a flexible schedule, regardless of cost.

Institutional demographic characteristics across the 2-year sector demonstrated a positive influence on 12-month enrollment from a higher percentage of male enrollment. Therefore, the pandemic negatively impacted females' access to postsecondary education. Moreover, this study found a positive relationship between urbanization and 2-year college enrollment. This finding suggests that institutions in urban locations experienced increased enrollment; as compared with institutions in rural areas. This finding contributes to our understanding of the inequities surrounding rural postsecondary education.

The results of the present study fill a gap in the literature regarding enrollment management during precarious environmental circumstances. Moreover, demographic findings contribute to a further understanding of the impact of COVID-19 on 2-year student populations. Subsequently, this study can inform future policy and practice initiatives rooted in equitable enrollment and institutional sustainability.

1.1 Background of the Problem

Two-year college enrollment has consistently declined since its peak in 2010, in both the public and private 2-year sectors (Juszkiewicz, 2017, 2020). Declines were widespread, as institutions in 35 states experienced enrollment decreases between fall 2018 to fall 2019. Program-level declines were prevalent across all sectors, though associate degree programs experienced the largest decline at -2.8% during fall 2019. Declines in 2-year college enrollment are negatively correlated with a thriving economy that draws potential students directly into the workforce, competition with 4-year institutions, and affordability (AACC, 2019; Brock & Diwa, 2021). Historically, enrollment in 2-year colleges has increased during economic recessions (AACC, 2019). A positive correlation has been demonstrated between 2-year college enrollment and unemployment rates, as community colleges are a cost-efficient means of gaining employment within fast-growing sectors (AACC, 2019; Armona et al., 2018; Juszkiewicz, 2017; Kwakye et al., 2021). However, since 2010, a strong economy has allowed for a flourishing workforce; leading to a decline in enrollment.

While 2-year college enrollment is declining, enrollment in 4-year institutions has increased (Ma & Baum, 2016). Relative to community colleges, 4-year institutions serve a higher percentage of traditional-age students who pursue a degree after high school rather than enter immediately into the workforce (Juszkiewicz, 2017). This leaves 2-year colleges to compete for traditional-age college students in times of economic stability due to the prioritization of employment among the typical 2-year student demographics. Furthermore, between 2025 and 2029, the college-age population is expected to decrease by 15% (Copley & Douthett, 2020). Labeled the "enrollment cliff," this decline stems from low birth rates during the 2008 economic recession. Declines in traditional college-age students will push 4-year institutions to target non-

traditional students. Consequently, this shift exacerbates enrollment declines across the 2-year sector.

Affordability plays a critical role in enrollment. State disinvestment in higher education has left public 2-year colleges increasingly reliant on tuition as a revenue source (Rios-Aguilar & Deil-Amen, 2019). Insufficient state appropriations translate into higher tuition and reduced affordability (Juszkiewicz, 2017). Similarly, research on not-for-profit 2-year colleges demonstrated a positive relationship between increasing tuition discount incentives and minority student enrollment (Lassila, 2010). Two-year colleges historically serve a disproportionate amount of marginalized (e.g., minority, first-generation, adult-learners, and student parents), low SES, and at-risk students. Thus, tuition increases have impacted the traditional 2-year students' ability to afford postsecondary education.

The United States economy was significantly affected by the COVID-19 pandemic, causing an increase in both unemployment and financial hardship (Rudenstine et al., 2020). Consequently, current and prospective 2-year college students changed their enrollment plans at more than twice the rate of 4-year college students (Owens et al., 2020; U.S. Census Bureau, 2021). The inability to invest in their college education caused by unemployment, lower incomes, and economic uncertainty has exacerbated gaps in college affordability among the 2-year student population: enhancing the competitive market between 2- and 4-year institutions. Therefore, apart from unemployment rate, factors known to historically decrease enrollment among 2-year institutions were exacerbated during the COVID-19 pandemic.

Existing summary reports demonstrate public 2-year colleges experienced comparatively steeper enrollment decline during the COVID-19 pandemic (Causey et al., 2021; NCES, 2021a). Between fall 2019 and fall 2020, enrollment at public 4-year colleges dropped by .3% (NSCH,

2023). In comparison, enrollment at community colleges dropped 10.5% (NSCH, 2023). While the pandemic had only minor impacts on high school graduation rates, the percent of 2020 high school graduates entering a community college declined by 13.2%, in contrast to a 1.3% increase in 2019 (Causey et al., 2021). Moreover, first-time student enrollment in community colleges dropped by 22.7% from 2019 to 2020 (Sutton, 2021). Therefore, the literature supports substantial declines in community college enrollment during COVID-19.

While the literature does not specify enrollment trends among the private 2-year sector, initial summary reports indicate that 4-year for-profit colleges experienced enrollment gains of 4% from fall 2019 to fall 2020 (NSCH, 2021). This is substantial given that for-profit college enrollment had fallen by an average of 10.5% annually between 2015 and 2019 (NCES, 2022b). Comparatively, the not-for-profit sector experienced stable enrollment from fall 2019 to fall 2020 (NCES, 2021b). The lack of differentiation between private sector enrollment data represents a gap in the literature. Consequently, research on enrollment in the 2-year private sector and the subsequent comparison to public 2-year colleges is needed.

Two-year colleges disproportionately serve minority, first-generation, low-income, and adult students compared with 4-year institutions (Andrade & Lundberg, 2018; Arbeit & Horn, 2017; Jacobs & Worth, 2019). Data from the Centers for Disease Control and Prevention (CDC) (2022) shows minority and low SES individuals were severely affected by COVID-19-related health and economic challenges. Black and Hispanic persons were disproportionately represented among all reported COVID cases and deaths (Brock & Diwa, 2021; CDC, 2022). Survey data indicate minority groups were more likely to suffer from loss of employment and financial disparities (Parker et al., 2020). Furthermore, underrepresented minorities suffered greater economic and food insecurity during the pandemic (Barber et al., 2021). These hardships

resulted in enrollment declines during COVID-19 for Black, Hispanic, and Indigenous students; and the low SES population (Brock & Diwa, 2021; Causey et al., 2021; Schanzenbach & Turner, 2022). Thus, the COVID-19 pandemic impacted enrollment decisions for typical 2-year student populations.

The transition to remote instruction impacted community college enrollment during COVID-19 (Barber et al., 2021; Brock & Diwa, 2021; Kim et al., 2020; Prokes & Housel, 2021). When community college students were surveyed about their confidence in remote learning, declines in self-confidence were observed across all demographics (Prokes & Housel, 2021). Additional survey data tie students' lack of confidence to an inability to obtain the necessary equipment for online learning, unreliable access to internet service, and living in a home environment inconducive to remote learning (Brock & Diwa, 2021; Kim et al., 2020). These findings were further substantiated through survey analysis of the COVID-19-related remote learning experiences of first-generation and underrepresented minority groups (Barber et al., 2021). Therefore, enrollment in distance education courses influenced enrollment decisions during COVID-19.

In response to COVID-19, postsecondary leaders prioritized enrollment efforts. Administration struggled to balance the financial implications, students' experience, safety, and equitable access to quality education. Consequently, enrollment management initiatives (i.e., shift to remote instruction, return to in-person instruction, distribution of emergency relief funds, and tuition incentives) were used to negate enrollment declines (Brink, 2022; Collier, Fitzpatrick, Snideman,& Marsicano, 2020; Gravely, 2022; Pierce, 2022).

The impact of COVID-19 on the United States economy prompted Congress to pass the Coronavirus Aid, Relief, and Economic Security Act (CARES Act). This bill allotted $14 billion

to postsecondary institutions through the Higher Education Emergency Relief Fund (HEERF) (National Association of Student Financial Aid Administrators [NASFAA], 2021). Throughout the 2020-2021 academic year postsecondary institutions received an additional $63 billion in emergency funding through the Coronavirus Response and Relief Supplemental Appropriations Act (CRRSA) and the American Rescue Plan (ARP); with 1,043 community colleges receiving a total of $23 billion (AACC, 2021; NASFAA, 2021; Gravely, 2022).

The health concerns surrounding COVID-19 required a rapid shift to remote instruction for colleges, necessitating technological investments across the 2-year sector. Two-year college students are less likely to have the necessary equipment for remote learning, reliable internet access, and an environment conducive to remote learning (Brock & Diwa, 2021; Kim et al., 2020). Several authors studied the influence of online presence pre-COVID-19 and investment in technological support during the remote shift (Bouchey et al., 2021; Hart et al., 2021). However, contradictory evidence exists about the relationship between online presence pre-COVID and enrollment during the 2020-2021 academic year (Bouchey et al., 2021; Hart et al., 2021).

Data from several studies have identified a correlation between state political affiliation and the resumption of in-person instruction during COVID-19 (Collier, Fitzpatrick, Snideman, & Marsicano, 2020; Collier, Fitzpatrick, Dell et al., 2022; Felson & Adamczyk, 2021). Felson and Adamczyk's (2021) finding that institutions in Republican states were more likely to resume in-person instruction supports this finding. Financial pressure further influenced decisions regarding in-person instruction. Colleges with higher tuition dependency were more likely to resume in-person instruction (Diep, 2020, Felson & Adamczyk, 2021; Lederman, 2020). However, the existing literature fails to address how the resumption of in-person instruction influenced enrollment during COVID-19.

Existing research on 2-year enrollment during the COVID-19 pandemic focuses on public 2-year colleges (i.e., community colleges), neglecting the private 2-year sector (e.g., 2-year for-profit colleges and 2-year not-for-profit colleges) (Bird et al., 2020; Bulman & Fairlie, 2021; NCES, 2022b). While 2-year colleges employed enrollment management initiatives to negate declining enrollment, their impact on enrollment during the COVID-19 pandemic is unknown. Therefore, this study quantitively explored the influence of COVID-19 on enrollment throughout the 2-year sector using variables such as student demographics (race/ethnicity, gender, low SES, enrollment intensity), campus setting, region, state unemployment rate, COVID-19 state case rate, shift to remote instruction, return to in-person instruction, emergency relief aid, and tuition incentives.

1.2 Problem Statement

COVID-19 substantively impacted enrollment throughout postsecondary education, bringing enrollment management to the institutional forefront. Historically, 2-year enrollment has increased during economic recessions, as unemployed workers return to college for training to position themselves for career advancement when the economy recovers (AACC, 2019; Juszkiewicz, 2017). However, COVID-19 and the consequent economic recession resulted in enrollment declines. Two-year college enrollment has consistently declined since 2010 (Juszkiewicz, 2017). Competitiveness between 2-year and 4-year institutions, combined with legislative funding reductions faced by public institutions, has led 2-year colleges to rely on enrollment as a primary source of revenue (Grawe, 2018; Ortagus & Yang, 2018; Phelan, 2014). Less revenue means fewer classes, instructors, and services; all of which impact the student experience and put institutions at risk for financial hardship (Burnett, 2021; Phelan, 2014). Therefore, the exacerbated enrollment declines seen during the COVID-19 pandemic perpetuate

and accentuate an existing problem. The pandemic presents an opportunity to analyze anomalous

enrollment patterns during a unique economic downturn. Subsequently, allowing postsecondary

administrators to strategically focus enrollment efforts on student populations most impacted;

while simultaneously promoting institutional sustainability and upward social mobility of

marginalized student populations.

Existing research substantiates enrollment declines among community colleges during

COVID-19 (Causey et al., 2021; NCES, 2021a; NCES, 2022a; Schanzenbach & Turner, 2022).

However, the literature lacks quantifiable evidence on the influence of enrollment management

efforts on enrollment during the pandemic. Moreover, the exclusion of the private 2-year sector

is an existing trend in research on community colleges (Ahlstrom, 2016). This exclusion

demonstrates a need to explore the heterogeneous impact on enrollment between institution

types. Consequently, the present study explored enrollment across the 2-year sector using several

variables (e.g., race/ethnicity, gender, low SES, enrollment intensity, campus setting, region,

state unemployment rate, total COVID-19 state case rate, shift to remote instruction, return to in-

person instruction, emergency relief aid, and tuition incentives).

1.3 Theoretical Framework

The present study is grounded in resource dependence theory (RDT). Resource

dependence theory highlights the relationship between organizations and their external

environment. Specifically focusing on organizations' dependence on their environment for

crucial resources and their ability to adapt in response to scarcity, ambiguity, and chaos (Pfeffer

& Salancik, 1978). Competitiveness between institutions, combined with funding reductions

faced by public institutions, has led 2-year colleges to rely on enrollment as a primary source of

revenue (Ortagus & Yang, 2018). Therefore, 2-year colleges are an ideal type of resource-

dependent organization to examine because so much of their resources depend on enrollment (McAllister-Spooner & Kent, 2009). Disruptions to enrollment and tuition revenue during COVID-19 represent a significant external environmental impact, requiring postsecondary institutions to adapt to remain sustainable.

Powell and Rey (2015) describe two areas of RDT in higher education applicable to this study: 1) environmental effects on organizations; and 2) organizational efforts to manage environmental constraints. RDT is grounded in the idea that institutions must maintain access to resources from the surrounding environment to survive. As such, I posit that because 2-year colleges are heavily dependent on tuition revenue, college leaders will take the necessary steps to retain enrollment numbers. As organizations become deprived of critical resources, they must seek different or novel resources to maintain institutional sustainability (Pfeffer & Salancik, 1978). In the context of this study, as postsecondary institutions lose revenue in one area, they must look for alternative resources to maintain operations (Powell & Rey, 2015). For example, prior to COVID-19, 2-year institutions attempted to offset declining enrollment by enrolling more dual enrollment students (An, 2013). However, the systemic impact of COVID-19 on student populations complicated the procurement of additional enrollment sources. This impact resulted in historical declines of 15% within the public 2-year sector (NSCH, 2021).

Significant enrollment declines occurred during COVID-19 as the 2-year student population was disproportionately impacted (Barber et al., 2021; Parker et al., 2020). Enrollment efforts used during COVID-19 were an adaptive response to resource scarcity. Therefore, to explain the influence of COVID-19 on 2-year enrollment, one must consider actions taken by the institution to manage enrollment declines. Essential resources, like enrollment, can impact the strategic plans of postsecondary institutions. Consequently, from a resource dependency

perspective, postsecondary institutions can employ two strategies to promote sustainable resources: 1) adapting and changing to fit environmental requirements; or 2) attempting to alter the environment to fit the institutional capabilities (Powell & Rey, 2015). During COVID-19, state mandates inflicted on postsecondary institutions prevented the latter strategy. Thus, 2-year colleges had to evolve to maintain adequate resources. To negate declining enrollment, institutions adopted strategies related to shift to remote instruction, return to in-person instruction, the distribution of emergency relief aid, and tuition incentives. However, the impact of these actions on enrollment during the pandemic is unknown. Therefore, using RDT, the present study aims to understand how COVID-19 influenced the 2-year colleges' acquisition of their most sustainable resource, enrollment.

1.4 Purpose and Nature of the Study

The purpose of this quantitative study, using multiple linear regression (MLR) analysis, was to explain how COVID-19 and the subsequent enrollment management efforts influenced 2-year college enrollment. Using resource dependence theory (RDT), this study establishes the influence of shift to remote instruction, return to in-person instruction, emergency relief aid, and tuition incentives on enrollment in 2-year colleges, controlling for institution demographics such as race/ethnicity, gender, low SES, enrollment intensity, campus setting, region, state unemployment rate, and COVID-19 state case rates across the national 2-year sector. The independent variables are defined as institutional adaptations aimed at ensuring institutional sustainability during precarious environmental circumstances. The dependent variable of enrollment represents an essential resource on which 2-year institutional sustainability is contingent. The outcome of this study could provide college administrators with empirical evidence to promote future strategic planning initiatives to sustain enrollment.

Research supports that COVID-19 significantly impacted enrollment in postsecondary education (NCES, 2022a; NSCH, 2021). However, there is limited research about the influence of COVID-19 on 2-year college enrollment. Given the impact of COVID-19 and the dependency on enrollment for revenue, it is necessary to examine and compare enrollment at public and for-profit 2-year institutions during the pandemic. Using RDT, this study aims to fill a gap in the literature by exploring the influence of COVID-19 on enrollment in the 2-year sector. Therefore, the purpose of this study is two-fold. First, this study explores the relationship between COVID-19 and enrollment across the 2-year sector. Second, this study explores the influence of enrollment management efforts on enrollment during the 2020-2021 academic year.

Existing literature on COVID-19 and enrollment informed variable selection (e.g., race/ethnicity, gender, low SES, enrollment intensity, campus setting, region, state unemployment rate, COVID-19 state case rate, shift to remote instruction, return to in-person instruction, emergency relief aid, and tuition incentives). This study used secondary data sets from the Integrated Postsecondary Education Data System (IPEDS), United States Bureau of Labor Statistics, U.S. Department of Education, National Conference of State Legislatures (NCSL), and the CDC. The present study used a non-experimental quantitative methodology with an MLR analysis. MLR is a commonly used analytic method in the educational and social sciences because it provides a way to model a quantitative outcome variable (i.e., dependent variable) from multiple explanatory variables (i.e., independent variables) while simultaneously controlling for other factors that affect the dependent variable (Teo, 2014; Wooldridge, 2012). Multiple regression attempts to model the variation in an outcome variable as a linear function of a set of explanatory variables through a linear equation that quantifies, via regression coefficients, the contribution of each explanatory variable to the outcome variable (Rubinfeld,

2000). The theoretical assumption is that for every one-unit change in the independent variable, there will be a consistent and uniform change in the dependent variable (Sweet & Grace-Martin, 2012). When used in the explanation context, MLR allows for inferential analysis of explanatory variables relative to their influence on the outcome variable. Therefore, this study established relationships and determined the influence of each independent variable (i.e., shift to remote instruction, return to in-person instruction, emergency relief aid, and tuition incentives) on the dependent variable of 2-year college enrollment, while controlling for race/ethnicity, gender, low SES, enrollment intensity, campus setting, region, unemployment rate, and COVID-19 state case rate.

The research questions for this study are as follows:

1. How did enrollment management efforts influence 2-year college enrollment during the COVID-19 pandemic?

2. What differences exist between the 2-year institution type and the influence of enrollment management efforts during the COVID-19 pandemic?

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1.5 Operational Definitions

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The following section provides a list of terms and definitions that are useful for this study.

2-year institution (i.e., 2-year college) - A postsecondary institution that offers degrees, diplomas, and certificates of at least two but less than four years duration (NCES, 2021). Two-year institutions with community college baccalaureate (CCB) programs are excluded from the 4-year duration delimitation. Therefore, these colleges are considered 2-year institutions for the scope of this study (NCES, 2012).

Public 2-year college (i.e., community college) - A 2-year educational institution whose programs and activities are operated by publicly elected or appointed school officials, and which is supported primarily by public funds (NCES, 2012).

For-profit 2-year college - A private institution in which the individual(s) or agency in control receives compensation other than wages, rent, or other expenses for the assumption of risk (NCES, 2012). For-profit 2-year colleges refer to profit-making schools which provide vocational certificates, academic certificates, and associate degrees in different concentrations (NCES, 2012).

Not-for-profit 2-year college - A private institution in which the individual(s) or agency(s) in control receives no compensation, other than wages, rent, or other expenses for the assumption of risk (NCES, 2012). Not-for-profit 2-year colleges refer to non-profit-making schools which provide vocational certificates, academic certificates, and associate degrees in different concentrations (NCES, 2012).

COVID-19 pandemic - A novel public health crisis as declared by the World Health Organization in 2020. The COVID-19 pandemic significantly impacted political, economic, sociocultural, and public health on a global scale (Karakose, 2021). The onset of the pandemic necessitated postsecondary institutions to be either partially or completely closed due to measures and restrictions taken by the government to prevent or slow the spread. These restrictions resulted in the postponement of in-person instruction and a transition from traditional to remote learning and service. Using RDT as a framework, the COVID-19 pandemic complicated the postsecondary environment and institutions' ability to meet enrollment goals. Ultimately, requiring 2-year institutions to adapt and evolve to acquire critical resources (i.e., student enrollment).

Enrollment - The total number of students registered at an institution (NCES, 2012). This study used IPEDS 12-month enrollment data from the 2020-2021 academic year. Using RDT, enrollment serves as a critical resource dependency for 2-year institutions; as 2-year institutions have become increasingly dependent on tuition revenue (Bennett & Law, 2020).

Institutional sustainability - An institution's ability to acquire resources (e.g., enrollment) in an uncontrolled environment (Pfeffer & Salanick, 1978). As environments become more chaotic, institutions will adopt strategies focused on preserving institutional sustainability (Terreberry, 1968).

Enrollment management efforts - Strategic institutional efforts intended to impact the characteristics or size of enrolled student bodies (Hossler & Kemerer, 1986). For this study's purposes, efforts are specific to institutional responses during the COVID-19 pandemic (e.g., shift to remote instruction, return to in-person instruction, distribution of emergency relief aid, and tuition incentives). As resource-dependent organizations, 2-year colleges function within their external environment to reduce ambiguity and secure access to scarce resources (Barnard, 1968; Pfeffer & Salancik, 1978). Consequently, environmental uncertainty influences strategies for procuring essential resources. Each initiative represents an institutional adaptation to resource scarcity.

Remote instruction (i.e., distance education and remote learning) - Instruction which uses one or more technologies (e.g., internet, learning management systems, audio, video, or digital text) to deliver synchronous or asynchronous instruction to students who are separated from the instructor (NCES, 2012).

In-person instruction - Any form of instructional interaction that occurs in the same physical space and in real time between the instructor and students (Great Schools Partnership, 2013).

Emergency relief aid - Constitutes the three phases of Higher Education Emergency Relief Funds (i.e., The Coronavirus Aid, Relief, and Economic Security Act [CARES], The Coronavirus Response and Relief Supplemental Appropriations Act [CRRSA], and The American Recure Plan [ARP]). Funds awarded to postsecondary institutions went directly to students in the form of emergency financial aid grants and towards institutional costs accumulated due to significant changes in the delivery of instruction and service (NASFAA, 2021). Allocation of emergency relief aid contributed to each institution's adaptive response to enhance enrollment as a dependent resource.

Tuition incentive - Refers to policies set in place by postsecondary institutions to lessen the financial burden on students in hopes of maintaining enrollment numbers during the COVID-19 pandemic. The most common incentives employed included tuition reduction and tuition freeze.

1.6 Assumptions

It is assumed the COVID-19 pandemic inflicted substantial health and economic-related stress among 2-year institutions and the student populations they serve (e.g., low SES, minority, and marginalized). An additional assumption exists that in-person instruction was the preferred modality among many 2-year college students. Moreover, institutions with a higher pre-COVID-19 online presence navigated the remote transition with more efficiency and employed a broader range of distance learning efforts.

Two theoretical assumptions underlie this study 1) COVID-19 drastically altered the landscape of higher education: impacting the relationship between 2-year colleges and their environment. 2) Two-year institutions depend on tuition revenue for institutional survival. Thus, actions (i.e., enrollment management efforts) during COVID-19 ensured the continued acquisition of crucial resources; making enrollment a primary concern among the administration.

The methodological assumptions underlying this study are rooted in the postpositivist paradigm. At the ontological level, there is an assumption that reality is objectively measurable but is only imperfectly and probabilistically apprehensible (Guba & Lincoln, 1994). Knowledge gained through quantitative research methods rooted in explanation, prediction, and control only moves knowledge closer to a truth that can never be fully verified (Racher & Robinson, 2003). Consequently, I recognize that my perceptions are attached to the research process and inference of knowledge gained.

1.7 Delimitations

In the present study, two delimitations emerged. First, this study was limited to 2-year colleges surveyed by IPEDS. While there are 6,000 2- and 4-year postsecondary institutions across the United States (NCES, 2022b), only 1,427 2-year institutions were included in my population sample. Most colleges experienced enrollment declines during the pandemic. However, community college enrollment declined the most (NCES, 2022a; NSCH, 2021). Substantial enrollment declines combined with 2-year colleges' dependency on tuition revenue warrant examination of enrollment management efforts used to promote institutional sustainability. Second, enrollment data were delimited to the 2020-2021 academic year, limiting exploration into longitudinal effects. Still, the impact of COVID-19 on the economy and student population between 2020 and 2021 creates ideal conditions to explore the influence of enrollment management efforts on 2-year college enrollment during times of instability.

1.8 Significance

COVID-19 exacerbated the higher education economic crisis, as institutions dependent on tuition revenue face financial hardship amidst enrollment uncertainties. Therefore, the novel circumstances created by the COVID-19 pandemic open an opportunity to examine factors

influencing enrollment during a precarious time and draw inferences applicable to future

enrollment efforts.

This study used a quantitative inferential design with MLR analysis. The rationale for this

approach is its ability to explain phenomena through the quantification of variable relationships

(Mertens, 2019; Teo, 2014). As a methodology, it has proven effective for analyzing

postsecondary enrollment trends (Frisbie & Converso, 2016; Monks, 2018; Pennington et al.,

2002). MLR analysis furthers understanding through its ability to model a quantitative outcome

variable (i.e., dependent variable) from multiple explanatory variables (i.e., independent

variable), while simultaneously controlling for factors known to impact the dependent variable

(Wooldridge, 2021). Therefore, MLR analysis allows for other factors which influenced

enrollment to be held constant, such as race/ethnicity, gender, low SES, enrollment intensity,

campus setting, region, state unemployment rate, and COVID-19 state case rates, while

examining the effect of enrollment management efforts (e.g., shift to remote instruction, return to

in-person instruction, emergency relief aid, and tuition incentives) during the COVID-19

pandemic.

While initial summary reports demonstrate enrollment declines in the public 2-year

sector, existing data are limited to percentage change and lack exploration into variable impact.

Moreover, the literature fails to differentiate enrollment trends between 2-year for-profit and not-

for-profit colleges, preventing analysis based on the type of institution. Therefore, enrollment

uncertainty concerning the private 2-year sector and the need to explore potential factors

influencing enrollment across 2-year institution types served as a rationale for this study.

Enrollment concerns are prominent amongst 2-year college administrators. Survey data

report 79% of community college presidents stated their institutions experienced a decline in

enrollment during COVID-19. More than 86% of those presidents placed enrollment as a priority (AACC, 2019; Kim et al., 2020). Amidst declining enrollment, public 2-year colleges must navigate declines in state funding. Institutions must prioritize tuition revenue to maintain institutional stability. When enrollment benchmarks are unmet, institutions must enforce cost-cutting measures such as cutting academic programs, hiring freezes, and furloughs (Kamssu & Kouam, 2021; Robinson et al., 2020). Having fewer resources to devote to instruction and academic support hinders student retention and completion rates. These obstacles contribute to a potential reduction in state funding among public colleges and the negative stigma perpetuating the private sector.

Finding solutions to unprecedented enrollment declines will be challenging. Therefore, data-informed decision-making is imperative. This study's significance is its ability to quantify the impact of enrollment management efforts on 12-month 2-year college enrollment. Doing so allows college administrators to engage in future strategic planning to improve enrollment and maintain adequate resources across the 2-year sector. Consequently, this study addresses both challenges in enrollment and financial sustainability.

Two-year college enrollment has been in continuous decline since 2010 (Juszkiewicz, 2017). This trend partially stems from barriers to postsecondary access among at-risk (e.g., first-generation, low SES, and underrepresented minority) populations (Goldrick-Rab et al., 2013). The pandemic served as a catalyst to prioritize inequities and break down accessibility barriers in higher education. As a primary means of postsecondary education for marginalized populations, 2-year colleges must build enrollment back. However, 2-year colleges enroll a diverse student body; making it difficult to focus enrollment efforts. The influence of student and institutional demographic data on total enrollment provides insight into the specific populations affected by

COVID-19, allowing for targeted enrollment efforts. By studying the influence of COVID-19 on

enrollment, vulnerabilities to degree attainment (e.g., financial constraints and technological

access) can be exposed. Subsequently, leading to investment in policy and practice that promotes

social mobility.

1.9 Chapter Summary

COVID-19 impacted postsecondary enrollment. However, little is known about the

influence of COVID-19 on enrollment within the 2-year sector. According to RDT, enrollment

serves as an essential resource among 2-year institutions: justifying research into the factors that

impacted enrollment during COVID-19. The purpose of this study was to quantitatively explore

factors which explain enrollment in 2-year institutions during the COVID-19 pandemic and

examine whether differences in enrollment existed based on the type of 2-year institution. The

results suggest that tuition incentives and emergency relief aid positively impacted enrollment at

public 2-year institutions, while neither a shift to remote instruction nor the return to in-person

instruction was influential. Incidentally, enrollment at for-profit institutions was unaffected by

enrollment management efforts, as increased tuition rates contributed the highest level of

influence over total enrollment. Thus, for-profit institutions leveraged themselves as a viable

remote learning opportunity, regardless of cost. This study has implications for successful

strategic planning efforts, institutional survival, and sustainability.

Chapter one presented the background for this study, specified the problem, established

significance, contextualized the problem using theory, and provided a brief overview of the

methodology used. Chapter two includes a detailed description of the theoretical framework, a

historical perspective on 2-year enrollment trends, 2-year enrollment during COVID-19, student

enrollment decisions during COVID-19, enrollment management efforts, and a review of the

methodological literature. Chapter three will present a description of the research design including justification of use, description of postsecondary sectors selected for analysis, a thorough description of each variable, the methodology for data collection, instrumentation used, and how that data were analyzed. The results of the analysis as it connects to each research question will be presented in chapter four. Interpretation of findings, postsecondary implications, and recommendations for action and further research will be discussed in chapter five.

CHAPTER 2: LITERATURE REVIEW

The COVID-19 pandemic and consequent economic recession, led to one of the largest

disruptions in the history of American education (Bird et al., 2022; Rudenstine et al., 2020).

Community colleges experienced unprecedented enrollment declines; as all marginalized student

populations were impacted (Brock & Diwa, 2021; Causey et al., 2021; NCES, 2021a; NSCH,

2021; Schanzenbach & Turner, 2022). Recent research attributes enrollment declines to the

disproportionate health, financial and technological impacts on the 2-year student population

(Brock & Diwa, 2021; CDC, 2022; Kim et al., 2020; Owens et al., 2020). To negate declining

enrollment, federal policymakers and college leaders implemented policy and practice initiatives

to support students and promote institutional sustainability (Brink, 2022; Collier, Fitzpatrick,

Snideman, & Marsicano, 2020; Gravely, 2022; Pierce, 2022). Grounded in RDT, this chapter

situates 2-year colleges as resource-dependent organizations, substantiates the impact of

COVID-19 on enrollment across the 2-year sector, and introduces enrollment management

efforts targeted at influencing enrollment during COVID-19.

This chapter reviews supportive literature and informed the selection of independent

variables for assessing the influence of COVID-19 on 2-year college enrollment. Chapter two is

structured to address enrollment trends pre-COVID-19, factors historically known to impact 2-

year enrollment, enrollment during COVID-19, student enrollment decisions during COVID-19,

and enrollment management efforts. This chapter ends with a review of the methodological

literature and justification of methodology and variable selection.

2.1 Two-year Postsecondary Institutions

The 2-year sector consists of public (i.e., community colleges) and private (i.e., for-profit

and not-for-profit) postsecondary institutions. During the early 1900s, whether public or private,

the typical junior college primarily offered a liberal arts curriculum, representing the first two years of work toward a bachelor's degree (Thelin, 2004). Thus, the original community college mission was to prepare students for transfer to a senior institution. While the 4-year transfer role is still prevalent (Kasper, 2003; Mullin, 2012), community needs over the first half of the twentieth century expanded the typical community college mission (Perini, 2014). Subsequently, the scope of the community college mission expanded to include vocational/occupational and adult or continuing education (Palinchak, 1973) as well as dual enrollment and remedial education (Cohen, 2003; Kisker, 2006).

Two-year college enrollment grew in response to increased population size and expanded access to postsecondary education for career attainment. Before 1950, ease of travel, immigration, population growth, and schooling for assimilation and acculturation contributed to a surge in enrollment among 2-year colleges (Levinson, 2005; Perini, 2014). During the second half of the century, several factors contributed to enrollment gains; the realization that education equated to professional opportunity; the promotion of civil rights, which led to greater access for women and minorities; and the creation of the Higher Education Act of 1965 (Vaughn, 2006). By the 1970s, enrollment had consistently increased, and 2-year colleges began to resemble modern-day institutions (Kasper, 2003).

In 2020, 2-year colleges enrolled 30% of the undergraduate student population (NCES, 2021a). While public community colleges offer an affordable means to higher education, the private sector has been praised for its flexibility and tendency to adapt quickly to job market demands (Crawford & Jervis, 2011). Demographically, both sectors enroll high proportions of minority and low-income students with missions focused on workforce development and

university transfer. However, despite similarities, the for-profit and public sectors have substantial differences.

Public 2-year institutions serve the public. Therefore, public entities (e.g., trustees and state coordinating bodies) oversee their operations to ensure that local community needs (e.g., educational enhancement and workforce development) are reached (Wood & Urias, 2012). In contrast, for-profit institutions are established and owned by individuals and corporations. As a result, they serve the best interests of the company owners and shareholders. While community colleges offer an affordable means to higher education (Kasper, 2003), due in large part to private, for-profits paying taxes and receiving no state or local subsidies, the for-profit sector must balance academic priorities against corporate measurements of success, resulting in higher tuition rates (Zamanai-Gallaher, 2004). Despite differences in affordability and funding, both sectors are highly dependent on enrollment.

Public 2-year enrollment increased at 1,108 institutions (AACC, 2017) between 2007-2009 (Juszkiewicz, 2017). Driven by a recession-era surge, unemployment rates catalyzed 2-year college enrollment (Armona et al., 2018; Fry, 2009). Community college leaders strategically positioned 2-year college enrollment as a viable option for upward social mobility through open admission policies and comparatively affordable tuition rates (Ma & Baum, 2016; Pratt, 2017). Meanwhile, 2-year for-profit colleges doubled their enrollment from 4-7% of all undergraduate students between 1995-1996 and 2010-2011, exhibiting enrollment growth three times that of public 2-year institutions (Arbeit & Horn, 2017; Gilpin et al., 2013).

The 2010 shift to economic stability resulted in enrollment declines across public 2-year institutions (AACC, 2019; Juszkiewicz, 2020). Despite being a primary means of higher education, declines occurred across most student demographics (AACC, 2019; Ma & Baum,

2016; O'Connor, 2009). Declining enrollment prompted community college leaders to prioritize enrollment management initiatives. Many public 2-year institutions attempted to offset declining enrollment by enrolling large numbers of dual-enrollment students (An, 2013). Moreover, while 60% of community college students are enrolled part-time, beginning in 2012, 2-year colleges pushed to increase full-time enrollment (Davidson et al., 2018; Juszkiewicz, 2020). This push was evident in the 2015 "free" tuition (i.e., promise program) policies, which required students to enroll full-time; and the implementation of 15 to Finish programs, an enrollment initiative requiring students to complete 30 credit hours per academic year (Davidson et al., 2018; McKinney et al., 2022).

A stable economy also contributed to enrollment drops across the for-profit sector (Armona et al., 2018). Moreover, the publicity surrounding predatory recruiting and fraudulent financial aid practices furthered enrollment declines (Cellini et al., 2020). Under the Obama administration, the U.S Department of Education enforced Gainful Employment regulations as a safeguard against unaffordable student debt accumulation (Serna, 2014). Institutions were required to meet minimum standards for the debt versus earnings of their graduates (U.S. Department of Education, 2014). As such, annual loan payments could not exceed 12% of total earnings or 30% of discretionary income. Moreover, institutions were required to make public disclosures regarding the performance and outcomes of their gainful employment programs (e.g., costs, earnings, debt, and completion rates).

The Department of Education also imposed sanctions on two national for-profit chains, Corinthian Colleges, and ITT Technical Institute (Cellini et al., 2020). Sanctions included a freeze on new student financial aid, increased financial oversight by the Department of Education, increases to the required letter of credit, and limits on the compensation of for-profit

executives (Fain, 2016). Sanctioned for-profit colleges experienced an average decrease of 40% in annual enrollment in the five-years following sanctions (Cellini et al., 2020). While the Trump administration reversed accountability measures under Gainful Employment, enrollment across the for-profit sector continued to decline (Cellini et al., 2020; NCES, 2022b).

Community colleges offer an affordable means to higher education. Incidentally, the private sector's innovative responsiveness to labor market demands attracts prospective students. While the number of public and private 2-year colleges has expanded over the last two decades, enrollment has consistently declined since 2010. Thus, despite their differences, the public and private 2-year sectors seek to maintain sustainable enrollment.

2.2 Factors Historically Shown to Impact 2-year College Enrollment

As resource-dependent organizations, 2-year colleges depend on access to critical resources. Enrollment is a resource on which 2-year colleges are dependent. Therefore, factors known to impact enrollment (e.g., unemployment rates, funding, and institutional competition) contribute to the institutional sustainability of 2-year colleges.

2.2.1 Unemployment Rates

As mentioned in the previous section, economic conditions and enrollment in 2-year colleges are considered counter-cyclical. Therefore, as the economy worsens, enrollment improves. Unemployment rates are correlated with a high demand for postsecondary education (AACC, 2019; Hillman & Orians, 2013). National enrollment data suggests that a 1% change in unemployment is associated with a 1.1-3.3% increase in enrollment at community colleges (Hillman & Orians, 2013). Similarly, for a 1% negative labor demand shock, enrollment in 2-year for-profit colleges increased by 1% (Armona et al., 2018). However, private colleges have structural features that allow them to adapt to changing economic conditions. For example, for-

profit colleges typically have a different governance structure than public institutions, with more defined stakeholder interests and physical and financial structures that allow more flexibility in the acquisition of financial resources (Gilpin et al., 2013).

It has been conclusively shown that previous economic hardships resulted in enrollment peaks as 2-year colleges represented an affordable means of degree attainment (Fry, 2009). These findings demonstrate the importance of economic conditions in determining enrollment impacts during recessions, and they suggest that the economy played a significant role in impacting enrollment during COVID-19.

2.2.2 Funding of Public 2-year Colleges

Community colleges are funded by the state, local property taxes, and student tuition. In 2017, more than half of public funding for community colleges came from state (33%) and local (20%) revenue (Community College Resource Center [CCRC], 2022). However, variation among state policy contexts, governance structures, and funding mechanisms contributes to state and local allocations. For example, in 2007, state appropriations in Arizona accounted for only 11% of total operational support, whereas state appropriations represented 60% of support in Arkansas, Connecticut, Georgia, North Carolina, Nevada, and Virginia (Katsinas & Tollefson, 2008). Moreover, local appropriations ranged from zero in 12 states to 40% or more of total operational support in California, Illinois, Minnesota, North Dakota, Nevada, and Wisconsin.

Structural deficits in state budgets have been criticized for their tendency to disadvantage community colleges (CCRC, 2022; Kahlenberg, 2015; Kolbe & Baker, 2019). In 2020, public 2-year colleges received less than half the revenue for education-related purposes per full-time-equivalent (FTE) student compared with public 4-year colleges ($8,700 vs. $17,500) (Yuen, 2020). FTE is calculated differently based on the institutional calendar system. For institutions

following a quarter calendar system, 45 undergraduate credit hours is considered one undergraduate FTE. In contrast, for institutions following a semester, trimester, 4-1-4, or other academic year calendar system, 30 undergraduate credit hours is considered one undergraduate FTE (NCES, n.d.-b). In 2021, public 2-year colleges received 6% more money per student from state and local governments (Barshey, 2022). Even with increased state and local funding, much less was spent on community colleges, as they disproportionally enroll part-time students. In 2019, 63% of community college students were enrolled part-time, compared with 26% of 4-year college students (NCES, 2021b). Thus, the disproportionate enrollment of part-time students contributes to insufficient funding of community colleges.

Institutional funding influences enrollment trends (Burnett, 2021; Cellini, 2010). The American Recovery and Reinvestment Act (ARRA) of 2009 required states to maintain funding for higher education. This funding mitigated the need for tuition increases and allowed the federal Pell Grant to support community college enrollment (D'Amico et al., 2015; Koh et al., 2019). However, since ARRA, state appropriations for public higher education have failed to meet increases in operational costs stemming from institutional growth, new program implementation, and inflation (Phelan, 2014). Between 2013 and 2018, community college expenditures increased by 20% (Albrecht, 2018). Consequently, community colleges shifted from state and local funding to a growing reliance on tuition and fees; without significant and corresponding increases in student financial aid (Phelan, 2014). This dependency on tuition revenue is crucial as it establishes 2-year colleges as resource-dependent organizations.

Insufficient and disproportionate state funding deprived community colleges of critical revenue resources, necessitating the acquisition of new resources. Therefore, inadequate investment among state and local governments forced community colleges to raise tuition.

Average tuition and fees at public 2-year colleges increased. The average annual cost of tuition, adjusted for inflation, increased from $1,212 in 1969-1970 to $3,377 in 2019-2020 (Hanson, 2022). Tuition costs differ between the private and public sectors (Gilpin et al., 2013). For example, in 2010, the average annual tuition difference between community colleges and for-profit colleges was $12,000 (Knapp et al., 2011). Higher tuition is related to lower enrollment (Burnett, 2021). While the Pell grant previously covered the cost of community college tuition, recent data suggest that it covers only 60% of rising tuition costs and does so for only the lowest-income students (Goldrick-Rab, 2018). Federal eligibility requirements placed on Pell grant recipients also contributed to 2-year enrollment declines (Koh et al., 2019). The Consolidated Appropriations Act of 2012 decreased the income threshold for an automatic zero-expected family contribution from $32,000 to $23,000 (Davidson, 2014). Enrollment in public and for-profit 2-year institutions positively correlates with increases in the Pell grant maximum (Cellini, 2010). Thus, tuition increases and changes to Pell grant eligibility influenced 2-year college enrollment declines.

2.2.3 Institutional Competition

Economic conditions and financial challenges are further exacerbated by changing student demographics. Lower birth rates resulting from the 2008 economic recession left fewer high school graduates pursuing higher education (Grawe, 2018). Nationwide enrollment at both 2-year and 4-year institutions is predicted to decline over the next decade (Grawe, 2018). This decrease in traditional-aged college students has resulted in competition for non-traditional students, a group historically served by 2-year colleges (Jenkins et al., 2020). Therefore, 2-year colleges must attract and retain students in a highly competitive market.

Competition for enrollment also exists within the 2-year sector. Targeting minority, low SES, and nontraditional student populations, public and private 2-year institutions draw from the same enrollment pool. While most prospective students choose the more affordable community college option, overcrowding has pushed potential students into the private sector. According to a nationally representative survey of U.S. community college students, 37% reported an inability to enroll in at least one course because it was full (Deming et al., 2013). Healthcare program availability also serves to attract students to the for-profit sector. Soliz (2018) found declines in the number of certificates awarded in health-related fields at community colleges two years after a new for-profit institution opened in the area. Survey data also demonstrated that students chose the private sector to avoid remedial courses and expedite degree completion (Deming et al., 2013).

In 2017, sanctions among the for-profit sector shifted enrollment to public institutions. In a national study on sanctioned for-profit institutions, Cellini et al. (2020) found a 53% decline in Pell grant recipient enrollment, while public 2-year colleges in the same counties saw a 17% enrollment increase (Cellini et al., 2020). Moreover, enrollment losses at for-profit colleges were 60-70% offset by increased enrollment within local community colleges. Two-year institutions must compete with each other and the 4-year sector to maintain enrollment numbers. However, during the COVID-19 pandemic, access to student enrollment was scarce.

2.3 Enrollment Trends During COVID-19

The COVID-19 pandemic continued the trend of declining enrollment amongst 2-year colleges. Between fall 2019 to fall 2021 enrollment in community colleges declined by 15% (NSCH, 2021). Enrollment declines were widespread, with 79% of community college presidents reporting declines (Kelderman, 2020; Vasquez, 2020). It is well established that 2-

and 4-year colleges serve different populations, but the enrollment data during COVID-19 reveal how much more vulnerable community college students are in times of crisis.

Enrollment patterns at 2- and 4-year colleges diverged sharply during COVID-19, with community colleges experiencing unprecedented enrollment declines (NCES, 2021a; NSCH, 2021). In spring 2021, enrollment at community colleges dropped 11.3% compared with the 5.9% decline among 4-year institutions (NSCH, 2021). Moreover, enrollment declined by 22.7% for first-year students, as households with prospective community college students canceled plans to enroll at more than twice the rate of those considering 4-year institutions (Fields et al., 2020; Sutton, 2021). These alarming trends pose a threat to the wellbeing of community colleges and the students they serve.

The literature focuses on public community colleges or groups 2- and 4-year private institutions together. Data on overall (i.e., 2- and 4-year) for-profit enrollment indicates that these institutions experienced enrollment gains during the pandemic. For-profit enrollment was 4% higher in fall 2020 than in fall 2019, marking the first positive single-year change in enrollment since 2010 (NCES, 2022b). This enrollment increase is substantial given that community colleges experienced significant enrollment declines between fall 2019 and fall 2020 (NCES, 2022b). Comparatively, not-for-profit college enrollment remained relatively stable (-0.6%) from fall 2019 to fall 2020 (NCES, 2021b).

The assumption exists that for-profit colleges' experience with online learning eased the transition from traditional to remote instruction during COVID-19, contributing to enrollment hikes (Deming et al., 2013). However, 2-year for-profit colleges disproportionately enroll students from low SES, first-generation, and underrepresented minority backgrounds; populations known to be negatively impacted by the digital divide (Brock & Diwa, 2021; Kim et

al., 2020; Quach & Chen, 2021). Therefore, assumptions of 4-year for-profit colleges are not directly transferable to the private 2-year sector. The lack of differentiation between private sector enrollment data represents a gap in the literature. The present study contributes to the literature by quantifying enrollment trends in the private 2-year sector and exploring the relationship between enrollment and COVID-19.

2.4 The Influence of COVID-19 on Student Demographics

The difference in the impact of COVID-19 on enrollment between the 2- and 4-year sectors can be partly explained by the different populations that these institutions serve. Relative to 4-year institutions, 2-year colleges serve a higher percentage of marginalized (e.g., minority, low SES, and non-traditional) student populations (Brock & Diwa, 2021; Causey et al., 2021; Schanzenbach & Turner, 2022). Therefore, to understand the influence of COVID-19 on 2-year college enrollment, one must consider how COVID-19 affected traditional 2-year student demographics.

2.4.1 Race/Ethnicity

During COVID-19, community colleges experienced a loss of enrollment from every major racial/ethnic group (Brock & Diwa, 2021; NCES, 2021a). White (-18.2%), Hispanic (-15.7%), Black (-17.6%), Asian (-16.7%), Native American (-20.8%), and international (-26.7%) student populations experienced substantial declines between fall 2019 and fall 2021 (NCES, 2021a). Brock and Diwa (2021) call attention to substantial declines among Black, Hispanic, and Indigenous students (i.e., American Indian or Alaskan native), as these same racial/ethnic groups were disproportionately affected by COVID-19-related health (e.g., increased infection and mortality rates) and economic challenges (e.g., loss of income and basic needs insecurity) (CDC, 2022; Pratt, 2017; Soria et al., 2020). Moreover, enrollment declines experienced within the

California community college system, the largest postsecondary system in the country, were greatest for Black and Hispanic students (Bulman & Fairlie, 2022). Therefore, the disparate impact of COVID-19 on minority populations influenced enrollment declines during 2020-2021.

2.4.2 Gender

From fall 2019 to fall 2020, enrollment declines among males at 2-year institutions were twice that of females (NCES, 2021a; Schanzenbach & Turner, 2022). This decline is attributed to a reduction in assembly, repair, and maintenance (ARM) programs; characterized by high male enrollment numbers and in-person coursework (Schanzenbach & Turner, 2022). Regression analysis demonstrated that concentration in ARM programs explained 28% of the observed decline in enrollment between 2019 and 2020 (Schanzenbach & Turner, 2022). This finding suggests that the disproportionate impact on hands-on technical courses negatively influenced male enrollment during COVID-19.

Two-year institutions play a crucial role in the postsecondary education of females, as women make up 60% of the 2-year student population (AACC, 2022; Center for Community College Student Engagement, 2021). More than 2 million community college students are parents of children under 18, and 70% of these parents are mothers (Karp & Cruse, n.d.). Undergraduate national survey data identified female students as having a higher rate of difficulty (24% vs. 14%) finding safe and stable childcare than male students during the COVID-19 pandemic (Cameron et al., 2021). Subsequently, substantial enrollment declines occurred in 2-year institutions where basic need services such as childcare were suspended (Zottarelli et al., 2022). Therefore, COVID-19 influenced enrollment by gender during the COVID-19 pandemic.

2.4.3 Low Socioeconomic Status

Existing research suggests that there was a relationship between income level and enrollment decisions during COVID-19. College enrollment of students graduating from low-income high schools declined by 10.7%, whereas higher-income schools declined by only 4.6% (Causey et al., 2021). This gap is substantial given that enrollment numbers showed little variance in prior years. Financial concerns were cited as the primary concern among community college students who chose not to re-enroll during the spring 2021 semester (Sutton, 2021). Of those students, 44% said they could no longer afford a program and 37% prioritized employment over enrollment (Sutton, 2021). Thus, COVID-19's impact on the low SES student population contributed to enrollment declines during the 2020-2021 academic year.

2.4.4 Enrollment Intensity

The economic impact and subsequent financial challenges of COVID-19 caused a significant decline in part-time and full-time enrollments at postsecondary institutions (NSCH, 2021). Historically, elevated levels of unemployment were associated with a greater demand for full-time attendance (Hillman & Orians, 2013). There was a potential for increased part-time enrollment in the spring of 2020 at public 2-year institutions based on assumptions from enrollment trends during the 2008 economic recession (Blagg, 2020; Juszkiewicz, 2020). However, during COVID-19, both full-time and part-time enrollment declined (-9.2% and -4.1%) (NSCH, 2021). Therefore, COVID-19 negatively impacted both part-time and full-time student enrollment decisions.

2.4.5 Campus Setting

There is a postsecondary enrollment gap between rural communities and their more urbanized counterparts, as rural students attend college at a lower rate than their urban peers

(Ratledge et al., 2020; Scott et al., 2016; Siddiqi, 2022). Rural community college students commonly face barriers to postsecondary enrollment stemming from affordability, travel, poor educational preparation, and inconsistent access to technology (Scott et al., 2016). Therefore, an assumption exists among rural community college leaders that COVID-19 exacerbated the postsecondary enrollment gap (Baldwin et al., 2021). However, enrollment declines were prevalent across the community college sector, regardless of campus location. First-time student enrollment declined by 13.1% among students from urban high schools and by 11% among students from suburban or rural high schools (Howell et al., 2021). Moreover, overall enrollment declined by 15.4% (city), 14.9% (suburban), 16.0% (town), and 12.1% (rural) between fall 2019 and fall 2021 (NCES, 2021a).

2.5 Student Enrollment Decisions During COVID-19

There were extensive enrollment declines across traditional 2-year student demographics as COVID-19 impacted student experiences and enrollment decisions (Brock & Diwa, 2021; Causey et al., 2021; NCES, 2021a; Schanzenbach & Turner, 2022). Students' choice not to enroll or reenroll informed the adaptation of enrollment management efforts to attract scarce resources during times of instability. Therefore, exploring the impact of COVID-19 on 2-year colleges' primary resources (i.e., students) is necessary. Several factors may have influenced student's enrollment decisions such as health and safety concerns, financial insecurity, and remote instruction.

2.5.1 Health and Safety Concerns

Health concerns associated with COVID-19 sparked uncertainty and distress throughout the student population. These concerns were prevalent among minority student populations, as Hispanics were disproportionally represented among all COVID cases, and Black, Hispanic, and

Indigenous persons were disproportionally represented among all COVID deaths (Brock & Diwa, 2021; CDC, 2022). While the health risks related to COVID-19 initially necessitated remote instruction, the eventual return to in-person instruction prompted concerns that COVID-19 would spread throughout college campuses and communities (Leidner et al., 2021). As a result, more than one-third of households with plans for community college enrollment cited the virus as a factor in their decision not to enroll (U.S. Census Bureau, 2021).

Several authors also explored the impact of COVID-19-related health concerns on students' mental health. Survey analysis of minority populations indicated that students of color reported high levels of mental health challenges related to COVID-19 (Molock & Parchem, 2021). In contrast, Clabaugh et al. (2021) used correlational analysis to demonstrate that emotional distress was significantly related to academic concerns, not the COVID-19 virus. However, their study demographics were not representative of the high minority population typical of 2-year colleges. Given that minority and low SES individuals were disproportionately affected by COVID-19, it is reasonable to assume that physical and mental health concerns influenced enrollment decisions during COVID-19.

2.5.2 Financial Impact

The economic implications of COVID-19 affected students as unemployment and basic needs insecurity increased (Owens et al., 2020). Students experienced life disruptions such as personal illness, taking care of a sick family member, job loss, homeschooling children, and homelessness (Blankstein et al., 2020). Survey data of 195,000 students from 130 2-year colleges and 72 4-year colleges and universities found that three in five respondents had insufficient access to affordable food or housing (Goldrick-Rab, 2021). Moreover, Black and Taylor (2021)

found community college students self-reported a high need for utility and housing assistance, with food being the lowest need.

Financial difficulties related to employment, loss of income, and food insecurity, were exacerbated for Black, Indigenous, and other people of color; populations typically served by 2-year colleges (Pratt, 2017; Soria et al., 2020). National survey data of 38,602 students at 39 2-year and 15 4-year colleges and universities demonstrated differences in basic needs insecurity by race/ethnicity, with Black and Hispanic students reporting higher rates of food and housing insecurity than White students (Goldrick-Rab et al., 2020). Students from low-income backgrounds were more likely to experience educational disruptions due to increased expenses and changes in living situations (Reed et al., 2022). Therefore, the impact of COVID-19 on student finances influenced enrollment decisions during the pandemic as students prioritized their basic needs.

2.5.3 Remote Instruction

The COVID-19 pandemic led to an abrupt shift from in-person to virtual instruction in the spring of 2020. Unequal access to technology and barriers to readiness for online learning among marginalized students complicated the transition (Hu, 2020). While advocates of online learning argue that virtual instruction increases accessibility to higher education, existing research demonstrates a digital divide (Quach & Chen, 2021). Foundational research in this area shows that community college students have higher course dropout rates and lower grades in online courses compared with classmates enrolled in face-to-face courses (Jaggers & Xu, 2010). Moreover, the negative impacts of online learning are most pronounced for students from low SES and minority backgrounds; populations disproportionately affected by COVID-19-related health and economic challenges (Blankstein et al., 2021; CDC, 2022; Hart et al., 2021).

National enrollment data demonstrates that remote course disruptions from COVID-19 shaped student experiences and enrollment decisions resulting in substantial enrollment declines (NCES, 2021a; NSCH, 2021). Students from lower-income households were less likely to have the necessary equipment for remote learning, reliable internet access, and an environment conducive to remote learning (Brock & Diwa, 2021; Kim et al., 2020). Moreover, the lack of technological resources to support the rapid shift to remote instruction was cited as the primary deterrent to rural student enrollment during COVID-19 (Siddiqi, 2022). Survey data on students' perceptions of remote learning shifts indicated declines in confidence amongst all marginalized student demographics related to completing learning-related tasks, access to remote technology, and life disruptions (Prokes & Housel, 2021). Consequently, the negative student perception of remote learning influenced enrollment decisions.

2.6 Enrollment Management Efforts

The novel circumstances surrounding the COVID-19 pandemic and their subsequent impact on students' enrollment decisions created precarious enrollment conditions. Community colleges were especially vulnerable due to their dependency on tuition revenue and service to marginalized student populations. Consequently, 2-year leaders looked outside the traditional paradigms of obtaining enrollment numbers. Using RDT, this study adds to the literature by exploring COVID-19-specific enrollment efforts (e.g., shift to remote instruction, return to in-person instruction, distribution of emergency relief aid, and tuition incentives) and their influence on enrollment during the 2020-2021 academic year.

2.6.1 Remote Shift

The shift to remote instruction necessitated technological investments across the 2-year sector. Colleges often defaulted to foundational efforts such as laptop distribution and hotspot

connectivity (Hart et al., 2021). While technology distribution removes the barrier of unequal

technological access, it only addresses the most basic level of student needs (Brock & Diwa,

2021; Hart et al., 2021). Successful online learning also requires a distinct set of student skills.

For instance, navigating modern technologies (e.g., learning management systems), time

management, self-motivation, and an environment conducive to learning (Hart et al., 2021;

Jaggers & Hu, 2010; Siddiqi, 2022). Therefore, the distribution of technology alone is not a

comprehensive solution to barriers created by the remote shift.

Qualitative data collected from chief online officers at various institutions across the

United States demonstrated that institutions with a higher level of online presence pre-COVID-

19 benefited during the remote transition (Bouchey et al., 2021). Moreover, regression analysis

showed that colleges with higher levels of distance education (DE) resources pre-COVID

generated broader online training efforts for students and faculty (Hart et al., 2021). The private

sector experienced enrollment gains, suggesting that private colleges' experience with online

learning eased the transition to remote instruction during COVID-19 (Deming et al., 2013;

NCES, 2022a; NSCH, 2021). Using RDT, the pre-COVID-19 availability of DE may have

encouraged a smoother transition to external contingencies and attenuated postsecondary

enrollment declines during COVID-19. However, several studies have contradicted this

assumption.

Using regression analysis, Bulman et al. (2022) demonstrated a small, negative, and not

statistically significant relationship between student enrollment changes and pre-pandemic online

shares within the California community college system. Further analysis of institutional-level

differences related to online technologies failed to predict enrollment in ARM programs at

community colleges (Schanzenbach & Turner, 2022). Moreover, while many urban and suburban

2-year institutions offered online courses before the pandemic, research on rural institutions

demonstrates that a lack of technology infrastructure and financial resources prohibited robust

online programming (Siddiqi, 2022). If online presence pre-COVID-19 benefited the remote

transition, one could expect steeper enrollment declines at rural institutions. However, summary

reports indicate that enrollment declines between fall 2019 and fall 2020 were equally

distributed, regardless of campus location (NCES, 2021a).

It has been suggested that digital barriers among the 2-year student population influenced

enrollment decisions (Bird et al., 2022; Hart et al., 2021). Furthermore, contradictory evidence

exists regarding the relationship between online presence pre-COVID and enrollment during the

2020-2021 academic year. Consequently, the present study explored the impact of the remote

shift on enrollment, using the percent change in students enrolled exclusively in distance

education courses from fall 2019 to fall 2020 as an independent variable.

2.6.2 Initiation of In-person Instruction

Research on the return to in-person instruction during COVID-19 is limited and often

centers around health implications such as increased incidence rates from colleges reopening

(Andersen et al., 2022). However, existing literature demonstrates the influence of political and

financial pressure on the resumption of in-person instruction (Collier, Fitzpatrick, Dell et al.,

2022; Felson & Adamczyk, 2021). Felson and Adamczyk's (2021) logistic regression analysis of

2- and 4-year public and 4-year private institutions demonstrated that politics and budget

concerns most impacted decisions about whether to return to in-person instruction.

During COVID-19, postsecondary leaders faced pressure to resume in-person instruction

as enrollment declines increased. In the media, college presidents justified reopening plans with

financial implications of reduced tuition revenue caused by enrollment declines during remote

learning (Diep, 2020; Lederman, 2020). Colleges with high tuition revenue were more likely to resume in-person instruction (Felson & Adamczyk, 2021). For example, leaders at not-for-profit institutions were significantly more likely to shift instructional strategies to include more in-person instruction, a choice stemming from financial dependence on tuition dollars (Whatley & Castiello-Gutiérrez, 2022).

Political pressure accompanied financial pressure to reopen. While there was a uniform response to school closures during the spring of 2020, decisions about in-person instruction in the fall of 2020 varied across states. Multiple group structural equation modeling suggested that county and state political preferences were strongly associated with in-person learning at 2-year public and private institutions (Collier, Fitzpatrick, Dell et al., 2022). Moreover, institutions in majority republican states were more likely to resume in-person instruction (Collier, Fitzpatrick, Snideman, & Marsicano, 2020; Felson & Adamczyk, 2021). However, a gap in the literature exists regarding the resumption of in-person instruction and enrollment during the COVID-19 pandemic.

Existing research supports the correlation between return to in-person instruction and financial/political pressure during COVID-19. However, the influence of return to in-person instruction on enrollment during 2020-2021 is unknown. Consequently, this study aims to fill a gap in the literature regarding the resumption of in-person instruction and its influence on 2-year college enrollment during COVID-19.

2.6.3 Emergency Relief Aid

The Coronavirus Aid, Relief, and Economic Security (CARES) act, a relief bill meant to aid families financially impacted during the pandemic, allocated $75 billion to assist postsecondary institutions as part of the Higher Education Emergency Relief Fund (HEERF)

(U.S. Department of Education, 2021). Funds came through three pandemic assistance bills; the CARES Act (HEERF I), Coronavirus Response and Relief Supplemental Appropriations Act (CRRSAA) (HEERF II), and the American Rescue Plan (ARP) (HEERF III). According to an AACC analysis of federal data, community colleges received $23 billion in HEERF funds (Gravely, 2022). However, compared with 4-year institutions, 2-year colleges received disproportionately less funding.

The CARES Act was structured based on the number of FTE students enrolled in each college. Therefore, it failed to consider institutions with large part-time enrollment (Miller, 2020). Community colleges disproportionately enroll part-time students (NCES, 2021b). While community colleges educate almost 40% of the student population, they only received 27% of CARES act funds (Miller, 2020). Even though 2-year colleges received less emergency relief funding than their 4-year counterparts, the media highlights HEERF funds as instrumental to combating enrollment declines (Brink, 2022; Gravely, 2022; Pierce, 2021).

HEERF guidelines mandated the distribution of funds so that a portion went directly to students as emergency financial grants, with the remainder for use in institutional priorities related to the pandemic. Many community colleges used funds to provide direct payment to students to offset COVID-acquired costs (e.g., childcare, food, housing, and healthcare), discharge student debt, and enhance technological capabilities (Gravely, 2022). For example, Atlantic Cape Community College in New Jersey discharged $1.1 million in debt, making students with past balances eligible to reenroll (Pierce, 2021). The same institution created a $2.5 million technology reserve program to offset the digital divide by providing enrolled students with free laptops (Pierce, 2021).

The media highlights COVID emergency relief as instrumental in supporting students and reversing enrollment losses (Brink, 2022; Gravely, 2022; Pierce, 2022). However, the research literature suggests that most community colleges struggled to deliver equitable and effective emergency aid programs (Goldrick-Rab, 2021). A systemic, nationally representative study of how HEERF funds aided student enrollment does not exist (Brock & Diwa, 2021). Therefore, this study explored how HEERF funds influenced enrollment during COVID-19.

2.6.4 Tuition Incentives

Colleges have traditionally responded to recessions by increasing tuition and fees to make up for declines from other revenue sources (An, 2013). After the Great Recession, community colleges increased tuition by 10.1% (Kelchen et al., 2021). However, affordability combined with the disproportionate impact of COVID-19 on at-risk student populations prompted discussions concerning the cost of tuition. To increase enrollment, many institutions used HEERF funding to offer tuition incentives (e.g., tuition freeze, tuition reduction, or free tuition [i.e., promise programs]) (Bauer-Wolf, 2021; Steele, 2022; Weissman, 2022; Whitford, 2021). For example, the administration at Brookdale Community College in New Jersey opted to freeze tuition in 2021 to increase access for students struggling financially (Whitford, 2021).

Existing research suggests that tuition reduction influences first-year enrollment decisions. Denning's (2017) quasi-experimental analysis demonstrated that reduced tuition impacts enrollment in community college immediately after high school graduation; associating a $1,000 decrease in tuition with a 5.1% increase in immediate first-year enrollment. Comparatively, regression estimates suggested that free tuition incentives (e.g., Oregon Promise) influenced 4-year students to transfer to public 2-year colleges, increasing enrollment by 4-5% (Guarantz, 2020). While both studies provide insight into the potential impact of tuition

incentives on 2-year college enrollment, they are limited by single-state data. This is significant given the wide variation in enrollment patterns across states (Ma & Baum, 2016).

Gandara and Li (2020) add to the literature using national data in their examination of the influence of tuition incentives on first-time 2-year college enrollment of students by race/ethnicity and gender. Their study demonstrated large increases in enrollment (23%) because of tuition incentives, directly associated with increases in Black, Hispanic, and female students (Gandara & Li, 2020). While this study generalized the influence of tuition incentives on 2-year college enrollment, it was conducted during economic stability and is therefore not representative of the economic environment created by the COVID-19 pandemic. Consequently, this study examined the influence of tuition incentives across the United States during a period of substantial financial hardship to add to our understanding of the impact of tuition incentives on enrollment.

2.7 Resource Dependence Theory

The present study used resource dependence theory (RDT) as a theoretical framework. Under RDT, organizational behavior, actions, and performance are explained by the environments or contexts which provide critical resources to the organization (Pfeffer, 1982). Therefore, organizations are not "internally self-sufficient" and must rely on the environment for essential resources (Pfeffer, 1982, p. 40). Public 2-year institutions depend on local and state appropriations and tuition revenue as critical resources. Underinvestment in community colleges by state and federal funding agencies (CCRC, 2022), has resulted in community colleges becoming increasingly dependent on tuition revenue. This dependency is even more prevalent in the private 2-year sector, as 88% of their revenue comes from tuition; compared with 53% at community colleges (Gilpin et al., 2015). Therefore, 2-year colleges are an ideal type of

resource-dependent organization to examine because so much of their resources depend on enrollment (McAllister-Spooner & Kent, 2009).

Postsecondary institutions seek institutional sustainability through enrollment management. For example, RDT has been used to demonstrate the relationship between resource scarcity and enrollment initiatives aimed at tuition diversification through enrollment of out-of-state students and online education (Jaquette & Curs, 2015; Ortagus & Yang, 2018; Salazar, 2019; Whatley & Castiello-Gutiérrez, 2022). Dependency on enrollment is central to this study as it impacts the strategic plans of 2-year colleges. Powell and Rey (2015) applied RDT to postsecondary education and how leaders acquire essential resources by leveraging resource dependency strategies. In their analysis, institutions are a system linked to the external environment through dependence on critical resources (e.g., tuition revenue and state funding). Therefore, institutions most responsive to environmental contingencies are rewarded through the procurement of essential resources and institutional sustainability.

RDT encompasses three environmental constructs applicable to this study: 1) munificence, 2) dynamism, and 3) complexity. Environmental munificence is determined by the availability and accessibility of critical resources (Pfeffer & Salancik, 1978). RDT predicts that organizations will develop strategies that take advantage of munificence to survive (Yeager et al., 2014). For example, the mandatory shift to remote instruction caused by COVID-19 required administration to manage enrollment through promotion of distance education courses. Subsequently, the removal of state social distancing mandates encouraged a push among the administration for in-person instruction. Whatley and Castiello-Gutiérrez (2022) were the first to use RDT to explore enrollment during COVID-19. Their results suggested that private-not-for-profit institutions were more likely to shift instruction back to an in-person modality due to the

institutions' financial dependency on international student enrollment (Whatley & Castiello-Gutiérrez, 2022).

Dynamism and complexity involve uncertainty within the environment. Fluctuations in munificence (i.e., accessibility of resources) make the environment more dynamic; creating uncertainty (Yeager et al., 2014). Environmental complexity further contributes to uncertainty by complicating the known efficiency of current actions on future objectives. COVID-19 created environmental conditions in which munificence decreased, while dynamism and complexity simultaneously increased. These conditions influenced strategies aimed at the procurement of essential resources. Therefore, the impact of COVID-19 on the external postsecondary environment presents an ideal situation to study the influence of enrollment management efforts.

The impact of COVID-19 on the student population called for institutions to adjust; a concept that Powell and Ray (2015) refer to as "adapting and changing to fit the environment" (p. 97). In the context of this study, COVID-19 impacted students' financial security and ability to take courses in their preferred modality. Consequently, institutions adapted to fit environmental requirements by offering remote instruction, followed by the eventual switch to in-person instruction. Tuition incentives and the distribution of emergency relief aid addressed students' financial insecurities. Therefore, as the student population's needs shifted, so did the institution's strategic actions. This shift is rooted in institutional sustainability and the need to procure critical resources (i.e., tuition revenue). However, the impact of these novel enrollment efforts on enrollment during COVID-19 is unknown. By applying RDT, this study addressed how COVID-19 and subsequent enrollment management efforts influenced 2-year college enrollment during the 2020-2021 academic year.

2.8 Methodological Review

Empirical research methodologies can be described as quantitative, qualitative, or a mixture of both (i.e., mixed methods). The present study utilizes a quantitative research design guided by RDT. Existing research demonstrates substantial enrollment declines during 2020-2021 (AACC, 2019; NSCH, 2021; NCES, 2021a). However, there is a gap in the literature regarding the influence of COVID-19, and subsequent enrollment management efforts, on 2-year college enrollment. Because non-experimental quantitative data are generated based on what is already known, it is best suited for testing existing theories. Comparatively, qualitative research is useful in the development of new theories. Higher education enrollment as a phenomenon has been extensively studied, using more than a dozen theories, including RDT (Perez-Vergara, 2019). Therefore, to address the purpose of this study, quantitative research methods are preferable.

The present study aims to explain the impact of COVID-19 on enrollment across the 2-year sector. Therefore, quantitative methodology provides the best foundation for broad generalization through the incorporation of a large, nationally represented, sample. Furthermore, this methodology allows for the quantification of enrollment management efforts. Subsequently, objective data serves to identify enrollment management efforts that were most influential during the pandemic.

Qualitative research often informs quantitative. Qualitative studies on COVID-19 and 2-year enrollment offered insight into the student and administrative perspective (Hawley et al., 2021; Strayhorn, 2022). While qualitative methodological approaches are limited in their ability to establish influence, they do inform variable selection for subsequent quantitative analysis. For example, content analysis of open-ended survey questions revealed themes of unemployment and

financial concerns among the 2-year student population: both of which were selected as variables for use in the present study (Hawley et al., 2021).

Existing quantitative research can be divided into two categories: descriptive and inferential. Descriptive research substantiates enrollment declines and introduces factors with the potential to influence enrollment. For example, summary reports demonstrated enrollment declines among student demographics (e.g., race/ethnicity, gender, socioeconomic status, enrollment intensity, etc.) (NCES, 2022a; NSCH, 2021). While applicable for monitoring yearly enrollment, summary reports examine percentage change, with statistical significance not reported. Several studies used survey research to capture institutional efforts aimed at promoting remote learning and service (Finkel, 2020; Zottarelli et al., 2022). Other studies employed survey instrumentation and descriptive statistics to highlight the community college student perception of remote learning and enrollment decisions (Kim et al., 2020; Prokes & Housel, 2021). However, descriptive research is limited in its ability to establish relationships between variables; failing to capture the influence of COVID-19 and subsequent enrollment management efforts on enrollment.

Several authors have employed higher-level statistical analyses to explore COVID-19 and postsecondary enrollment. Felson and Adamczyk (2021) and Hart et al. (2021) studied the influence of COVID-19 on institutional responses (i.e., technological investments and return to in-person instruction) using MLR. While these studies identified institutional-level responses to COVID-19, they fail to explain the influence these efforts had on enrollment. Several studies established relationships between explanatory variables (e.g., instructional mode, unemployment, percentage of ARM programs, 4-year transfer rates, financial aid, and underrepresented students of color) and community college enrollment during COVID-19 (Bulman & Fairlier, 2021;

Schanzenbach & Turner, 2022). While each of these studies validates the use of MLR analysis in explaining enrollment impact, they are limited in the exclusion of the private 2-year sector and non-nationally representative data. Therefore, restricting their ability to offer generalizable inferences. At the national level, Scafidi et al. (2021) used a multinomial logistic approach to explore the influence of COVID-19 on enrollment at 158 independent K-12 schools from 15 states between fall 2019 and fall 2020. The anomalous enrollment patterns of K-12 independent schools during COVID-19 validate a multinomial dependent variable approach (i.e., prediction of different outcomes). In comparison, the consistent enrollment declines across the 2-year sector call for a single dependent variable representing enrollment during the 2020-2021 academic year rather than having different categories of dependent variable (e.g., increase, decrease, stayed the same).

National summary reports substantiate declines in 2-year college enrollment during COVID-19 (AACC, 2019; NSCH, 2021; NCES, 2021a). While the analytic research demonstrates variable impact, it is delimited by single state-level data (Bulman & Fairlier, 2021; Felson & Adamczyk, 2021; Hart et al., 2021; Schanzenbach & Turner, 2022). Moreover, inferential and descriptive analysis focuses on student demographics and course instruction, failing to address the institutional response to declining enrollment. Therefore, the purpose of this study was to explain how COVID-19 and enrollment management efforts influenced 2-year college enrollment during 2020-2021.

Drawing from past quantitative studies, this study utilized MLR analysis to explain how enrollment management efforts influenced 2-year college enrollment during COVID-19. MLR analysis is a valid model for this study because it incorporates many variables, can handle diverse types of variables (e.g., scale, nominal, and ordinal), calculates the interaction effect

between variables, and is explanatory in nature (Gilstrap, 2013; Teo, 2014). As a research methodology, it has been validated by statisticians in the social and behavioral sciences as an effective tool when used to explain phenomena (Gilstrap, 2013). However, for regression analysis to produce a valid model, each variable should be grounded in the theoretical or empirical research literature (Gall et al., 2015).

2.9 Chapter Summary

The COVID-19 pandemic continued the trend of declining enrollment among 2-year colleges and exacerbated inequalities among marginalized student populations. Students faced health-related concerns, unequal access to technology and online readiness (i.e., digital divide), and financial implications resulting from unemployment and prioritization of basic needs security (Blankstein et al., 2020; Brock & Diwa, 2021; CDC, 2022; Quach & Chen). Subsequently, disproportionate enrollment declines among minority, low SES, and male student populations occurred (Brock & Diwa, 2021; Schanzenbach & Turner, 2022; Sutton, 2021).

As resource (i.e., tuition) dependent organizations, 2-year colleges are sensitive to fluctuations in enrollment, requiring adaptation to promote institutional stability. Consequently, the transformative influence of COVID-19 on 2-year colleges, and the student population, necessitated novel enrollment management efforts (e.g., shift to remote instruction, return to in-person instruction, distribution of emergency relief aid, and tuition incentives). However, the influence of these enrollment efforts on enrollment during COVID-19 is unknown.

Based on a review of existing literature, there is sufficient cause to examine which factors contributed to enrollment during COVID-19. Moreover, gaps in the literature highlight the need for higher-level statistical analysis with an emphasis on variable impact. Using RDT, this study adds to existing research by exploring COVID-19-specific enrollment efforts (e.g., shift to

remote instruction, return to in-person instruction, distribution of emergency relief aid, and

tuition incentives) and their influence on enrollment during the 2020-2021 academic year.

Chapter three will include a detailed description of the methodology chosen for this study.

CHAPTER 3: METHODOLOGY

The COVID-19 pandemic changed the political, social, and economic environment surrounding postsecondary education impacting enrollment decisions throughout the student population. Subsequently, 2-year colleges experienced substantial enrollment declines, bringing enrollment management to an institutional forefront. Amidst declining enrollment, federal policymakers responded by distributing resources and college leaders countered by adapting enrollment efforts to ensure institutional sustainability. The emphasis placed on student enrollment calls for exploration into the influence of COVID-19 on enrollment during the 2020-2021 academic year. Therefore, the purpose of this study was to explain how enrollment management efforts influenced 2-year college enrollment during the COVID-19 pandemic.

Chapter three includes a detailed description of the methodology chosen for this study. It also provides a thorough explanation of the methods used, including the research design, variable selection, and sample population. In addition, data collection methods and instrumentation use are presented. This chapter concludes with a discussion of data analysis methods related to the explanation of the influence of each independent variable (e.g., shift to remote instruction, return to in-person instruction, emergency relief aid, and tuition incentives) on enrollment during the COVID-19 pandemic.

3.1 Research Design and Approach

Quantitative research involves the systemic and empirical investigation of a phenomenon. Quantitative methodology is applicable when the objective is to: a) investigate a phenomenon and b) quantify relationships between variables (Basias & Pollalis, 2018). The purpose of the present study was to explain what type of relationship, if any, exists between the dependent variable (total enrollment) and each of the independent variables (e.g., shift to remote instruction,

return to in-person instruction, emergency relief aid, and tuition incentives). Related studies,

such as Agajanian et al. (2008) and Scafidi et al. (2021), used quantitative methods to explore the

influence of COVID-19 on enrollment at for-profit and K-12 schools between fall 2019 to fall

2020. This approach was also used by Bulman and Fairlie (2022) to explain the impact of

COVID-19 on community college enrollment within the California community college system.

Consequently, the justification for using a quantitative method stems from its ability to show

relationships and establish influence amongst variables while controlling for factors known to

impact enrollment (e.g., race/ethnicity, gender, low SES, enrollment intensity, campus setting,

region, state unemployment rate, and COVID-19 state case rate).

Research questions further served to guide the methodology of this study. The present

study addressed two research questions: 1) How did enrollment management efforts influence 2-

year college enrollment during the COVID-19 pandemic? and 2) What differences exist between

the 2-year institution type and the influence of enrollment management efforts during the

COVID-19 pandemic?

Based on the research questions, the present study aligned with correlational research.

This methodology explores relationships between variables contributing to a phenomenon,

providing statistical significance and magnitude (Gall et al., 2015). Existing research on

enrollment substantiates the use of a correlational design. O'Hara et al. (2012) used correlational

research methods to establish the relationship between perceived racial discrimination and

college enrollment for African Americans. Moreover, Sanchez-Gonzalez et al. (2019) used a

correlational approach to explore relationships between Latinx postsecondary enrollment and

psychocultural, sociocultural, college knowledge, and citizenship. Therefore, correlational

research is appropriate for exploring relationships between variables and enrollment.

Inferential statistics, in the form of MLR analyses, were used to address each research question. MLR analysis uses linear modeling to quantify the amount of impact each independent variable had on the dependent variable while controlling for race/ethnicity, gender, low SES, enrollment intensity, campus setting, region, state unemployment rate, and COVID-19 state case rate (Reinard, 2006; Teo, 2014). MLR analysis has been used to explain variable impact on enrollment in state-level systems and academic programs (Bulman & Fairlie; Schanzenbach & Turner, 2022). Therefore, MLR analysis is a valid tool for examining the influence of enrollment management efforts on enrollment in 2-year institutions during the COVID-19 pandemic.

3.2 Delimitations

Institutions included in this study were delimited to those classified in IPEDS as public and for-profit institutions. Not-for-profit 2-year institutions were removed from the population due to the small sample size (N=137). Missing data further impacted the analysis of the not-for-profit population as listwise exclusion produced zero valid cases. This study was also delimited by geographic location. Data in IPEDS is representative of all postsecondary institutions participating in federal student aid programs across all 50 states and American territories. The current study delimited the list of institutions to exclude those in outlying areas (e.g., Puerto Rico), as these institutions represent a small proportion (1%) of all 2-year colleges. The onset of the COVID-19 pandemic and the availability of IPEDS data further delimited this study to the 2019-2020 and 2020-2021 academic years.

3.3 Positionality

I approach this research as a professor at a public 2-year college located in the southeast region of the United States. This institution, like many others, experienced enrollment declines during the COVID-19 pandemic. In response, enrollment management efforts ensured

institutional sustainability. Therefore, my position within the 2-year sector influenced the purpose of my current research.

I acknowledge that positionality not only informs topic selection but also shapes the choice of methodology and interpretation of the findings. As a professor within the natural and physical science department, I assume that reality is objectively measurable through quantitative research methodology. However, knowledge gained in my doctoral program has shifted my philosophical beliefs from a positivist to a postpositivist paradigm. Therefore, my position within the public 2-year college system informs all aspects of this study, contributing to biases and the imperfection of knowledge gained.

3.4 Setting and Sample

The postsecondary landscape comprises 1,933 public, 1,774 private not-for-profit, and 2,292 for-profit institutions, 1,721 of which are 2-year institutions (NCES, 2022b). Two-year institutions (e.g., public, for-profit, and not-for-profit) enroll 31% of undergraduate students with instructional missions focused on providing career-oriented programs and preparing students to transfer to 4-year institutions. In the United States, 148 community colleges, and 25 technical colleges, offer community college baccalaureate (CCB) programs. These programs allow for a 4-year degree without transferring to a senior institution. CCB degrees typically focus on programs critical to local and regional economies where community college students live (Whissemore, 2022). Thus, these institutions align with the typical 2-year mission and were included in the study population.

The open admission policies employed by 2-year colleges permit comparatively large enrollment proportions among the marginalized (e.g., minority, low SES, and non-traditional) student populations. Furthermore, the 2-year sector disproportionately enrolls part-time students,

with 37% of 2-year students attending full-time and 63% attending part-time (NCES, 2022b).

Though the average annual cost of 2-year tuition is $10,300, there is considerable variation

between institution type and state. The private sector and institutions in New Hampshire offer the

highest tuition, while the public sector and institutions located in California offer the lowest

(Hanson, 2021). Total revenues at 2-year institutions are $61 billion, with tuition ranging from

27-88% of revenue (NCES, 2022b).

Sample selection for this study was based on the principle of purposeful sampling. This

intentional strategy informed further understanding of the problem and phenomenon related to

the study (Creswell, 2007). Institutions were selected based on those institutions most applicable

to the problem. Institution selection was further validated by the substantial declines in 2-year

college enrollment resulting from the COVID-19 pandemic (NCES, 2022a; NSCH, 2021).

Consequently, the population selected for this study includes 2-year colleges participating in

federal student aid programs across the 50 states. As shown in Table 3.1, institutions used for

this study were public ($N = 901$) and for-profit ($N = 526$) 2-year colleges. Not-for-profit 2-year

institutions were removed from the population due to the small sample size ($N = 137$) and

missing data.

The choice to include both public and private 2-year institution types derived from the

research questions guiding this study. The novel circumstances created by the COVID-19

pandemic changed the environment surrounding postsecondary education. Moreover, it

systematically impacted enrollment in all postsecondary institutions. Therefore, to understand the

influence of COVID-19 on enrollment, while simultaneously differentiating its impact across the

2-year sector, both institution types were considered.

Research methodology and analysis also influenced the population size selection for this study. In quantitative studies, a small population size decreases the probability of accuracy (Ioannidis, 2005). Several recommendations on the population size requirement for MLR analysis exist. For example, 10 events per variable and a 500 minimum sample size rule (Bujang et al., 2018; Van Smeden, 2016). With population sizes of $N = 901$ and $N = 526$, the present study satisfied the standards set forth by best practices. As such, the analysis of data from the entire population increased the generalizability and validity of the findings.

3.5 Instrumentation and Data Collection

As shown in Table 3.2, data for each variable comes from secondary (i.e., archival) datasets. IPEDS served as the primary source of enrollment data for this study. IPEDS consists of 12-interrelated survey components on financial, enrollment, and other data for every college, university, technical and vocational institution participating in Title IV federal student aid programs (IPEDS, n.d.). This study utilized data from the institutional characteristics (campus setting), fall enrollment (shift to remote instruction), 12-month enrollment (total enrollment, race/ethnicity, gender, and enrollment intensity), student financial aid and net price (low SES and tuition incentives), and finance surveys (emergency relief aid and return to in-person instruction). As a survey instrument, IPEDS is recognized as a valid and reliable tool for collecting postsecondary enrollment data (Blagg, 2020; Juszkiewicz, 2020; Mullin & Phillippe, 2009). Moreover, federal and state governments and accrediting agencies use IPEDS as a reliable source for reporting postsecondary enrollment trends. IPEDS is updated annually through self-reports by each institution. Data sets are publicly available and can be downloaded in a comma-separated values (CSV) format, viewable in Microsoft Excel. Additional data sets came from the U.S. Bureau of Labor Statistics, the U.S. Department of Education, the National Conference of

State Legislatures (NCSL), U.S. Census Bureau, and the CDC. Each source was validated by literature as a reliable source of data for the present study (Collier, Fitzpatrick, Dell et al., 2022; Juszkiewicz, 2020; Scafidi et al., 2021).

3.5.1 Dependent Variable

In March 2020, the World Health Organization declared COVID-19 a pandemic. By early April, most states imposed social distancing restrictions that shifted in-person instruction to online. This timeline suggests health concerns and shelter-in-place restrictions would have had their first impact during the spring 2020 semester and full effect starting in fall 2020 (Bulman & Fairlie, 2022). Total Enrollment during the 2020-2021 academic year was the sole dependent (i.e., outcome) variable considered within this study, as it represented a full year of enrollment during COVID-19. In alignment with RDT, enrollment is an essential source of revenue among 2-year institutions (Ortagus & Yang, 2018). Disruptions to enrollment during COVID-19 represent a substantial external environmental impact, necessitating postsecondary institutions to adapt and meet the needs of the student population.

While Bulman & Fairlier (2021) and Schanzenbach & Turner (2022) used the difference in enrollment between fall 2019 and fall 2020 as their dependent variable, this study used 12-month enrollment data for 2020-2021. This measure provides a more comprehensive picture of enrollment among institutions that enroll students year-round for short-term programs (e.g., 2-year colleges) (NCES, n.d.-a). Therefore, 12-month enrollment data accurately represents enrollment trends. Total enrollment data for this study came from IPEDS.

3.5.2 Explanatory Variables

In response to enrollment declines, 2-year colleges adapted efforts to ensure access to enrollment as an essential resource. However, the existing research fails to address the influence

of enrollment management efforts on enrollment. Through MLR analysis, the present study

quantified the contribution of each explanatory variable to total enrollment during the 2020-2021

academic year. Explanatory variables used in the analysis include the shift to remote instruction,

return to in-person instruction, emergency relief aid, and tuition incentive.

3.5.2.1 Shift to remote instruction

COVID-19 necessitated a rapid shift to remote learning among all colleges. Existing

research demonstrates a negative relationship between remote learning and the decision to enroll

among community college students, as students lacked technological resources and an

environment conducive to learning (Brock & Diwa, 2021; Prokes & Housel, 2021). Moreover,

contradictory evidence exists regarding the influence of pre-COVID-19 online presence and

enrollment during COVID-19 (Bulman & Fairlie, 2022; Hart et al., 2021). This existing research

validates the selection of the shift from traditional to remote instruction as an explanatory

variable.

The percentage change in students enrolled exclusively in distance education courses

from fall 2019 to fall 2020 represented the remote shift. This delimitation was chosen because

courses were offered exclusively online in the fall of 2020. Bulman and Fairlie's (2022) analysis

of the influence of pre-pandemic online presence on enrollment during COVID-19 validates this

variable choice. Data on total enrollment of students enrolled exclusively in distance education

courses came from IPEDS. The percentage change in students enrolled exclusively in distance

education courses from fall 2019 to fall 2020 was calculated in Excel.

3.5.2.2 Return to in-person instruction

The negative relationship between remote learning and enrollment decisions creates the

assumption that in-person instruction was the preferred modality of students during COVID-19.

Existing research establishes connections between tuition revenue dependency, state political affiliation, and the decision to resume in-person instruction (Collier, Fitzpatrick, Snideman, Marsicano, 2020; Collier, Fitzpatrick, Dell et al., 2022; Felson & Adamczyk). There is a correlation between state political affiliation and return to traditional in-person instruction; with republican states being more likely to return to in-person instruction (Collier, Fitzpatrick, Snideman, & Marsicano, 2020; Collier, Fitzpatrick, Dell et al., 2022; Felson & Adamczyk, 2021). Therefore, state political affiliation served as a proxy variable for the return to in-person instruction during COVID-19. As supported by Collier, Fitzpatrick, Dell et al. (2022), this study used data from the NCSL to identify states in which both the legislature and governorship were under joint republican control. A single binary variable was created in Excel, with institutions residing in republican states valued as one.

Return to in-person instruction was also influenced by tuition revenue dependency (Felson & Adamczyk, 2021). Therefore, tuition dependency served as a second proxy variable for the return to in-person instruction. Like Felson and Adamczyk (2021), the present study used the percentage of revenue from tuition as a proxy to represent return to in-person instruction. Data on total revenue and tuition revenue were collected from IPEDS. Tuition revenue was calculated as a percentage of total revenue using Excel.

3.5.2.3 Emergency relief aid

HEERF(s) were used to negate enrollment declines. Two-year colleges provided direct payments to students, discharged student debt, enhanced technological capabilities, promoted tuition incentives, and developed re-enrollment campaigns (Brink, 2022; Gravely, 2022; Ortagus et al., 2020; Pierce, 2022). However, quantifiable data about the HEERF's influence on 2-year college enrollment is nonexistent. COVID-19 impacted student finances and enrollment

decisions (Owens et al., 2020; Zottarelli et al., 2022). Therefore, the total HEERF fund allocation awarded to each institution was an explanatory variable in this study. All data for HEERF allocations came from the U.S. Department of Education. Each institution's award was calculated as a percentage of total operating costs in Excel. Data on operating costs per year came from the total expenses' variable in IPEDS. However, a limitation of this variable is that it does not account for how institutions used the funds.

3.5.2.4 Tuition incentive

College affordability impacts student enrollment decisions (Gandara & Li, 2020; Juszkiewicz, 2017; Lassila, 2010; Rios-Aguilar & Deil-Amen, 2019). During COVID-19, the 2-year student population was more likely to suffer from loss of employment and financial disparities (Parker et al., 2020). Therefore, postsecondary education became unaffordable for much of the 2-year student demographic. Tuition incentives (e.g., tuition freeze and tuition reduction) were offered by 2-year colleges due to student hardships (Bauer-Wolf, 2021; Steele, 2022). However, the influence of tuition incentives during COVID-19 on 2-year enrollment is unknown. This gap in the literature justifies tuition incentives as an explanatory variable for this study. Using IPEDS as a data source, in-state tuition data for the 2019-2020 and 2020-2021 academic years was collected. Subsequently, three binary variables were created to represent tuition increase, tuition decrease, and same rate of tuition. The use of IPEDS tuition data was validated by two studies: 1) Lassila's (2010) regression analysis of tuition discount on marginalized student enrollment and 2) Hemelt and Marcotte's (2011) use of in-state tuition and fees data to explore the relationship between tuition increase and enrollment.

3.5.3 Control Independent Variables

COVID-19 disproportionately affected the student demographic groups traditionally served by the 2-year sector (e.g., minority, low SES, non-traditional) (Barber et al., 2021; CDC, 2022; Parker et al., 2020). The health-related and economic impacts of COVID-19 resulted in increased unemployment and basic needs insecurity; as students faced personal illness, caretaker responsibilities, homeschooling children, and homelessness (Blankstein et al., 2020; Owens et al., 2020). These hardships affected students' enrollment decisions and influenced 2-year enrollment declines during COVID-19. Thus, race/ethnicity, gender, low SES, enrollment intensity, campus setting, region, state unemployment rate, and total COVID-19 state case rate were valid control variables.

3.5.3.1 Race/Ethnicity

Student demographics influenced 2-year college enrollment during the COVID-19 pandemic, as community colleges experienced a loss of enrollment from every racial/ethnic group (Brock & Diwa, 2021; NCES, 2021a). Declines stemmed from COVID-19's disproportionate impact on the minority and low SES student populations (Bulman & Fairlie, 2022; CDC, 2022). Therefore, to understand the influence of COVID-19 on enrollment while taking into consideration the disproportionate impact of the pandemic on marginalized student populations, race/ethnicity was selected as a control variable.

Twelve-month enrollment data by race/ethnicity for the 2020-2021 academic year came from IPEDS. Race and ethnicity data are reported in IPEDS as a) American Indian or Alaskan Native, b) Asian, c) Black or African American, d) Hispanic, e) Native Hawaiian or other Pacific Islander, f) White, g) Two or more races, h) race/ethnicity unknown, and i) nonresident alien. For ease of interpretation and data analysis, American Indian or Alaskan Native, Asian, Native

Hawaiian or other Pacific Islander, two or more races, race/ethnicity unknown, and nonresident alien were collapsed into a single variable. Enrollment data were converted to a percentage of total enrollment for each institution using Excel.

3.5.3.2 Gender

During the COVID-19 pandemic, institutions with a higher percentage of ARMs (Assembly, Repair, and Maintenance) programs experienced substantial declines in male enrollment numbers (Schanzenbach & Turner, 2022). In contrast, female students experienced exacerbated financial challenges, particularly female students lacking childcare. Substantial enrollment declines occurred in 2-year institutions where basic needs services such as childcare were suspended (Zottarelli et al., 2022). Therefore, to control for the impact of COVID-19 on both male and female populations, gender was selected as a control variable. Twelve-month enrollment data by gender for the 2020-2021 academic year came from IPEDS. Gender is reported in IPEDS as men and women. Enrollment data were converted to a percentage of total enrollment for each institution using Excel. Only male enrollment was included as a variable to adjust for collinearity between male and female enrollment.

3.5.3.3 Low socioeconomic status

Students from low-income backgrounds were more likely to experience educational distributions, such as prioritizing employment and family responsibilities during the COVID-19 pandemic (Owens et al., 2020; Reed et al., 2022). Therefore, low SES was included as a control variable to understand the pandemic's disproportionate impact on the low-income student population. The percentage of undergraduate students awarded Pell grant aid during the 2020-2021 academic year served as a proxy variable for low SES student enrollment. The percentage of undergraduates awarded Pell grant aid during 2020-2021 came from IPEDS. The Pell proxy

has been demonstrated as an accurate assessment of how many low SES students enroll at a

given institution (Carnevale & Van Der Werf, 2017). However, several authors claim the Pell

proxy undercuts low-income student enrollment and fails to accurately represent low-SES

student enrollment (Delisle, 2017; Rosinger & Ford, 2019).

3.5.3.4 Enrollment intensity

As a result of the fiscal impact of COVID-19 on the student population, both full-time (-

9.2%) and part-time (-4.1%) enrollment declined (NSCH, 2021). Therefore, enrollment intensity

was selected as a variable to control for institutional enrollment patterns. Only full-time

enrollment was included as a variable to adjust for collinearity between part-time and full-time

enrollment. Twelve-month enrollment data for the 2020-2021 academic year for full-time total

undergraduates came from IPEDs. Using Excel, enrollment data were converted to a percentage

of total enrollment for each institution.

3.5.3.5 State unemployment rate

Job loss experienced by the student population impacted students' decisions to enroll in

community colleges (Blankstein et al., 2020). Financial distress related to unemployment was

cited as the primary concern among community college students who chose not to re-enroll

during the spring 2021 semester (Sutton, 2021). Two-year college enrollment rates declined by

15.1% among students in counties with unemployment rates above 10.7%, while the decline was

10.6% in counties with unemployment rates below 10.7% (Howell et al., 2021). As supported by

Scafidi et al. (2021), the state unemployment rate controlled for pandemic-induced economic

deterioration. An average of the 2020 and 2021 state unemployment rates from the U.S. Bureau

of Labor Statistics represented state unemployment rates during the 2020-2021 academic year.

3.5.3.6 Total COVID-19 state case rate

More than one-third of households with plans for community college enrollment cited the

virus as a factor in their decision not to enroll during the fall 2020 semester (U.S. Census Bureau,

2021). Two-year college enrollment rates declined by 13.6% among students in counties with

high daily COVID-19 case rates, while the decline was 9-10% in counties with COVID-19 cases

rates of 8.5% and lower (Howell et al., 2021). As supported by Scafidi et al. (2021), COVID-19

state case rates served to control for health-related concerns. Data on COVID-19 state case rates

came from the CDC. To account for population size, this study used the total COVID case rate

per 100,000 between July 1, 2020, to June 30, 2021.

3.5.3.7 Campus setting

Two-year college enrollment declined by 13.1% among students from urban high schools

and 11% among students from suburban or rural high schools in fall 2020 (Howell et al., 2021).

The lack of technological resources to support the rapid shift to remote instruction negatively

influenced rural student enrollment during COVID-19 (Siddiqi, 2022). Therefore, the campus

setting variable controlled for variance in enrollment based on the institution's location. The

degree of urbanization data came from IPEDS. Data are reported as a) City (small, midsize, and

large), b) Suburb (small, midsize, and large), c) town (remote, distant, and fringe), and d) rural

(remote, distant, and fringe). For ease of interpretation, data were consolidated into urban (e.g.,

city and suburb) or rural (e.g., town and rural). A binary variable was created in Excel which

represented urban institutions as one and rural institutions as zero.

3.5.3.8 Region

Two-year college enrollment rates declined by more than 10% in 23 states and increased

in five states in fall 2020 (North Dakota, Oklahoma, Missouri, Iowa, and Vermont) (Howell et

al., 2021). Moreover, 2-year enrollment rates declined across all southern states. Therefore, geographic region served as a variable to control COVID-19's regional impact. Binary variables were created to represent geographical locations as Northeast, Midwest, West, and South.

<div align="center">**3.6 Data Analysis**</div>

Data analysis for this study consisted of three parts, 1) assumption verification, 2) descriptive statistics (e.g., mean and standard deviation), and 3) inferential analysis. MLR analyses using the Statistical Package for Social Sciences (SPSS) software program (version 28.0) addressed each research question. This allowed for inferences about the impact of enrollment management efforts on total enrollment during the COVID-19 pandemic.

3.6.1 Variable Scales

The dependent variable (i.e., total enrollment) and variables of race/ethnicity, gender, low SES, enrollment intensity, state unemployment rate, COVID-19 case rate, shift to remote instruction, and emergency relief aid were all measured as scale variables in SPSS. Return to in-person instruction, as measured through tuition dependency, was entered as a scale variable. However, the return to in-person instruction variable, as measured by state political affiliation, was transformed into a binary variable. States who resumed in-person instruction during the 2020-2021 academic year (i.e., republican) were valued as one, and states less likely to have returned to in-person instruction (i.e., non-republican) were valued as zero. The campus setting variable was also represented as a binary variable with urban institutions valued as one and rural institutions valued as zero. Additional binary variables were created to represent each institution's regional location (e.g., Northeast, South, West, and Midwest). Lastly, tuition incentives were measured using binary variables which represented tuition increase, same rate of tuition (i.e., tuition freeze), and tuition decrease.

3.6.2 Variable Analysis

First, boxplots were created to detect outliers in data. Subsequently, erroneous data points were removed from the sample. Outlier analysis of total enrollment resulted in the removal of three for-profit institutions, which brought the population from 529 to 526. Non-erroneous outliers were kept as a representation of natural variations in the population (Stevens, 2012). Therefore, this study assumed that outliers occurred as a function of the inherent variability of the data. To account for variability in total enrollment among public and for-profit institutions ($M = 7820.44$, $SD = 10143.05$; $M = 667.60$, $SD = 869.65$), a natural logarithmic transformation was performed. Transformation of the dependent variable allowed for extreme scores to be kept in the data set, while reducing skew and error variance (Osborne & Overbay, 2004). Thus, logarithmic (Ln) transformation de-emphasized outliers enabling their incorporation into the study.

Next was to check the five assumptions of MLR analysis: 1) linearity, 2) multicollinearity, 3) multivariant normality, 4) homoscedasticity, and 5) autocorrelation (Kelly & Bolin, 2013; Kumari, 2008; Williams et al., 2013). The linearity assumption was verified using scatterplot matrices to demonstrate a linear relationship between total enrollment and each independent and control variable. Before the dependent variable transformation, a linear relationship was not demonstrated between total enrollment and each independent/control variable. As seen in table 3.3, Ln transformation of the dependent variable resulted in linear relationships between total enrollment and the variables of Pell ($R^2 = 0.44$), full-time enrollment ($R^2 = .48$), and tuition dependency ($R^2 = .41$). Subsequently, a double Ln transformation accomplished linearity between the variables of total enrollment and gender ($R^2 = .17$). For each binary variable (e.g., campus setting, region, political affiliation, and tuition incentives), linearity

was assumed as there are two means, and a straight line always perfectly fits two points (Nahhas, 2022).

During linearity verification, two MLR models emerged. All independent and control variables which demonstrated linearity with total enrollment were incorporated into Model A. The variables of race, COVID case rate, HEERF funds, remote shift, and unemployment rate failed to demonstrate linearity with total enrollment. Non-linear Ln transformations were performed to improve normality. Subsequently, the non-linearly transformed variables were incorporated into Model B with the linear variables.

The multicollinearity assumption, violated when the independent variables are highly related, was assessed using a correlational matrix. When two or more independent variables are highly correlated, the relationship between the independent variables and the dependent variable is biased, resulting in reduced validity of the analysis (Daoud, 2017). This study used Pearson's bivariate correlation coefficient of less than .90 (O'Brien & Scott, 2012). Both models demonstrated multicollinearity between the variables of Pell and full-time enrollment, $r = .91$, $p < .01$. Thus, Pell was removed from the analysis. The decision to remove Pell as a variable was grounded in validity, as the Pell proxy has been shown to undercut low-income student enrollment (Delisle, 2017; Rosinger & Ford, 2019). In Model B (public institutions), addition of the remote shift variable and subsequent listwise deletion caused further multicollinearity between the variables of tuition increase and tuition same $r = -.88$, $p < .01$. Therefore, to establish the influence of tuition freeze, increased tuition was removed from the analysis.

Next, the assumptions of multivariate normality, homoscedasticity, and autocorrelation were validated. The multivariate normality assumption implies that the residuals (the vertical distance between data points and the regression line [i.e., errors]) of the model are normally

distributed. This was tested using a probability-probability (P-P) plot to verify that the points did

not differ from the equiangular line (Williams et al., 2013). Homoscedasticity assumes the

variation in the residuals (i.e., amount of error in the model) is constant at every point in the

linear model (i.e., equally distributed) (Kelly & Bolin, 2013). This assumption was tested in

SPSS by creating a plot of standardized residuals verses predicted values. The Durbin Watson

statistic of $1.5 < d < 2.5$ was used to confirm that each model did not exhibit autocorrelation

within the residuals.

As shown in Figures 3.1, 3.2, 3.7, and 3.8, the histogram of standardized residuals

indicated that the data contained normally distributed errors. Moreover, the normal P-P plot of

the residuals was linear, supporting the condition that the error terms are normally distributed

(Figure 3.3, Figure 3.4, Figure 3.9, and Figure 3.10). As shown in Figures 3.5, 3.6, 3.11, and

3.12, the scatterplot of standardized residuals demonstrated that the data met the assumption of

homoscedasticity. Variable data for both models met the assumption of independent errors with

Durban-Watson values of $(1.5 < d < 2.5)$.

Data incorporated into Model A satisfied all major MLR assumptions. However, the

variables of race, state unemployment rate, COVID-19 state case rate, remote shift, and HEERF

funds did not meet the linearity assumption. Therefore, failure to achieve linearity contributed to

the possible introduction of bias among slope and intercept estimates and the fitted values from

the regression in Model B (Nahhas, 2022).

3.6.3 Multiple Linear Regression Analysis

Regression analysis is a statistical technique used to explain the change in one variable,

the dependent variable, as a function of movements in a set of independent variables (i.e.,

explanatory variables), through quantification of a single equation (Studenmund, 2007).

$$Y_i = \beta_0 + \beta_1 X_{1i} + \cdots \beta_k X_{ki} + \varepsilon_i \tag{1}$$

Using equation (1), Y represents the dependent variable (i.e., total enrollment), while $X_1 \ldots X_\kappa$ represent the independent variables of student demographics (race/ethnicity, gender, low SES, enrollment intensity), campus setting, region, state unemployment rate, COVID-19 state case rate, shift to remote instruction, return to in-person instruction, emergency relief aid, and tuition incentives). β_o is the population value of the intercept (the value of Y when all other independent variables are equal to 0). $\beta_1 \ldots \beta_\kappa$ are the estimated regression coefficients. ε_i is the unobservable influence of any omitted variable (i.e., error) (Teo, 2014).

Separate MLR regression analyses were conducted using data from public and for-profit 2-year populations. MLR analysis allowed for quantification of the relationship and subsequent influence of each independent variable on enrollment. Each analysis established the influence of enrollment management efforts on enrollment during the COVID-19 pandemic, while controlling for other factors known to impact enrollment.

The present study assumed that data were missing on a random basis. Listwise deletion was used to account for missing data on each independent variable. As such, any institutions with missing values in one or more variables were eliminated from the analysis. Using model A, seven public and 41 for-profit institutions were removed from the analysis. Model B eliminated 125 public and 262 for-profit institutions. Under the assumption that data were missing at random, listwise deletion produces unbiased estimates and conservative results (Kang, 2013).

The coefficient of determination (R^2) represented the overall fit of the model. The R^2 quantifies the proportion of the variance in the dependent variable that can be explained by the set of explanatory variables (Teo, 2014). This study utilized the adjusted R^2; incorporating only statistically significant independent variables into the model. A null hypothesis significance test

(i.e., F-test) evaluated if the model accounted for more variance in the outcome variable than would be expected by chance alone (i.e., statistically significant at $p \leq 0.05$).

To check the statistical significance and relative importance of each explanatory variable, the unstandardized and standardized coefficients of each explanatory variable were examined. The unstandardized regression coefficients were assessed for statistical significance ($p \leq 0.05$) and used to interpret the effect that a one-unit change in each explanatory variable had on enrollment. For variables where only the dependent variable was log-transformed (e.g., Pell, enrollment intensity, campus setting, region, return to in-person instruction, and tuition incentives), the standardized coefficient was exponentiated, subtracted by one, and multiplied by 100 (Ford, 2018). This gave the percent change in total enrollment for every one-unit change in the independent variable. For variables in which both the dependent and independent variables were log-transformed (gender, race, state unemployment rate, COVID-19 state case rate, emergency relief aid, and shift to remote instruction), the standardized coefficients were interpreted as the percent change in total enrollment for every one percent increase/decrease in the independent variable (Ford, 2018).

To address the variance in measurement scales among independent variables, standardized coefficients were calculated. Standardized coefficients were generated after running the MLR model on standardized variables (i.e., rescaled variables with a mean of zero and a standard deviation of one). As such, a change of one standard deviation in the independent variable was associated with β standard deviations in the dependent variable (Choueiry, n.d.). The standardized regression coefficients were then evaluated for statistical significance and used to determine which explanatory variable had the largest influence on enrollment.

3.6.4 Hypotheses

      The COVID-19 pandemic negatively impacted 2-year colleges' access to enrollment as a critical resource. Resource scarcity required institutional adaptation of enrollment management efforts. The purpose of this quantitative study, using MLR analysis, was to explain how COVID-19 and the subsequent enrollment management efforts (e.g., shift to remote instruction, return to in-person instruction, emergency relief aid, and tuition incentives) influenced 2-year college enrollment. Moreover, this study serves to differentiate impact across the 2-year sector. The following hypotheses are associated with the research questions.

1. How did enrollment management efforts influence 2-year college enrollment during the COVID-19 pandemic?

   - H_o1: No statistically significant relationship between shift to remote instruction and 2-year college enrollment exists.

   - H_a1: A statistically significant relationship between shift to remote instruction and 2-year college enrollment exists.

   - H_o2: No statistically significant relationship between return to in-person instruction and 2-year college enrollment exists.

   - H_a2: A statistically significant relationship between return to in-person instruction and 2-year college enrollment exists.

   - H_o3: No statistically significant relationship between emergency relief aid and 2-year college enrollment exists.

   - H_a3: A statistically significant relationship between emergency relief aid and 2-year college enrollment exists.

- H_o4: No statistically significant relationship between tuition incentive and 2-year college enrollment exists.

- H_a4: A statistically significant relationship between tuition incentive and 2-year college enrollment exists.

2. What differences exist between the 2-year institution type and the influence of enrollment management efforts during the COVID-19 pandemic?

- H_o5: No statistically significant difference exists between the 2-year institution type and the influence of enrollment management efforts during the COVID-19 pandemic.

- H_a5: A statistically significant difference exists between the 2-year institution type and the influence of enrollment management efforts during the COVID-19 pandemic.

3.7 Limitations

The primary limitation of this study concerns the provisional status of the 2020-2021 enrollment data, as reporting institutions have not yet revised inaccurately reported data (IPEDS, n.d.). However, revisions are typically minimal (between 1-7%) (IPEDS, n.d.). Delimitation to the 2020-2021 academic year further limits this study's ability to explain the longitudinal effects of enrollment management efforts. Given the impact of COVID-19 on the environment surrounding postsecondary education during 2020-2021 and the accuracy of IPEDS enrollment data, this study still has the potential to fill a critical gap in the literature regarding enrollment management during times of instability.

An additional limitation of this study comes from its usage of secondary data. This limitation may manifest in proxy variables which are used when the variable of interest cannot be measured. The present study used the Pell proxy to determine the number of low-income students enrolled in each 2-year institution. A limitation impacting the Pell proxy's reliability is

its ability to undercut low-income student enrollment while counting middle-income students as low-income (Delisle, 2017; Rosinger & Ford, 2019). While limitations exist, the Pell proxy is still widely accepted by the research community as an acceptable measure of low SES enrollment. State political affiliation and tuition revenue dependency also serve as proxy variables to explore the influence of return to in-person instruction on enrollment during COVID-19. However, previous research literature validates the use of these variables (Collier, Fitzpatrick, Snideman, & Marsicano, 2020; Collier, Fitzpatrick, Dell et al., 2022; Felson & Adamczyk, 2021).

3.8 Chapter Summary

COVID-19 impacted enrollment throughout the 2-year sector (NCES, 2021a; NSCH, 2021). Two-year institutions are dependent on enrollment as an essential source of revenue. Therefore, enrollment declines affect institutional sustainability. The present study explained the influence of COVID-19, and subsequent enrollment management efforts, on 2-year college enrollment during the 2020-2021 academic year.

A quantitative methodology was used to explore two research questions: 1) How did enrollment management efforts influence 2-year college enrollment during the COVID-19 pandemic? and 2) What differences exist between the 2-year institution type and the influence of enrollment management efforts during the COVID-19 pandemic? MLR analysis quantified the influence of each independent variable on enrollment during the 2020-2021 academic year. This impact was then differentiated across the 2-year sector. All analyses were conducted in SPSS using secondary data sets. The following chapter will provide a detailed description of the results.

Table 3.1

Description of 2-year Institution Type

IPEDS Classification	Description	*N* size
Public 2-year	A 2-year educational institution whose programs and activities are operated by publicly elected or appointed school officials, and which is supported primarily by public funds.	901
For-profit 2-year	A private 2-year institution in which the individual(s) or agency in control receives compensation other than wages, rent, or other expenses for the assumption of risk. For-profit 2-year colleges provide vocational certificates, academic certificates, and associate degrees in different concentrations.	526

Table 3.2

Description of Variables

Variable	Variable Type	Source	Data Description	Variable Scale
Total enrollment	Dependent	IPEDS	12-month enrollment total	Scale
Remote shift	Explanatory	IPEDS	Percentage change in students enrolled exclusively in distance education courses from fall 2019 to fall 2020	Scale
Emergency relief aid	Explanatory	U.S. Department of Education & IPEDS	HEERF funds awarded to each institution (e.g., CARES, CRRSA, and ARP) as a percentage of total operating costs.	Scale
Return to in-person instruction (political proxy)	Explanatory	NCSL	Institutions categorically coded based on republican/non-republic state residence	Nominal
Return to in-person instruction (tuition dependency proxy)	Explanatory	IPEDS	2020-2021 tuition revenue calculated as a percentage of total revenue	Scale
Tuition incentives	Explanatory	IPEDS	Average in-state tuition data for the 2019-2020 and 2020-2021 academic years categorically coded for a price reduction, increase, or same	Nominal
Race/Ethnicity	Control	IPEDS	Percentage of 12-month enrollment total	Scale
Gender	Control	IPEDS	Percentage of 12-month enrollment total	Scale
Low SES (Pell proxy)	Control	IPEDS	Percentage of total students receiving Pell grant during 2020-2021	Scale
Enrollment intensity	Control	IPEDS	Percentage of total students enrolled part-time	Scale
Campus setting	Control	IPEDS	Rural vs. Urban campus location	Nominal
Region	Control	U.S. Census Bureau	Northeast, Midwest, West, and South	Nominal
State unemployment rate	Control	U.S. Bureau of Labor Statistics	An average of the 2020 and 2021 state unemployment rate	Scale
COVID-19 state case rate	Control	CDC	An average of the 2020 and 2021 cumulative rate of COVID-19 cases per 100,000 population	Scale

Table 3.3

Variable Transformations and Linearity

Variable	Transformation	R^2	Linearity Assumption Met
Total enrollment	Ln	-	-
Gender	Ln+1	.17	Yes
Race White	Ln+1	-	No
Race Black	Ln+1	-	No
Race Hispanic	Ln+1	-	No
Race Other	Ln+1	-	No
Pell	-	.44	Yes
Enrollment intensity	-	.48	Yes
Campus setting	-	-	Yes
Northeast region	-	-	Yes
Midwest region	-	-	Yes
South region	-	-	Yes
West region	-	-	Yes
Unemployment rate	Ln	-	No
Covid case rate	Ln	-	No
HEERF funds	Ln	-	No
Tuition dependency	-	.41	Yes
Political Affiliation	-	-	Yes
Tuition increase	-	-	Yes
Tuition same	-	-	Yes
Tuition decrease	-	-	Yes
Remote Shift	Lg10+101	-	No

Note. Institutions for which the linearity assumption was meant were used to build regression

Model A. Model B incorporated all variables, including those which failed to demonstrate

linearity with the total enrollment.

Figure 3.1

Model A Histogram of Standardized Residuals, Public 2-year Institutions
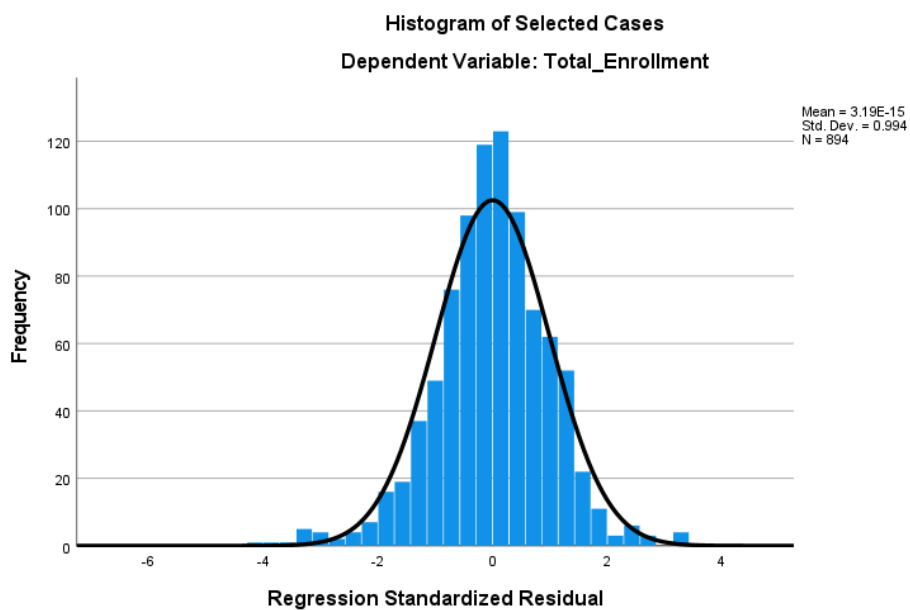
Figure 3.2

Model A Histogram of Standardized Residuals, For-profit 2-year Institutions
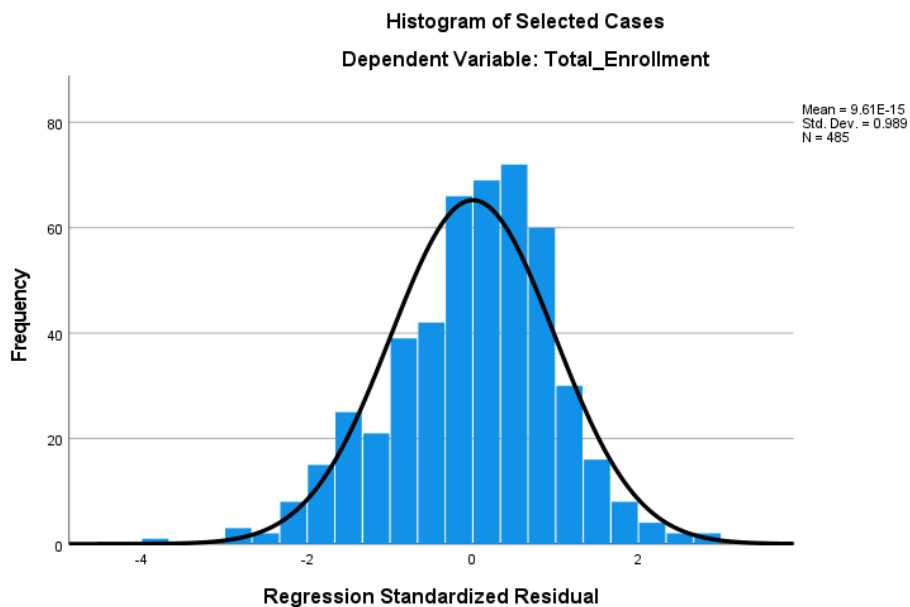
Figure 3.3

Model A P-P Plot, Public 2-year Institutions

Normal P-P Plot of Standardized Residual for Selected Cases
Dependent Variable: Total_Enrollment
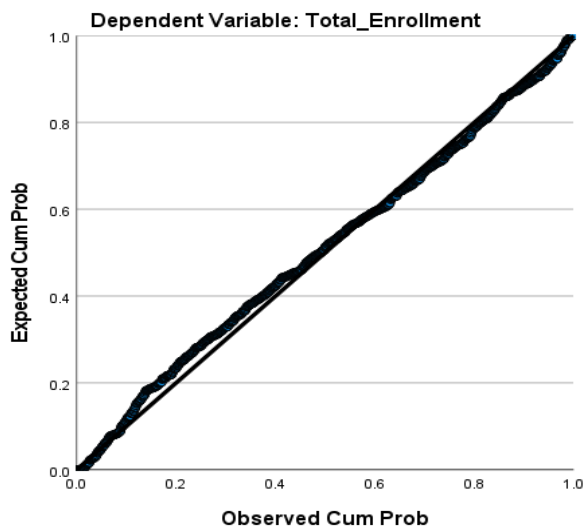
Figure 3.4

Model A P-P Plot, For-profit 2-year Institutions

Normal P-P Plot of Standardized Residual for Selected Cases
Dependent Variable: Total_Enrollment
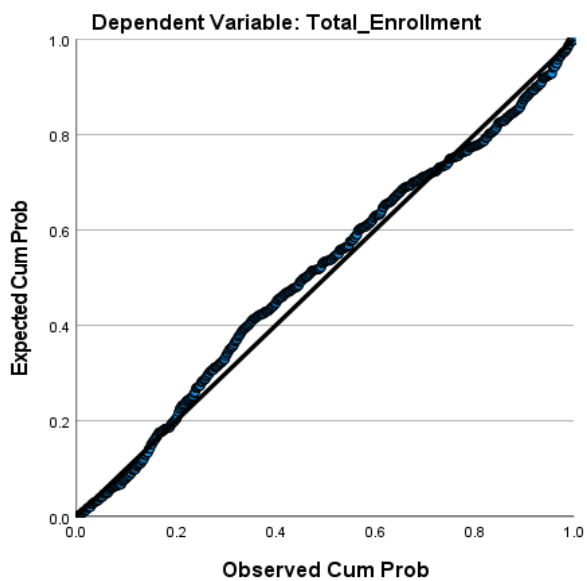
Figure 3.5

Model A Scatterplot of Standardized Residuals, Public 2-year Institutions
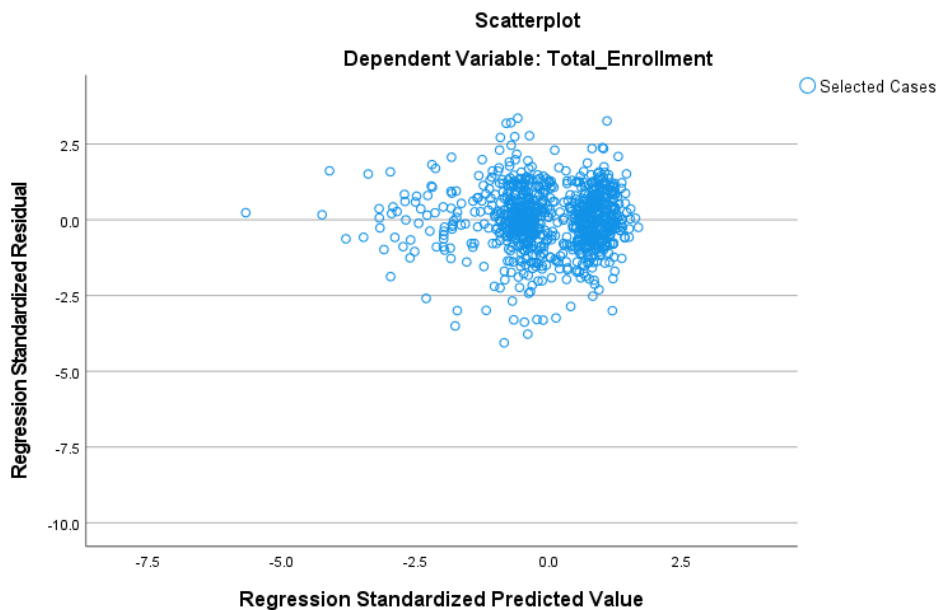
Figure 3.6

Model A Scatterplot of Standardized Residuals, For-profit 2-year Institutions

Figure 3.7

Model B Histogram of Standardized Residuals, Public 2-year Institutions

Figure 3.8

Model B Histogram of Standardized Residuals, For-profit 2-year Institutions

Figure 3.9

Model B P-P Plot, Public 2-year Institutions

Dependent Variable: Total_Enrollment
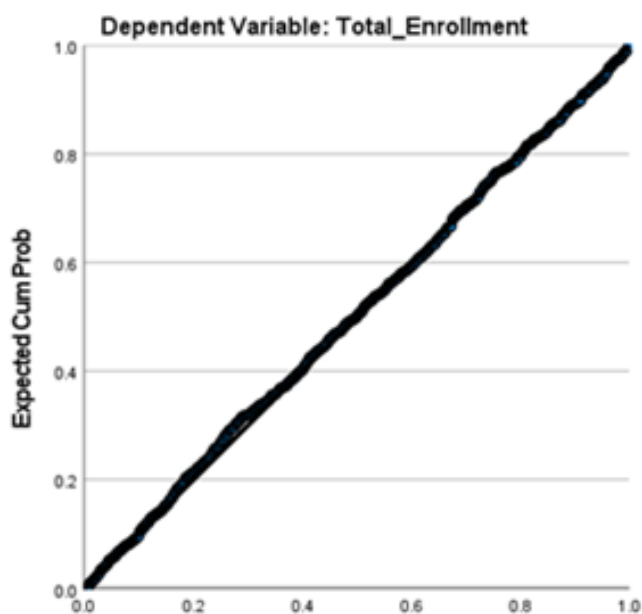
Figure 3.10

Model B P-P Plot, For-profit 2-year Institutions

Normal P-P Plot of Standardized Residual for Selected Cases

Dependent Variable: Total_Enrollment
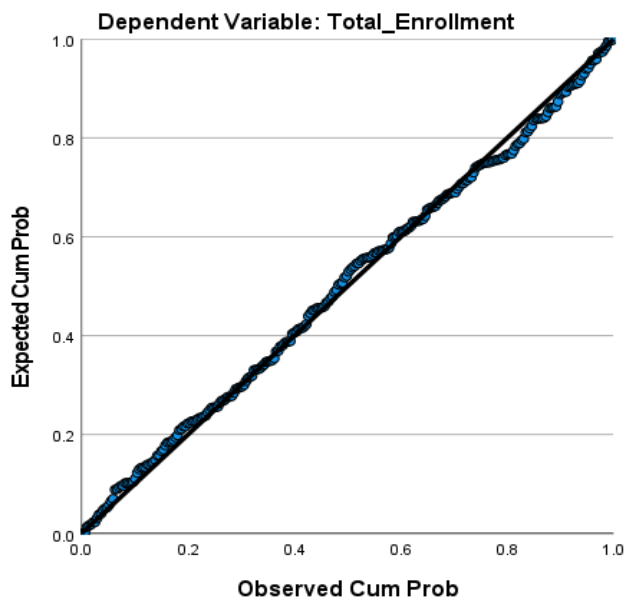
Figure 3.11

Model B Scatterplot of Standardized Residuals, Public 2-year Institutions
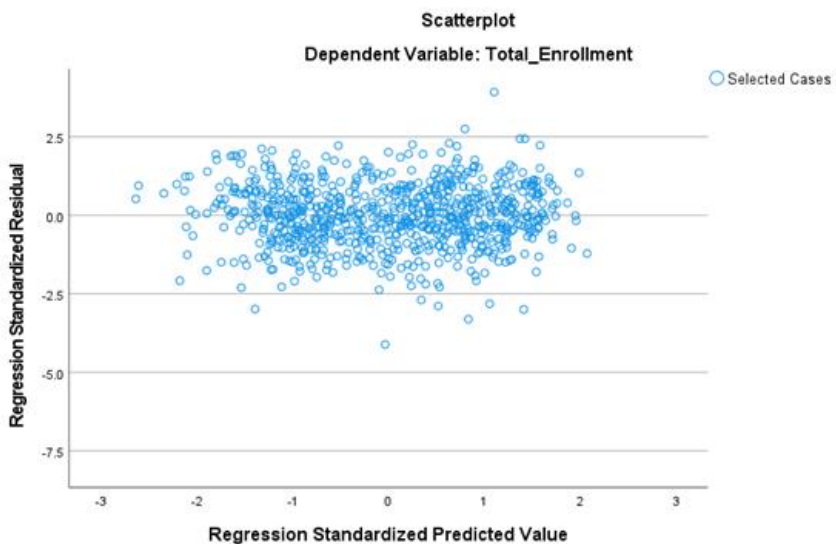
Figure 3.12

Model B Scatterplot of Standardized Residuals, For-profit 2-year Institutions
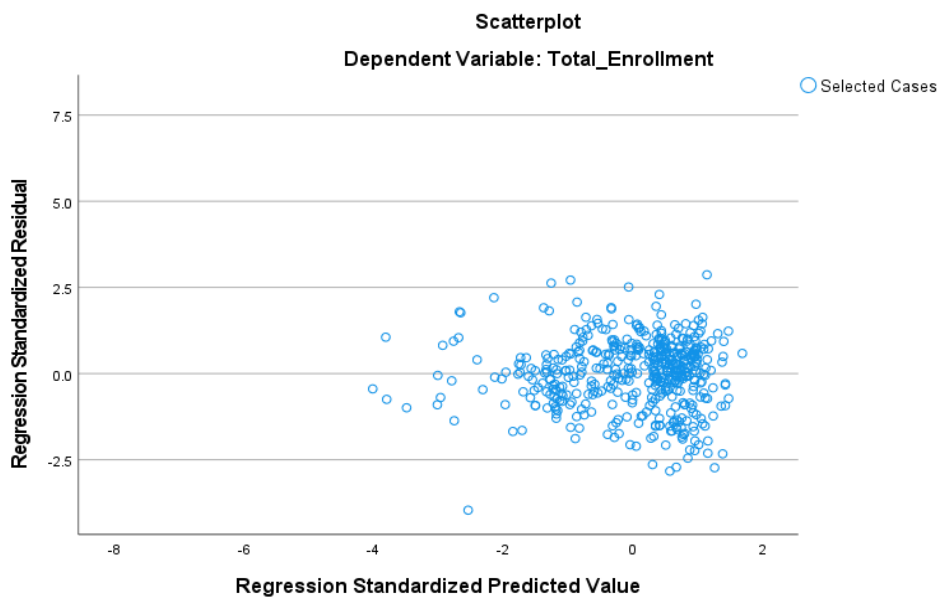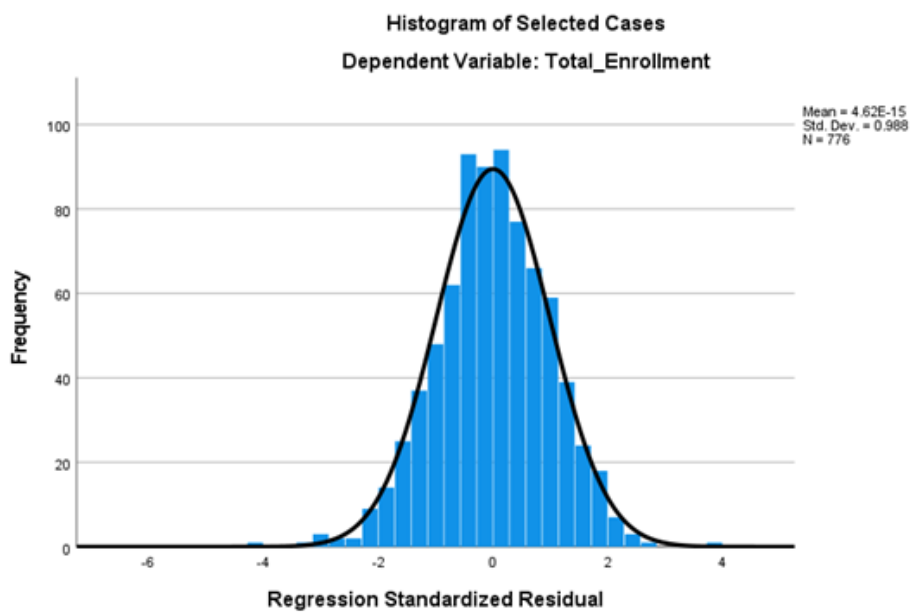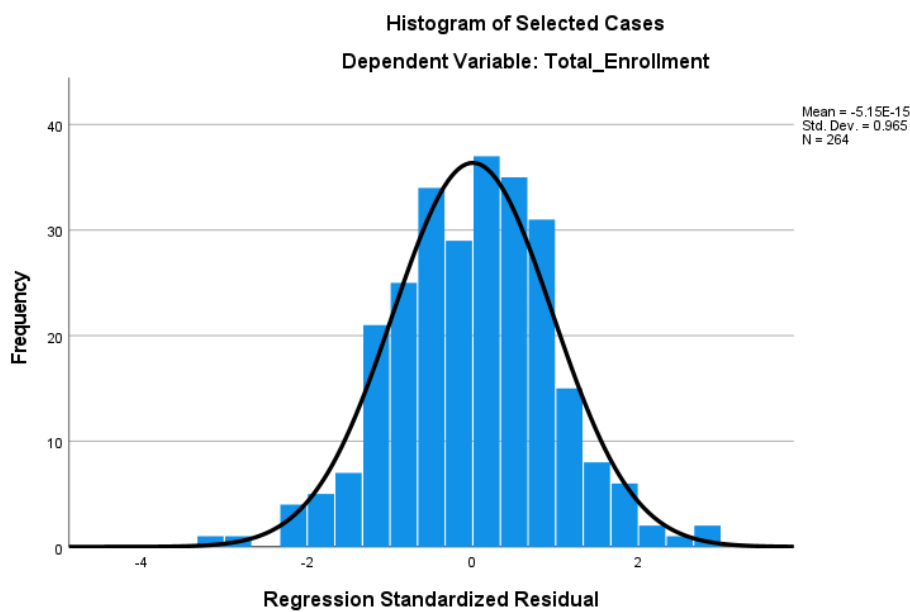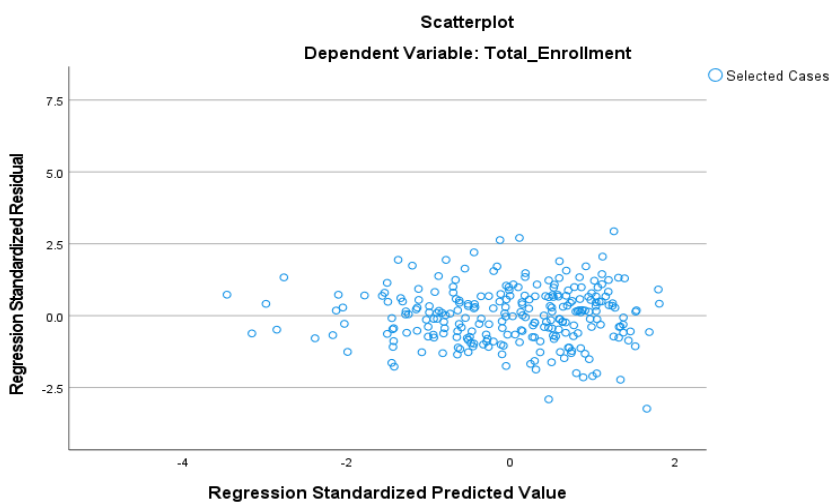
CHAPTER 4: RESULTS

The COVID-19 pandemic resulted in unprecedented enrollment declines across the 2-year sector (NCES, 2021a; NSCH, 2021). Two-year institutions are dependent on enrollment as a source of revenue. To manage enrollment declines, policymakers and college leaders implemented policy and practice initiatives grounded in student support and institutional sustainability. However, quantifiable evidence about the influence of enrollment management efforts on enrollment is lacking. Moreover, existing research focuses on public community colleges and excludes the private 2-year sector (Ahlstrom, 2016).

The purpose of this study was to explain how COVID-19 and the subsequent enrollment management efforts influenced 2-year college enrollment. An important notation throughout this chapter is the reference to two different multiple linear regression (MLR) models (i.e., Model A and Model B). Both models were used to establish relationships and determine variable influence on total 12-month enrollment during the 2020-2021 academic year. The research examined four independent variables: 1) shift to remote instruction, 2) return to in-person instruction, 3) emergency relief aid, and 4) tuition incentives; while controlling for race/ethnicity, gender, low-SES, enrollment intensity, campus setting, region, unemployment rate, and COVID-19 state case rate.

Chapter four begins with a description of the population studied. Next, the results of each MLR model are introduced, followed by a thorough interpretation of the findings as they relate to the influence of variables on total 12-month enrollment. This chapter concludes with a summary of the data findings related to the research questions and corresponding hypotheses. The two research questions explored in this study were:

1. How did enrollment management efforts influence 2-year college enrollment during the COVID-19 pandemic?

2. What differences exist between the 2-year institution type and the influence of enrollment management efforts during the COVID-19 pandemic?

4.1 Population Description

The population for this study consisted of 1,427 2-year institutions; 901 public and 526 for-profits. As seen in Table 4.1, the average 12-month enrollment at public 2-year institutions was 7,820.44; for-profit institutions enrolled an average of 667.70 students. Total 12-month enrollment declined by an average of seven percent between the academic years of 2019-2020 and 2020-2021 at public 2-year institutions, whereas 2-year for-profit enrollment increased by 15%. Student demographics at public institutions were 40.71% male, 54.13% White, 13.43% Black, 17.45% Hispanic, and 14.99% constituted other races. Comparatively, for-profit institutions' student demographics were 30.98% male, 38.04% White, 24.49% Black, 22.54% Hispanic, and 14.93% constituted another race. For-profit institutions enrolled a higher percentage of Pell grant recipients, with an average of 91.14%, compared with 31.90% at public institutions. Enrollment intensity among public 2-year institutions was 34.31% full-time, whereas for-profit institutions enrolled predominantly full-time students averaging 90.81%.

Most for-profit institutions were in urban areas (94%), whereas only 51% of public institutions were classified as urban institutions. The highest proportion of public institutions was in the South (41%), 24% percent were in the Midwest, 21% in the West, and 14% in the Northeast region. The Southern region also housed the highest proportion of for-profit institutions at 34%, with 28% located in the West, 23% in the Midwest, and 16% in the

Northeast. Furthermore, 51% of for-profit institutions were in Republican states, compared with 44% of public institutions.

As supported in the literature, for-profit institutions were more dependent on tuition revenue, with an average tuition dependency of 88.29% compared with 15.35% at public institutions. Among the for-profit sector, 56% of the 2-year institutions increased tuition between 2019-2020 and 2020-2021, whereas only 36% of public 2-year institutions increased tuition. A decrease in tuition rate was the primary incentive utilized by for-profit colleges (32%), while public institutions demonstrated a high rate of tuition freeze (50%).

The average state unemployment rate for public institutions was 6.49% compared with 6.81% for private institutions. Thus, both sectors exhibited historically high state unemployment rates, a representation of the economic fallout caused by the pandemic. Also, there was a slight variation in COVID-19 cases, with public institutions averaging 9,428.47 state cases per 100k and for-profit institutions at 9,266.55. Emergency relief funds as a percentage of total operating costs were higher for public institutions (41.38%) than for-profit institutions (33.29%). The number of undergraduate students enrolled exclusively in distance education courses was 608% higher in 2020 than in 2019, as institutions moved in-person courses to a virtual format. For-profit institutions only experienced an 11.62% increase.

4.2 MLR Analysis: Regression Model A

MLR regression analyses were conducted using data from public and for-profit 2-year populations. MLR analysis allowed for quantification of the relationship and subsequent influence of each independent variable on enrollment. Each analysis established the influence of enrollment management efforts on enrollment during the COVID-19 pandemic, while controlling for other factors known to impact enrollment.

Only those variables which met the linearity and multicollinearity assumptions were incorporated into model A. Independent variables included the return to in-person instruction and tuition incentives. Control variables included gender, enrollment intensity, campus setting, and region. Listwise deletion resulted in population sizes of $N = 894$ (public 2-year institutions) and $N = 485$ (for-profit 2-year institutions).

Results are reported using standardized regression coefficients (β). While unstandardized coefficients interpret the direct effect of each independent variable on the outcome (i.e., total enrollment), they are impractical when the measurement scales of the independent variables are different. Therefore, standardized coefficients enable a clearer understanding of the relative impact that each independent variable had on total enrollment during the COVID-19 pandemic.

4.2.1 Results for Public 2-year Institutions

The results of the multiple regression analysis indicated that the model was statistically significant, $F(11,882) = 99.52$, $p < .001$, with an adjusted R^2 of .55. As seen in Table 4.2, evaluation of β values indicated that the main influences on the dependent variable were in the order of tuition same ($\beta = .72$, $p < .001$), tuition increase ($\beta = .66$, $p < .001$), campus setting ($\beta = .44$, $p < .001$), tuition decrease ($\beta = .30$, $p < .001$), enrollment intensity ($\beta = -.27$, $p < .001$), gender ($\beta = .15$, $p < .001$), and Midwest region ($\beta = -.06$, $p < .05$). The analysis showed that the Northeast region, West region, and return to in-person instruction did not significantly influence total enrollment.

Enrollment management efforts, in the form of a tuition freeze, contributed the most impact on enrollment during the COVID-19 pandemic. While total enrollment increased in response to higher tuition rates, keeping tuition the same resulted in 2,894 more students on

average. Decreased tuition rates exhibited a smaller level of influence than tuition increases.

Therefore, the tuition reduction incentive did not impact enrollment.

For every 1% increase in male enrollment, on average, total enrollment increased by

.81% or 63 students. Consequently, higher percentages of male enrollment positively influenced

total enrollment among public 2-year colleges. Urban campus location was associated with a

total enrollment increase of 189%. Therefore, the degree of urbanization positively influenced

enrollment among public 2-year institutions. Midwest regional location was associated with a

16% decrease in enrollment. Enrollment intensity, as measured through full-time enrollment,

negatively impacted total enrollment during the COVID-19 pandemic. However, a comparatively

high standard deviation (SD = 17.80) resulted in false influence (β = -.27). As such, the

unstandardized coefficient of B = -.02 was used to interpret no impact of enrollment intensity on

total enrollment.

4.2.2 Results for For-profit 2-year Institutions

The results of the multiple regression analysis indicated that the model was statistically

significant, F (11,473) = 9.36, $p < .001$, with an adjusted R^2 of .16. As seen in Table 4.3,

evaluation of β values indicated that the largest influences on the dependent variable were in the

order of tuition increase (β = .31, $p < .001$), tuition decrease (β = .25, $p < .05$), Midwest region (β

= -.22, $p < .001$), campus setting (β = .18, $p < .001$), tuition same (β = .15, $p < .05$), return to in-

person instruction, as measured through tuition dependency, (β = .14, $p < .01$) and gender (β =

.10, $p < .05$). Moreover, the analysis showed that enrollment intensity, Northeast region, West

region, and return to in-person instruction, measured through political affiliation, did not

significantly influence total enrollment.

While tuition incentives positively impacted total enrollment, increased tuition rates contributed more influence. Therefore, incentivized tuition was not an effective enrollment strategy during the COVID-19 pandemic. The return to in-person instruction, measured through tuition dependency, had a small significant impact on total enrollment during the COVID-19 pandemic. However, this variable had a comparatively high standard deviation (SD = 14.66), resulting in false influence (β = .14) Therefore, the unstandardized coefficient (B = .01) for the tuition dependency variable was interpreted as having no impact.

Gender, as measured through male enrollment, had a small positive impact on for-profit enrollment. For every 1% increase in male enrollment, total enrollment increased by .10%. For-profit enrollment was also positively influenced by campus setting, as urbanization contributed to enrollment increases of 136%. However, Midwest regional location was associated with a 43% decrease in enrollment.

4.3 MLR Analysis: Regression Model B

Model B incorporated all variables identified as relevant in the literature review. The exception was low-SES, which demonstrated multicollinearity with full-time enrollment. Moreover, tuition increase was removed from the public 2-year analysis as the drop in population size resulted in multicollinearity with tuition same. While the shift to the remote instruction variable was included in the public 2-year model, missing data necessitated its removal from the for-profit model. Listwise deletion resulted in population sizes of N = 776 (public 2-year institutions) and N = 264 (for-profit 2-year institutions). Independent variables included in the model were return to in-person instruction, tuition incentives (i.e., tuition same and tuition decrease), remote shift, and HEERF funds. Control variables included race/ethnicity,

gender, enrollment intensity, campus setting, region, unemployment rate, and COVID-19 state case rate.

4.3.1 Results for Public 2-year Institutions

The results of the multiple regression analysis indicated that the model was statistically significant F (18,757) = 47.20, $p < .001$, with an adjusted R^2 of .52. As seen in Table 4.4, the independent variables of tuition incentives (i.e., tuition freeze) ($\beta = .10$, $p < .05$) and emergency relief aid ($\beta = .12$, $p < .001$) positively influenced enrollment. Consequently, unchanged tuition rates contributed an increase of 1,017 students to total enrollment on average. For every 1% increase in emergency relief aid, total enrollment increased by 0.24% or approximately 19 students. Return to in-person instruction, as measured through tuition dependency, positively impacted total enrollment during the COVID-19 pandemic. However, a high standard deviation ($SD = 9.13$) contributed to false influence ($\beta = .14$). Therefore, the unstandardized coefficient of $B = .01$ was used to interpret no impact for the tuition dependency variable. Return to in-person instruction, as measured through political affiliation, did not influence total enrollment ($\beta = .07$, $p < .05$). Also, the remote shift variable did not significantly impact enrollment during the COVID-19 pandemic.

Among race/ethnicity, Hispanic had the most influence. For every 1% increase in Hispanic enrollment, total enrollment increased by .25% or 20 students ($\beta = .26$, $p < .001$). A 1% increase in male enrollment increased total enrollment by .69%, or 54 students ($\beta = .12$, $p < .001$). Consequently, higher percentages of male enrollment positively influenced total enrollment among public 2-year colleges. The degree of urbanization positively influenced enrollment with an increase of 110% ($\beta = .39$, $p < .001$). For every 1% increase in unemployment, total enrollment increased by about 0.94% or 74 students ($\beta = .23$, $p < .001$).

The Northeast regional location was associated with a 28% decrease in enrollment ($\beta = -.12$, $p < .001$). Enrollment intensity, measured through full-time enrollment, negatively impacted total enrollment during the COVID-19 pandemic. However, a comparatively high standard deviation ($SD = 12.65$) resulted in false influence ($\beta = -.16$). The unstandardized coefficient of $B = -.01$ indicated no impact on total enrollment for the enrollment intensity variable. COVID case rate, Midwest, and West regionality did not significantly influence total enrollment.

4.3.2 Results for For-profit 2-year Institutions

As seen in Table 4.5, the results of the multiple regression analysis indicated that the model was statistically significant, $F(18,245) = 6.04$, $p < .001$, with an adjusted R^2 of .26. Return to in-person instruction, as measured through tuition dependency, positively impacted total enrollment during the COVID-19 pandemic. However, a high standard deviation ($SD = 15.28$) contributed to false influence ($\beta = .14$); the unstandardized coefficient of $B = .01$ indicated no impact for the tuition dependency variable. Tuition incentives, return to in-person instruction (i.e., political affiliation), emergency relief aid, and the remote shift did not significantly influence enrollment. Thus, enrollment management efforts failed to impact total enrollment at for-profit 2-year institutions during the COVID-19 pandemic. The analysis further demonstrated that the race/ethnicity of White, gender, enrollment intensity, Northeast region, Midwest region, West region, unemployment rate, and COVID case rate did not significantly influence total enrollment.

The race/ethnicities of Black ($\beta = .25$, $p < .001$), other ($\beta = .25$, $p < .001$), and Hispanic ($\beta = .17$, $p < .05$) significantly impacted total enrollment. As each race/ethnicity increased by 1%, total enrollment increased by 1-2 students. Urban campus location also contributed a positive influence ($\beta = .14$, $p < .05$), increasing enrollment by 88%.

4.4 Hypotheses

This quantitative study measured the influence of enrollment management efforts on total enrollment during the COVID-19 pandemic. MLR analysis using two regression models addressed the study's research questions. The following section includes a summary of the data findings related to the research questions and corresponding hypotheses.

1. How did enrollment management efforts influence 2-year college enrollment during the COVID-19 pandemic?

   - H_o1: No statistically significant relationship between the shift to remote instruction and 2-year college enrollment exists. The remote shift variable failed to meet the linearity assumption with total enrollment at 2-year public institutions during COVID-19. Moreover, its incorporation into Model B failed to yield a significant impact on public 2-year college enrollment. Missing data within the for-profit population was substantial (76%), necessitating removal from the for-profit analysis. Therefore, the shift to remote instruction failed to explain the variance in enrollment during the pandemic among 2-year colleges.

   - H_o2: No statistically significant relationship between return to in-person instruction and 2-year college enrollment exists. MLR analysis demonstrated that return to in-person instruction, measured through tuition dependency and political affiliation, did not explain variation in enrollment during the COVID-19 pandemic at 2-year institutions (i.e., public and for-profit).

   - H_a3: A statistically significant relationship between emergency relief aid and 2-year college enrollment exists. Emergency relief aid failed to meet the linearity assumption with total enrollment during COVID-19. However, Model B demonstrated a small,

yet significant, positive influence of HEERF funds on total enrollment at public 2-year institutions. The distribution of HEERF funds failed to explain variance in enrollment during the pandemic among for-profit 2-year colleges.

- H_a4: A statistically significant relationship between tuition incentives and 2-year college enrollment exists. Among 2-year institutions, enrollment increased regardless of tuition rates, as tuition increase attributed ($\beta = .66$, $p < .001$) and ($\beta = .31$, $p < .001$) relative influence. However, at public institutions, the same tuition rate ($\beta = .72$, $p < .001$) had more impact on enrollment than tuition increase. Thus, incentives in the form of a tuition freeze positively contributed to total enrollment at public 2-year colleges during the pandemic. Comparatively, at for-profit institutions, tuition decrease ($\beta = .25$, $p < .01$) influenced enrollment more than the same rate of tuition ($\beta = .15$, $p < .01$). However, neither incentive outweighed the impact of increased tuition rates. Thus, tuition incentives did not influence total enrollment among for-profit 2-year institutions during the pandemic.

2. What differences exist between the 2-year institution type and the influence of enrollment management efforts during the COVID-19 pandemic?

- H_a5: A statistically significant difference exists between the 2-year institution type and the influence of enrollment management efforts during the COVID-19 pandemic. At public 2-year institutions, the same tuition rate ($\beta = .72$, $p < .001$) contributed the most influence on enrollment during the COVID-19 pandemic. Comparatively, at for-profit 2-year institutions, increased tuition rates most impacted total enrollment. Moreover, emergency relief aid had a small, yet significant, impact on public 2-year enrollment. Yet HEERF funds failed to demonstrate influence on for-profit

enrollment. Neither the return to in-person instruction nor the remote shift variables significantly influenced enrollment across the 2-year sector.

4.5 Chapter Summary

This study used a quantitative research design, with MLR analysis, to explore the influence of various enrollment management efforts on 2-year college enrollment during the COVID-19 pandemic. Assumption verification resulted in the emergence of two models: Model A and Model B. Subsequently, inferential analysis established the influence of enrollment management efforts, while simultaneously controlling other factors which impacted enrollment during the COVID-19 pandemic.

Model A incorporated only those variables for which all MLR assumptions were meant (i.e., tuition incentives, return to in-person instruction, gender, enrollment intensity, campus setting, and region). Model A accounted for 55% of the variance in public and 16% in for-profit enrollment. In the public sector, tuition freeze most influenced total enrollment. Comparatively, for-profit enrollment was not susceptible to enrollment management efforts. Demographically, gender (i.e., male enrollment) and urbanized campus setting positively influenced enrollment among the 2-year sector, whereas Midwest regional location contributed a negative impact.

All variables deemed relevant within the existing literature were used to build Model B. The model accounted for 52% of the variance in public and 26% in for-profit enrollment. However, a limitation of this model was the introduction of bias stemming from a violation of the linearity assumption. Using Model B, enrollment management efforts of HEERF funds and tuition freeze were most influential among public 2-year institutions. Comparatively, enrollment management efforts did not impact 2-year for-profit enrollment.

Demographically, race/ethnicity positively influenced total enrollment across the 2-year sector. While Hispanic enrollment was most influential at public 2-year colleges, the race/ethnicity of Black demonstrated the most influence on for-profit 2-year enrollment. Urbanized campus settings among both sectors positively influenced enrollment. Moreover, gender, as measured through male enrollment, and unemployment rate both attributed a positive influence on total enrollment at public institutions. However, Northeast regionality negatively impacted enrollment.

Chapter four introduced population demographics and a thorough overview of the MLR findings from two explanatory models. Chapter five will interpret the data and introduce future policy and practice initiatives aimed at institutional sustainability through enrollment management. Chapter five will also situate the findings within the current literature.

Table 4.1

Descriptive Statistics

Variable	Public		For-profit	
	M	*SD*	*M*	*SD*
Total enrollment	7820.44	10143.05	667.60	869.65
Gender [a]	40.71	9.99	30.98	30.90
Race White	54.13	23.97	38.04	26.74
Race Black	13.43	15.30	24.49	22.71
Race Hispanic	17.45	18.44	22.54	21.99
Race Other [b]	14.99	13.73	14.93	14.54
Pell [c]	31.90	12.44	91.14	18.69
Enrollment intensity [d]	34.21	17.81	90.81	19.01
Campus setting [e]	.51	.50	.94	.25
Northeast region	.14	.08	.16	.36
Midwest region	.24	.08	.23	.42
South region	.41	.08	.34	.47
West region	.21	.08	.28	.45
Unemployment rate	6.49	1.42	6.81	1.38
Covid case rate	9428.47	1590.49	9266.55	1482.58
Remote shift	608.31	4700.75	11.62	71.52
HEERF funds	41.38	23.27	33.29	47.70
Tuition dependency [f]	15.35	10.30	88.29	14.65
Political Affiliation [g]	.44	.50	.50	.50
Tuition increase	.36	.48	.56	.50
Tuition same	.50	.50	.05	.22
Tuition decrease	.04	.19	.32	.47

Note. [a] Gender is representative of male enrollment. [b] Racial categories used by IPEDS (American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, race/ethnicity unknown, and nonresident alien) have been collapsed into the "Race other" category. [c] Pell serves as a proxy for low-SES student enrollment. [d] Enrollment intensity is representative of full-time enrollment. [e] Campus setting with urban institutions valued as one. [f] Tuition dependency serves as a proxy variable for return to in-person instruction. [g] Political affiliation with institutions in republican states valued as one served as a proxy for return to in-person instruction.

Table 4.2

Model A Regression Table Public Institutions

Variable	Unstandardized B	Std. Error	Standardized Coefficients β	t	Sig.	M	SD
(Constant)	3.87***	.53		7.33	<.001		
Gender [a]	.81***	.13	.15***	6.28	<.001	3.71	.22
Enrollment intensity [b]	-.02***	.00	-.27***	10.15	<.001	34.26	17.80
Campus setting [c]	1.06***	.06	.44***	18.75	<.001	.51	.50
Northeast region	-.14	.10	-.04	-1.47	.142	.13	.34
Midwest region	-.18*	.08	-.06*	-2.27	.024	.24	.43
West region	.11	.08	.04	1.34	.182	.21	.41
Tuition dependency[d]	.01	.00	.05	1.82	.069	15.35	10.30
Political affiliation [e]	-.01	.06	-.00	-.08	.935	.44	.50
Tuition increase	1.65***	.12	.66***	14.31	<.001	.36	.48
Tuition same	1.72***	.11	.72***	15.12	<.001	.50	.50
Tuition decrease	1.85***	.18	.30***	10.30	<.001	.04	.19

Note. R^2 = .55 (*p* < .001)

[a] Gender is representative of male enrollment. [b] Enrollment intensity is representative of full-time enrollment. [c] Campus setting with urban institutions valued as one. [d] Tuition dependency serves as a proxy variable for return to in-person instruction. [e] Political affiliation with institutions in republican states valued as one serves as a proxy for return to in-person instruction. The South region was dropped during the analysis.

*p<.05. **p<.01. ***p<.001

Table 4.3

Model A Regression Table For-profit Institutions

Variable	Unstandardized B	Std. Error	Standardized Coefficients β	t	Sig.	M	SD
(Constant)	2.97***	.50		5.93	<.001		
Gender [a]	.10*	.05	.10*	2.14	.033	2.97	1.07
Enrollment intensity [b]	.00	.00	.07	1.74	.083	90.70	18.98
Campus setting [c]	.86***	.20	.18***	4.33	<.001	.94	.24
Northeast region	.06	.17	.10	.34	.734	.16	.36
Midwest region	-.56***	.13	-.22***	4.35	<.001	.24	.43
West region	.17	.15	.07	1.17	.243	.25	.43
Tuition dependency[d]	.01**	.00	.14**	3.18	.002	88.24	14.66
Political affiliation [e]	.04	.13	.02	.29	.774	.52	.50
Tuition increase	.69***	.21	.31***	3.34	<.001	.57	.50
Tuition same	.78**	.30	.15**	2.66	.008	.05	.21
Tuition decrease	.60**	.21	.25**	2.87	.004	.33	.47

Note. R^2 = .16 ($p < .001$)

[a] Gender is representative of male enrollment. [b] Enrollment intensity is representative of full-time enrollment. [c] Campus setting with urban institutions valued as one. [d] Tuition dependency serves as a proxy variable for return to in-person instruction. [e] Political affiliation with institutions in republican states valued as one served as a proxy for return to in-person instruction. The South region was dropped during the analysis.

*p<.05. **p<.01. ***p<.001

Table 4.4

Model B Regression Table Public Institutions

Variable	Unstandardized *B*	Std. Error	Standardized Coefficients *β*	*t*	Sig.	*M*	*SD*
(Constant)	-1.32	1.37		-.96	.338		
Race Black	.12***	.03	.12***	3.54	<.001	2.22	.96
Race White	.23***	.06	.15***	3.88	<.001	3.87	.63
Race Hispanic	.25***	.04	.25***	6.93	<.001	2.47	.96
Race other [a]	.23***	.05	.14***	4.58	<.001	2.55	.60
Gender [b]	.69***	.16	.12***	4.23	<.001	3.69	.16
Enrollment intensity [c]	-.01***	.00	-.16***	-5.54	<.001	31.31	12.65
Campus setting [d]	.74***	.06	.39***	13.24	<.001	.53	.50
Northeast region	-.33***	.10	-.12***	-3.45	<.001	.14	.35
Midwest region	.07	.08	.03	.84	.400	.25	.43
West region	.01	.10	.05	1.00	.318	.22	.41
Unemployment rate	.95***	.15	.23***	6.57	<.001	1.84	.23
COVID cases	.23	.14	.05	1.61	.107	9.11	.21
Tuition dependency [e]	.01***	.00	.14***	4.26	<.001	15.58	9.13
Tuition same	.12**	.05	.10**	2.31	.021	.54	.50
Tuition decrease	.21	.13	.04	1.65	.100	.04	.19
Political affiliation [f]	.13*	.06	.07*	2.10	.036	.40	.49
HEERF funds	.24***	.07	.12***	3.47	<.001	3.57	.44
Remote shift	.05	.06	.02	.73	.463	2.40	.44

Note. R^2 = .52 ($p < .001$)

[a] Racial categories used by IPEDS (American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, race/ethnicity unknown, and nonresident alien) have been collapsed into the "Race other" category. [b] Gender is representative of male enrollment. [c] Enrollment intensity is representative of full-time enrollment. [d] Campus setting with urban

institutions valued as one. [e] Tuition dependency serves as a proxy variable for return to in-person

instruction. [f] Political affiliation with institutions in republican states valued as one served as a

proxy for return to in-person instruction. The South region was dropped during the analysis.

*p<.05. **p<.01. ***p<.001

Table 4.5

Model B Regression Table For-profit Institutions

Variable	Unstandardized B	Std. Error	Standardized Coefficients β	t	Sig.	M	SD
(Constant)	-4.04	3.45		-1.17	.243		
Race Black	.26***	.07	.25***	3.70	<.001	2.70	1.08
Race White	.05	.08	.05	.68	.500	3.45	1.00
Race Hispanic	.16*	.07	.17*	2.37	.019	2.49	1.14
Race other [a]	.27***	.07	.24***	3.94	<.001	2.31	.98
Gender [b]	.01	.06	.01	.19	.851	2.90	1.13
Enrollment intensity [c]	.00	.00	.04	.80	.423	90.32	19.36
Campus setting[d]	.63*	.27	.14*	2.33	.020	.94	.24
Northeast region	.17	.22	.06	.76	.459	.19	.39
Midwest region	-.35	.18	-.14	-1.95	.052	.26	.44
West region	.33	.23	.13	1.42	.157	.26	.44
Unemployment rate	.22	.38	.05	.57	.566	1.89	.23
COVID cases	.62	.37	.10	1.67	.095	9.12	.19
Tuition dependency [e]	.01*	.00	.14*	2.35	.019	87.20	15.28
Tuition increase	.10	.26	.05	.38	.702	.54	.50
Tuition same	.24	.36	.05	.67	.505	.06	.23
Tuition decrease	.08	.27	.03	.29	.772	.34	.47
Political affiliation [f]	.06	.18	.03	.32	.746	.48	.50
HEERF funds	.02	.08	.01	.23	.816	3.16	.78

Note. $R^2 = .26$ ($p < .001$)

[a] Racial categories used by IPEDS (American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, race/ethnicity unknown, and nonresident alien) have been collapsed into the "Race other" category. [b] Gender is representative of male enrollment. [c] Enrollment intensity is representative of full-time enrollment. [d] Campus setting with urban institutions valued as one. [e] Tuition dependency serves as a proxy variable for return to in-person

instruction. [f] Political affiliation with institutions in republican states valued as one served as a proxy for return to in-person instruction. The South region was dropped during the analysis.

p<.05. **p*<.01. ***p*<.001

CHAPTER 5: DISCUSSION

Throughout the COVID-19 pandemic, 2-year colleges experienced widespread enrollment declines (NSCH, 2021; Kelderman, 2020; Vasquez, 2020). Two-year institutions are dependent on enrollment as a source of revenue. Grounded in resource-dependence theory (RDT), the present study situated 2-year colleges as resource-dependent organizations: highlighting adaptation and the procurement of institutional sustainability through enrollment management. Therefore, the purpose of this study was to explain how COVID-19 and the subsequent enrollment management efforts influenced 2-year college enrollment. The research examined four independent variables: 1) shift to remote instruction, 2) return to in-person instruction, 3) emergency relief aid, and 4) tuition incentives; while controlling for student demographics (race/ethnicity, gender, enrollment intensity, and low SES), institutional characteristics (campus setting and region), and environment (unemployment rate and COVID-19 state case rate). The two research questions explored in this study were:

1. How did enrollment management efforts influence 2-year college enrollment during the COVID-19 pandemic?

2. What differences exist between the 2-year institution type and the influence of enrollment management efforts during the COVID-19 pandemic?

Quantitative methodology employing inferential multiple linear regression (MLR) analysis addressed each research question. Regression Model A accounted for 55% of the variance in public and 16% in for-profit enrollment, while Model B accounted for 52% of the variance in public and 26% in for-profit enrollment. Since Model B violated the MLR linearity assumption, findings from Model A will primarily inform the discussion of the results, with specific exceptions cited throughout the chapter.

The results indicated that tuition incentives (i.e., tuition freeze) positively impacted 12-month enrollment among public 2-year institutions. Comparatively, while tuition incentives influenced total enrollment among for-profit 2-year institutions, the impact was not as strong as that of tuition increases. Thus, tuition incentives were not influential as an enrollment management initiative among for-profit institutions. Using regression Model B, emergency relief aid had a small yet significant impact on public 2-year enrollment. Contrary to expectations, this research did not reveal a significant relationship between total enrollment and the enrollment management efforts of a shift to remote instruction and return to in-person instruction across the 2-year sector.

In contrast to earlier results (Schanzenbach & Turner, 2022), the present study established that male enrollment had a positive influence on 12-month enrollment, so when institutions enrolled a larger proportion of males, their total enrollment was positively impacted. This finding suggests that the pandemic negatively impacted females' access to postsecondary education. Moreover, this study found a positive relationship between urbanization and 2-year college enrollment. This finding confirms that COVID-19 exacerbated the existing postsecondary enrollment gap between rural and urban communities (Ratledge et al., 2020; Scott et al., 2016; Siddiqi, 2022). Furthermore, it contributes to our understanding of inequities surrounding rural higher education.

This chapter provides a detailed interpretation of the results related to each research question, followed by a discussion of how the results compare with existing literature on enrollment management and the relationship between institutional characteristics, student demographics, and enrollment. Subsequently, the theoretical and practical implications of the

research are presented. The chapter concludes with a discussion of recommendations for future research.

<div align="center">**5.1 Enrollment Management Efforts**</div>

In the present study, tuition freeze positively influenced total 12-month enrollment among public 2-year institutions. Comparatively, for-profit 2-year enrollment was immune to tuition incentives, as increased tuition contributed the most influence. Using MLR Model B, a small positive impact on public 2-year enrollment was attributed to emergency relief aid. However, enrollment across the 2-year sector was not impacted by the variables of remote shift or return to in-person instruction. Thus, enrollment management efforts in the form of tuition incentives and emergency relief aid explained the variance in enrollment among public 2-year institutions. Enrollment management efforts failed to demonstrate influence within the for-profit sector.

5.1.1 Public 2-year Institutions

While community colleges are considered a more cost-effective route to postsecondary education, they are not immune to the trials of affordability. Financial concerns were the primary concern among community college students who chose not to enroll during the pandemic (Sutton, 2021). The inability of prospective students to invest in their college education caused by unemployment, lower incomes, and economic uncertainty exacerbated gaps in college affordability among the 2-year student population, leading to declines in community college enrollment.

Community colleges offer an affordable means to higher education, especially when compared with other sectors (e.g., for-profit and public 4-year colleges). However, the pandemic resulted in unexpected expenses and loss of employment, requiring increased financial aid to

promote enrollment. Community colleges received $23 billion in HEERF funds through the federal CARES act. Many community colleges used funds to distribute student payments to offset COVID-acquired costs (e.g., childcare, food, housing, and healthcare) (Gravely, 2022). For example, Northern Virginia Community College used CARES act funding to provide $500-$700 in emergency financial aid and distributed grocery gift cards (Beer & Bray, 2020). Thus, the direct distribution of HEERF funds were used to reduce financial insecurities among the 2-year student population.

In the present study, emergency relief aid positively influenced enrollment among public 2-year institutions. Though contradictory to media claims that highlighted HEERF funding as instrumental in supporting students and reversing enrollment loss (Brink, 2020; Gravely, 2022; Pierce, 2022), the influence was minimal. While the direct distribution of aid has been shown to positively impact enrollment at 4-year colleges (Castleman & Long, 2016), research focusing specifically on nontraditional students found that cash payments via a state financial aid program (i.e., California Competitive Cal grant program) had no impact on enrollment (Gurantz, 2020). Minority, low SES, and nontraditional students, populations disproportionately represented within the 2-year sector, were more likely to experience unemployment, increased expenses, and changes in living situation during the pandemic (Reed et al., 2022). Therefore, the minimal impact of emergency relief aid distribution indicates that students used emergency aid funds to support basic needs rather than college enrollment.

HEERF funds were also used to invest in institutional priorities related to the pandemic. Accordingly, many institutions used emergency relief aid to offer tuition incentives (Bauer-Wolf, 2021; Steele, 2022; Weissman, 2022; Whitford, 2021). Community colleges have traditionally responded to economic recessions by increasing tuition and fees to offset declines from other

revenue sources (An, 2013). However, increased federal funding combined with the

disproportionate financial impact of COVID-19 on at-risk student populations (e.g., first-

generation, low SES, and underrepresented minorities) gave rise to initiatives directed at

increasing affordability (Pratt, 2017; Soria et al., 2020). For example, Brookdale Community

College in New Jersey opted to freeze tuition in 2021 to increase access for students struggling

financially (Whitford, 2021). On a larger scale, South Carolina designated $17 million in federal

emergency relief aid money to fund tuition-free technical college for students in high-demand

fields (Bauer-Wolf, 2021). Thus, HEERF-funded tuition incentives increased postsecondary

affordability during the COVID-19 pandemic.

Results of the present study suggest that fixing tuition is an impactful enrollment

management effort during times of economic downturn. Among public 2-year institutions,

enrollment management efforts, in the form of a tuition freeze, positively influenced enrollment

during the COVID-19 pandemic, contributing to enrollment increases of 37%. Though the

present study is the first to explore the impact of a tuition freeze on public 2-year enrollment,

previous research has demonstrated a positive influence on 4-year college enrollment (Riggs,

2020). Moreover, while postsecondary institutions throughout Indiana experienced record

enrollment declines during the pandemic, Purdue University experienced enrollment gains in

response to increased affordability measures led by a move to freeze tuition (Fiorini, 2022).

Thus, enhanced affordability through fixed tuition rates is a viable option to enrollment

management among community colleges.

In contrast to earlier findings (Denning, 2017; Guarantz, 2020), no evidence of

substantial enrollment gains from decreased tuition rates was observed. Within the population of

public 2-year colleges studied, only 4% decreased tuition rates, hampering the potential influence

of reduced tuition on 12-month enrollment. Moreover, this finding suggests most institutions prioritized tuition stability over reduced tuition during the COVID-19 pandemic; a decision rooted in their dependency on tuition revenue.

The positive impact attributed to the tuition freeze, combined with the insignificance of the remote shift, and return to in-person instruction variables, indicates that affordability outweighed modality preference among students enrolling at public 2-year institutions during the COVID-19 pandemic. The insignificant remote shift findings were unexpected among the public sector, as it experienced a substantial increase in remote instruction between fall 2019 and fall 2020. Contrary to expectations, no relationship existed between pre-pandemic online investment and total enrollment. This finding supports Bulman et al. (2022) and suggests that pre-COVID distance education failed to negate enrollment declines among public institutions. Moreover, the administrative decision to resume in-person instruction did not impact total enrollment. While a return to in-person instruction created health and safety concerns (Leidner et al., 2021), the insignificant impact of the COVID-19 state case rate, combined with the positive influence on enrollment attributed to Black and Hispanic race/ethnicities, populations disproportionately impacted by the COVID-19 virus, suggests health concerns did not influence community college enrollment (Brock & Diwa, 2021; CDC, 2022).

In the context of RDT, the COVID-19 pandemic negatively impacted students' financial security. Therefore, public 2-year institutions adapted their enrollment management efforts to address affordability concerns among the student population. Employing strategies related to tuition incentives and the distribution of emergency relief aid enabled public 2-year institutions to highlight themselves as an affordable means to postsecondary education during precarious

environmental circumstances. Subsequently, securing access to tuition revenue through increased enrollment.

5.1.2 For-profit 2-year Institutions

While enrollment management efforts aimed toward affordability (i.e., tuition incentives and emergency relief aid) were influential within the public sector, they failed to demonstrate influence in the for-profit sector. Thus, an important finding to emerge in this study was the for-profit sector's immunity to enrollment declines despite increased tuition. As recognized brands in distance education, it was expected that for-profits would employ marketing strategies to capitalize on social distancing mandates. Yet their ability to increase tuition and enrollment during times of substantial economic hardship warrants exploration.

While decreased tuition influenced enrollment more than the tuition freeze, neither incentive was as strong as the impact of increased tuition rates. Shown to enroll similar student demographics, one would assume that public 2-year colleges offer the most appeal as their tuition rates are lower. However, public 2-year institutions experienced comparatively higher enrollment declines during the pandemic (NCES, 2021a; NCES, 2022b; NSCH, 2021). This divergence may have resulted from lax federal and state regulation, aggressive student recruitment strategies, an existing model for online instruction, or a combination of factors.

Liberated by the Trump administration from restrictions imposed by the Obama administration (e.g., gainful employment rule), for-profit institutions had access to emergency relief aid and, because of their propensity for online learning, could pitch themselves as an attractive opportunity to earn a postsecondary degree on a flexible schedule. A study that conducted interviews with current for-profit students suggests high tuition rates and student loan debt are normalized, as prospective students assume the high for-profit price tag is standard for

postsecondary education (Hall, 2021). Furthermore, students who choose for-profit institutions value convenience and flexibility over concerns about tuition pricing (Iloh & Tierney, 2014). Thus, for-profit institutions marketed themselves as an opportunity to get valuable credentials on a flexible schedule, regardless of cost.

Shift to remote instruction and the eventual return to in-person instruction were non-influential to enrollment across the 2-year sector. Missing data necessitated the removal of the remote shift variable from the for-profit model. However, the minimal influence contributed by the return to in-person instruction variable, combined with an increase in enrollment during the pandemic (NCES, 2022b), supports the assumption that for-profit institutions used their position as forerunners in distance education to attract students seeking reliable learning options during the pandemic. Therefore, the for-profit predisposition for online education shielded their enrollment from the impact of modality shifts.

5.2 Relationship Between Institutional Characteristics, Student Demographics, and Enrollment

Among public and private institutions, campus settings influenced enrollment during the pandemic. Thus, institutions with more urbanization experienced higher enrollment. This impact contradicts previous findings that enrollment declines were equally distributed across urban and rural settings during the pandemic (NCES, 2021a). Moreover, the Midwest location, a region with high rurality, negatively impacted enrollment at for-profit institutions compared with the Northeast, South, and West regions. Rural community college students face barriers to postsecondary enrollment stemming from affordability, travel, poor educational preparation, and inconsistent access to technology (Scott et al., 2016). Thus, findings from the present study

support the idea that barriers to rural postsecondary enrollment were exacerbated during the COVID-19 pandemic.

Higher numbers of male students had a positive influence on enrollment across both sectors. This outcome contradicts previous findings whereby COVID-19 disproportionately impacted male enrollment due to a reduction of assembly, repair, and maintenance (ARM) programs (Schanzenbach & Turner, 2022). Both sectors enrolled comparatively higher percentages of female versus male students on average (59% [public] and 69% [for-profit]). Incidentally, female students experienced exacerbated financial challenges, particularly female students lacking childcare (Cameron et al., 2021). More than 2 million community college students are parents of children under 18, and 70% of these parents are mothers (Karp & Cruse, n.d.). Therefore, economic hardship stemming from the COVID-19 pandemic hindered female enrollment in postsecondary education.

While public 2-year enrollment was influenced by all races/ethnicities (i.e., Black, other [American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, two or more races, race/ethnicity unknown, and nonresident alien], Hispanic, and White), higher numbers of minority populations exclusively contributed a positive influence on for-profit enrollment. The for-profit sector has cultivated a reputation for marketing programs to minority student populations. Without needing to close campuses, a benefit of predominantly online instruction, budgets remained stable, allowing for-profit institutions to expand pandemic-themed marketing messages (Dudley, 2020). Moreover, the for-profit reputation for distance education legitimized them as a viable option.

For-profit schools cluster in and around Black and Hispanic neighborhoods, a means of targeted inclusion among historically marginalized students (Cellini & Turner, 2019). Zip codes

with majority Black residents are 75% more likely to have for-profit colleges, locations with

majority Latino residents are 110% more likely to have for-profit colleges (Student Borrow

Protection Center, 2021). These same racial/ethnic groups were disproportionately affected by

COVID-19-related health (e.g., increased infection and mortality rates) and economic challenges

(e.g., loss of income and basic needs insecurity) (CDC, 2022; Pratt, 2017; Soria et al., 2020).

Targeted marketing materials emphasized expediency and convenience, offering prospects of

financial security through remote career training (Seamster & Charron-Chenier, 2017).

Therefore, the positive influence attributed to racial minority groups, combined with minimal

enrollment decline (NCES, 2022b), implies that the for-profit sector marketed itself as an

accessible means of postsecondary education among minority populations during the COVID-19

pandemic. Subsequently, promoting institutional sustainability through the enrollment of

minority populations.

During the COVID-19 pandemic, public 2-year enrollment benefited from the initiation

of a tuition freeze. In comparison, 2-year for-profit institutions experienced enrollment gains

despite increased tuition rates. Enrollment in both sectors was positively influenced by higher

proportions of male students and urbanization. Consequently, findings from this study have

implications for policy and practice initiatives rooted in affordability, for-profit accountability,

and equity.

5.3 Recommendations for Actions

The COVID-19 pandemic allows policymakers and college leaders to reflect on what

worked, what did not, and the lessons learned. Consequently, adaptations to enrollment

management efforts during the pandemic serve to inform future policy and practice initiatives.

This study highlights a need for practice and policy aimed at tuition affordability, student support

services (particularly those which address basic needs insecurity), and closure of the rural divide. Moreover, the ability of the for-profit sector to increase tuition and enrollment simultaneously calls for more regulatory oversight of the for-profit sector.

5.3.1 Fixed Rate Tuition

As inflation remains elevated, the risk is growing that potential students will prioritize work over postsecondary education. While colleges have traditionally responded to recessions by increasing tuition, research has demonstrated a strong negative relationship between increased tuition rates and community college enrollment (An, 2013; Nutting, 2014). Perspective students prioritize affordability when considering postsecondary enrollment, especially students of low SES (Hemelt & Marcotte, 2016). Consequently, fixed-rate tuition plans have significant value as they provide financial security for prospective students during economic hardship.

Community college tuition is sensitive to economic fluctuations. As such, a positive correlation between recession impact and college tuition exists (Johnson, 2014). Tuition goes up when prospective students are least able to afford cost increases. Historically, 2-year enrollment has increased during economic recessions as unemployed workers return to college for training to position themselves for career advancement when the economy recovers (AACC, 2019; Juszkiewicz, 2017). Consequently, the need for career advancement outweighed concerns about affordability. However, the impact of the tuition freeze on public 2-year college enrollment in this study demonstrates a shift to prioritization of affordability.

Already in place at colleges and universities nationwide, fixed rate tuition plans rely on one common principle: students pay the same annual tuition rate for a pre-determined length of time. For example, under the University of California's tuition stability plan, tuition will be adjusted for each incoming undergraduate class but will remain at a flat rate until the student

graduates, for up to six years. The University of North Carolina's fixed tuition program provides all in-state undergraduates with a fixed tuition rate for eight consecutive semesters of enrollment. Additionally, several states (e.g., Ohio, Iowa, Oklahoma, and Missouri) launched bills to freeze tuition rates in an effort to increase postsecondary affordability (Carter, 2023; Chen, 2022).

Fixed-rate tuition plans insulate students from unexpected increases in the cost of their education. Higher tuition is related to lower enrollment (Burnett, 2021). Thus, the benefit of fixed-rate tuition is its ability to promote enrollment while simultaneously addressing affordability concerns among the 2-year student population. Moreover, fixed-rate tuition plans improve retention and persistence rates among 4-year colleges, as increased tuition contributed to higher attrition rates (Morphew, 2007). While fixed-rate tuition plans are more common among 4-year institutions, this study provides preliminary evidence that 2-year institutions may benefit from fixed tuition rates. However, several obstacles must be acknowledged in regards to fixed tuition rates.

Fixed-rate tuition plans require that institutions forecast tuition, which necessitates some estimation of inflation and cost increase. Delaney and Kearney (2015) argue that fixed tuition rates contain inflationary risk, encouraging institutions to set tuition rates higher than the typical annual adjustment (26%-30% vs. 6%-7%). Therefore, to implement fixed-rate tuition within the public 2-year sector, state support is needed. State investment could negate the frontloading of costs and maintain equitable access to postsecondary education. For example, in Iowa, the state Senate passed legislation that provided over $200 million to the state's community college to help cover the cost of fixed tuition implementation (Chen, 2022).

The benefit from current tuition plans is largely restricted to students enrolled full-time in an attempt to increase persistence. As a result, fixed-rate tuition plans have been criticized for

disproportionately impacting poor, minority, and first-generation college students; populations with low persistence rates (Morphew, 2007; NSCH, 2019). The disproportionate enrollment of part-time students calls for the expansion of fixed-rate tuition plans to include part-time enrollment for three to four years.

Students who enroll in community college due to tuition incentives come from two groups: students who planned to attend 4-year universities and students who had no intention of enrolling in college before incentivized tuition. Knowing who responds to community college prices is critical for policymakers and college administration when considering the effects of community college tuition. Denning (2017) found tuition incentives (e.g., tuition reduction) to be influential in switching student choice from non-enrollment to enrollment. As institutions offer tuition incentives, students from marginalized and at-risk populations will be encouraged to enroll. Most students will arrive without academic preparation or the necessary financial resources to effectively navigate postsecondary education. Consequently, academic and student support services are critical to successful tuition incentive implementation.

5.3.2 Academic and Student Support Services

The lack of technological resources was a primary deterrent to rural student enrollment during the COVID-19 pandemic (Siddiqi, 2022). Thus, investments in technology at the institutional and state level are necessary. Colleges could develop a laptop loan policy whereby registered students are provided laptops, free of charge, for the length of a course (e.g., 8-16 weeks). Furthermore, institutions might consider including Wi-Fi-enabled mobile devices (e.g., iPads or Surface Tablets) as part of the standard financial aid package for students who demonstrate need (Jaggars et al., 2021). In turn, states should allocate federal funding to support universal laptop access. Concurrently, state investment in broadband expansion efforts is needed

to ensure technological access to rural and underserved populations (e.g., Black, Hispanic, low-SES, etc.).

While removing technological barriers (e.g., laptop distribution and broadband expansion) addresses basic student needs, online learning requires a distinct set of skills. Dabbagh (2007) defines a successful online student "as someone who has a strong academic self-concept; is competent in the use of online learning technologies, particularly communication and collaborative technologies; understands, values, and engages in social interaction and collaborative learning; possesses strong interpersonal and communication skills, and is self-directed" (p.8). Thus, further institutional initiatives which support rural student development (e.g., navigating learning management systems, time management, and self-motivation) are needed. Virtual services created during the pandemic, such as advising and counseling, could be altered to fit the post-COVID era. For example, in addition to the technology resources, institutions could offer targeted mandatory sessions in areas such as registration, advising, course orientation, counseling, and career coaching (Siddiqi, 2022).

Institutions with a higher percentage of male enrollment experienced increased total enrollment during the COVID-19 pandemic. This finding suggests that female enrollment in 2-year postsecondary higher education was negatively impacted. Based on previous findings of exacerbated financial hardships and basic needs insecurity among the female gender (Cameron et al., 2021), college leaders must establish supportive resources to negate financial barriers (e.g., campus pantries, emergency aid scholarships, etc.). Advancement of such services would help reduce stigma and communicate a culture of support, promoting enrollment through college attainment (Goldrick-Rab et al., 2020). Goldrick-Rab offers three principles to the implementation of any needs-based program 1) "maximize equity by keeping red tape for

students to a minimum, 2) maximize impact by ensuring that the application and distribution

processes are quick, and 3) maximize efficiency by imposing as little administrative burden as

possible on program staff "(Goldrick-Rab, 2021, p.6).

Community colleges with limited on-campus resources, or inadequate funding to support

on-campus resources, have found success in non-profit partnerships. For example, Single Stop

USA provides comprehensive poverty alleviation services by enrolling students in health care,

food stamps, and financial services (e.g., tax preparation, legal services, and financial

counseling) (Broton et al., 2014). Thus, collaboration with external agencies can provide non-

academic support that institutions struggle to provide independently. State policymakers can also

support the enrollment of students with basic needs insecurity. States have the flexibility to

broaden access to public benefit programs. For example, states can raise the gross income limit

in Supplemental Nutritional Assistance Program (SNAP) or designate postsecondary programs

as eligible under the SNAP Education and Training program (Koppisch et al., 2021).

Basic needs insecurity will grow as potential students face financial instability due to

diminished wealth among racial/ethnic minorities and a weakened job market (Khanal et al.,

2021). Even with tuition incentives, basic needs support is necessary as increased affordability

will drive new students from financially weaker backgrounds to enroll (Goldrick-Rab, 2021).

Therefore, sustained enrollment benefits from tuition incentives in contingent on offering student

support services.

5.3.3 For-profit Accountability

Among 2-year for-profit institutions, tuition increase contributed the most influence on

total enrollment, as compared with incentivized tuition. Moreover, undergraduate enrollment

decreased at public 2-year colleges, while 2-year for-profit institutions experienced enrollment

gains. Students who attend for-profit institutions take on more educational debt and are more

likely to default on their loans (Armona et al., 2018). This trend is especially true for low SES,

Black, and Hispanic populations; groups disproportionately served by the for-profit sector. The

for-profit sectors' ability to increase tuition and maintain enrollment simultaneously translates to

more student loan debt and higher default rates, particularly among at-risk populations.

Consequently, findings from this study have federal policy implications for the reinstatement of

the gainful employment rule.

Previous transgressions (e.g., predatory recruiting and fraudulent financial aid practices)

within the for-profit sector led the Obama administration to enact the gainful employment (GE)

rule, a set metric used by the Education Department to measure the relative earnings of graduates

in proportion to student debt. The rule was an attempt to prevent programs that leave students

with debt and no means to pay it back from continuing to receive federal financial aid. However,

in 2019, the Trump administration rescinded the rule. The elimination of the GE rule was

estimated to cost taxpayers $5.3 billion in financial aid due to increased spending on programs

that failed to meet previously established standards (Shireman, 2019). Consequently, decreased

accountability and ambiguous program performance data jeopardize the welfare of students,

taxpayers, and the federal budget (Armona et al., 2022). Greater oversight of the for-profit sector

is needed.

Based on rules established in 2014, if a program's graduates have annual loan payments

of more than 12% of total earnings and greater than 30% of discretionary earnings, the program

is considered to have failed the requirements (Delisle & Chon, 2022). If reinstated as is, 8% of

all for-profit programs, as compared with 2% (public) and 5% (non-profit), would fail (Itzkowitz

& Klebs, 2022). These numbers will increase under the current Biden administration's proposed

debt-to-earnings test, whereby programs lose their financial aid eligibility if graduates' median

loan payments exceed 8% of earnings and 20% of discretionary earnings (Delisle & Cohn,

2022).

Although the GE rule is broadly popular among institutional leaders, it has limitations

(Klebs, 2022). Programs can pass the debt-to-income test if many students finance their

education with federal grant aid or out-of-pocket funds instead of student loans (Delisle & Cohn,

2022). For-profit student choice is characterized by low parental involvement (Chung, 2012),

leaving students to navigate the complexities of college admission alone. Therefore, to combat

the limitations of the GE rule, increased transparency across the for-profit sector is needed.

Prospective students must be made aware of graduation rates, length to degree completion, job

placement rates, licensure/certification rates, labor market outcomes, and student loan repayment

policies. States have the legal authority to impose such disclosure requirements. For example,

Massachusetts' regulations prohibit deceptive language in communications with prospective

students (Hutchens & Fernandez, 2021). Thus, the GE rule, in conjunction with increased

transparency, allows prospective students to make informed decisions and lessens the financial

burden for those seeking social mobility through for-profit postsecondary education.

For-profit colleges make up 40% of all higher education advertising, a recruitment

strategy correlated with increased enrollment (Cellini & Chaudhary, 2020). Yet these

advertisements are not always truthful: projecting exaggerated outcomes and erroneous financial

information (Galindo, 2023; Hall, 2021). Moreover, for-profit institutions aggressively target

minority and low-income populations, further deepening the social mobility gap that plagues

postsecondary education. Thus, for prospective students to make informed decisions about their

education, greater transparency is critical. A proposed solution is mandating institutions to report

accurate information on graduation rates and debt-to-earnings ratios, in addition to limiting the percentage of revenue that for-profit colleges can spend on advertising.

Despite employee job titles, the for-profit recruitment process has not evolved to mirror that of public institutions. The individuals employed to recruit students at for-profit colleges are more likely to come from a sales background than from student affairs (Hall, 2021). Student perceptions of the for-profit recruitment process were described as "transactional," "salesy," and "overly intrusive": offering little support in areas related to academic counseling, career planning, or sensible discussion about financial aid (Hall, 2021). When treated like selling a product, recruiters are encouraged to disseminate false information and employ aggressive sales tactics to boost enrollment numbers. While the Higher Education Act prohibits institutions from incentivizing enrollment strategies, for-profit colleges can provide recruiters commissions if classified as bundle employees; an employee that works in more than one department (Galindo, 2023). Not only does this tactic exaggerate aggressive marketing strategies, but it also elevates the cost of for-profit education. Contracted recruiting operations can cost an institution up to 60% of tuition (Shireman, 2019). Closing this loophole is critical to deterring sales-based enrollment tactics and mitigating tuition inflation in the for-profit sector.

The COVID-19 pandemic presented an opportunity to explore enrollment management efforts during economic instability. Therefore, this study provides valuable information to advise future enrollment management initiatives. However, as introduced in the following section, several limitations of this study exist.

5.4 Limitations

Although this study fills a gap in the literature about 2-year college enrollment and enrollment management during the COVID-19 pandemic, there are several limitations to note: 1)

data collection was delimited to the 2020-2021 academic year; 2) proxy variables accounted for unmeasurable variables; 3) emergency relief aid failed to represent the usage of HEERF funds; and 4) Model B violated the linearity assumptions. As a result, findings are characteristic of enrollment during a single academic year and do not represent long-term enrollment management trends. The inability to determine each institution's date of return to in-person instruction necessitated the incorporation of proxy variables (i.e., tuition dependency and political affiliation). However, exact return dates would have been a more accurate measurement.

The present study included total HEERF funds received by each institution as a percentage of operating costs and did not account for if/how funds were spent. CARES Act legislation gave colleges considerable discretion in how to distribute funds. Thus, the present study failed to account for the specific allocation of funds and their subsequent influence on enrollment. Lastly, Model B did not meet the MLR linearity assumption. Therefore, results related to emergency relief aid and race/ethnicity were subjected to bias.

While limitations related to data collection and analysis existed, the findings of this study contribute valuable insight into 2-year college enrollment during the COVID-19 pandemic. Moreover, the study's limitations inform future research on 2-year college enrollment. Thus, future attempts at research on the topic should consider a longitudinal analysis with differentiation of HEERF fund distribution.

5.5 Future Research

Current research on 2-year colleges and the COVID-19 pandemic focuses on online instructional responses and the student perception of remote learning shifts (Bird et al., 2022; Prokes & Housel, 2021; Xu, 2021). However, this study indicates that community college students prioritized affordability over modality preferences. This result contradicts Patten's

(2021) finding that when funds were used to improve academics, rather than incentivizing tuition, 2-year institutions experienced larger enrollment gains. Therefore, further research on federal fund usage to promote enrollment initiatives is needed.

The present study failed to establish influence based on the specific usage of HEERF funds. HEERF guidelines mandated the distribution of funds so that a portion went directly to students as emergency financial grants, with the remainder for use in institutional priorities related to the pandemic. Future research should explore the distribution of federal HEERF funds among 2-year colleges and how individual efforts influenced enrollment. Findings could inform strategic planning of future funding allocations to improve enrollment through academic or affordability-based initiatives.

During the COVID-19 pandemic, many colleges incentivized tuition by offering a fixed rate. Despite the prevalence of fixed-rate tuition policies, there is little empirical evidence of long-term impacts. Yet several studies have demonstrated the negative influence that higher community college tuition has on enrollment (Burnett, 2021; Nutting, 2014). Furthermore, Miller & Park (2022) found that three years after a tuition cap or freeze ended, there was no statistically significant difference between community colleges' actual tuition level and what it would have been without the regulation. Incidentally, the present study demonstrated a positive influence on enrollment from a single-year tuition freeze. Since tuition was frozen at the preexisting rate (i.e., no inflation), this study suggests that avoidance of cost frontloading loading is essential to fixed-rate tuition implementation. However, this study was delimitated to the 2020-2021 academic year and failed to address the long-term impact. Therefore, a longitudinal analysis of total enrollment is needed to explore sustainability through incentivized tuition.

While this study addressed tuition incentives such as freezes and reductions, the impact of free tuition on total enrollment during the pandemic is unknown. Given the push for free community college education (Jaschik, 2021), research on free tuition programs could provide valuable insight into enrollment management. Multiple states (e.g., California, Oregon, Georgia, North Carolina, etc.) and individual colleges offer free tuition (i.e., College Promise) programs. Promise programs are associated with large (23% average) increases in enrollments of Black and Hispanic students, especially students classified as females (Gandara & Li, 2020). COVID-19 disproportionally impacted Black and Hispanic populations (Bulman & Fairlie, 2022). Findings from the present study demonstrated a negative relationship between total enrollment and female enrollment during the pandemic. Therefore, free tuition may be valuable to institutions looking to recoup enrollment losses. Future research should explore enrollment trends among institutions that offered free tuition incentives during the COVID-19 pandemic. Moreover, the wide variation in promise program design calls for future research on how enrollment varies based on program requirements and across demographic groups.

Research on the for-profit sector centers around educational outcomes and student loan debt compared with the public higher education sector (Liu & Belfield, 2020; Li & Kelchen, 2021; Tucker, 2021). Students enrolling in 2-year for-profit colleges have dismal degree completion rates and significantly more student loan debt than demographically similar students in public 2-year colleges (Tucker, 2021). Thus, current research trends, combined with the positive influence of tuition hikes on enrollment demonstrated in this study, call for further exploration into for-profit student enrollment choice.

With the growth of distance learning, students have many options when selecting a postsecondary institution. Community colleges provide an opportunity to earn an affordable

degree while remaining close to home. Whereas for-profit student choice centers on

convenience, flexibility, and short-term degree completion (Gelbgiser, 2018; Tierney, 2011). The

COVID-19 pandemic increased financial insecurities among prospective 2-year student

populations. Nevertheless, the for-profit sector experienced enrollment gains during the

pandemic. There are concerns as to why students would attend an institution with such a high

cost and a socially perceived low probability of return on investment (Cellini & Turner, 2014;

Tierney, 2011). Thus, more research is needed to understand why students chose for-profit

institutions during the COVID-19 pandemic. For example, a qualitative study exploring the

perceptions of marginalized (e.g., minority, first-generation, adult-learners, and student parents),

low SES, and at-risk student populations could provide valuable insight into enrollment barriers.

Since for-profit institutions experienced enrollment gains, a student choice analysis could

provide public 2-year institutions with information on how to adapt recruitment efforts in a post-

COVID era.

While 2-year for-profit institutions may offer equitable means to social mobility, some

for-profits have a historical tendency for predatory marketing. Given the financial and safety

implications of COVID-19, it is reasonable to assume that those same institutions may have used

the pandemic to recruit vulnerable student populations. Marketing practices aimed at scaring

students into studying online or entering degree fields considered more in demand because of the

pandemic are unethical and exploitative. Thus, future research into marketing strategies as an

enrollment management effort during the COVID-19 pandemic is needed. Qualitative

perceptions from students enrolled in for-profit 2-year institutions during the pandemic could

provide valuable insight into potential predatory recruitment and marketing strategies. Moreover,

data could assist policymakers in developing guidelines to protect current and prospective students from inequitable marketing strategies.

This study suggests that public 2-year institutions benefit from efforts to maintain affordable tuition rates. Furthermore, the study's findings call for increased federal accountability in the for-profit sector. Federal funds may be better invested in public community colleges rather than enabling at-risk student populations to incur unmanageable debt at for-profit colleges. Thus, future research on sustainable enrollment management efforts and for-profit student choice is needed.

5.6 Conclusion

Two-year colleges experienced widespread enrollment declines during the COVID-19 pandemic: a trend ongoing since 2010 (Juszkiewicz, 2017; NCES, 2022a). Traditionally economic hardship resulted in enrollment gains among 2-year colleges (Fry, 2009). Yet despite the pandemic's negative effect on the economy, 2-year enrollment declined. The pandemic represented an opportunity to analyze enrollment patterns during a unique economic downturn. This study used resource dependence theory (RDT) to situate 2-year colleges as resource-dependent organizations. Impacted by resource scarcity (i.e., potential students), 2-year colleges adapted their enrollment management efforts to account for the pandemic's effect on the student population, while simultaneously ensuring institutional sustainability through continuous access to enrollment.

The purpose of this study was to quantitatively explore factors that explained enrollment in 2-year institutions during the COVID-19 pandemic and examine whether differences in enrollment existed based on the type of 2-year institution. Multiple linear regression (MLR) analysis demonstrated that tuition incentives (i.e., tuition freeze) and emergency relief aid

positively influenced total 12-month enrollment during the 2020-2021 academic year at public 2-year institutions. Contrary to expectations, the shift to remote instruction and return to in-person instruction did not significantly influence enrollment. Consequently, affordability outweighed modality preference among the public 2-year student population. This finding suggests that, during economic hardship, public institutions benefit from maintaining affordability.

While total enrollment among the public 2-year population declined by seven percent, for-profit 2-year institutions experienced an average enrollment increase of 15%. Moreover, the for-profit 2-year sector was immune to all enrollment management efforts, as tuition increase contributed the most influence. This finding implies that students who chose for-profit institutions prioritized convenience and flexibility over concerns about tuition pricing. Thus, for-profit institutions leveraged their position as forerunners of distance education as an opportunity to earn a postsecondary degree during the pandemic, regardless of cost. Given the for-profit sector's history of predatory marketing, dismal employment outcomes, and high student loan debt, more federal regulation is necessary (Armona et al., 2018; Galindo, 2023). Therefore, the findings of this study call for increased accountability across the for-profit sector, specifically the reinstatement of the Gainful Employment rule.

COVID-19 negatively impacted all student demographics (Brock & Diwa, 2021; Causey et al., 2021; NCES, 2021a; NSCH, 2021; Schanzenbach & Turner, 2022). However, this study demonstrated that female and rural students suffered the most. Given the financial and technological barriers that female and rural students faced during the pandemic, institutions should establish support services aimed at addressing basic needs insecurity and closure of the digital divide. Therefore, promoting enrollment through equity-based enrollment management efforts.

This study quantified the impact of enrollment management efforts and exposed vulnerabilities to postsecondary enrollment among impacted student populations. Public 2-year colleges must build enrollment back. Consequently, this study is valuable when considering enrollment management efforts in the post-COVID-19 era. Moreover, the findings of this study call for increased accountability across the for-profit sector.

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