

**Sexed Differences for Student-Parents Pursuing Higher Education**

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APRIL BARNETT ADAMS

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## **Abstract**

This study uses newly collected data identifying students who are parents of dependent children (student-parents) as they pursue post-secondary education in Texas to explore the choices student-parents make in pursuit of their higher education goals. Prior research on student-parents have focused on their needs and have relied on population estimates or small or homogenous populations, limiting researchers' ability to generalize about the relationship between a student parent's sex and their educational choices. This led to calls for additional research using more diverse and larger populations. This quantitative, non-experimental, archival study seeks to determine whether sex-based differences are observable in the enrollment choices of student-parents in Texas public colleges and universities, using a gendered social control theoretical framework. With a sample of more than 7,000 student records, this study found statistically significant associations between sex and institution type and sex and enrollment modality for student-parents, using chi-square tests of independence. Two-sample proportions tests were then used to provide additional insights into the relationship between student-parents' sex and their enrollment choices. Student-parents in this study overwhelmingly attended community colleges, rather than universities. While a larger number of mothers were enrolled, a statistically significantly larger proportion of fathers enrolled in community colleges, which may indicate fathers may benefit from more attention from community college recruitment teams and student affairs staff. While just over a third of fathers took all of their classes in fully online formats, nearly half of mothers enrolled in fully online courses, which was a statistically significant result. This study provides new insights for college administrators about how and where student-parents pursue post-secondary education.

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## Chapter 1: Introduction

In the United States, college students are often conceptualized as single, relatively carefree young adults. However, many college students are working professionals in pursuit of additional credentials, and/or have families for whom they are responsible. College students who have dependent children (referred to as student-parents henceforth) balance multiple identities and roles, as they navigate schooling, family life and often employment. For student-parents, their role in their family is a central component of their identity as a student, even when this context differentiates them from the imagined or ideal traditional student (Ferguson & Evans, 2019). For student-parents, their role as a parent appears to intersect with and inform their student experience (Lindsay & Gillum, 2018). Their role in their family is a central component of their identity as a student, at times superseding their identification as a student (Ferguson & Evans, 2019; Lindsay & Gillum, 2018). Their role and responsibilities to their families and/or their family context can serve as a motivator, but may also constrain a student-parent's finances, time, attention, and schedule flexibility (Crispin & Nikolaou, 2019; Van Stone, et al., 1994). Student-parents comprise a sizeable proportion of college and university student populations, but the currently available research about them is frequently based on limited or estimated populations and often focuses on highly specific populations and contexts (Conway, et al., 2021; Coronel, 2020; Lindsay & Gillum, 2018).

This study using newly available data about student-parents can now be analyzed to understand whether and how student-parents' sex may interact with two aspects their college-going behavior. College students who are parents of dependent children are believed to comprise about 25% of the college student population in the United States (Crispin & Nikolaou, 2019; IWPR, 2023). Researchers have historically relied on estimates of the size and demographic

composition of the student-parent population, as these students have not been readily or consistently identified and monitored for success points in the way traditional college students have (IWPR, 2023; Navarro-Cruze, et al., 2023).

In the past, the most consistently available data point used for identifying student-parents among college populations relies on answers to one question on the Free Application for Student Assistance (FAFSA), which asks about dependent children for whom the applicant is a primary provider (Colonel, 2020; Department of Education, 2024). The FAFSA is the unified financial aid application for colleges and universities in the United States (Department of Education, 2024). Because only a portion of students at any given institution in any given year complete the FAFSA, the reliance on FAFSA completion for recognition of or collection of data about parental status is problematic, especially in lower cost community colleges (Colonel, 2020). According to the National College Attainment Effort (NCAN, 2023), only 53% of 2021 high school graduates in the United States completed the FAFSA.

Recent changes to Texas law have increased the amount and types of data about student-parents available. A 2023 addendum to the Texas Education Code §51.9357, subsection C requires institutions of higher education (IHEs) that receive funding by the State of Texas to collect data about their student-parents and report it to the Texas Higher Education Coordinating Board (Shaw, 2023). This generates a large sample of data about student-parents from a variety of institutions of higher education that can now be analyzed for size, composition, and enrollment status (full-time versus part-time).

As of 2024, each publicly funded college and university in Texas is required to identify and report about the student-parents among their student population. This large-scale data collection makes it possible to address an empirical gap in knowledge that resulted from earlier

estimates about the population. Namely, we will know more about the size and distribution of the student-parent population, where and how they attend college, and hopefully, the age and number of children they support. This new data source means Texas' legislative bodies, and Texas' public IHEs are less dependent on estimates of the student-parent population at any given institution. This study uses this newly available data to investigate the college-going behavior of students who are parents attending Texas' colleges and Universities.

This study expands a body of research informing and informed by the representation of postsecondary students in research. The historically available data brings some students into focus, while allowing others to remain on the margins (Nguyen & Kramer, 2023). The populations or data points that are identified as the foci of institutional or program evaluations are often dependent upon or inform the data that is consistently collected. Among colleges, universities, and institutions of higher education, demographic and other key data points are collected using application forms, financial aid applications, and sometimes during extra-curricular activities. These data points often center traditional student populations. As a result, research on college and university students may overemphasize these traditional students, despite indications they represent diminishing proportions of the student population at colleges and universities in the United States (Copley & Douthett, 2020).

Discussions about college and university students often frame college students as young, unmarried adults between the ages of eighteen and twenty-four. Most colleges and universities were designed to serve this traditional college student population (Sparrow, 2023). In other words, the design of these institutions, including the services they offer, and the hours these services are available have been designed to serve traditional college students (Sparrow, 2023). Similarly, the populations we have centered in institutional and program designs are these

traditional students for whom we have established processes for consistently collecting data and measuring success (Nguyen & Kramer, 2023).

Populations on the margins of the student body are less likely to be known or described in published research for lack of consistent or complete data collection. Such a lack of representation can create institutional blind spots that leave colleges and universities unaware of what structures or systems within the institution support successes or function as barriers to success for these students (Polihronakis, et al., 2016). One specific example of this can be seen in the paucity of data about the presence of gender non-binary students in higher education. Many institutional forms include only binary sex options on required or official documents (Polihronakis, et al., 2016). In institutions of higher education that offer on-campus housing, housing assignments may be assigned only based on either male or female identity (Polihronakis, et al., 2016).

There are well-documented sex-based trends in the pursuit of higher education, with females being more likely to enroll in college and complete college than males in recent years (Reeves, 2022; Riegle-Crumb, 2010; Srivastava & Dhamija, 2024). Other studies have documented sex-based differences in college students' major selection and career goals (Eren, 2021; Garner, et al., 2022; Moreira, et al., 2021; Philipp, 2023; Wladis, et al., 2024). Recent adoption of outcomes-based funding models for some colleges and universities highlight sex-based disparities in some of the outcomes measured (Chen & Smith, 2023; Creusere, et al., 2019; Troutman & Creusere, 2021; Wladis, et al., 2024). The majority of these studies that consider sex as a variable of interest for college and university students still analyze and report findings using binary sex categories. In rare contexts with readily available data on students who identify as

gender minorities, non-binary students have been found to have higher grade point averages but persist or reenroll at lower rates (Trimble, 2019).

In many of the published studies that focus on student-parents, the populations skew heavily toward mothers (Crispin & Nikolaou, 2019; Dayne, et al., 2022; Dayne, et al., 2023; Van Stone, et al., 1994). As a result, more is known about students who are mothers, but relatively little is known about students who are fathers. In one of few studies that included robust samples of both male and female student-parents, Conway, et al. (2021) found that single mothers (and fathers) were more likely to have “uncontaminated” time to dedicate to schoolwork. The financial instability of single mothers may allow them to qualify for more childcare grants or support than married or partnered student-mothers (Dayne, et al., 2022).

This study is relevant and warranted because there are significant differences between traditional students and student-parents, and well-documented sex-based differences in college student major selection and educational and career outcomes (Garner, et al., 2022; Moreira, et al., 2021; Philipp, 2023; Troutman & Creusere, 2021). However, relatively limited research considers the relationship between sex and student-parent status. Student-parents appear to be more financially insecure; a trend that could be informed by the fact that student-parent data may only be collected for students with higher needs (Coronel, 2020; Trellis Company, 2023; Van Stone, et al., 1994). Students who identify as student-parents appear to be much more likely to be female than male (Collom, et al., 2021). The reliance on FAFSA completion to identify student-parents may be why mothers appear to attend college at higher rates than fathers (Trellis Company, 2023).

Despite the estimated quarter of college and university students that are believed to be parents, student-parents appear to exist on the margins or outside of the purview of strategic

planning committees (Crispin & Nikolaou, 2019; Dayne, et al., 2023; Sparrow, 2023; Van Stone, et al., 1994). Colleges and universities need to identify and include non-traditional students, such as student-parents, in their data collection and in their strategic planning efforts to be more readily responsive to their unique needs (Copley & Douthett, 2020). Suggestions for future research identify a need for robust quantitative analyses of larger, more representative populations (Dayne, et al., 2022; Meza, 2019).

This study fills an empirical gap in research, in that it provides insights into whether and how sex interacts with college-going behavior for student-parents. This highlights the role of sex for a specific population who has been underrepresented in prior studies. This study made use of more comprehensive institutional data to make the findings more generalizable to student-parents in Texas. This allowed findings to no longer rely on only FAFSA data to identify student-parents. Additionally, this study applied the theory of gendered social control to the new context of student-parents, a theory that suggests social control dynamics specific to sex and gender roles may influence college-going behavior for this specific population of college students.

### **Statement of the Problem**

The problem addressed by this study is that while student-parents make up a substantial proportion of the college-going population, they are often overlooked or presented as an afterthought in research about student populations, especially reports related to non-traditional students (Meza, 2019). There are calls in the research to better understand diverse populations of student-parents (Dayne, et al., 2022; Navarro-Cruze, et al., 2023; Yoo & Marshall, 2024) and the impact of sex on their educational pursuits (Kozlowski, et al. 2022; Sanborn, et al., 2024). Gardner, et al. (2022) found that while non-traditional student populations are growing,

universities and colleges have been slow to adapt structures to adequately support non-traditional students such as student-parents. Sanborn, et al. (2024) identified a need to disaggregate student-parent research by sex, race, and relationship status. Trimble (2019) notes that research on sex in university populations often includes only binary male and female categories, which can render non-binary, intersex, or transgendered students invisible.

Researchers have also called for additional research on the role of sex in student-parents' experiences (The Hope Center, 2021; Thomas, et al., 2021). The need for additional studies of student-parents consisting of more diverse and larger populations is also identified by Navarro-Cruze, et al. (2023) and by Thomas, et al. (2021). Huerta, et al. (2022) called for institutional reforms which would allow colleges to identify student-parents more readily to better connect them to community support providers. Inconsistent data about this population makes it impossible to assess how responsive or effective student support structures are in serving student-parents.

### **Purpose of the Study**

This non-experimental quantitative study sought to increase understanding of student-parents' enrollment patterns and college-going behavior by assessing whether their institution type or enrollment modality significantly differ based on the sex of the student-parent. This study used archival data recently collected by three Texas universities and six Texas community colleges for a study population of 7,013 student-parents enrolled in a public post-secondary institution in Texas. This study aimed to determine whether there are sex-based differences in choices about whether to attend a university or community college and whether to enroll in online or in-person classes for student-parents. If proportional differences between university and community college enrollment are found, this study provides new insights into the enrollment

behavior of mothers and fathers in pursuit of post-secondary credentials. The theoretical framework posited that gendered social control may affect higher education engagement for student-parents. This theoretical framework allowed for integrated exploration of cultural and structural controls such as gender norms as possible factors in how student-parents access and navigate higher education systems.

### **Introduction to Theoretical or Conceptual Framework**

Several extant theories relate to the educational choices, experiences, and challenges of student-parents, some considering gender or sex as a variable of interest. A robust collection of published research has sought to explain the persistent sex-based segregation observed in occupational contexts in the social sciences through the latter part of the 20<sup>th</sup> century and the first part of the 21<sup>st</sup> century (Jacobs, 1989a; Jacobs, 1989b; Jacobs, 1995). Several such theories have been developed to explain the persistence of sex-based segregation observed in occupational and educational contexts. This study was designed using gendered social control theory as the study's theoretical framework (Ericsson & Jon, 2006).

Gendered social control theory was developed by applying a feminist lens to Hirschi's (1969) social control theory. Hirschi (1969) suggested that social bonds such as shared beliefs, attachment, and belonging (via commitment and involvement) and social controls such as consequences and the desire to protect social bonds keep people from acting in deviant, antisocial, or criminal ways. Weak social bonds, or ineffective social controls may lead to an increase in non-compliant or deviant behavior, according to social control theory (Hirschi, 1969). Hirschi's (1969) theory seems to have been applied to only criminal justice and institutional contexts until Jerry Jacobs (1989a; 1989b) applied a feminist lens to social control theory to explain sex-based trends he observed in occupational segregation. In this application of social

control theory to occupational trajectories, Jacobs (1995) suggested that social bonds, especially attachment, belonging, and shared beliefs about what was appropriate or accessible for women or men affected the career paths they sought. Also drawing upon social control theory, Jacobs (1995) suggested that in occupational contexts, social controls may take the form of marginalization, experiences of being an outsider, or even difficulty obtaining employment or competitive pay when someone pursues a career in a sex-atypical field. Jacobs raised concerns that sex-based disparities in career opportunities appeared to be a pipeline issue, noting sex-based segregation in majors selected by students in college (1989b, 1995). Jacobs' (1995) use of social control theory in occupational contexts was affirmed by Herbaut and Barone (2021), who confirmed that boys and girls in institutional educational settings were making different choices when given elective course and extra-curricular options that appeared to have a cumulative effect yielding different career or educational opportunities and goals years later.

In their work related to career and educational development, Ericsson and Jon (2006) noted the established convergence of feminist theory and social control theory by renaming the merged theory **gendered social control** (however, they used *gendered social control* and *feminist social control* interchangeably) (Ericsson & Jon, 2006). A more thorough description of gendered social control theory and discussion about how it may explain sex-based differences in post-secondary educational engagement for student-parents is available in chapter 2. However, two primary points are worth identifying here. First, according to Ericsson and Jon (2006), females experience more restrictive social constraints than their male peers both through formal structures (access), and informal controls, such as family roles or time constraints. The application of social control for women is qualitatively different than that experienced by men, because their striving for careers is in some contexts seen as incongruent with the expectations

and boundaries of femininity (Ericsson & Jon, 2006). Second, many women face a de facto expectation they will pursue marriage, motherhood, and domestic roles that are established as normative in a patriarchal society (Ericsson & Jon, 2006).

Gendered social control theory suggests that social controls such as sex-based roles and social roles inform our social development and behavior. As such, these social roles, duties, and norms have the potential to influence a student-parent's choices when it comes to the pursuit of a higher education credential, including access to particular institutions, the ability to relocate for the sake of attending a particular institution, selection of an academic major, or the enrollment modalities or pace at which they choose to enroll. Gendered social control theory served as the framework that guided the development of the problem because in Texas, sex-based roles function as a social control. Specifically, conservative political ideology and religion function as influential components of family and community life (Murray, 2021). Texas families have a tradition of male authority and sex-based norms in complementarian family structures, which may function as social controls informing different access for mothers and fathers to any given university or in-person attendance as compared to online enrollment (Murray, 2021). The framework guided the purpose of determining if there are differences by sex because of the literature that indicates a potential for students who are mothers to feel less able to relocate to attend a university and feel more need to attend a near-to-home community college.

Additionally, mothers may be less able to commit to in-person, campus-based attendance if they are the primary caregiver for dependent children. The research questions for this study were based on the theory and as a result this study may find support for or refute gendered social role theory as an explanation or partial explanation of the behavior of student-parents. As it focuses

on a narrowly defined population, this study has the additional ability to support the expansion of contexts where social control theory may be at play.

### **Introduction to Research Methodology and Design (Nature of the Study)**

For this quantitative, archival study, the researcher requested de-identified disaggregated or student-level archival information about the student-parent population at twenty-two Texas institutions of higher education (IHEs). These twenty-two IHEs included fourteen community colleges and eight universities. These requests sought the following fields for student-parents enrolled in the fall 2024 semester:

- Students identified as parents
- Sex
- Race/ethnic group (Asian, Black/African American, Hispanic, Native American/Alaskan Native/Pacific Islander, Two or more race/ethnicities, Other or Unknown Race/ethnicity)
- Relational status (if available)
- (Highest) credential they are currently pursuing (if available)
- Enrollment type (online/in-person/mixed)
- Course-load category (full-time/part-time)
- Course load (semester credit hours)
- Institution Type (community college versus university)
- Location of the institution (rural versus urban).
- Institution size (undergraduate student population)

Additionally, the researcher asked for information on whether students were required to provide parental status or if reporting parental status was optional, allowing the researcher to assess the robustness of the data provided by each institution. Because the focus and purpose of this study was to assess possible sex-based differences in how and where student-parents engage with higher education enrollment, the data elements collected directly apply to the variables of

interest. The researcher provided clear and consistent definitions of the data requested from each institution and was available for consultation if questions or concerns arose in the data collection process, to support this study's reliability.

Because the requested data came from the IHEs during the first or second year of consistent data collection by the institutions, it is unlikely more traditional student success metrics such as retention, GPA, or completion will be available for this population at the time of this study. The data available for analysis in this study is limited by the archival nature of the data and their source. The nominal or ordinal nature of currently available fields limits the ability for correlational or regression-types of research. However, as this population's data is newly available for research, the nominal data fields will allow for testing whether sex and institution type or enrollment modality are independent variables, and it will allow for testing whether there are differences between the way male and female student-parents pursue their higher education goals.

This study sought to assess first whether the institution a student chose to enroll in, or the modality of their enrollment were independent of the student-parent's sex. In order to measure whether these are independent or dependent variables, this study used chi-square tests of independence. After assessing the independence of sex and the educational choices student-parents make, this study used two independent sample tests of proportions to analyze the student behavior. Tests of proportions assume the dependent variable of interest are not independent and seeks to evaluate the impact of their dependence.

Chi-square tests of independence are non-parametric in nature. They are used to observe frequencies of co-incidence for categorical (nominal) variables in a population or sample. In a

chi-square analysis, the observed frequencies are compared to those that would be expected if there was no association or relationship between the variables.

Tests of independence are used when a proportion of a population is a more informative or relevant statistic than a population mean. The decision tree shown below indicated chi-square tests and tests of proportions were appropriate when two independent samples were observed (male and female student-parents) along with another binary variable (community college versus university enrollment; online versus in-person enrollment).

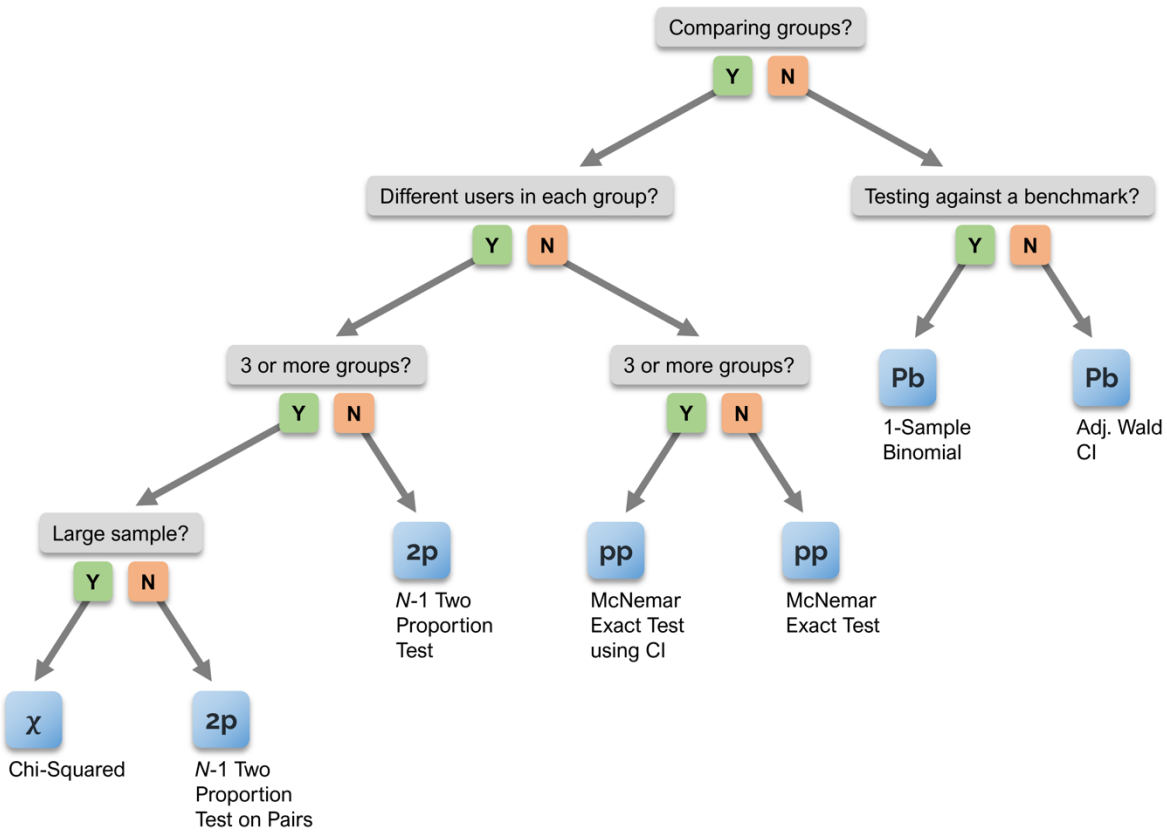


Figure 1 Research Design Decision Tree (Suaro & Lewis, 2022)

This study used chi-square analyses to assess independence for the variables, and two-sample tests of proportions to test for differences in the proportions of male and female student-parents as they make educational decisions. Specifically, this study tested to see if the student-parents' choices about what type of higher education institution in which they choose to enroll and whether their choice to take courses online are independent of their sex. If these variables are found to not be independent, then the two-sample tests of proportions will indicate if female student-parents enroll at different rates in a community college (versus a four-year university), and whether they pursue their education via online or in-person or hybrid enrollment modalities than their male peers. According to Sauro & Lewis (2012), the two-proportion test is a mathematically equivalent test to the chi-square test, developed by Karl Peterson in 1904 (Turhan, 2020). With chi-square testing, small populations decrease reliability, but the size of the population of this study was large enough to present reliable results. The two-proportions test is reliable, in cases where each sample has at least ten instances in each category of the variables of interest, the test can be used (Agresti & Franklin, 2007). Because multiple tests were run on the same population, a Bonferroni correction was incorporated to reduce the risk of type I error (Haynes, 2013). Type 1 errors occur when a researcher finds significant results when the null hypothesis should have been accepted (Haynes, 2013). Tests for independence and proportion hypothesis test designs are appropriate and closely aligned with the purpose and research questions for this study.

Because this study used archival data, the ethical risks for the subjects was minimal. The data for the student-parents upon whom this study focused had already been collected by their institution, and already reported to the THECB, according to the 2023 Texas law requiring this data to be collected and reported (Shaw, 2023). For this reason, the risk to human participants is

minimal. In the event institutions report non-binary students among their student-parent population, these non-binary student-parents may be excluded due to small population size. There is some risk that this would then further marginalize or decenter non-binary people in the research. It is possible that state funded colleges and universities collected different types of data for student-parents, or collected their data in different ways. For example, some schools may be collecting parenting data from students using a survey tool, whereas other institutions may mandate that all students respond to questions about their parent status.

### **Research Questions**

The research questions posed in this quantitative study were designed to assess whether the student-parents' sex is independent of or associated with their choice to attend a community college or to enroll in online courses. When these variables were found to be associated, the second series of questions were used to assess whether there are statistically significant differences between two aspects of the college-going behavior of male and female student-parents. The research questions for this study were as follows:

- RQ1:*** Are sex and institution type independent variables for student-parents who are pursuing higher education at public institutions of higher education in Texas?
- NH1:*** Whether a student-parent attends a community college or university in Texas is independent of the student-parent's sex.
- AH1:*** A student-parent's choice of Texas public institution type (community college versus university) is associated with the student-parent's sex.
- RQ2:*** Are sex and enrollment modality independent variables for student-parents pursuing higher education at public institutions of higher education in Texas?
- NH2:*** Student-parents' choice to enroll fully online at public institutions of higher education in Texas is independent of their sex.
- AH2:*** Student-parents' choice to enroll fully online at public institutions of higher education in Texas is associated with their sex.

**RQ3:** Is the proportion of female student-parents who attend a Texas public community college different from the proportion of male student-parents who attend Texas public community college (versus a Texas public four-year university)?

**NH3:** The proportions of female student-parents who attend a Texas public community college are not statistically significantly different from that of male student-parents attending a Texas public community college (versus a Texas public four-year university).

**AH3:** The proportions of female student-parents who attend a Texas public community college is statistically significantly different from that of male student-parents.

**RQ4:** Does the proportion of female student-parents who attend a Texas public institution of higher education online (versus in person) differ from the proportion of male student-parents who attend a Texas public institution of higher education online?

**NH4:** The proportions of female student-parents who attend a Texas public institution of higher education online (versus in person) are not statistically significantly different from that of male student-parents.

**AH4:** The proportions of female student-parents who attend a Texas public institution of higher education online (versus in person) is statistically significantly different from that of male student-parents.

### **Significance of the Study**

This study is one of the first to consider whether there is a relationship between enrollment behaviors of student-parents in Texas' public institutions of higher education. This quantitative study sought to confirm whether sex and educational choices appears to be associated or independent, and whether sex appears associated with specific enrollment behaviors for students who are parents and who are pursuing higher education. This study was made possible by the availability of newly collected and robust data that purports to more consistently identify student-parents within the population of public institutions of higher education in the state of Texas (Shaw, 2023). The size and diversity of the available sample allowed the researcher to assess whether student-parents' sex is associated with their educational choices, and whether their educational choices differ significantly between male and female

student-parents. Gendered social role theory may explain or partially inform the sex-based differences between female and male student-parents. As this study focused on a narrowly defined population, it supports the expansion of contexts where gendered social control theory may be at play.

Any significant findings related to sex-based educational choices made by student-parents may be useful to institutions and policy makers by informing policies or further research and by allowing educators to better understand and recruit student-parents. This is useful information for institutions and policymakers as they seek to identify where additional work is needed to build welcoming, inclusive, and equitable educational environments.

## **Definitions of Key Terms**

### ***Sex***

In Texas's state-funded institutions, sex is typically operationalized in a binary manner; however, this study will request the sex categories defined as male, female, and an "unknown or not reported" category that may include any non-binary student-parents. This study uses only binary sex categories, which may perpetuate the exclusion or othering of non-binary or intersex individuals. This decision was made because of recent political and policy changes in Texas, which prohibit use of gender identity or anything other than binary sex categories and based on the limitations imposed by the binary sex classifications available in official documents in Texas (Office of the Texas Governor, 2025; THECB, 2023).

### ***Full-time Enrollment***

Undergraduate students enrolled in 12 or more semester credit hours (SCH) per term are considered full-time students. Undergraduate students enrolled in fewer than 12 credit hours will

be identified as part-time students (THECB, 2023). For graduate students, 9 or more enrolled credit hours per term will serve as the full-time threshold. In this study, some of the student-parents included in the archival records received from the universities were identified as graduate students. For this study, any graduate students identified in the data received from the participating institutions was removed prior to analysis.

### ***Enrolled Modality***

The Texas Higher Education Coordinating Board (THECB) provides definitions of distance education courses, hybrid courses, and online versus hybrid programs in their (2023) Glossary of Data Terms. Based on the THECB definitions, this study refers to fully online students as those who are enrolled only in classes defined by the THECB as “100-Percent Online Course(s):”

*A distance education course in which 100 percent of instructional activity takes place when the student(s) and instructor(s) are in separate physical locations. Requirements for on-campus or in-person orientation, testing, academic support services, internships/fieldwork, or other non-instructional activities do not exclude a course from this category (THECB, 2023, p.44).*

Students enrolled in all online classes or a fully online degree plan were treated as online students (THECB, 2023). Any student enrolling in classes requiring any in-person attendance (including hybrid or hy-flex courses, or a mixture of online and in-person courses) was treated as attending in-person, due to the expectation that they will be near their campus and able to routinely attend classes in person (THECB, 2023).

### ***Student-parents***

Student-parents were defined in this study as any post-secondary students who was identified as the parent or guardian of a dependent child (IWPR, 2023). Most institutions that participated in this study rely on student-parents to self-identify. This study limited the student-parent population to undergraduate students – students pursuing a bachelor’s degree, associate’s degree, or a post-secondary certificate requiring less than 120 semester credit hours (Note: 120 semester credit hours is the minimum number of credits required for a baccalaureate degree (THECB, 2023)).

### **Summary**

Student-parents have existed on the margins of college-going populations, despite making up an estimated one in four college students (Crispin & Nikolaou, 2019; IWPR, 2023). Student-parents have been under-represented in research related to college students. When student-parents are included or addressed, their population is generally estimated based on reporting they have dependent children when completing the FAFSA (Colonel, 2020; Department of Education, 2024).

When research is focused on student-parents, female student-parents tend to be over-represented or make up the entire population (Crispin & Nikolaou, 2019; Dayne, et al., 2022; Lovell & Lockhart, 2022). Sex-based trends have been observed in student selections of majors, with some researchers suggesting that women choose programs in care-related fields (nursing, education), due to the student’s expectation that their college credential will make a family-friendly of the careers more available (Moreira, et al., 2021; Philipp, 2023).

Newly available data made it possible for this study to provide a more comprehensive look at student-parents attending publicly funded colleges and universities in Texas. This study was able to use newly available increasingly robust information about the population of student-parents attending these institutions, no longer requiring estimates or relying on FAFSA completion. This archival quantitative analysis explored the intersection of sex and college-going behavior for student-parents in Texas, to determine whether sex and enrollment decisions are related or independent variables and if there are statistically significant differences in how male and female student-parents attend college at state funded schools in Texas.

## Chapter 2: Literature Review

The purpose of this study was to answer a gap in knowledge about possible interactions between sex and college-going behavior of student-parents, as they comprise a noteworthy population of undergraduate students but are underrepresented or not considered in many studies on college student populations. This study addressed the problem that there is limited knowledge about whether mothers and fathers engage in post-secondary educational pursuits differently. This study can be used to help identify the scale of the population of student-parents attending public colleges and universities in Texas, as well as to demonstrate whether mothers and fathers select community colleges or online enrollment at different rates. First, it is important to consider what is known through the extant literature about student-parents, and what is known about the relationship between sex and post-secondary educational engagement and outcomes. Student-parents are often older than traditional college students (Collom, et al., 2021; Gardner, et al., 2022; Meza, 2019), more likely to work in paid employment and live off campus with family members (Gardner, et al., 2022; Meza, 2019; Nguyen & Kramer, 2023). These are all features of the adult and non-traditional student population, which situates student-parents as a sub-population of adult students.

The study of adult learning or adult students is sometimes referred to as “andragogy.” There is a wealth of research about andragogy and fewer studies about student-parents, therefore this review of the literature begins with a brief review of recent research about adult and non-traditional students with findings that are convergent with student-parents. Next, this review describes recent research related to the interplay of sex and decision-making pertaining to students’ selections of institution, field of study, course-load, and enrollment modalities. Then the focus narrows to review studies related to student-parents, exploring the limitations of data

availability and the pervasive calls for more robust and consistent collection of data pertaining to populations of student-parents in institutions of higher education (IHEs). Finally, this chapter reviews studies that explore student-parents' experiences of integration or marginalization in higher education, their unique needs, including what is known and unknown about the relationships between sex and student-parents' pursuit of post-secondary education.

The studies reviewed in this literature review were located between August 2023 and October 2024 in several waves. The researcher was interested in academic publications about the intersection of sex, parents, and engagement with higher education, so the search for appropriate studies was performed using the NavigatorSearch (previously Roadrunner Search) tool available via the National University Library. This search tool allows researcher to search across multiple databases including ProQuest and Ebsco. The search process occurred in several waves, each considering a particular theme.

Note that during the time period literature was being sought and reviewed for this study, the researcher's focus was on the student parent's gender, which includes the student parent's gender identity and gender presentation in their higher education context. Changes to the political context, specifically national and state policy directives in the United States of America and Texas in early 2025 required the researcher to pivot the focus of this study from gender to sex. Sex is understood in this study to represent an individual's presumed genetic identity at the time of their birth, based on their observed genitalia. This is in response to the limitations of available data from Texas public institutions of higher education. In Texas, sex is officially limited to binary male/female categories (Office of the Texas Governor, 2025; THECB, 2023).

For theme one, the search began by identifying common terms to identify student-parents and higher educational engagement. The researcher began searching for data related to all three

topics of interest. Initially, the researcher searched all available sources for “gender AND (“post-secondary” or “higher education”) AND (student+parent(n4))”. This yielded no exact results, but a smart search yielded nearly half a million possible reports, so results were limited to the last 5 years, and academic journals. A review of titles in this search surfaced two insights: first, there were many ways student-parents were described in published research, and second, this process could not distinguish studies about student-parents from studies about parents of students. The following phrases appeared as the most frequently used descriptors of college or university students who were parents, and the search was refined accordingly: “student parent\*” “parenting student” “student-parent\*.” Similarly, higher education was refined to include the following phrases: “higher education” (“college” or “university”) “post-secondary.”

When searching for the theme 2 topic of Andragogy, the author used the NavigatorSearch tool to search for “gender AND (“adult student\*” or “non-traditional student\*”)” within 5 years, which yielded less than 200 results. When searching for the theme 3 of student parents the researcher searched gender AND (“student-parent\*”) with a 5-year limitation, again there were less than 200 results, which the researcher was able to quickly scan for relevant reports. When searching for Theme 4 the gender disparities in college. The researcher used NavigatorSearch tool to look for articles using the following search prompt: “gender disparity” AND (“college” or “higher education”) which yielded more than 5,000 results. The researcher then looked for titles that indicated outcomes might be in focus of the study. While reading the studies discussed in this literature review, any additional primary research articles listed in the reference lists that appeared particularly relevant were also reviewed. Studies that surfaced as primary or significant source identified in another study include Augustine, et al. (2018), Fink (2023), and Goldrick-Rab and Sorensen (2010).

## **Theoretical Framework**

The theoretical framework for this study and literature review posits that gendered social control may be affecting higher education engagement for student-parents. This allowed for the exploration of cultural and structural controls such as sex-based norms and consequences for acting inconsistently with expected sex-based norms as potential factors in how student-parents access and navigate higher education systems. Gendered social control theory was developed by applying a feminist lens to Hirschi's (1969) social control theory. We discuss this feminist take on social control theory in depth below, after discussing the origination of social control theory.

### ***Social Control: Historical Applications***

Social control theory attempts to explain the persistence of sex-based segregation by considering the interplay of cultural norms, social dynamics, human needs, and beliefs and motives as factors influencing human behavior. This theory was first developed by Travis Hirschi (1969) in the field of criminology as a model for explaining the factors that led to delinquency or criminal behavior. According to social control theory, social bonds and social controls are what keep people from acting in delinquent or criminal ways (Hirschi, 1969). Social bonds are described as attachment, commitment, involvement, and shared beliefs, and the desire to protect these social bonds encourages compliance with social norms. Deterioration in or absence of any one of these bonds may result in an individual turning to criminal activity or delinquency, while an internalized desire to avoid disruptions in these social bonds was seen as protective against delinquency (Hirschi, 1969).

Jerry Jacobs (1989a; 1989b) appears to have first expanded the application of social control theory to occupational studies when he applied a feminist lens to social control theory to

explain sex-based trends he observed in occupational segregation. Working backward from his observations about the persistent sex-based segregation he found in occupational contexts, he identified constraints (formal controls) extant in the education-to-employment pipeline (Jacobs, 1989b; Jacobs, 1995). Jacobs found similar sex-based segregation in the education pipeline, wherein women selected majors in different fields of study than their male peers, which led to different occupational opportunities (1989a; 1989b). Herbaut and Barone (2021) found support for Jacobs' (1995) social control theory as an explanation for sex-based segregation in higher education programs (GSHE). This support is reflected in their findings that a series of curricular and extra-curricular decisions created a cumulative effect that ultimately led to boys and girls having different opportunities and preferences in their academic and career goals (Herbaut & Barone, 2021).

The convergence of feminist theory and social control theory was structuralized by Ericsson and Jon (2006) who renamed the merged theory **gendered social control** (note: they used *gendered social control* and *feminist social control* interchangeably in their theory paper) (Ericsson & Jon, 2006). Ericsson and Jon (2006) clarified the definition as follows:

Feminist social control critique is a theoretical perspective making two main claims:

- 1) Social control of women is immeasurably tighter than the social control of men—working through a continuum of means from the formal (prison) to the informal (family).
- 2) In addition, the control is qualitatively different from that of men: the control of women is above all aimed at keeping them in line as feminine women, punishing, reforming, treating every deviation from the narrow limits of respectable womanhood, defined by sexual modesty, domesticity, marriage and responsible and caring motherhood. This social control of women is seen as embedded in, and as constitutive of, the patriarchal structures of society (p.126).

In this way, Ericsson and Jon (2006) expand the focus of gendered social control theory to explain how institutions and influential people in the life of a developing young person act as formal structures that create and reinforce normative sex-based behaviors. This is not inconsistent with gender theory and gender role theory, which both discuss differences in the normalized behaviors and socialization of males and females as they interact with and engage in social structures (Jule, 2022; Kray, et al., 2017). While I acknowledge gender theory and gender role theory may also explain any sex-based differences between how male and female student-parents engage post-secondary education, I propose gendered social control as explanatory in that feminist theory integrated into gendered social control answers for the role of patriarchal structures and expectations that may make some choices untenable for one sex or another as they navigate the multiple roles student-parents have been shown to balance (Andrewartha, et al., 2023; Dolson & Deemer, 2022; Jule, 2022; Kray, et al., 2017; Nikiforidou & Holmes, 2022 ). Gendered social control theory also explains the way any atypical sex-based behavior, or deviation from normalized sex-based behavior is penalized and prompts some corrective treatment (Ericsson & Jon, 2006). Herbaut and Barone (2021) found support for this theory, noting the powerful influence of parental pressure reinforcing sex-based cultural stereotypes and norms, and tacitly punishing or stigmatizing choices that are atypical as deviant.

Gendered social control theory offers an explanation for how both formal and informal social structures and supports inform and reinforce sex-based norms and behavior in social contexts. These normalized social roles, duties, and norms may influence a student-parent's choices when it comes to whether, where, and how they pursue postsecondary education or credentials. Thus, gendered social control helped shape the problem, purpose, and research questions of this study by pointing to sex as a potential reason for differences between men and

women in terms of taking fully online courses and what institutions they choose to enroll in: community college or four-year institutions. This study finds support for gendered social control theory as an explanation or partial explanation of the behavior of student-parents.

### **Studies on Adult and Non-traditional Students: Andragogy**

Student-parents, the population on which this study is focused, exist as a sub-population within a larger and more well-researched population of adult and non-traditional students. The study of adult students is sometimes called “andragogy” in educational research literature. While the published research about student-parents is rapidly growing, the substantial body of literature related to adult and non-traditional students provides important insights about their potential significance to institutions of higher education (IHEs). Additionally, it provides insights into their preferences related to the pursuit of post-secondary education. This section will review the published research about student-parents to consider three areas of previous research. First, studies on college enrollment trends provide information about the significance and importance of the non-traditional student population for post-secondary schools (Fink, 2023; Sparrow, 2023). Second, there are several articles that did not intend to study student-parents but inadvertently have results that describe student-parents within the adult non-traditional student population (Gardner, et al., 2022; Srivastava & Dhamija, 2024; Sutton Trust, 2023). Specifically, This chapter reviews findings from andragogy research that apply to student-parents, despite parents often being overlooked or noted as an afterthought within research on adult student populations (Creusere, et al., 2019; Gardner, et al., 2022; Meza, 2019; Nguyen & Kramer, 2023; Srivastava & Dhamija, 2024; Sutton Trust, 2023). While not all andragogical studies consider sex as a relevant or noteworthy variable, the review will include findings related to sex-based engagement in higher education where they are identified.

## Post-secondary Enrollment Trends

In recent years, College and University administrators have expressed concern about observed decreasing enrollment trends among traditional students, especially at community colleges. Using data available through the Integrated Postsecondary Education Data System (IPEDS), a source of nationally representative survey data about public college and university students in the United States, following the 2008 economic recession, Fink (2023) noted a trend of enrollment declines which were more significant among community colleges, over the decade preceding the 2020 COVID-19 pandemic. This was remarkable, because community college enrollments generally have an inverse relationship to economic measures of well-being, meaning when there is a downturn in the economy, community colleges have historically benefitted from increased enrollments (Fink, 2023). Fink (2023) and Sparrow (2023) converge in their findings that while there is an observed significant decline in adult student community college enrollment, this drop is eclipsed by the less severe (in percentage point drop), but more substantial (in number) drop in enrollment among traditional college students. Adult students are typically identified as college students who are 25 years old or older, while traditional students are those who have recently completed high school and are between 18-24 years of age (Collom, et al., 2021; Fink, 2023; Gardner, et al., 2022).

Traditional students comprise a much larger proportion of community college enrollments than they comprise among university student populations (Fink, 2023; Sparrow, 2023). In reviewing and in response to the findings from Fink's (2023) Community College Research Center study, Sparrow (2023) acknowledges young adults who have recently completed high school are not pursuing college degrees at the same rates they had prior to 2008. Sparrow (2023) and Fink (2023) converge in their observation that some institutions have

established or expanded dual high-school and college enrollment programs to buffer these declines in traditional student enrollment. Sparrow (2023) suggests that institutions might be better served by investing in recruitment of adult and non-traditional students, noting demographic changes and declining birth rates that will result in declining populations of students in the high schools who may transition to traditional student status for IHEs in coming years (Copley & Douthett, 2020; Kelchen, et al., 2024). In summary, as traditional student enrollment is decreasing some institutions are seeking to recruit and better retain non-traditional students to stabilize their enrollment.

Indeed, Coronel (2020) similarly found that colleges and universities in the United States have sought to recruit more adult and non-traditional students, viewing them as a potential stabilizing population in response to observed declines in direct-to-college transitions among recent graduates (Coronel, 2020; Sparrow, 2023). However, increased recruitment efforts may not be effective if post-secondary institutions fail to retain and adequately support their adult students (Sparrow, 2023). Sparrow (2023) noted a precipitous drop in adult student enrollment in Community Colleges in the last ten years, citing competition from employment opportunities and increasing pay for low-skill jobs present recruitment challenge for colleges and universities concerned about stability in their enrollment. In summary, adult and non-traditional students may be one way for colleges to increase enrollment, but as IHEs expand their outreach and recruitment efforts to adult-students, they will benefit from taking the needs and limitations of student-parents into account (Gardner, et al., 2022; Meza, 2019; Nguyen & Kramer, 2023; Sparrow, 2023).

Non-traditional students appear to have different support needs than their traditional student peers (Raaper, et al., 2022). In a small, qualitative study, Raaper, et al. (2022) found that

support networks of non-traditional students cluster around family needs, family support, or interpersonal connection with other students at the university. Sparrow (2023) and Raaper, et al. (2022) converge as they express concern that non-traditional students appear to rely more on informal (rather than institutional) structures for their support needs, which may indicate those resources are perceived as not available for or not accessible to them within their institutions. Student-parents relied heavily on their social and familial networks for support and information about college, career, and childcare (Huerta, et al., 2022). In families with rigid sex-based norms or roles, we may find these ideals influencing an adult-student's behavior in ways that may not exist for their traditional student peers, who appear to rely more on institutional and social supports available at their college or university (Ericsson & Jon, 2006; Herbaut & Barone, 2021).

Additionally, many institutional student support programs have access requirements such as full-time enrollment or living on campus that make non-traditional students ineligible for support (Raaper, et al., 2022; Sparrow, 2023). Adult and non-traditional students appear more likely to enroll in community colleges, which are more poorly funded and often have less robust support structures than four-year universities (Gardner, et al., 2022; Huerta, et al., 2022; Nguyen & Kramer, 2023). Gardner, et al., (2022) used chi-square analyses to consider adult student motivation in a large-scale quantitative study across eight colleges and universities in the United States. In one finding they did not appear to expect, they found that adult students enrolled in community colleges at higher rates than in traditional universities (Gardner, et al., 2022). Meza (2019), in a large, non-experimental, descriptive study of 7,953 students seeking a baccalaureate degree from Washington State Community College observed that the average age of students pursuing these degrees was thirty-two at the point of entry in their program. Another large, quantitative study using a nationally representative sample in the United States to provide

generalizable findings provides insight into the size, influence, and diversity of non-traditional students (Nguyen & Kramer, 2023). Meza's (2019) and Gardener, et al.'s (2022) findings were confirmed in the converging quantitative study by Nguyen and Kramer (2023) in which students attending two-year institutions appear more likely to be non-traditional ("neo-traditional") students.

Gardner, et al. (2022) found adult students frequently select a school based on proximity to their primary residence, which often means they will select a community college. Non-traditional students' preference for enrolling in a community college may be related to their increased likelihood of being first-generation students and low income, as noted by Collom, et al. (2021). Their qualitative study focused on adult community college students using the Tennessee Reconnect Grant, which sought to increase access to higher education for non-traditional students pursuing a college credential (Collom, et al., 2021). Because many of these students were found to be low-income and/or first-generation students (Collom, et al., 2021), they are understood to have fewer resources and may be attracted to the lower costs of attendance offered at a community college. Non-traditional students may not have the necessary financial resources to relocate to a larger or more reputable or desirable university, as noted in a quantitative study exploring factors influencing college selection for students in Turkey by Pence and Ulusoy (2022). Additionally, first-generation students may underestimate or not consider the potential benefits of one school's reputation over another due to limited familial experience or knowledge of college systems (Pence & Ulusoy, 2022). Srivastava and Dhamija (2024), confirm the influence of family members in the selection of a post-secondary school, as they developed a model for the decision-making process for students as they choose a college, based on quantitative analysis from more than five hundred students in India. They found a combination

of influential people in the student's lives and the attributes of potential colleges work together to guide a student's decision to enroll in a particular school (Srivastava & Dhamija, 2024). A student's economic capital moderately influences the university in which they chose to enroll (Pence & Ulusoy, 2022). In summary, lower levels of both economic capital and familial support appear to increase a student's likelihood of attending college in their home city, whereas students with more resources appeared to experience more freedom to relocate to a desired university (Collom, et al., 2021; Pence & Ulusoy, 2022; Srivastava & Dhamija, 2024).

Non-traditional students are more likely to have paid employment outside of their educational institution, which appears to limit the number of courses they take at any given time (Nguyen & Kramer, 2023). Non-traditional student preferences for part-time enrollment were also observed in a quantitative analysis by Klinke, et al. (2024) which identified factors that increase the risk for unsuccessful outcomes or dropping out for non-traditional students enrolled at an online IHE in Germany. The population of students included in this study was substantial (n=5796) but were all drawn from a single school which had a narrow range of online programs (Klinke, et al., 2024). Klinke, et al. (2024) found a significant positive correlation between part-time enrollment and likelihood of dropping out, which suggests time-poverty may predict or moderate an increased risk of dropping-out. This is consistent with findings from Nguyen and Kramer (2023) who found non-traditional students demonstrate lower rates of retention and completion.

### **Sex and Overall Enrollment Trends**

Several studies have found sex-based differences in the choices students **make when they are pursuing** post-secondary education. This section will explore the findings related to differences in how men and women engage higher education. Overall, women appear to be

increasing in higher education enrollment at a higher rate than men (Field, 2021; Reeves, 2022; Sutton Trust, 2023). An early study by Song and Glick (2004) noted female students were more likely to pursue a post-secondary education than their male peers. The Sutton Trust (2023), an advocacy-based non-profit organization in the United Kingdom focused on research and policy that will help allow more people to experience upward economic mobility, performed a descriptive comparative analysis on access to higher education for persons in the UK who were 18 years of age between 1997 and 2020. They found despite increased access to higher education, the gap between males and females nearly doubled from 7 percentage points in 2006 to 13 percentage points in 2022, with women pursuing higher education at higher rates than men (Sutton Trust, 2023). Field (2021) notes a converging trend in the United States (U.S.), based on a review of data from the U.S. Department of Education showing the sex composition of students in U.S. IHEs reversed between 1970 and 2019. While men made up 56% of IHE enrollment in 1970, by 2020, they made up only 43% of the population of U.S. college students (Field, 2021). The trend that was identified early by Song and Glick in 2004 is found to persist in more recent converging studies by Meza (2019) and the Sutton Trust (2023). Reeves (2022) considers how public education policy affects male students differently across their educational lifecycle, again confirming the substantial drop in college-engagement for males, compared to females. Consistent trends are seen in both the United States and United Kingdom of women enrolling in college at higher rates than men (Reeves, 2022; Song & Glick, 2004; Sutton Trust, 2023).

A number of prior studies investigate the relationship of a student's sex to a student's institution of choice (Gardner, et al., 2022; Meza, 2019; Song & Glick, 2004). In the forementioned large non-experimental study, Meza (2019) found women were enrolling in these Bachelor of Applied Science programs (offered through community colleges) at proportionally

higher rates than men. Female students were found to enroll in less selective or prestigious institutions than their male peers (Song & Glick, 2004), which is supported by findings observed in several recent studies which found women were more likely to enroll in community colleges than universities (Gardner, et al., 2022; Meza, 2019). While not all studies on adult and non-traditional students disaggregate their findings by sex, we do see both female students (Gardner, et al., 2022; Meza, 2019, Song & Glick, 2004) and non-traditional students (Nguyen & Kramer, 2023) pursue post-secondary education via community colleges at higher rates than at universities.

### **Enrollment Modality as an Educational Choice**

As college students make decisions informing their pursuits of postsecondary education, sex-based differences have been found for some students' preferences for and motivation in online versus in-person courses (Frikha, et al., 2024; Hachey, et al., 2023; Klinke, et al., 2024). A divergent study by Yoo & Marshall (2024) found no significant sex-based differences in the motivation to take online courses between men and women among graduate students in the United States. This may mean that student motivation to take an online course is moderated by cultural differences between the populations of these two studies (Frikha, et al., 2024; Yoo & Marshall, 2024). In an apparently unexpected finding, while significant sex-based differences in motivation were not found among the students in the United States, student-parents scored higher on intrinsic motivation (Yoo & Marshall, 2024). The authors suggested that this makes student-parents good candidates for more autonomous learning environments (Yoo & Marshall, 2024).

Noting online courses have higher withdrawal rates than face-to-face courses, Hachey, et al. (2023) surveyed 780 students from a large institution in the United States, seeking to explore

students' reasons for withdrawal from their online or in-person courses (Hachey, et al., 2023). While both online and in-person students cited course characteristics as a primary reason for withdrawal, students who withdrew from online courses were significantly more likely to cite time-related concerns as a secondary reason for withdrawal (Hachey, et al., 2023). Online students reported the course took too much time and judgment that the material was incompatible with the online modality, while in-person students noted course or instruction organization more often (Hachey, et al., 2023). These findings seem to support Klinke, et al.'s (2024) hypothesized correlation between time-poverty and online enrollment for women. Both Hachey, et al. (2023) and Collom, et al. (2021) converge in their findings that online learners reported challenges with a steep learning curve as a result of having to learn the online learning tools in tandem with the course material. In contrast, Frikha, et al. (2024) found that access to online learning made some courses more accessible, especially for female students who may have otherwise been unable to access such course material due to social constraints in a highly sex segregated culture.

A limited number of studies provided analysis of findings that was disaggregated by sex. In one study, Klinke, et al. (2024) interpreted their findings that female non-traditional students appear to prefer part-time and online enrollment to mean female non-traditional students have more time constraints which would make online courses more attractive to them. Women were found to have had higher levels of both intrinsic and extrinsic motivation when the course was made available in an online format, while male students seemed to struggle to remain as engaged when their course was moved to an online format in the context of the COVID-19 pandemic (Frikha, et al., 2024). In summary, online education appears to increase access for non-traditional students (Yoo & Marshall, 2024) and women (Frikha, et. al., 2024; Klinke, et al., 2024), but these students may need additional supports in order to successfully manage their time and learn

the online tools alongside the course material (Collom, et al., 2021; Frikha, et al., 2024; Hachey, et al., 2023).

### **Sex and Field of Study**

The interplay noted above between a student's financial status and cultural capital on a student's educational choices appears to not only affect the type and location of college they choose to attend (Pence & Ulusoy, 2022), these factors also appear to influence the major or career aspirations of college-students, with women choosing less selective schools and majors in humanities and the arts, which are less financially lucrative (Song & Glick, 2004). A number of prior studies investigate the relationship of a student's sex and their major, which together appear to demonstrate persistent sex-based effects in post-secondary students' selection of a major or career (Doerr, et al., 2021; Creusere, et al., 2019; Dalberg, et al., 2024; Meza, 2019; Philipp, 2023; Puzio & Valshtein, 2022; Song & Glick, 2004; Tătar, et al., 2023). Puzio and Valshtein (2022) note that in the United States, sex-based segregation in occupational settings has been observed for forty years in their narrative analysis of the features of labor segregation.

The persistence of differences in the choices male and female students make as they choose a college major and career path can be demonstrated by findings noted twenty years ago (Song & Glick, 2004). Song and Glick (2004) performed a logistic regression analysis of a large, nationally representative data set from the National Education Longitudinal Study (NELS88). Although sex was not initially a variable this research group intended to focus on, they found significant sex-based differences in both student's likelihood of attending college and their selected major (Song & Glick, 2004). Song and Glick (2004) found women tend to choose majors in the arts and humanities. More recently, Meza's (2019) analysis of nearly 8,000

students enrolled in a Washington State Bachelor of Applied Science program from 2009 and 2018 appears to show that the longstanding sex-based segregation in student's major selections may be changing. They found women and student-parents are shifting towards choosing STEM majors in recent years, instead of their previous preference for business and health-related programs (Meza, 2019). Dalberg, et al. (2024) also found sex to be a primary factor in student choice of major, followed by familial socio-economic status when they used a novel method (CA) to graphically analyze factors correlated with college major selection (Dalberg, et al., 2024).

Puzio and Valshtein (2022) suggest that while large scale efforts have been employed to promote gender egalitarianism through women-in-STEM programs, there has been limited investment aimed at encouraging or supporting males to develop skills and pursue careers in historically feminized fields, which they refer to as HEED fields. HEED stands for "healthcare, elementary education, and domestic" work roles (Puzio & Valshtein, 2022, p. 272). Reeves (2022) similarly reports concern that males have been forgotten in efforts to promote gender egalitarianism, advocating for more intentional support for boys to engage in and pursue careers he refers to as HEAL occupations: those dealing with "health, education, administration, and literacy" (Winship, 2023).

While sex-based norms are socially constructed and culturally bound and reinforced (Puzio & Valshtein, 2022), we see sex-based segregation both in the United States (Dalberg, et al., 2024; Meza, 2019; Song & Glick, 2004) and internationally (Philipp, 2023; Tătar, et al., 2023). In a quantitative analysis of variance, Tătar, et al. (2023) found statistically significant effects of three factors predicting how gender-stereotypical a student's selected major will be: student sex, the gender equality index value for their country of origin, and the economic

development status of their country of origin. Consistent with other studies on sex-based segregation in the workplace and in college majors, female students in this study were statistically significantly more likely to select a major in a field that would socially or culturally be considered feminized, including arts, social sciences, and humanities (Tătar, et al., 2023). Additionally, in Germany, Philipp (2023) found that gender typicality in the student's major selection appears moderately correlated with their parent's career gender-typicality only when the student sex matches that of the parent, or when the opposite-sexed parent has a gender atypical role. These findings supported findings from other studies indicating males are more restricted in their available options and seem to have more to lose by selecting a gender atypical major (Philipp, 2023; Puzio & Valshtein, 2022; Reeves, 2022; Song & Glick, 2004; Tătar, et al., 2023). In summary, many studies converge in finding persistent sex-based segregation in major selection for college students, where females are more likely to select majors in arts, humanities, and social sciences (Dalberg, et al., 2024; Philipp, 2023; Song & Glick, 2004; Tătar, et al., 2023). Meza's (2019) study was divergent, in finding females shifting toward STEM programs in recent years, a finding that may be unique to the majors available in the bachelors' completion programs that were the focus of Meza's study. These observations and findings appear to support the application of gendered social control theory to the persistent sex-segregation in college students' career aspirations.

### **Sex and Higher Education or Career Outcomes**

The sustained sex-based-segregation in higher education observed above has downstream effects on career outcomes (Green & Coppélia Kahn, 1991; Puzio & Valshtein, 2022). Song and Glick (2004) found women's tendency to choose majors in the arts and humanities funnel them into lower paying positions. They suggest this may be acceptable to women, as these careers are

believed to be more flexible or more accepting of breaks in career progression due to childrearing or other family obligations (Song & Glick, 2004). Additionally, they suggest that potential pay may not be as important a factor in major selection for women as employment flexibility and the ability to accommodate family needs (Song & Glick, 2004).

Puzio and Valshtein (2022) and Creusere, et al. (2019) note that even when a gender-atypical field is selected, women tend to realize diminished returns from their selection of a historically masculine field. Conversely, men who enter historically feminized fields tend to be accelerated into higher paid and more authoritative positions than their female peers (Puzio & Valshtein, 2022). In a large quantitative case study by Creusere, et al. (2019) income mobility (the ability for a graduate to move to a better economic state after completion) was more readily available for males than females, even when the students obtained the same or comparable degrees (Creusere, et al., 2019). In a 2021 follow up to Creusere, et al.'s (2019) study, Troutman and Creusere (2021) found continued inequities in post-completion wages by sex and by race/ethnicity that were not able to be fully explained by differences in the student's area of study or major (Troutman & Creusere, 2021). Reflecting on this study, Troutman (2023) shared at a 2023 TAIR Conference that females who graduated from the University of Texas with technical computer science degrees were found to be working in project manager roles at higher rates than their male peers who completed the same degree. The male computer science graduates were more frequently employed in technical engineering or developer roles (Troutman, 2023). Continued inequities persist wherein women and racial minorities do not experience comparable wage gains as their male and white or Asian peers, which may be tied to sex-based gatekeeping (Merriweather, 2020; Puzio & Valshtein, 2022; Troutman & Creusere, 2021). In the same way sex-based segregation in fields of study appears in multiple regions of the world (Dalberg, et al.,

2024; Meza, 2019; Philipp, 2023; Puzio & Valshtein, 2022; Song & Glick, 2004; Tătar, et al., 2023), the sex-based effects of student's post-graduation career trajectory does not appear to be limited to the United States (Belluigi, et al., 2024). In a large, quantitative, archival study, Belluigi, et al. (2024) found women employed by universities in the United Kingdom were more likely to be employed part time, and in non-tenured or associate-level positions.

When women pursue careers in historically masculinized fields such as STEM fields, they appear to adopt a meritocratic belief system as a means of bolstering their sense of belonging and integrating into their work culture (Doerr, et al., 2021). In a moderately large qualitative analysis, Doerr, et al. (2021) found that among women in STEM, adoption of meritocratic beliefs led them to be less aware or sensitive of the role of sex in their opportunities for advancement and work tasks. Consistent with intersectional theory (Kaufmann & Derry, 2024), several studies found that women of color were more aware of the role of race and sex informing their sense that they stand out in their workplace (Belluigi, et al., 2024; Doerr, et al., 2021) and appear to experience more barriers to employment and promotion (Belluigi, et al., 2024).

In summary, there is overall agreement that women appear to have substantively different outcomes in career trajectory and earning potential even when compared with men who completed the same credential (Belluigi, et al., 2024; Creusere, et al., 2019; Merriweather, 2020; Troutman & Creusere, 2021). Sex-based disparities in major selection appear to lead to knock-on effects that limit opportunities for economic advancement, especially for women of color, in the United States (Creusere, et al., 2019; Dalberg, et al., 2024; Meza, 2019; Philipp, 2023; Puzio & Valshtein, 2022; Troutman & Creusere, 2021). The economic wellbeing of women may be further limited by findings from a nationally representative study of U.S. college students that

found women were more likely to have debt one year after graduation (Chen & Smith, 2023). Increased debt burdens, gatekeeping around opportunities for advancement, and significantly lower pay for women make it harder for women to pay down or pay off their student loans than their male peers (Chen & Smith, 2023; Merriweather, 2020). None of the above studies are causal in nature, and therefore the educational choices women make cannot be causally linked to the different outcomes for them, compared to their male peers (Belluigi, et al., 2024; Creusere, et al., 2019; Doerr, et al., 2021; Troutman & Creusere, 2021). However, Doerr, et al.'s (2021) study diverges from these other studies in its qualitative nature, and it's focus on women who are working in fields where they have historically been marginalized.

### **Sex and Motivation**

Several studies found a relationship between a student's sex and their motivation to engage post-secondary education (Frikha, et al., 2024; Gardner, et al., 2022), some with student-parents in focus (Andrewartha, et al., 2023; Coronel, 2020; Frikha, et al., 2024; Lovell & Lockhart, 2018; Yoo & Marshall, 2024). Two studies reviewed above converge in finding that female students appear to have higher levels of intrinsic motivation than their male peers (Frikha, et al., 2024; Gardner, et al., 2022). Frikha, et al. (2024) also noted females had higher levels of extrinsic motivation to engage in their course, while Gardner, et al. (2022) only found higher levels of extrinsic motivation for student-parents with older, more independent children. Yoo & Marshall (2024) found no significant difference between male and female parents in their stress or motivation but did find that student-parents were more intrinsically motivated than their non-parent peers, which they suggested makes student-parents good candidates for online courses. In another recent non-experimental study with a large population of Australian students which skewed heavily female, Andrewartha, et al. (2023) found those who were parents reported they

were motivated extrinsically. These parents, mostly mothers, explicitly named hopes of improving future employment opportunities, achieving financial security, and desire to be a good example for their children (Andrewartha, et al., 2023). For these parents, their parental status and experience served to positively affect their motivation for pursuing post-secondary education. In summary, students who are female appear to have elevated motivation in their pursuits of higher education – motivation that is driven by internal desires, as well as external goals. Students who are parents, especially those with children who are older and more independent, report increased levels of intrinsic (Yoo & Marshall, 2024) and extrinsic motivation (Gardner, et al., 2022) such as a desire to pursue a college degree as a means of inspiring their children (Andrewartha, et al., 2023).

One notable observation about the research literature related to adult and non-traditional students is how frequently findings related to student-parents surface in andragogy research, despite student-parents being frequently overlooked or not considered in the analysis or findings (Barone, et al., 2023; Creusere, et al., 2019; Srivastava & Dhamija, 2024; Sutton Trust, 2023). Alternatively, some studies report findings related to student-parents, despite all indications that the study design did not consider them as a population of interest or in focus in the study design or analyses (Gardner, et al., 2022; Meza, 2019; Nguyen & Kramer, 2023). Adult and non-traditional students are typically identified as college students who are 25 years old or older (Collom, et al., 2021; Gardner, et al., 2022). They are more frequently employed (Andrewartha, et al., 2023) and they enroll part-time at higher rates (Klinke, et al., 2024). Additionally, several convergent studies have found evidence that women are pursuing post-secondary education at higher rates than men (Field, 2021; Reeves, 2022; Song & Glick, 2004; Sutton Trust, 2023), and more readily enroll at community colleges (Coronel, et al., 2020; Gardner, et al., 2022). This has

been found internationally (Sutton Trust, 2023) and within the United States (Field, 2021; Reeves, 2022; Song & Glick, 2004). It has been found that women appear to be time-poor (Klinke, et al., 2024) but also more intrinsically motivated (Frikha, et al., 2024; Gardner, et al., 2022). The findings come from moderately strong studies with ample sample sizes. Based on this review of the existing recent literature, there are substantial studies of non-traditional students: studies that explore sex-based differences in enrollment and program selection, and studies that explore the experiences, time-constraints, demand to balance multiple-roles, and the unique needs of student-parents, but few that consider the relationship between sex and the ways student-parents pursue higher education goals.

### **A Need to More Readily Identify Student-parents**

Many studies on non-traditional students or adult students report findings that pertain to student-parents as if the presence of student-parents or the significance of their role as parents in their student experience is an afterthought (Gardner, et al., 2022; Meza, 2019; Nguyen & Kramer, 2023). However, additional and more consistent data about student-parents is called for in many prior studies, including a call for more intentional collection of and consideration of sex as a variable of interest for future research on student-parents (Andrewartha, et al., 2023; Coronel, 2020; Evans, 2024; Dayne, et al., 2023; Goldrick-Rab & Sorensen, 2010; Huerta, et al., 2022; Kisanga & Matiba, 2023). The fact that decisions whether to collect the data on student-parents and how to collect it have been left to individual institutions has contributed to a paucity of consistent data from which generalizable studies could be developed (IWPR, 2023).

In the discussion of the research literature on student-parents that follows, we will see many of the enrollment trends that were discussed above in the review of literature on adult and

non-traditional students again, as they pertain to student-parents. Student-parents exist as a sub-population within a larger and more well-researched population of adult students, but efforts to identify student-parents within college student populations have historically been piecemeal and inconsistent. While student-parents make up a substantial proportion of college students, researchers have only very recently begun intentionally focusing on this population for study.

**There is a pervasive need and call for improved data collection pertaining to student-parents** (Andrewartha, et al., 2023; Coronel, 2020; Evans, 2024; Dayne, et al., 2023; Goldrick-Rab & Sorensen, 2010; Huerta, et al., 2022; IWPR, 2023; Kisanga & Matiba, 2023). Among the 600 student-parents who participated in the study by Andrewartha, et al. (2023), more than half reported they had not disclosed their parental status on their college application (Andrewartha, et al., 2023). When institutions do not consistently identify student-parents, it makes it difficult to identify the scale of the population, or the services student-parents need (Dayne, et al., 2023). Additionally, it presents challenges to ensuring student-parents are informed of all appropriate services available to them. These challenges were noted in a recent moderately large survey by Dayne, et al. (2023), who tied inconsistent or absent efforts to identify student-parents to insufficient outreach to student-parents about available supports. When students are not consistently and directly asked about their parental status, it appears low rates of them report their parental status to their school (Andrewartha, et al., 2023). With the problem clearly noted among several studies (Andrewartha, et al., 2023; Dayne, et al., 2023),

Huerta, et al. (2022) published a large and diverse qualitative case study, in which they provide specific recommendations for institutions to collect more reliable data to identify student-parents which would make sharing information about childcare and career placement services more effective (Huerta, et al., 2022). The absence of intentional and consistent

collection of data to identify student-parents leaves many of them relying on chance interactions with knowledgeable staff in order to know about and gain access to available services or supports targeted to their needs. In findings and recommendations convergent with Coronel (2020), Andrewartha, et al., (2023) found a dearth of support services directed at parents and limited awareness among student-parents of potential supports. A 2023 policy brief published by the nonpartisan think tank Institute for Women's Policy Research (IWPR) surveyed the policies that individual states in the United States (US) have for supporting student-parents. The initiatives and policies aimed at supporting parents attending postsecondary institutions have historically been dependent on individual institutions to develop and implement, however there is increasing interest and need to expand these policy supports via state-level measures and to more effectively measure outcomes of these programs (IWPR, 2023). The major policy recommendations include expanding efforts to meet student-parents' basic needs, make housing and childcare more available and affordable for these students, and reducing the cost of college enrollment for these and other non-traditional students (IWPR, 2023). One notable barrier to effectively implementing and evaluating these policies is a need for more robust and consistent data collection about student-parents (IWPR, 2023).

One of the primary methods historically used to identify student-parents in the United States is a question on the Free Application for Student Assistance (FAFSA), which asks about dependents who rely on the student for at least 50% of their needs (Department of Education, 2024). The reliance on FAFSA completion to identify students who are parents is problematic because only a portion of students complete the FAFSA at any given institution in any given year (Coronel, 2020). According to the National College Attainment Effort (NCAN, 2023), only 53% of 2021 high school graduates in the United States completed the FAFSA. In a large study of

nearly 60,000 students at more than 100 IHEs, Barone, et al. (2023) found more male students and more part-time student respondents reported not completing the FAFSA. This disparity between male and female FAFSA application rates may contribute to women being over-represented in the existing data about student-parents. Many of the Fall 2021 Student Financial Wellness Survey (SFWS) respondents reported they were debt averse or believed they did not need financial aid to pay for school (Barone, et al., 2023).

Newly collected data about student-parents attending public colleges and universities in Texas has become available. In 2023, the Texas Legislature overhauled the way public institutions of higher education were funded in the state, in order to tie state-funds distributed to public community colleges to the outcomes they provide to their students (AEI, 2022). This new funding model includes additional bonuses for several student populations who have historically completed college at lower rates (Rosinger, et al., 2020). One of the special populations identified for additional funding bonuses is non-traditional adult students, which incentivizes these IHEs to collect and report on the outcomes for non-traditional students (AEI, 2022). A Committee Brief from the Texas State Legislature by Shaw (2023) discussed additional new requirements for identifying and reporting about student-parents who attend state-funded IHEs. This brief describes a newly passed law in 2023 that requires state-funded public IHEs in Texas to collect and report data about student-parents to the THECB beginning in 2024 (Shaw, 2023). This law did not indicate *how* the schools should collect this information or *how often* it should be collected (Shaw, 2023). However, the new law provides the foundation for this study in that it provides the basis for the large-scale collection of data on student-parents.

Prior to this study, it was unclear if mothers make up a majority of student-parents enrolled in post-secondary education, or if they have just been more readily identified among

student populations due to higher rates of FAFSA completion (Barone, et al., 2023). This study provides new insights into whether sex disparities are similar or substantially different for student-parents compared to the larger population of post-secondary students. Student mothers appear to be more readily identifiable in published research, as indicated by an over-representation of female student-parents in studies about student-parents (Dayne, et al., 2023; Evans, 2024; Nikiforidou & Holmes, 2022). In a mixed-methods study by Nikiforidou and Holmes (2022) the population was overwhelmingly female with eighty-five mothers and only five fathers participating in their survey. Similarly, Evans (2024) interviewed a convenience sample of twenty-seven student-parents for their qualitative study, 85% of whom were female. In Dayne, et al.'s (2023) large survey of student-parents, women made up more than 70% of the respondents. Two studies of student-parents diverged from the tendency toward female skew, in that they had a more balanced distribution of males and females, as can be seen in the small qualitative study by Coronel (2020), and the moderately-sized quantitative study by Dolson and Deemer (2022). The qualitative 2020 study by Coronel used 12 in-depth interviews of student-parents attending two community colleges in California; one of few studies which had a relative balance between the sexes of participants in their population, which was composed of 7 mothers and 5 fathers (Coronel, 2020).

In summary, piecemeal, voluntary, and inconsistent data collection about students' parental status among institutions of higher education in the United States has presented a population gap in the empirical research about college students (Andrewartha, et al., 2023; Dayne, et al., 2023; Goldrick-Rab & Sorensen, 2010; Huerta, et al., 2022; IWPR, 2023). Consistent data collection across multiple institutions via the FAFSA application still leave a knowledge gap about the large number of students who do not complete a FAFSA (Coronel,

2020; Department of Education, 2024; NCAN, 2023). This may skew institutions' understanding of their student populations toward poorer or full-time students, as higher income students and those who only attend part time may be less likely to complete the FAFSA (Barone, et al., 2023). Among the research that is available about student-parents, mothers appear to be overrepresented in the research populations (Evans, 2024; Nikiforidou & Holmes, 2022). It is unclear whether this is because the gender gap for student-parent enrollment is significant, or mothers who are students are more readily identifiable or more willing to participate in research (Field, 2021; Reeves, 2022; Song & Glick, 2004; Sutton Trust, 2023). The lack of reliable data prompted some researchers to recommend future studies are needed to evaluate sex-based differences in student-parents' engagement with post-secondary education (Brauer & Foust, 2020; Wladis, et al., 2024c). New requirements for public institutions of higher education in Texas will provide more complete data about student-parents attending these institutions (Shaw, 2023).

### **Student-parent Experiences and Needs**

In part, due to the limited availability of robust data about student-parent populations, and partly because it is a relatively newly identified population of interest, many studies about student-parents are qualitative and exploratory or descriptive in nature (Andrewartha, et al., 2023; Briegel, et al., 2023; Coronel, 2020; Dayne, et al., 2022; Dayne, et al., 2023; Evans, 2024; Huerta, et al., 2022; Kisanga & Matiba, 2023; Lovell & Lockhart, 2022; Navarro-Cruz, et al., 2023; Nikiforidou & Holmes, 2022; Van Stone, et al., 1994). Qualitative studies about student-parents seek to expand knowledge and visibility of student-parents' experiences (Lovell & Lockhart, 2022; Nikiforidou & Holmes, 2022; Van Stone, et al., 1994). Some of these identify struggles with belonging and/or marginalization as they develop their student identity or navigate their studies in colleges and universities that were historically built for traditional students

(Evans, 2024; Lovell & Lockhart, 2022; Nikiforidou & Holmes, 2022; Van Stone, et al., 1994). Most institutions of higher education were developed with policies and institutional structures which assumed all students share needs consistent with those of traditional college students (Evans, 2024; Nikiforidou & Holmes, 2022).

A recent study by Navarro-Cruz, et al. (2023) interviewed 36 student-parents to understand their decision making as they pursued post-secondary education. For these mothers, educational choices were informed by contextual influences, their beliefs, their economic assets, familial support, and other social forces (Navarro-Cruz, et al., 2023). Several studies report converging observations that cultural dynamics and cultural sex-based role expectations appear to affect Hispanic student-parents in sex-specific ways (Dayne, et al., 2023; Navarro-Cruz, et al., 2023; Wladis, 2024b). Specifically, Hispanic fathers may be encouraged to take on full-time employment, which may make them less likely to enroll at all or more likely to enroll part time or in technical or work-related programs. Alternatively, Hispanic mothers may find caretaking duties limit their enrollment options (Dayne, et al., 2023; Navarro-Cruz, et al., 2023).

Converging studies finding lower rates of college engagement for student-fathers may indicate fathers may experience more barriers to accessing college than mothers do (Dayne, et al., 2023; Goldrick-Rab & Sorensen, 2010). In a review of policy and literature on the role of college education for single parents who are enrolled in college, Goldrick-Rab and Sorensen (2010) identify enrollment trends for unmarried parents, and institutional policies or structural challenges that make college-going more difficult for single parents. Unmarried mothers are more than twice as common in colleges as unmarried fathers, but they face social alienation both in their family of origin (as many are first-generation college students) and face an alienating experience on campuses where assumptions of traditional students mean parents may have fewer

opportunities for extra-academic connection (Goldrick-Rab & Sorensen, 2010). Goldrick-Rab and Sorensen (2010) found that student-parents, especially fathers, reported more challenges accessing post-secondary education, which may explain the over-representation of female student-parents we find in the available literature (Dayne, et al., 2023; Evans, 2024; Nikiforidou & Holmes, 2022) and may inform the forementioned trends indicating women are enrolling at higher rates than men (Field, 2021; Sutton Trust, 2023).

Several studies found that student-mothers are motivated by the desire to build social capital and upward social mobility for themselves and their households (Lovell & Lockhart, 2022; Van Stone, et al., 1994), which is consistent with motives cited by students in Creusere, et al.'s (2019) study. Many studies converged in identifying consistent thematic motivators for student-parents including financial needs, economic insecurity, and financial stressors, and their hope for economic mobility for them and their children (Dayne, et al., 2022; Goldrick-Rab & Sorensen, 2010; Lovell & Lockhart, 2022; Sanborn, et al., 2024; Van Stone, et al., 1994). A large, early, qualitative study by Van Stone, et al. (1994) based on interviews with forty-six single mothers at a medium-sized university in the United States found single mothers were more likely to be poor (Van Stone, et al., 1994), a finding that is consistent with Collom, et al.'s (2021) findings pertaining to non-traditional students. Another large quantitative study of student-parents enrolled at City University of New York (CUNY) found single parents were significantly more likely to report financial stressors, were more likely to work higher numbers of hours in paid employment, have more debt, and more likely to be food or housing insecure (Sanborn, et al., 2024). These financial stressors can put student-parents at risk of dropping out or delaying their post-secondary education (Coronel, 2020; Dayne, et al., 2022).

Additional responsibilities for housing, feeding, and providing transportation and supervision for their children inform the financial challenges student-parents face, which may not apply to traditional students (Dayne, et al., 2022). In fact, in a mixed-methods survey of 91 student-parents attending a public university in the UK, Nikiforidou & Holmes (2022) suggested it may also be beneficial for institutional policymakers to seek to create more opportunities for students to integrate their role as parents into their educational pursuits, which is consistent with recommendations made by Lovell and Lockhart (2022). The additional needs of student-parents surfaced in these studies shed light on how student-parents may feel marginalized or frustrated by a mismatch between their needs and institutional structures and policies which assume college and university students are unencumbered and independent (Evans, 2024). Raaper, et al., (2022) noted findings consistent with others, which strengthen observations that non-traditional students appear more tangentially integrated or connected with college life and may experience marginalization at campus events. In another converging qualitative study intended to assess the barriers that may negatively impact completion or graduation rates for student-parents, Coronel (2020) found that institutional barriers were present and reported by all participants. Student-parents indicated that IHEs cater to traditional students at the expense of the students on the margins, including student-parents. These parents reported they were motivated and committed to their studies in spite of their experiences of marginalization (Coronel, 2020).

In their qualitative case-study of 24 single student-parents at a Canadian University, Briegel, et al. (2023) found their participants reported needing a stronger sense of belonging and community on campus, and spaces for breastfeeding. These findings were similar to needs and challenges identified in other recent studies other studies by Sparrow (2023), Dayne et al. (2022, 2023), and Navarro-Cruz, et al. (2023). A recent qualitative study by Evans (2024) found the

COVID-19 pandemic exacerbated existing inequities and tensions for student-parents (Evans, 2024). For example, student-parents are frustrated by institutional policies that make children unwelcome in support spaces frequented by traditional students such as tutoring centers, libraries, and office hours (Van Stone, et al., 1994). Another qualitative study by LaBrenz, et al. (2023), based on 15 interviews with student mothers found that institutional structures and expectations from their instructors made success and persistence more challenging for student-parents (LaBrenz, et al., 2023).

In response to these findings related to institutional structures and policies creating barriers or challenges for student-parents, several researchers provide recommendations that would strengthen or build a safety net for these student-parents (Goldrick-Rab & Sorensen, 2010; LaBrenz, et al., 2023). Specific recommendations presuppose the collection of more robust and meaningful data about student-parents (Goldrick-Rab & Sorensen, 2010). Additional recommendations included increasing financial supports via scholarships and/or emergency funding (Goldrick-Rab & Sorensen, 2010). LaBrenz, et al. (2023) recommended that student-parents could benefit from additional flexibility in academic and social support structures availability, including making the campus spaces where these services are offered more child-friendly (LaBrenz, et al., 2023).

### **Childcare Needs**

While the above studies converge in their suggestions that an array of policy changes and programs or services that could create a more supportive environment for student-parents (Goldrick-Rab & Sorensen, 2010; LaBrenz, et al., 2023), many studies reported childcare needs created as an additional financial burden and scheduling challenge for student-parents (Briegel,

et al., 2023; Dayne, et al., 2022; Evans, 2024; Goldrick-Rab & Sorensen, 2010; Navarro-Cruz, et al., 2023). While their study was not limited to or focused on student-parents, Raaper, et al. (2022) noted that female non-traditional students often note caretaking responsibilities as a factor that makes balancing school and family demands more challenging. Navarro-Cruz, et al. (2023) found student-parents' childcare needs are not monolithic, but they vary, depending on a number of factors including their non-academic support network and work schedules (Navarro-Cruz, et al., 2023). In a qualitative study including responses from 58 student-parents, Dayne, et al. (2022) student-parents reported childcare availability and accessibility were significant challenges (Dayne, et al., 2022). In a subsequent study, Dayne, et al., (2023) noted that childcare persists as a challenge and an opportunity for improving institutional support for student-parents. Similarly, in a qualitative case-study of 24 single student-parents at a Canadian University, Briegel, et al. (2023) also found their participants reported needing support for childcare access. These findings were similar to the needs and challenges of student-parents and non-traditional students identified in other recent studies by Sparrow (2023), Dayne et al. (2022, 2023), and Navarro-Cruz, et al. (2023). For student-parents, the availability of childcare and challenges with scheduling childcare appears to effect male and female student-parents in significantly different ways (Conway, et al., 2021; Wladis, et al., 2023; Wladis, et al., 2024b; Wladis, et al., 2024c).

### **Balancing Multiple Roles and Time Poverty for Student-parents**

Without adequate childcare, student-parents may struggle with distraction and balancing multiple roles and responsibilities while attending to their studies. Nearly 76% of participating student-parents in one study reported it was very hard or hard to balance their multiple roles and demands during the pandemic lockdown (Nikiforidou & Holmes, 2022). The need to manage multiple roles as a parent, partner, employee, and as a student was a convergent concern cited by

researchers and participants in several studies that appear unique or more prominent for student-parents, especially following the COVID-19 pandemic (Dayne, et al., 2022; Dolson & Deemer, 2022; Huerta, et al., 2022; Nikiforidou & Holmes, 2022). Student mothers reported that the COVID-19 pandemic exacerbated their experiences of the "triple shift," (Duncombe & Mardsen, 1995, as cited in LaBrenz, et al., 2023) because they struggled to adequately support and accommodate their own educational needs, and those of their children.

The role conflict student-parents face may take several forms which can be described as work-family, work-school, and school-family conflict. In a quantitative study focused on these three potential forms of role-conflict, Brauer and Foust (2020) compared working students who are not parents to student-parents in their assessment of their experiences of role conflict. Work-family conflict is not unique to student-parents, as it is also experienced by working parents who are not students (Brauer & Foust, 2020; Ebeoğlu Duman & Akgöz Aktaş, 2024; Hess & Schneickert, 2024). A quantitative study by Ebeoğlu Duman and Akgöz Aktaş (2024) identified firm sex-based roles in a family with two working parents functioned to increase work-family conflict. Mother's roles as employees were diminished as sex-based role divergence increased in couples' values. The potential for burnout and emotional exhaustion experienced by graduate student-parents may complicate their efforts to balance work, school, and family roles, according to a quantitative study with a large population of 245 graduate-student-parents at a large, public university in the U.S., (Dolson & Deemer, 2022). Among these student-parents, burnout seems to be the mechanism by which graduate student-parents experience conflict between work, family, and school (Dolson & Deemer, 2022). In a 2021 qualitative study by Thomas, et al., student mothers were found to report technologies such as remote work or online education offered student mothers more control in whether they blurred the lines between their family and

work roles. Additionally, technology was reportedly used to increase flexibility of work locations and tasks for these working mothers (Thomas, et al., 2021).

Another role conflict that arises is work-school conflict, wherein a student-parent's need to provide for themselves and their family limits their ability to enroll in the number of classes or makes finding adequate time to study difficult in a way that keeps them from moving forward in their post-secondary education at a feasible pace (Brauer & Foust, 2020). While student-parents were not the focus of Wladis, et al.'s (2023) study, they noted student-parents were significantly more likely to work more hours in paid employment and to take online courses (Wladis, et al., 2023). Another study found students who are mothers are more likely to work for pay than their non-parent peers (Kisanga & Matiba, 2023). Student-mothers appear to work more paid hours than their peers, and work in lower wage and lower status jobs (Education Trust, 2022; Kisanga & Matiba, 2023; Navarro-Cruz, et al., 2023). Low-status workers generally have less-predictable work schedules than people in higher socio-economic positions, which can make attending courses in person difficult or impossible (Wladis, et al., 2024a). This seems to be the case for student-parents and other non-traditional students which may create inequitable outcomes for these historically marginalized students (Wladis, et al., 2024a). Employees in lower status positions also are less likely to have flexibility to do schoolwork during working hours (Wan, et al., 2022). This may be one reason student-parents appear to prefer online courses (Collom, et al., 2021).

When a student-parent experiences family-school conflict, the demands of caring for their family or policies preventing children from coming along limit their ability to effectively engage their studies or may make participating in educational support activities like tutoring, advising, student-life activities, or office hours less feasible for student-parents. Brauer and Foust (2020)

found that student-parents reported significantly more conflict between school and family roles, than they did between school and work or work and family, a finding supported by others (Nikiforidou & Holmes, 2022; Raaper, et al., 2022). The presence of a co-parenting partner or spouse appears to be protective, in that it appears to reduce their potential to be overwhelmed by school-family conflicts, and may mean family needs do not require parents to pivot from school demands (Kisanga & Matiba, 2023). In their 2023 qualitative study, married or partnered student-mothers more frequently demonstrated the agency and ability to work out solutions to their problems than their single mother peers, whose more frequent use of emotion-based coping indicated their struggles were perceived to be rooted in institutional or structural challenges, which they could not change (Kisanga & Matiba, 2023). Kisanga and Matiba (2023) conclude that institutions need to better identify the needs and challenges faced by student mothers. Student-parents appeared to bifurcate their time into school time and parenting time in a way that preserved their family time, but that required them to draw from personal time rather than family time during times when additional time or attention was needed for school (Nikiforidou & Holmes, 2022). One notable finding indicated that student-parents "would prioritize their role as a parent above the rest," which may mean educational policymakers would be wise to not put student-parents in positions where they must choose between their courses and their role as a parent (Nikiforidou & Holmes, 2022 p. 2017). Similarly, Wan, et al. (2022) found students who strongly identified with their work role tended to prioritize work-tasks when confronted with work-school conflict.

Time-poverty surfaced as a theme in studies related to online enrollment, sex, and student-parents. Citing fears that their parenting suffered because they were trying to balance multiple roles, more than one third of student-parents reported concerns about the quality of their

parenting (Nikiforidou & Holmes, 2022). A number of student-parents (Nikiforidou & Holmes, 2022) and some researchers (Augustine, et al., 2018; Martin, et al., 2019) assume the need to balance multiple roles means student-parents give their children less time or attention than parents who are not also students. In a large longitudinal study comparing student-parents with parents not enrolled in college, Martin, et al. (2019) appears to have expected to find negative impacts on children of student-parents. While this research group seemed to assume the adolescent children of student-mothers would be negatively impacted by their mother's attention being directed elsewhere, they found that adolescents with mothers who began pursuing a post-secondary credential during their middle childhood tend to outperform in math compared to their peers whose mothers did not attend college during their middle childhood or young childhood (Martin, et al., 2019). Other hypothesized correlations were not found, such as behavioral or substance abuse concerns or impacts on reading scores (Martin, et al., 2019).

Like Martin, et al.'s assumptions, and in contrast to other research studies (Lovell & Lockhart, 2022), a novel 2018 study by Augustine, et al. also assumed an antagonistic position. In this study, the researchers seemed to assume children of student-mothers will be harmed by their mother's educational pursuits (Augustine, et al., 2018). This study appears to be one of the first to use American Time Use Survey (ATUS) data to explore challenges faced by student mothers. They found mothers who attend college had less time with their children than mothers who were not in school, and student-mothers spent less time on school activities than their non-mother peers (Augustine, et al., 2018). Student-mothers in this study appeared to work similar numbers of hours in paid labor as other women in college without children, which differs from two more recent studies in which mothers appeared to work more paid hours than their peers, and work in lower wage and lower status jobs (Education Trust, 2022; Kisanga & Matiba, 2023;

Navarro-Cruz, et al., 2023). This research group suggested that mothers who are in college may have fewer resources available in at least the short term for their children (Augustine, et al., 2018). While the time-squeeze they substantiated for student-mothers is consistent with other studies citing time-poverty as a concern for student-parents (Nikiforidou & Holmes, 2022; Wladis, et al., 2024c), this study did not find the time parents spent on their studies came at the expense of time with their children (Augustine, et al., 2018). Instead, the time student mothers spent on educational activities appears to be taken from sleep and other self-care activities for the mothers (Conway, et al., 2021; LaBrenz, et al., 2023), and not from purposeful time with their children (Augustine, et al., 2018). Augustine, et al.'s (2018) findings that mothers who are students spend time in educational activities at the cost of their discretionary time, sleep, and self-care, converges with findings in studies by several other authors or research groups (LaBrenz, et al., 2023; Nikiforidou & Holmes, 2022; Wladis, et al., 2024c). A logistical regression study considering sex and time poverty revealed that students with more limited time surrendered more of their free time to school, potentially to the detriment of their health (Wladis, et al., 2024c). More specifically, student-mothers and student-parents with younger dependents (under age thirteen) report spending more of their time studying than their non-parent peers but student-parents' focus on educational endeavors may be of lower quality (Conway, et al., 2021).

Several studies identified time-poverty as moderating student-parents' decisions to take online courses, rather than in-person courses, and their educational outcomes (Conway, et al., 2021; Wladis, et al., 2020). In a large, nationally representative study considering time-poverty as a factor influencing post-secondary educational outcomes for student-parents, Conway, et al. (2021) also analyzed data from the American Time Use Survey (ATUS) from 2003-2019. Conway, et al. (2021) found for student-parents, the age of their child(ren) is inversely related to

their time-poverty, meaning those with younger children were more time-poor. Sex also appeared to be a significant factor, with student-mothers demonstrating significantly higher rates of time poverty (Conway, et al., 2021). In this study, male and female students seemed to make different choices around how they spend their time (Wladis, et al., 2024c). In a moderately large (n=49) exploratory qualitative study, Wladis, et al. (2020) found work and family were the top two reasons students cited for taking online courses. When encouraged to share more specifically, student-parents reported caretaking responsibilities and other parenting related reasons informed their online enrollment (Wladis, et al., 2020). In a subsequent large-scale quantitative analysis of the relationship between time poverty and online course enrollment Wladis, et al. (2023) found time poverty and increases in the number of children a student reported caring for statistically significantly increased the likelihood they enrolled in online courses (Wladis, et al., 2023). Curiously, in a set of paired articles, from a subsequent large quantitative study, Wladis, et al. (2024b, 2024c) found mothers who were college students reported having substantially more children than their peers who were fathers, which put student mothers at statistically significantly higher time-poverty levels (Wladis, et al., 2024b).

Time poverty appeared to slow students' credit accumulation and put them at risk of not persisting in their program (Wladis, et al, 2024b). Mixed results were noted for students taking online courses (Wladis, et al., 2023). They were more likely to complete an online course, rather than withdraw or receive an unsuccessful grade, but online students had lower retention rates and earned fewer college credits per term (Wladis, et al., 2023), likely related to higher levels of part-time enrollment (Collom, et al., 2021; Klinke, et al., 2024).

In another article, Wladis, et al. (2024a) studied the role of time-poverty in educational decision-making and the relationship between time poverty and various educational outcomes. In

this study, they proposed an expansion to the theory of capital that would integrate time-and body-capital into a more robust theoretical model (Wladis, et al., 2024a). A large quantitative regression analysis by Wladis, et al. (2024a), noted time poverty shows up differently and may have differential impacts for different students, because disabilities, mental health needs, and even the quality of sleep and a student's food security can inform differences in the physical or embodied capabilities of different students (Wladis, et al., 2024a).

### **Summary**

As observed in the studies reviewed above, there appear to be sex-based differences in student needs and experiences (Collom, et al., 2021; Klinke, et al., 2024; Wladis, et al., 2024a), but perhaps not motivation for students who are parents. However, the overrepresentation of women in many studies may limit one's ability to draw conclusions about the impact of these sex-based differences (Wladis, et al., 2023; Yoo & Marshall, 2024). Other studies found that for student-parents, the number and age of children and availability of childcare appears to mediate student-parent's time-poverty levels in significantly different ways for male and female student-parents (Conway, et al., 2021; Wladis, et al., 2023; Wladis, et al., 2024b; Wladis, et al., 2024c).

Student-parents are non-traditional students, and as such, have different needs than traditional students (Raaper, et al., 2022). Student-parents tend to be older (Gardner, et al., 2022; Meza, 2019), employed in paid work (Education Trust, 2022; Kisanga & Matiba, 2023; Navarro-Cruz, et al., 2023; Wladis, et al., 2023), and find themselves trying to balance multiple roles (Dayne, et al., 2022; Dolson & Deemer, 2022; Huerta, et al., 2022; Nikiforidou & Holmes, 2022), which puts them at increased risk of time-poverty impacting their educational experience (Wladis, et al., 2023; Wladis, et al., 2024a; Wladis, et al., 2024c). This unique constellation of demands and challenges may make student-parents more likely to enroll in online courses or

programs (Wladis, et al., 2023). While student-parents make up a substantial proportion of college students, researchers have only very recently begun intentionally targeting this population for study. Other researchers have stumbled upon findings particular to student-parents, in ways that indicate student-parents were an unexpected population of significance in their findings (Gardner, et al., 2022; Meza, 2019; Nguyen & Kramer, 2023; Wladis, et al., 2024c). Research about student-parents often uses convenience samples from a single higher education institution (Brauer & Foust, 2020; Evans, 2024), or populations in which women are overrepresented substantially, leaving gaps in our knowledge about fathers who attend college (Gardner, et al., 2022; Wladis, et al., 2023; Yoo & Marshall, 2024). One factor contributing to the limited extant literature about student-parents may be that institutions have been free to not identify student-parents (Andrewartha, et al., 2023; IWPR, 2023), or have relied on FAFSA completion for identifying student-parents (Barone, et al., 2023; Coronel, 2020). This gap in data about the population has left student-parents on the margins of reports that inform policy and student support structures in institutions of higher education, where data and research findings inform policy and investments (Briegel, et al., 2023; Goldrick-Rab & Sorensen, 2010; LaBrenz, et al., 2023). Many prior researchers and research groups have called for more consistent and robust identification of student-parents (Andrewartha, et al., 2023; Coronel, 2020; Evans, 2024; Dayne, et al., 2023; Goldrick-Rab & Sorensen, 2010; Huerta, et al., 2022; IWPR, 2023; Kisanga & Matiba, 2023). A recent legislative change in the state of Texas now requires state funded institutions to consistently collect information and report to The Higher Education Coordinating Board (THECB) about their population of student-parents (Shaw, 2023). This made new sets of institutionally collected data available, which will allow for quantitative analysis and more generalizable results for future studies.



### **Chapter 3: Research Method**

The problem this study addressed is that while student-parents make up a substantial proportion of the college-going population, they are often overlooked or presented as an afterthought in institutional assessments and evaluations (Meza, 2019). There are calls in the research to better understand diverse populations of student-parents (Dayne, et al., 2022; Navarro-Cruze, et al., 2023; Yoo & Marshall, 2024) and the impact of a student-parent's sex on their educational pursuits (Kozlowski, et al. 2022; Sanborn, et al., 2024). Despite these calls for additional research, student-parents have not in the past been consistently identified through traditional institutional processes. The purpose of this non-experimental quantitative study was providing new understanding of enrollment patterns and college-going behavior for student-parents by assessing whether their institution choice and/or enrollment modality significantly differ based on their sex. This study aimed to determine whether sex and educational decisions are associated or independent and whether there are sex-based differences in college selection and enrollment behavior for men and women who are student-parents.

This section describes the study design, data collection methods, and provides details about why the proposed research methods were justified for this study. Subsequently, this chapter describes the population this study was focused on, and information about sampling processes and procedures. This review of the methodology and study design delineates definitions of relevant operational terms and variables, describes the processes used for data collection and analysis, and addresses assumptions made in the analysis process, including limitations that impact the generalizability of study findings.

## Research Methodology and Design (Nature of the Study)

This study used archival data collected between August 2023 and December 2024 by three public universities and six public community colleges in Texas. The design for this study was quantitative and non-experimental. It was quantitative, because it used aggregated numeric data for analyses and non-random and or self-selected groups (Privitera, 2020). It was non-experimental, because it used non-manipulatable, non-random variables (as in student-parent sex) or self-selected categories (as in fully online versus in-person or mixed enrollment) as variables of interest (Privitera, 2020). This design was selected to allow the researcher to compare and assess relationships between and/or whether differences exist between the educational choices of male and female student-parents.

A 2023 amendment to the Texas Education Code and Texas Administrative Code made by the 88th Texas Legislature identified student-parents as a population of interest for state-funded institutions of higher education (IHEs) (Shaw, 2023). The data used in this study was an appended combination of the data these institutions collected in response to H.B. 1361 and are now required to report to The Higher Education Coordinating Board (THECB), with additional fields of student data that is normally collected and tracked about students attending institutions of higher education (Shaw, 2023; THECB, 2023). Specifically, H.B. 1361 requires state-funded IHEs in Texas to report the following aggregated metrics to the THECB annually (see THECB Parenting Student Survey in [Appendix A](#)):

- Aggregate number of student-parents enrolled
- Count of student-parents per designated age groups
- Count of student-parents per designated race/ethnicity groups
- Count of student-parents by gender group
- Count of student-parents per full-time or part-time enrollment status
- Count of student-parents per transfer/withdrawal/graduating status

In this study, Texas Public IHEs were defined according to the Texas Administrative Code, Title 19, Part 1, Chapter 4, Subchapter X, Section 4.372, and the Texas Education Code, Title 3, subtitle B, Chapter §61.003. The author requested the data these institutions collected, plus an additional field about enrollment modality; a field that would be expected to be available from a selection of Texas IHEs of varying size and from a variety of rural and urban contexts. Because the institutional data collection is required by Texas State Law, the study was archival in nature and therefore understood to be free of researcher bias and participant bias. The archival data the author received was analyzed for differences in the proportions of male and student-parents who are enrolled, according to institution type (university versus community college) or enrollment modality (online versus face-to-face).

Because this study used numerical and categorical data collected from archives, and public information requests, the study is quantitative in nature. While qualitative data is often used in psychology and social sciences to build highly contextualized and deep descriptions of human experience, quantitative studies are appropriate for describing the significance of a subpopulation within a larger population, for assessing generalizable and statistical trends, or for comparing groups to assess the statistical significance of any differences that may be found among or between groups (Privitera, 2020). While qualitative studies allow for development of deep understanding of a situation, quantitative studies allow for inference, trends, and forecasting (Privitera, 2020).

While some quantitative studies are experimental, indicating the researcher is able to manipulate variables of interest or apply treatments in ways that allow for the assessment of causation, not all quantitative studies allow for this level of control or certainty. The ability to control for and manipulate variables is especially limited in natural or naturalistic study

environments. When variables are not able to be manipulated due to natural differences between groups, such as sex-based differences or self-selection that occurs in natural settings, the research is said to be non-experimental in nature. Because the archival data used for this study includes groups defined by natural differences (male versus female) and categories that the students self-select (type of school, enrollment modality) this study uses a non-experimental design. The researcher cannot manipulate variables of sex and student enrollment, nor would it have been feasible or ethical for the researcher to make enrollment choices on behalf of students.

### **Population and Sample**

The population for this study included student-parents who enrolled in a publicly funded college or university in Texas during the Fall 2024 term. These student-parents were identified as parents of dependent children by their institutions in response to new state reporting requirements (Shaw, 2023). Most of the participating institutions indicated that student-parents included in the report are based on self-reports of the students. According to NCES, there are 52 Community Colleges, and 50 Public Universities or University Systems in Texas (U.S. Department of Education, 2022). The sample for this study was composed of students who were enrolled in the Fall 2024 term and were identified by participating schools as student-parents. The number of student-parents in each categorical variable was collected by the postsecondary institution they attended to meet the reporting requirements of HB 1361 (Shaw, 2023). This sizeable sample of the population of student-parents attending state funded IHEs in Texas was appropriate for this study, because it allows for assessment of the relationship between the student-parents' sex and the educational choices student-parents made as they enrolled in Texas public postsecondary institutions. This allows for additional and new insight into a specific

population that has not historically been well researched. This allowed this study to expand what is known about how mothers and fathers who are student-parents engage with higher education.

Table 1 below contains descriptive statistics demonstrating the size, demographic, and enrollment distribution for the sample of students collected for this study.

Table 1

*Descriptive Statistics for all Reported Student-parents*

<b>Frequency Table for Respondents</b>		<b>2-year</b>		<b>4-year</b>		<b>Row Totals</b>	
<b>Sex</b>		<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>	<b>#</b>	<b>%</b>
	Female	4715	73%	439	85%	5154	73%
	Male	1779	27%	80	15%	1859	26%
	Other	1	0%		0%	1	0%
<b>Enrollment Modality</b>							
	Fully Online	2858	44%	331	64%	3189	45%
	Not Fully Online	3637	56%	188	36%	3825	54%
<b>Race/Ethnicity</b>							
	American Indian or Alaskan Native	22	0%	2	0%	24	0%
	Asian	353	5%	2	0%	355	5%
	Black or African American	1069	16%	58	11%	1127	16%
	Hispanic or Latino	2325	36%	208	40%	2533	36%
	International	72	1%	1	0%	73	1%
	Multiracial	226	3%	13	3%	239	3%
	Native Hawaiian or Other Pacific Islander	14	0%		0%	14	0%
	Unknown or Not Reported	83	1%	7	1%	90	1%
	White	2331	36%	228	44%	2559	36%
<b>Enrollment Level</b>							
	Full-Time	1935	30%	287	55%	2222	31%
	Part-Time	4560	70%	232	45%	4792	67%
<b>Totals</b>		<b>6495</b>		<b>519</b>		<b>7014</b>	

## Materials or Instrumentation

Prior to this study, the author requested information from the Texas Higher Education Coordinating Board (THECB) detailing what types of information were reported to them, with

what level of disaggregation. This was done as a means of assessing the feasibility of this study. The THECB response indicated that aggregate counts of student-parents attending a Texas Public IHE could be obtained, disaggregated by the following variables: institution, age group, sex, race/ethnicity, enrollment status (full-time vs. part-time), and student status (transfer-in, withdrawn, or graduating (per term)). While the aggregate information about student-parent institution and sex would be relevant and sufficient to answer the first research question, the THECB's data set would be unable to answer the second research question about online learning preferences. For that reason, the author requested archival data, including the enrollment modality from eight Texas universities and fourteen Texas community colleges via each institution's public information request process. The data was expected to be readily available archival records for each individual institution, considering they must report all fields except the enrollment modality to the THECB annually. Enrollment modality was presumed to also be readily available, as it is a common data point higher education institutions collect and report for all of their enrolled students. Enrollment modality may have been classified as fully online, in-person, or mixed. At least one school only classified enrollment as in-person or online, so the researcher reclassified enrollment for other schools into binary categories: either fully online or not fully online (including in-person or mixed enrollment).

### **Operational Definitions of Variables**

This nonexperimental quantitative study sought to determine if there is a statistically significant sex-based difference in the way student-parents engage with institutions of higher education (IHEs) in the state of Texas. Specifically, this study seeks to assess whether mothers and fathers enroll in different types of institutions (community colleges versus universities), and if they enroll in fully online courses at different rates. Because of the archival nature of this

study, many of the variables used will be defined according to the standards and norms used by the Texas public IHEs that generated and own the records. The operational definitions of sex, race/ethnicity, institution type, and enrollment modality are defined below.

### ***Sex***

In this study, sex is used as the primary variable differentiating the independent groups. Sex was classified as either male or female, in response to and consistent with how sex is identified in official contexts in the state of Texas. In Texas, official documents and records include only male or female sex categories, according to that which was assigned to an individual based upon the appearance of their genitalia at birth. The THECB Parenting Student Survey (included in [Appendix A](#)), asked institutions to report the number of student-parents using the following three categories: male, female, and “unknown or not reported.” Public information requests submitted for this study requested the reporting institutions to provide sex categories consistent with the THECB’s sex definitions and allowed for the inclusion of the third “unknown or not reported” category, however only one student with this third sex category was identified in all responsive records received (THECB, 2024b). That single student was excluded from this study, because of insufficient representation for analysis.

### ***Race/Ethnicity***

For college students in Texas, race and ethnicity are frequently combined and reported out as a single race/ethnicity category. These categories are self-selected by the students as they apply for admission, and as they apply for financial aid, if they apply for financial aid. This study adopted the same definitions for a student-parent’s race/ethnicity as they are defined in the (2023) THECB *Glossary of Terms*. The THECB definitions of race/ethnicity groups are consistent with the definitions included in the THECB *Parenting Student Survey* (THECB,

2024a), and so are assumed to be readily available in the archival records. The available categories include: African American, American Indian/Alaskan Native, Asian, Hispanic, Native Hawaiian / Pacific Islander, White, Multiracial, International, and Unknown/Not Reported. According to THECB (2024b) communication, race/ethnicity is determined using the following rules, in order of precedence:

*-If "International" is selected, then the reporting category is "International," regardless of other race or ethnicity selections.*

*-If more than one race is selected (excluding "International" and " Unknown or Not Reported"), then the reporting category is "Multiracial."*

*-Any student with a single race selected should be reported in the selected category. (THECB, 2024b, p. 2).*

### ***Institution Type***

The study was interested in only two categories of Texas public IHEs and grouped these institutions as either 2-year or 4-year colleges. The institutions in Texas that are required to collect and report student-parent data fall into four different categories defined in Texas Education Code, §61.003. They are “public junior colleges” (subsection 2), “general academic teaching institution[s]” (or GAIs) (subsection 3), “public senior college or universit[ies]” (subsection 4), “medical and dental unit[s]” (subsection 5), “other agenc[ies] of higher education” (subsection 6), and “public technical institute[s]” (subsection 7) (Texas Education Code §61.003). All of these are listed in subsection 8 as “Institutions of Higher Education” in Texas (Texas Education Code §61.003). For the purposes of this study, data was only requested from institutions identified in subsections 2, 3, 4, and 7, in order to limit the possible student sample to students enrolled in 2-year and 4-year undergraduate degree-granting institutions.

Institutions that only function as medical schools and/or dental schools were excluded from data collection efforts. Institutions identified as “other agencies of higher education”

generally include museums and research facilities and were excluded from this study. For the purposes of this study, Texas' public IHEs will be classified according to the predominant credentials they offer. Because the predominant credential offered by IHEs defined as "public junior colleges" and the two schools listed as "public technical institute[s]" is an associate's degree, or a certificate requiring fewer than 120 college credit hours, these will be classified as 2-year institutions or as community colleges. All other IHEs not otherwise excluded as described above provide bachelor's degrees as their primary credential and will be identified as 4-year institutions or universities.

### ***Enrollment Modality***

Online enrollment has been defined in different ways in the published research. The operational definition to be used in this study differs from the student-course level enrollment modality used in other reviewed studies of online enrollment and withdrawal (Hatchey, et al., 2023; Wladis, et al., 2023). Wladis, et al. (2023) calls a student an online student if they take even one fully online course. Alternately, Frikha, et al. (2024) and Klinke, et al. (2024) identified students who enrolled in programs and schools that were offered entirely online as online students.

Enrollment modality for any given student may vary per student-course combination. If a student takes multiple courses in a term, they may be enrolled in some online courses and others in a hybrid or in-person format. This study asked responding institutions to identify an overall composite modality for each student's Fall 2024 enrollment, which was used to describe the student-parents' preferred enrollment modality as demonstrated by their Fall 2024 enrollment. Clear definitions of enrollment modality used in this study were provided to the institutions from whom archival data was requested, to ensure consistent reporting of student modality.

The requests for archival records included a request for a student-level field indicating if a student attends all classes via a fully online modality or if a student enrolls in any classes that require on-campus in-person attendance for the Fall 2024 term. It was hypothesized that sex-based features of social control (such as the inability to attend in-person courses due to family and care-related demands) may contribute to different enrollment preferences for mothers and fathers. For this study, any course that is not available to take from a remote location (whether synchronous or asynchronous) was identified as an in-person course, due to the assumption that the student would be available to attend on campus meetings or activities. Any student whose Fall 2024 enrollment in one of the responding Texas public IHEs in Fall 2024 included only online courses were identified as a fully online student. Any student who was enrolled in even one class requiring in-person attendance (including hybrid or hy-flex courses,) was categorized as having “in-person or mixed enrollment” in this study.

In short, if students take any in-person classes they will not be considered to have enrolled fully online. Modality in this study is classified as fully online or not fully online (in-person or mixed). In the event an IHE reported a student as having enrolled in a mixture of in-person and online courses, the student was classified as attending not-fully online, because they took at least one course that would have required them to attend in person. The choice to combine students who have fully in-person enrollment or mixed enrollment is based upon the expectation that any student with an in-person course would need to be near their campus and able to attend classes at a particular time and place; an availability that may not exist for some student-parents.

## Study Procedures

For this study, the researcher submitted public information requests for de-identified student-level archival data for the institution's student-parent population pertaining to their Fall 2024 student-parent population information to a total of twenty-two Texas public IHEs, including eight 4-year institutions and fourteen 2-year institutions. These public requests for information have a requirement for the institution to respond within 10-day timeframe. When student-level data was provided in response to these public requests for records, the report included a de-identified list of student-parents enrolled in the Fall 2024 term including:

- Student-parent's sex
- Student-parent's race/ethnicity group
- Student-parent's enrollment modality category (fully online / mixed enrollment / fully in-person enrollment)
- The student-parent's marital or household status (if available)
- The student-parent's percentage of Fall 2025 courses taken online (if available)
- Student-parent's full-time or part-time (FT/PT) enrollment status for Fall 2024 term
- Number of semester credit hours (SCH) the student-parent enrolled in for the Fall 2024 term
- Highest credential the student-parent was actively pursuing as of Fall 2024 Official Reporting Date (ORD) (certificate level 1 or 2 / associate degree / baccalaureate degree / post-baccalaureate certificate / graduate degree)

Some public institutions have policies restricting the provision of student-level information, or information that may make students individually identifiable to outside entities. With this in mind, the researcher included an alternative reporting option including a template workbook ([Appendix C](#)) with the requested fields to make clear the need for disaggregated small cell counts which allow for disaggregation across multiple variables, including student-parents' sex, enrollment modality, and race/ethnicity categories fields.

## Data Collection and Analysis

The researcher submitted public information requests to twenty-two Texas public colleges and universities. Student-level or appropriately disaggregated data was received from three universities and six community colleges from various locations in Texas. The data received included records for 7,014 students, a number that exceeds the minimum target sample size of 2,000 students. The researcher combined the data provided by the partnering institutions into a master data file, expanding any small cell aggregate reports to student level according to the available categories.

When the master data set was compiled and records for a sufficiently large population of student-parents had been collected, an obvious difference between the number of student-parents enrolled in a community college and those enrolled in a university appeared to indicate the community college students had been oversampled. 93% of the student-parents in the study sample were reported by 2-year institutions, while only 7% of the study sample were reported by 4-year institutions (see Table 2 below).

Table 2

### *Reported Student-parent Distribution by Institution Type*

<b>Institution Type</b>	<b>Student-Parents Reported</b>	<b>Percentage of Study Sample</b>
Community Colleges	6,495	93%
Public Universities	519	7%
<b>Study Sample Total</b>	<b>7,014</b>	

A public information request was then made to the Texas Higher Education Coordinating Board (THECB) for a report including the most recent available population data to compare the distribution by institution type for the study sample with the most recently reported distribution

for the population of student-parents attending Texas public institutions of higher education. In the Spring 2024 term, the first term in which Texas public IHEs were required to report descriptive information to the THECB about their student-parent population, there appears to be a similar but less severe skew toward community college enrollment for student-parents attending public institutions of higher education in Texas.

Table 3

*THECB Reported Spring 2024 Student-parent Population by Institution Type*

<b>Institution Type</b>	<b>Parenting Students Reported in Spring 2024</b>	<b>Percentage of Last Reported Population</b>
Community Colleges	65,817	71%
Public Universities	26,341	29%
<b>Total of 2-yr + 4-yr</b>	<b>92,158</b>	

The researcher then considered pulling a stratified random sample of the study sample for analysis. In order to obtain a representative stratified sample of at least 2,000 student-parents, the researcher needed more than 29% of that sample or 580 student-parents available for sampling from universities. The study sample obtained from universities was below this number, which did not allow for random sampling from both institution types. For this reason, the researcher did not sample from the archival records received and instead used the entire sample.

One student was reported by one institution to have an “unknown or not reported” sex or gender category. This student was included in the descriptive statistics about all student-parents reported in the archival records obtained for this study. That one student was excluded from the analysis, due to insufficient representation in the “unknown or not reported” sex category.

Statistical analyses for this study were performed using IBM SPSS Statistics (Version 30). Using the student level data in the master data set ( $n=7013$ ), the researcher created a

descriptive cross-tabulation table for each of the research questions showing the frequency for each combination of the variables. An example of one of these cross tabulated tables is included below with the distributed counts of male and female student-parents across the one other variable, which is the structure needed for a chi-square analysis to test the independence of the student-parent's sex and their educational choices. The student-level data in the master file were sufficient in number and useful for answering each of the research questions in order to provide new insights into the relationship between student-parents' sex and the ways they pursue higher educational goals.

Chi-square tests for independence were used as inferential tests for research questions 1 and 2. The chi-square test for independence, also referred to as the Pearson chi-square, is frequently used in social sciences, and business contexts to analyze whether a relationship or association exists between two nominal variables (Privitera, 2020). This test is non-parametric in nature, meaning none of the variables are required to be structured as ratios or intervals, and there is no assumption that the distribution of the population is normal (Kline, 2005). Developed by Karl Pearson in the early 20th century, this test is particularly effective for large sample sizes and is frequently applied to contingency tables (Privitera, 2020). This is an appropriate test for this study, because the variables of interest (sex, institution type, and enrollment modality) are all binary in structure, non-overlapping or independent, and nominal or categorical in nature (Privitera, 2020).

Table 5 below provides an example of the cross tabulated tables that will be used for the statistical tests reported in chapter four. These tables include the actual counts of student-parents in this study sample with the expected counts that might be expected in each quadrant if the decision to attend a 2-year or 4-year school was independent of student-parent's gender. Also

included in this cross tabulated table is the proportion of students by sex attending two-year versus four-year institutions, which will be used for proportion testing for research question three, in the event that the chi-square test of independence finds student-parents' institution type is not independent of their sex.

Table 4

*Sample Cross Tabulated Table for Research Question 1*

**Institution\_Type \* Sex or Gender Crosstabulation**

		Sex of Student-parent			
		Female	Male	Total	
Institution_Type	2-year	Count	4715 <sup>a</sup>	1779 <sup>b</sup>	6494
		Expected Count	4773	1721	6494
		% within Sex or Gender	91.5%	95.7%	92.6%
	4-year	Count	439 <sup>a</sup>	80 <sup>b</sup>	519
		Expected Count	381	138	519
		% within Sex or Gender	8.5%	4.3%	7.4%
Total		Count	5154	1859	7013
		Expected Count	5154	1859	7013
		% within Sex or Gender	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Sex or Gender categories whose column proportions do not differ significantly from each other at the .05 level.

Chi-square tests for independence were used as inferential tests for research questions one and two. The chi-square test for independence, also referred to as the Pearson chi-square, is frequently used in social sciences, and business contexts to analyze whether a relationship or association exists between two nominal variables (Privitera, 2020). This test non-parametric in nature, meaning none of the variables are required to be structured as ratios or intervals, and there is no assumption that the distribution of the population is normal (Kline, 2005). Developed by Karl Pearson in the early 20th century, this test is particularly effective for large sample sizes and is frequently applied to contingency tables (Privitera, 2020). This is an appropriate test for this study, because the variables of interest (sex, institution type, and enrollment modality) are all

binary in structure, non-overlapping or independent, and nominal or categorical in nature (Privitera, 2020).

Additional inferential tests for this study used the proportions in these tables for two independent samples tests of proportions, which allow for assessing whether the proportion of women in this sample attending community college (compared to university) is statistically significantly different than the proportion of men in this sample attending community college. A test of proportions assumes there is a relationship between the student-parents' sex and their enrollment behaviors. The chi-square analyses, the findings of which will be discussed in chapter four, do indicate there is a relationship between the student-parents' sex and their choices of institution and modality. Based on the assumption of association (or non-independence) being met, tests of proportions were performed for research questions three and four. Because research questions three and four are focused on whether the proportion of female student-parents attending community colleges or taking all of their courses online differ significantly from the proportion of male student-parents who make the same educational choices, two independent sample tests of proportions are appropriate and relevant for use. The samples are independent, in that student-parents in the two groups do not overlap (male and female student-parents) and another binary non-overlapping variable (community college versus university enrollment; "fully online" versus "in-person or mixed enrollment"). For the last two research questions, the researcher tested for differences in the proportion of male and female student-parents who enroll in a community college (versus a four-year university), and whether male and female student-parents pursue their education via fully online or in-person or mixed enrollment modalities.

The two-sample test for proportions used to evaluate research questions three and four, is a parametric test, which requires an assumption of normal distribution be met. This requirement

is met by the use of the null hypothesis which is tested against the distributions observed. The null hypothesis in both research question three and four assume that the differences in proportions between the sexes (which are natural ratios) are clustered around 0.0. The two-proportion test is a mathematically equivalent test to Karl Peterson's chi-square test (Sauro & Lewis, 2012; Turhan, 2020). In a two-proportions test, as long as each sample has at least ten instances in each sample and category of the variable of interest, the test can be used (Agresti & Franklin, 2007). As such, the test of proportions is an appropriate test for this study, whose sample is larger than the requisite minimum. Proportion hypothesis test designs are appropriate and closely aligned with the purpose and research questions for this study.

In order to reduce the risk of a Type I error, Bonferroni corrections will be used (Bland & Altman, 1995). Type I errors (which result when a researcher finds significant results when the null hypothesis should have been accepted) (Haynes, 2013). The use of a Bonferroni correction is common when multiple inferential tests are run on the same sample (Haynes, 2013). As noted in Bland and Altman (1995), Bonferroni corrections are commonly estimated using the following equation:

$$(level\ of\ significance\ desired) / (number\ of\ tests\ run\ on\ the\ sample).$$

In this case, since four tests will be run on the same study sample, the Bonferroni correction takes the standard significance level of 0.05 and divides it by the number of tests performed on the sample population is calculated as follows:

$$(0.05 / 4) = 0.0125$$

Therefore, a p-value of 0.0125 will be required to avoid rejecting the null hypothesis when it should be accepted in order to conclude that any statistically significant sex-based differences exist in the rates at which student-parents choose to enroll in community colleges

(rather than universities) or enroll in online modalities in their pursuit of post-secondary education.

### **Assumptions**

This study assumed that the archival data provided by participating institutions of higher education is accurate and complete, according to the definitions provided above. The rationale for this assumption is that the institutions from whom the archival records were obtained are the custodians and owners of their student data. Each participating institution develops their own methods for collecting and documenting student demographics and enrollment. This study assumed the student-parent's sex and enrollment modality provided by their IHE is accurate. There are two recognized gender categories for Texas IHEs, with a third "unknown or not reported" category sometimes used to document either non-binary gender identity or missing data related to a student's sex. This third category has the potential to perpetuate erasure via structural failure to recognize non-binary individuals' gender status (Polihronakis, et al., 2016; Vaccaro & Koob, 2019). This is a policy issue, however, and remains outside of the scope of this study. The researcher sought to mitigate the risks of inconsistent definitions for archival data received by participating institutions by providing clear definitions in the initial request for data, and by making herself available for any follow up or clarification needed as the institutions prepared the requested data.

Additionally, this study assumed the student-parents' enrollment modality was student selected, and indicative of the students' preferences for the Fall 2024 term. It is possible that a student may have enrolled in a course with a non-preferred modality if it was the only option available for a necessary course. The potential for this a student's selected course modality in a particular term to not accurately represent their enrollment preferences could be evaluated by

future studies which seek additional information about the availability of comparable courses across modalities and times, but this is not feasible for and is out of the scope of this study.

Questions of course availability and definitions of comparable courses were outside the scope of this study, as they would introduce multiple additional variables, including course time, course location (in cases where an institution has multiple campuses), and the potential influence of a particular instructor.

### **Limitations**

With the recency of the Texas law requiring IHEs to collect and report data related to their student-parent population, it is possible institutions may have collected student-parent data in different ways. For example, some schools may be collecting parenting data from students using a survey tool, whereas other institutions may mandate all students to respond to questions about their parent status as they register for courses. This may make it difficult to the data received from different institutions. Archival records were only requested from schools who were known or expected to routinely and consistently collect student-level identifiable records about their student-parents.

### **Delimitations**

Using the Texas Public IHEs as delineated in the Texas Education Code, §61.003, the institutions will be limited to only 2-year and 4-year institutions, excluding medical and dental schools, and excluding University System-owned museums or other institutions. Data collected from the participating institutions will be limited to students pursuing certificates, associates degrees, and bachelor's degrees. Any student-parents pursuing a graduate or post-graduate credential will be excluded from the study population. The archival records used for this study

are dependent on the data collection and retention procedures employed by the different state funded colleges and universities from whom it was collected.

### **Ethical Assurances**

The ethical risks for the subjects of this study were minimized by the archival nature of the study. The data for the student-parents in focus here has already been collected by their universities and has or will be reported to the Texas Higher Education Coordinating Board (THECB). No information was requested or obtained that would make individual students individually identifiable. In this study, there was no intention of contacting any students or human subjects directly. For this reason, the risk to human participants is minimal. There is some risk that the single non-binary student-parent included in the received archival records will experience their omission from the analysis as a microaggression or erasure (Polihronakis, et al., 2016; Vaccaro & Koob, 2019). While excluding non-binary students in gender or sex-related studies is not uncommon, it does perpetuate a hegemonic gender binary in published research and may further marginalize or render this population invisible.

### **Summary**

Colleges and universities are interested in better understanding and improving services to student-parents. Unfortunately, college and university students who are parents have not consistently been identified in university records, which has limited both historical research and our understanding of student-parents. The newly available data about student-parents attending state-funded institutions of higher education in Texas used in this study allowed for new and improved insights into the size, composition, and behavior of the population of student-parents attending Texas' colleges and universities. This quantitative, archival study made use of this newly available data about student-parents from a convenience population of archival records

from 2-year and 4-year institutions of higher education in the state of Texas. This study was non-experimental in nature, because it used existing data and categories that are natural (gender categories) or student-selected (enrollment modality, and IHE attended), rather than variables that could be controlled or manipulated by the researcher.

The obtained de-identified, student-level, archival records were coalesced and analyzed to assess for a relationship between the sex and enrollment behaviors of student-parents. Then these records were used to assess for sex-based differences in the proportion of student-parents opting to enroll in community colleges over universities or in the proportions of students enrolling in fully online courses. The records collected were analyzed using two chi-square tests for independence, and two different two-sample tests of proportions. These analyses allowed for inferences to be made about whether male and female students attending public colleges and universities in Texas appear to make different choices about the type of institution they opt into, and the modality for the courses they select as they pursue higher educational goals.

## Chapter 4: Findings

### Introduction

The problem addressed by this study is that while student-parents make up a substantial proportion of the college-going population, there is a need for additional research with larger and more diverse populations, as student-parents are often overlooked or presented as an afterthought in research about student populations, especially reports related to non-traditional students (Meza, 2019; Navarro-Cruze, et al., 2023; Sanborn, et al., 2024; Thomas, et al., 2021). The purpose of this non-experimental quantitative study sought to determine whether there are sex-based differences for student-parents in their choices about whether to attend a university or community college and whether to enroll in fully online or in-person classes or programs. The theoretical framework posited that gendered social control may be affecting higher education engagement for student-parents by presenting different reinforcing social bonds, such as experiences of belonging or negative social consequences according to sex. This theoretical framework allowed for integrated exploration of cultural and structural controls like gender norms as possible factors in how student-parents access and navigate higher education systems.

This chapter will begin with an exploration the preliminary questions about whether the type of institution student-parents choose to attend is independent of or related to their sex. Then it will seek to determine if the type of course modality the student parent chooses appears to be related to or independent of their sex. In the event that either of these exploratory analyses find associations between a student-parent's sex and their institution choice or course modality, then the necessary assumption of association will be met to check for statistically significant sex-based differences in the choices student-parents make as they pursue higher education at Texas' public institutions of higher education.

## **Validity of the Data**

This study uses two different types of statistical tests in order to answer the four research questions and to test the four hypotheses associated with the research questions. The first pair of inferential tests are chi-square tests of independence, used to determine whether sex and enrollment choices are associated for these student-parents. The chi-square test for independence, also referred to as the Pearson chi-square, is regularly used in social sciences, and business contexts to analyze whether a relationship or association exists between two nominal variables (Privitera, 2020). Chi-square tests are non-parametric in nature, meaning none of the variables are required to be structured as ratios or intervals, and there is no assumption that the distribution of the population is normal (Kline, 2005). Developed by Karl Pearson in the early 20th century, this test is particularly effective for large sample sizes, such as the one obtained for this study and frequently makes use of contingency tables (Privitera, 2020). This is an appropriate test for this study, because the variables of interest (sex, institution type, and enrollment modality) are all binary in structure, non-overlapping or independent, and nominal or categorical in nature (Privitera, 2020).

The last two research questions and their associated hypotheses will use the two-independent samples test of proportions to test for differences in the proportion of male and female student-parents who enroll in a community college (versus a four-year university), and whether male and female student-parents pursue their education via fully online enrollment modalities at different rates. A test of proportions assumes there is a relationship between the student-parents' sex and their enrollment behaviors. The two-sample test for proportions is a parametric test, which means an assumption of normal distribution needs to be met. This requirement is met by testing the observed proportions against a null hypothesis. The null hypothesis in both research question

three and four assume that the differences in proportions between the sexes (which are natural ratios) are equal to or clustered around 0.0. The two-proportion test is mathematically equivalent to Karl Peterson's chi-square test (Sauro & Lewis, 2012; Turhan, 2020). The two-proportions test may be used when each sample has at least ten instances in each combination of the variables (Agresti & Franklin, 2007). Proportions may be useful for comparison when there is a known difference in the numbers of participants in each of the independent samples, such as the unequal distribution between the sexes of student-parents we find in this study. As such, the test of proportions is an appropriate test for research questions three and four and closely aligned with the purpose and research questions for this study.

### **Reliability of the Data**

The archival records used in this study were obtained via public information requests sent to a selection of publicly funded IHEs in the state of Texas between February 21, 2025, and March 31, 2025. This process may alternatively be called a Freedom of Information Act (FOIA) request, an Open Records Request, or a Public Information Request. Each institution had its own process for requesting such records. An example of the submitted public information request may be found in [Appendix B](#).

This study notes the assumption that the archival records about the student-parents enrolled at each of the reporting institutions are accurate and reliable. The institutions are mandated to identify student-parents at their institutions and to report about their student-parent population to the Texas Higher Education Coordinating Board according to the 2023 Texas House Bill 1361 (Shaw, 2023). However, in the data collection process, it became apparent that some institutions were unable to connect their identified student-parents to their enrollment records. Institutions who were unable to provide reliable student-parent information along with

enrollment information and demographic information were not included in this study. Some other institutions provided data about their student-parents in aggregated forms that included small cell suppression, wherein fewer than five students would not be reported in the counts. Institutions who provided counts with small cell suppression or broadly aggregated records were excluded from this study. Most participating institutions indicated their student-parent records are based upon students' self-report.

## **Results**

The first part of this study dealt with the initial questions about whether there is or is not an association between the sex of student-parents and their institution choice and between their sex and their enrollment modality of choice. Because the archival data used for this study is newly available, this is a logical first exploratory step in expanding knowledge about the dynamics of how student-parents pursue higher education goals. Chi-square tests for independence were used to assess for relationships between student-parent sex and institution type, and between student-parent sex and their enrollment modality. When these results were reviewed, additional tests of proportions to determine whether female student-parents were more likely to attend community colleges and whether female student-parents were more likely to choose online enrollments than their male peers.

Because there were four tests run on the study sample, Bonferroni corrections were used to reduce the risk of reporting significant findings when the null hypothesis should have been accepted (Bland & Altman, 1995; Haynes, 2013). The use of a Bonferroni correction is common when multiple inferential tests are run on the same sample in order to mitigate risk of type I errors (Bland & Altman, 1995; Haynes, 2013). As noted in Bland and Altman (1995), Bonferroni corrections are commonly estimated using the following equation:

*(level of significance desired) / (number of tests run on the sample).*

In this case, four tests will be run on the same study sample. Therefore, the Bonferroni correction takes the standard significance level of 0.05 and divides it by the number of tests performed on the sample population is calculated as follows:

$$(0.05 / 4) = 0.0125$$

For this study, a p-value of 0.0125 will be required to avoid rejecting the null hypothesis when it should be accepted in order to conclude that any statistically significant sex-based differences exist in the rates at which student-parents choose to enroll in community colleges (rather than universities) or enroll in online modalities in their pursuit of post-secondary education.

The population for this study is notably large and diverse. Descriptive statistics for the study population are included below.

Table 5

*Descriptive Statistics for the Study Sample of Student-parents Attending Public Institutions of Higher Education in Texas Public Colleges and Universities*

Frequency Table for Study Sample		2-year		4-year		Row Totals	
Sex		#	%	#	%	#	%
	Female	4715	73%	439	85%	5154	73%
	Male	1779	27%	80	15%	1859	27%
<b>Enrollment Modality</b>							
	Fully Online	2857	44%	331	64%	3188	45%
	Not Fully Online	3637	56%	188	36%	3825	55%
<b>Race/Ethnicity</b>							
	American Indian or Alaskan Native	22	0%	2	0%	24	0%
	Asian	353	5%	2	0%	355	5%
	Black or African American	1069	16%	58	11%	1127	16%
	Hispanic or Latino	2325	36%	208	40%	2533	36%
	International	72	1%	1	0%	73	1%
	Multiracial	226	3%	13	3%	239	3%
	Native Hawaiian or Other Pacific Islander	14	0%		0%	14	0%
	Unknown or Not Reported	83	1%	7	1%	90	1%
	White	2330	36%	228	44%	2558	36%
<b>Enrollment Level</b>							
	Full-Time	1935	30%	287	55%	2222	32%
	Part-Time	4559	70%	232	45%	4791	68%
<b>Totals</b>		<b>6495</b>		<b>519</b>		<b>7013</b>	

**Research Question One/Hypothesis**

If gendered social control theory had no relevance to a student-parent's enrollment, we might expect to find that student-parents' sex is independent of their higher education institution type. As a reminder, research question one asks whether the student-parents' sex and their institution type are independent or associated in some way:

**RQ1:** Are sex and institution type independent variables for student-parents who are pursuing higher education at public institutions of higher education in Texas?

**NH1:** Whether a student-parent attends a community college or university in Texas is independent of the student-parent's sex.

**AH1:** A student-parent's choice of Texas public institution type (community college versus university) is associated with the student-parent's sex.

Table 7 below shows the cross tabulated table with the aggregated counts of student-parents in this study sample. SPSS was used to calculate and include expected counts that might be expected in each quadrant if the decision to attend a 2-year or 4-year school was independent of student-parent's sex. Table 7 also includes the proportion of students by sex attending two-year versus four-year institutions, which will be used in the two-proportions test for research question three, if the chi-square test of independence demonstrates student-parents' selection of institution type is not independent of their sex.

Table 6

*Cross Tabulated Table for Research Question 1: Institution Type by Sex*

		Institution_Type * Sex or Gender Crosstabulation		
		Sex of Student-parent		Total
Institution_Type		Female	Male	
2-year	Count	4715 <sup>a</sup>	1779 <sup>b</sup>	6494
	Expected Count	4773	1721	6494
	% within Sex or Gender	91.5%	95.7%	92.6%
4-year	Count	439 <sup>a</sup>	80 <sup>b</sup>	519
	Expected Count	381	138	519
	% within Sex or Gender	8.5%	4.3%	7.4%
Total	Count	5154	1859	7013
	Expected Count	5154	1859	7013
	% within Sex or Gender	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Sex or Gender categories whose column proportions do not differ significantly from each other at the .05 level.

A chi-square test of independence was run to assess the relationship between a student-parent's sex and their institution type. In a chi-square test of independence, we begin by calculating observed counts of students in each combination of variables. These observed counts are then compared to the counts that would be expected if the variables were independent and the

likelihood of any combination of variables was randomized. These expected counts are a randomized estimate of the distribution that one would expect to find if the null hypothesis was true. For this reason, we are testing against the null hypothesis, which takes a position of sex and gender being independent or having no influence on which type of institution a student-parent chooses to enroll in.

Table 7 below shows the results of the chi-square test of independence for student-parent sex by institution type. Because the two variables are both binary in nature, the degree of freedom is equal to 1. The chi-square formula is:  $\chi^2 = \sum(O_i - E_i)^2/E_i$ , where  $O_i$  = observed count and  $E_i$  = expected count. The result of the chi-square test for research question one showed a significant relationship between student-parents' sex and their institution type, as shown in Table 7. This was significant beyond the .0125 Bonferroni corrected threshold discussed above:  $\chi^2 (1, N=7013) = 35.407, p > .001$ .

Table 7

*Chi-square Analysis Results for Research Question 1*

<b>Chi-Square Tests</b>					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	35.407 <sup>a</sup>	1	<.001		
Continuity Correction <sup>b</sup>	34.795	1	<.001		
Likelihood Ratio	39.294	1	<.001		
Fisher's Exact Test				<.001	<.001
N of Valid Cases	7013				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 137.58.

b. Computed only for a 2x2 table

***Research Question Two/Hypothesis***

For research question two, another cross tabulated table was developed to show the counts of student-parents in this study sample with counts that might be expected in each quadrant if the decision to enroll fully online or not fully online was independent of a student-parent's sex. Again, in this table you will find the proportion of students by sex who are enrolled in fully online courses or not fully online courses, which will be used later for proportion testing in research question four. Table 8 below will be used to answer research question two below, which includes the following research question, null hypothesis, and alternative hypothesis:

***RQ2:*** Are sex and enrollment modality independent variables for student-parents pursuing higher education at public institutions of higher education in Texas?

***NH2:*** Student-parents' choice to enroll fully online at public institutions of higher education in Texas is independent of their sex.

***AH2:*** Student-parents' choice to enroll fully online at public institutions of higher education in Texas is associated with their sex.

Table 8

*Cross Tabulated Table for Research Question 2: Modality by Sex*

		<b>Enrollment_Modality * Sex of Student-parent</b>		
		Sex or Gender		Total
Enrollment_Modality		Female	Male	
Fully Online	Count	2534 <sub>a</sub>	654 <sub>b</sub>	3188
	Expected Count	2343	845	3188
	% within Sex or Gender	49.2%	35.2%	45.5%
Not Fully Online	Count	2620 <sub>a</sub>	1205 <sub>b</sub>	3825
	Expected Count	2811	1014	3825
	% within Sex or Gender	50.8%	64.8%	54.5%
Total	Count	5154	1859	7013
	Expected Count	5154	1859	7013
	% within Sex or Gender	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Sex or Gender categories whose column proportions do not differ significantly from each other at the .05 level.

SPSS flagged the counts as statistically significant by sex here. A chi-square test of independence was run to evaluate the relationship between a student-parent's sex and enrollment modality during the fall 2024 semester. Table 9 below shows the SPSS generated results of the chi-square test of independence for student-parent sex by instructional modality. The two-by-two table yields a degree of freedom equal to one. The result of the chi-square test for research question two showed a significant relationship between student-parents' sex and their instructional modality, as shown in table 9. This was also significant beyond the .0125 Bonferroni corrected threshold discussed above:  $\chi^2(1, N=7013) = 107.779, p > .001$ .

Table 9

*Chi-square Analysis Results for Research Question 2*

<b>Chi-Square Tests</b>					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	107.779 <sup>a</sup>	1	<.001		
Continuity Correction <sup>b</sup>	107.215	1	<.001		
Likelihood Ratio	109.289	1	<.001		
Fisher's Exact Test				<.001	<.001
N of Valid Cases	7013				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 845.07.

b. Computed only for a 2x2 table

***Research Question Three/Hypothesis***

Based on the statistical confirmation found in response to research question one, demonstrating with statistical significance that student-parents' sex is not independent of their institution type, the assumption of association is met between the two binary variables needed in order to use the proportions calculated in table 6 above for a two independent sample test of proportions. The study sample contains two independent populations (male student-parents, and female student-parents). The two-sample test of proportions will allow for the comparison of the proportions of students attending community college by sex, to assess for whether there are sex-based differences between men and women who are student-parents attending a Texas public college or university. Research question three and the affiliated null hypothesis and alternate hypothesis are:

**RQ3:** Is the proportion of female student-parents who attend a Texas public community college different from the proportion of male student-parents who attend Texas public community college (versus a Texas public four-year university)?

**NH3:** The proportions of female student-parents who attend a Texas public community college are not statistically significantly different from that of male student-parents attending a Texas public community college (versus a Texas public four-year university).

**AH3:** The proportions of female student-parents who attend a Texas public community college is statistically significantly different from that of male student-parents.

Table 10 below provides the statistics used for the two-sample test of proportions showing the proportion of female and male student-parents attending a community college in Texas. Because the research question holds female student-parents attending community college in focus, success was defined as enrollment in a community college (rather than a university).

Table 10

*Independent Samples Group Statistics for Research Question 3*

**Independent-Samples Proportions Group Statistics**

	Sex or Gender	Successes	Trials	Proportion	Asymptotic Standard Error
Community_College_Student = Yes	= Female	4715	5154	.915	.004
	= Male	1779	1859	.957	.005

**Independent-Samples Proportions Confidence Intervals**

	Interval Type	Difference in Proportions	Asymptotic Standard Error	95% Confidence Interval of the Difference	
				Lower	Upper
Community_College_Student = Yes	Agresti-Caffo	-.042	.006	-.054	-.030
	Newcombe	-.042	.006	-.054	-.030

The proportions in Table 10 are compared between the two independent populations (male student-parents and female student-parents) in independent samples proportions test illustrated in table 11 below. The differences in proportions between female and male students

showed that the proportion of female student-parents attending Texas public community colleges was 4.2% lower than their male peers. Female student-parents had statistically significantly lower rates of attending Texas public community college (-.042) than their male student-parent peers.  $z=-5.950$ ,  $p < .001$ .

Table 11

*Independent Samples Proportions Test for Research Question 3*

Independent-Samples Proportions Tests						
	Test Type	Difference in Proportions	Asymptotic Standard Error	Z	Significance	
					One-Sided p	Two-Sided p
Community_College_Student = Yes	Wald H0	-.042	.006	-5.950	<.001	<.001

***Research Question Four/Hypothesis***

Based on the statistical confirmation that student-parent sex is associated with their enrollment modality found in the analysis for research question two, the assumption of association between sex and enrollment modality is met and allows for the use a two independent sample test of proportions for research question four. The two independent samples are the same as those used in research question three: male student-parents, and female student-parents. The two-sample test of proportions allows for testing whether there are statistically significant sex-based differences between female and male student-parents enrolling in classes that are fully online. Research question four and the affiliated null hypothesis and alternate hypothesis are:

***RQ4:*** Does the proportion of female student-parents who attend a Texas public institution of higher education online (versus in person) differ from the proportion of male student-parents who attend a Texas public institution of higher education online?

***NH4:*** The proportions of female student-parents who attend a Texas public institution of higher education online (versus in person) are not statistically significantly different from that of male student-parents.

**AH4:** The proportions of female student-parents who attend a Texas public institution of higher education online (versus in person) is statistically significantly different from that of male student-parents.

Table 12 below shows the proportions of female and male student-parents attending Texas public institutions of higher education who take all of their courses in a fully online format. We see that 49.2% of female student-parents enroll in fully online coursework, compared to 35.2% of the male student-parents attending Texas public institutions of higher education.

Table 12

*Independent Samples Group Statistics for Research Question 4*

**Independent-Samples Proportions Group Statistics**

	Sex or Gender	Successes	Trials	Proportion	Asymptotic Standard Error
Enrollment_Modality = Fully Online	= Female	2534	5154	.492	.007
	= Male	654	1859	.352	.011

**Independent-Samples Proportions Confidence Intervals**

	Interval Type	Difference in Proportions	Asymptotic Standard Error	95% Confidence Interval of the Difference	
				Lower	Upper
Enrollment_Modality = Fully Online	Agresti-Caffo	.140	.013	.114	.165
	Newcombe	.140	.013	.114	.165

The proportions in table 12 are compared between the two independent populations (male student-parents and female student-parents) in independent samples proportions test illustrated in table 13 below. The differences in proportions between female and male students showed that the proportion of female student-parents enrolling only in online courses at these Texas public institutions of higher education was 14% higher than their male peers. Female student-parents had statistically significantly higher rates of enrolling in all of their classes in a fully online modality (.014) than their male student-parent peers.  $z=-10.382$ ,  $p < .001$ .

Table 13

*Independent Samples Proportions Test for Research Question 4*

<b>Independent-Samples Proportions Tests</b>						
	Test Type	Difference in Proportions	Asymptotic Standard Error	Z	Significance	
					One-Sided p	Two-Sided p
Enrollment_Modality = Fully Online	Wald H0	.140	.013	10.382	<.001	<.001

**Evaluation of the Findings**

As this paper seeks to explore and expand knowledge about the decisions students who are parents of dependent children (student-parents) make in pursuit of higher education goals, it uses newly available archival records that provide a large and broad sample of student-parents who were enrolled in a public community college or university in the state of Texas in the fall 2024 term. Using gendered social control theory as a theoretical framework, along with findings from extant research about how gender may inform different approaches and different experiences for male and female student-parents, this study hypothesized that female student-parents may be influenced to pursue higher educational goals in different ways than their male peers. These differences may show up as different social ties or connections, by way of having different experiences of belonging, or differing resonance with their identity as a student. Also informed by gendered social control theory, this study explores whether there may be social structures or controls that may lead to different educational pathways for mothers and fathers pursuing higher education at these Texas institutions. While this paper does not attempt to explore what social controls or social ties may influence sex-based differences in higher-education enrollment, prior research notes that mothers appear more readily identifiable in campus data, as they appear to have higher FAFSA application rates. Consistent with what is seen in other studies about higher education enrollment, female student-parents, like female

students overall, appear more likely than their male peers to pursue post-secondary education (Field, 2021; Sutton Trust, 2023). This study confirmed the larger number of female student-parents enrolling but provides new insights by confirming community college enrollment appears to be preferred over university enrollment by both male and female student-parents (Gardner, et al., 2022), and the student-parents' sex and institution choice are not independent of each other, as they have a statistically significant strong association. Previous research available indicates that female student-parents may have more barriers to enrollment in a traditional university program due to childcare needs and unequal care-giving burdens (Conway, et al., 2021; Wladis, et al., 2024b; Wladis, et al., 2024c). Research question three hypothesized female student-parents would attend community colleges at higher rates than male student-parents was found to be untrue. The association between the sex of the student-parent and the institution they attended was the opposite of that which was hypothesized in this study. A statistically significant higher proportion of male student-parents attended community college over universities at these Texas public institutions.

Additionally, the second research question in this study sought to assess whether a relationship existed between student-parents' sex and their decisions to take courses in an entirely online format or not. The chi-square analysis for research question two identified a statistically significant association between the student-parents' sex and their enrollment in fully online courses in the fall 2024 semester. On the topic of course modality preference, gendered social control theory and prior research might indicate that student-mothers may have additional care burdens and time-constraints that would make them more inclined to enroll in online courses or programs where these mothers may benefit from more schedule and location flexibility. In response to research question four, this study found female student-parents

attending Texas public colleges and universities in fall 2024 enrolled in fully online coursework at a significantly higher rate than their male student-parent peers.

### **Summary**

This study was developed with an awareness of the pervasive calls for additional research about student-parents using larger, more diverse populations, and providing new insights into how students who are parents of dependent children pursue higher education goals. While sex-based and gender-based differences have been observed in prior studies of college-going populations, the few studies that explored the relationship between sex and college going behavior for student-parents have been limited and based on estimates of the populations due to limited available data. Newly available archival records pertaining to student-parents attending public colleges and universities in Texas made it possible to explore the relationship between student-parent sex and their choices about institution type and online enrollment. For these student-parents attending public colleges and universities in Texas, their identity as a male or female appeared related to both their institution choice and their enrollment modality. The first research question used a chi-square test of independence to test if there is an association between the student-parent's sex and their enrollment in a community college versus a university and found a strong association between the students' sex and their institution type. The second research question used another chi-square test of independence to test for a relationship between the students' sex and their enrollment modality, again finding a strong association between the students' sex and enrolled modality.

Having found sex to not be independent of institution type or enrollment modality for these student-parents, this study then used independent sample tests of proportions to see if the rates were different in a statistically significant manner in research questions three and four. For

research question three, the two-sample test of proportions tested to see if female student-parents enrolled in community colleges at higher rates than their male peers. The proportions test indicated that male student-parents attended community college at statistically significantly higher rates than female student-parents. For research question four, another two-sample test of proportions was performed to test for differing rates of online enrollment between the sexes. The proportions test for research question four indicated that female student-parents in this sample opt into fully online enrollment at rates that were statistically significantly higher than their male peers.

## Chapter 5: Implications, Recommendations, and Conclusions

This study was situated in a context where newly collected archival data identifying student-parents (students who were parents of dependent children) enrolled in public institutions of higher education in the state of Texas made it possible to explore enrollment choices made by student-parents in these schools in ways that were not previously possible due to limited or only partially available information about student-parents among college-going populations. This study addressed the problem identified in chapter one: while student-parents make up a substantial proportion of college populations, there is a need for additional research with larger and more diverse populations. Student-parents are often overlooked or presented as an afterthought in research about non-traditional student populations (Meza, 2019; Navarro-Cruze, et al., 2023; Sanborn, et al., 2024; Thomas, et al., 2021). The purpose of this quantitative, non-experimental, archival study was to determine whether sex-based differences are observable in the enrollment choices student-parents make as they pursue higher education goals in Texas public colleges and universities. Specifically, this study looked for sex-based differences in whether these student-parents enroll in a university or a community college and whether they enroll in fully online or in-person classes or programs. The theoretical framework posited that gendered social control may explain cultural and structural controls that may inform how student-parents access and engage higher education systems.

For this study, the researcher requested archival records for de-identified student level enrollment records for student-parents who were enrolled in a public community college or university in Texas in the fall 2024 semester. Public information requests were submitted to twenty-two Texas public institutions of higher education via their institutional information request processes. Six community colleges and three universities provided responsive records

within the data collection period. The researcher combined the records received from these institutions into a single master record for use in this study, including 7,013 student-parent enrollment records. Two chi-square tests for independence were run to test whether the student-parent's sex was associated with the type of institution they were enrolled in, and to assess whether the student-parent's sex was associated with their enrollment modality in the reported term. Having found that sex was not independent of either of the enrollment variables, the researcher proceeded to use independent samples tests of proportions to determine whether a larger proportion of female student-parents enrolled at a community college than their male peers, and whether a larger proportion of female student-parents opted to take their classes fully online than their male student-parent peers. This study was limited by the responsiveness of the institutions that functioned as the owners and stewards of the records. Sex differences considered in this study were limited to binary male and female categories, because Texas governmental bodies use only binary sex or gender categories in official records. Of note, only one institution reported any student-parents with a non-binary sex. The non-binary-identified student was excluded from this study. Because this study focused on Texas public colleges and universities and considered only fall 2024 enrollment for the reported student-parents, there are limitations to the generalizability or ability to identify patterns of enrollment over time for these student-parents.

This chapter will briefly discuss the results of these inferential tests, including a discussion of the implications of these findings for institutions who may seek to better understand and better serve their students with dependent children. Where appropriate, this chapter will include recommendations for future policy development or for future practice.

Where additional research is needed or notable questions remain, recommendations will be made for future research.

### **Implications and Recommendations for Practice (combined)**

The first and third research questions in this study both pertain to whether and how sex and institution choice are related for student-parents attending public colleges and universities in Texas. Because these two research questions deal with the student-selected institution type, they will be discussed together first in this chapter. Similarly, the second and fourth research questions in this study both pertain to whether and how sex and enrollment in online courses are associated for the same sample of student-parents attending public colleges and universities in Texas. Thus, the implications of research questions two and four will also be discussed together.

### ***Research Questions One and Three / Hypotheses One and Three***

The first research question was, “Are sex and institution type independent variables for student-parents who are pursuing higher education at public institutions of higher education in Texas?” The related first null hypothesis for research question one was, “Whether a student-parent attends a community college or university in Texas is independent of the student-parent’s sex.” The chi-square test of independence used for research question one indicated sex and institution type are not independent variables. If student-parents are making different choices about whether to apply or enroll at a community college or a university, these choices may be influenced by social controls or cultural factors that may be explained by gendered social control theory. In this study, the results of research question one indicated a strong relationship between student-parents’ sex and their institution type. Therefore, we reject the null hypothesis and accept the alternative hypothesis: for student-parents attending Texas public colleges and universities,

their decision to enroll in a 2-year institution or a 4-year institution is not independent of their sex.

Based on the raw counts of student-parents by institution type in these archival records, student-parents of both sexes appear to enroll in community colleges at higher rates than in universities, which appears consistent with some prior studies, but divergent from other prior studies on non-traditional students (Fink, 2023; Gardner, et al., 2022; Sparrow, 2023). The implication of this finding may indicate student-parents have unique needs, as noted by Raaper, et al. (2022). Community colleges may be more responsive than universities to these unique needs (Meza, 2019; Raaper, et al., 2022; Sparrow, 2023). Sparrow (2023) and Coronel (2020) appear to support the possibility that community colleges may have considered the needs of student-parents as a means of stabilizing enrollments, while other studies demonstrate community colleges designing programs with a flexibility designed with non-traditional students in mind (Meza, 2019; Nguyen & Kramer, 2023). While not a focus of this study, the notable discrepancy in student-parents' enrollment in community colleges over universities may indicate that community colleges may see a better return on investment from building and assessing support services designed to serve student-parents than universities. For legislators and governing bodies who may determine policies and budgets designed to support student-parents in pursuit of higher education, it appears that these funds would benefit more students if these resources were directed to community colleges, a suggestion supported by Sparrow's (2023) enrollment analysis.

The archival records collected and used in this study were heavily skewed toward community college enrollment with twice the number of community colleges as universities providing usable records. This skew could impact the interpretations of the findings, especially

as they pertain to institution type. However, a similar, but less severe skew (71 % compared to 93% for this study) towards community college enrollment for student-parents is seen in the state-wide data shown in the THECB Reported Spring 2024 Student-parent Population by Institution Type shown in table 3 (page 84).

As a logical next line of inquiry, research question three asked, “Is the proportion of female student-parents who attend a Texas public community college different from the proportion of male college student-parents who attend Texas public community college (versus a Texas public four-year university)?” The hypothesis used for research question three was “The proportions of female student-parents who attend a Texas public community college are not statistically significantly different from that of male student-parents attending a Texas public community college (versus a Texas public four-year university).”

In light of gendered social control theory, this study proposed that mothers pursuing post-secondary education at these public institutions of higher education (IHE) may be more likely to experience more limitations on their ability to travel, cultural adherence to gender roles and norms in family contexts, and a higher burden of care for children than male student-parents, as noted in several prior studies (Collom, et al., 2021; Gardner, et al., 2022; Huerta, et al., 2022; Nguyen & Kramer, 2023). These experiences may serve as social controls that may function as barriers to enrollment in a university, which would drive these mothers to pursue their educational goals through community college enrollment rather than university.

Research question three hypothesized female student-parents would enroll at community colleges at higher rates than male student-parents. Despite a larger number of female student-parents enrolling in both universities and community colleges, the findings from the proportions test for research question three indicated a higher proportion of male student-parents enrolled in

a Texas public community college. The proportion of female student-parents attending community colleges rather than a university was 4.2% smaller than the proportion of male student-parents who enrolled in a community college rather than a university. This difference in proportions was statistically significant.

Consistent with prior studies about higher education enrollment in general, more female student-parents pursue higher education at these institutions than male student-parents (Field, 2021; Reeves, 2022; Sutton Trust, 2023). However, for student-parents pursuing postsecondary education at Texas' public IHEs males and females opt into community colleges rather than universities at different rates. These findings suggest community colleges may benefit from further exploring the trends and identifying any unique needs of fathers who enroll in their institutions, which will be possible in years to come, as more robust information about student parents is routinely collected. Any claims about the needs of fathers and how they may differ from the needs for mothers is outside the scope of this study.

Now that student-parents are being routinely identified in public colleges and universities and reported to the Texas Higher Education Coordinating Board (THECB), higher education providers seeking to build programs that effectively recognize and support student-parents may look at the raw number of enrolled mothers and fathers and seek to create supports with a generalized female student-parent in mind (Gardner, et al., 2022; Shaw, 2023; THECB, 2024a). This may be justified, based on the raw numbers, and supported by historical focus on or overrepresentation of mothers in research about student-parents (Huerta, et al., 2022; Meza, 2019; Wladis, et al., 2023; Yoo & Marshall, 2024). Creating support structures designed with mothers in mind may result in these institutions overlooking fathers' increased community

college enrollment rate. More attention to the needs and college to career paths of fathers may be warranted, especially for community colleges.

***Research Questions Two and Four / Hypotheses Two and Four***

The second research question was, “Are sex and enrollment modality independent variables for student-parents pursuing higher education at public institutions of higher education in Texas?” The second null hypothesis for research question two was, “Student-parents’ choice to enroll fully online at public institutions of higher education in Texas is independent of their sex.” The analysis of research question two indicated a strong relationship between student-parents’ sex and their enrollment in online versus in-person courses. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states “Student-parents’ choice to enroll fully online at public institutions of higher education in Texas is associated with their sex.”

While enrollment by modality for all enrolled students is routinely reported by Texas IHEs, questions about modality are not included in the parenting student survey used to collect state-wide data on student-parents (THECB, 2024a; THECB 2024b). The survey that Texas’ IHEs submit annually to the THECB reports aggregate counts of students by individual categories in the Parenting Student Survey (THECB, 2024a). This method for reporting does not require reporting IHEs to retain the ability to identify or follow up with their student-parents. Therefore, post-secondary institutions in Texas may not be aware of or have the ability to assess how student-parents are engaging their classes. This makes it impossible to use the new state-wide data collected by the THECB to assess or identify trends or impacts that may be multifactorial in nature. The findings that sex and enrollment modality are associated for student-parents may indicate adding a question about enrollment modality and collecting data in a format that would allow for analyzing student-parent enrollment and progress across multiple variables

would make future revisions to the THECB Parenting Student Survey more useful and actionable (THECB, 2024a). This would allow for future research on the prevalence and importance of online enrollment options for students who are parents of dependent children.

Based on the findings of research question two, the fourth research question asked, “Does the proportion of female student-parents who attend a Texas public institution of higher education online (versus in person) differ significantly from the proportion of male college student-parents who attend a Texas public institution of higher education online?” The null hypothesis that was tested for research question four was “The proportions of female student-parents who attend a Texas public institution of higher education online (versus in person) are not statistically significantly different from that of male student-parents.”

The high proportion of student-parents of both genders taking all of their fall 2024 courses in a fully online format seems to indicate that online coursework is desirable to student-parents, findings consistent with several prior studies on non-traditional students (Conway, et al., 2021; Hatchey, et al., 2023; Wladis, et al., 2023). Nearly half of the female student-parents in this study enrolled in fully online coursework, which seems to confirm female student-parents have some barriers to in person attendance or engagement, or need the flexibility offered by online courses (Andrewartha, et al., 2023; Dayne, et al., 2023; Klinke, et al., 2024; Navarro-Cruz, et al., 2023; Wladis, 2024b). This interpretation of these findings is supported by Klinke, et al.’s (2024) prior research suggesting a correlation between time-poverty and online enrollment for women, and with studies by Wladis, et al. (2024b, 2024c), who found time-poverty was not equitably experienced across genders and racial or ethnic groups.

Gendered social control theory could provide an explanation for persistently sex-segregated major selection in cultural contexts with strong gendered social norms, which would

be consistent with Tătar, et al.'s (2023) findings that cultural measures of gender equity are one of three factors that were predictive of sex-specific major selection. Another social control was identified by Philipp (2023), who noted that familial examples of norm-breaking in career choice seemed to give later generations permission to make similar norm-breaking career choices. In the review of literature provided in chapter 2, it was noted that many studies converge in finding persistent sex-based segregation in major selection for college students, where females are more likely to select majors in arts, humanities, and social sciences (Dalberg, et al., 2024; Philipp, 2023; Song & Glick, 2004; Tătar, et al., 2023). If these parents are choosing majors or degree programs in a similar sex-segregated manner, it is possible that males are choosing programs and majors that are less likely to have online course options. Some examples of such programs include majors in design, construction, and manufacturing fields, where hands-on practical learning is essential to the coursework.

Whether sex-segregation in major selection is occurring among these student-parents is outside of the scope of this study. The findings for research question four, demonstrating that a significantly higher proportion of female student-parents enrolled in fully online courses indicates a need for more research about the factors driving this discrepancy. Additional studies are needed to explore whether major or institution type are factors that may affect student-parents' preferences for or likelihood of enrolling in online courses.

### **Recommendations for Future Research**

Because of the non-parametric nature of the initial analyses, the study findings reported here may not be broadly generalizable (White, personal communication, December 17, 2024). Specifically, more community colleges than universities provided useable archival data contributing to a skew in the study sample in favor of community college enrollment. However,

the chi-square tests used in research questions one and two do not require the data to be normally distributed. This study was one of the first to use a large set of this newly available data and was exploratory in nature. The limited time frame for which this data on student-parents attending Texas public colleges and universities is presently available limits the ability to identify trends or predictions about how student-parents will pursue higher education credentials. While this study and its findings may be used as a baseline for the enrollment behaviors of student-parents attending Texas public institutions of higher education, future research is needed to identify whether the observations for the fall 2024 semester are typical for this population, and whether spring semester enrollment is similar to fall semester enrollment behavior for these student-parents

Additional research may be performed to further clarify the relationship between student-parents' sex and their institution type using the more robust population data that is available via the Texas Higher Education Coordinating Board (THECB). While outside of the scope of this study, the archival records received indicated higher enrollment numbers at community colleges than universities for student-parents of both sexes attending Texas public IHEs. The observation that student-parents appear to prefer enrollment in community colleges as opposed to universities appears to conflict with recent research on enrollment trends for non-traditional students (Fink, 2023; Sparrow, 2023). This calls for additional research to validate these findings and identify why these student-parents diverge from the non-traditional student population in this apparent preference for community colleges. Future analyses may be beneficial to assess for whether other variables such as full-time versus part-time enrollment modality, rural or urban locations, or other demographic variables are correlated with institution type.

While this study found that female student-parents took all of their courses online at statistically significantly higher levels than fathers, no effort to identify causes or other correlates to online enrollment can be made at this time. It is possible that sex-segregation in student majors may make online courses differently available. Additional research is needed to identify any additional correlates and potential causes for this discrepancy, as well as to determine if this discrepancy between mothers and fathers is persistent across multiple terms.

## **Conclusions**

Previous research on college and university students who are parents of dependent children is limited by small and often homogenous study samples or was limited by reliance on the Free Application for Student Aid (FAFSA) applications to identify student-parents (Brauer & Foust, 2020; Colonel, 2020; Evans, 2024; Department of Education, 2024). Only a portion of college and university students apply for financial aid, which means research using FAFSA applications used population estimates (Barone, et al., 2023; Colonel, 2020; NCAN, 2023). These prior studies have provided insights into the experiences and unique needs of student-parents pursuing higher education but have left lingering questions about where and how student-parents go about pursuing postsecondary education goals (Huerta, et al., 2022; LaBrenz, et al., 2023; Lindsay & Gillum, 2018). Mothers appeared overrepresented in extant research about student-parent populations, and a number of prior studies called for research on larger, more diverse populations of student-parents (Evans, 2024; Gardner, et al., 2022; Nikiforidou & Holmes, 2022; Wladis, et al., 2023). Newly available archival records collected by public colleges and universities in Texas provides an opportunity to assess the enrollment behaviors for larger, more robust samples of students who are parents (Shaw, 2023). The paucity of disaggregated and robust information about the size, scope, and educational pathways of student-

parents makes to challenging for institutions to know the size or composition of their parenting student population (Sanborn, et al., 2024).

This quantitative, non-experimental, archival study made use of the newly available data about student-parents collected by a convenience sample of public colleges and universities in Texas, using archival records these schools provided in response to public information requests. Quantitative methods were chosen, as this study dealt with aggregated counts and proportions of student-level data received from multiple institutions to evaluate relationships and differences between the college-going behavior of the sexes based on observations in the reported archival sample. The sample population consisted of 7,013 unique student-parents from three Texas public universities and six Texas community colleges.

This study sought to identify whether and how student-parents' sex was related to either the type of institution they attended (research question one and three) or whether and how sex was related with the student's enrollment modality for the fall 2024 term (research questions two and four). Using a chi-square test of independence, student-parents' sex was found to be strongly associated with institution type. Having confirmed a relationship between sex and institution type, a proportions test was used to compare males and females in their choice to enroll in a community college. A statistically significantly larger proportion of male student-parents (95.7%) attended community colleges over universities when compared to the proportion of female student-parents attending community colleges (91.5%). This finding was contrary to the hypothesized relationship in research question three. Fathers appeared to opt to enroll in a community college at 4.2% higher rates than mothers at these Texas institutions.

Using another chi-square test of independence, student-parents' sex was found to be strongly associated with enrollment modality. Having confirmed a relationship between sex and

enrollment in fully online courses, another test of proportions compared the rates of male and female student-parents enrolling in all online courses. Nearly half (49.2%) of mothers were enrolled in only online courses, while just over a third (35.2%) of fathers took all of their classes online: a statistically significant difference. This finding was consistent to the hypothesized relationship in research question four.

Sex-based differences have long been observed in students' major and career selections, but sex-based differences in institution type and enrollment modality for these student-parents presents new information and raises new questions for the institutions they attend. If student-parents have needs for childcare, housing support, or other needs in order to feel they belong than students who are not parents, it appears that community colleges will need to be able to ramp up these supports at a larger scale than universities, due to the large proportion of student-parents enrolling in community colleges versus universities. The findings from research question four, indicating a significantly higher proportion of female student-parents enrolled in a fully online format opens new questions about the causes for these differences, and questions about the potential effects of this difference in outcomes such as learning retention, connection with other students and their faculty, and successful completion of their courses of study. Student-parents appear to be an important population for community colleges to attend to and support, with high rates of online course enrollment, especially among mothers. Sex-based differences in their enrollment behaviors were found, which may indicate gendered social controls are contributing to different needs, different choices, and potentially different outcomes for mothers and fathers pursuing higher education at Texas public IHEs. Additional research on student-parents to determine the causes and impacts of these differences is needed.

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## Appendix A

### THECB Parenting Student Survey

#### Parenting Student Data Collection

According to HB 1361, each institution of higher education as defined by Texas Education Code, 61.003(8), is required to submit a data report to the THECB for students enrolled for the current academic year who are a parent or guardian of a child younger than 18 years of age. Per HB 1361, the data that will be collected includes student demographic data of age, race/ethnicity, sex, academic data of full-time/part-time enrollment status, number of graduates, transfer students and student withdrawals. The data will be collected at the aggregate level.

THECB acknowledges that this is a pilot data collection mandated by legislation, and it must be completed by May 1, 2024. The purpose of this data collection is to evaluate and identify ways in which the state can effectively assist and empower parenting students during their post-secondary education. By analyzing the data and the data collection process, THECB aims to make informed decisions about future reporting requirements and enhance support services for parenting students.

1) Please provide your name, institution, and email address. You will receive a copy of your responses to this survey at the listed email address.

Name (first and last)

Institution

Email address

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The following definitions will be used to inform several of the student characteristics and outcomes below:

Age Range: Based on the age of the student as of 1/1/2024

Race/Ethnicity: When reporting by race and ethnicity, THECB uses the following categories:

African American

American Indian/Alaskan Native

Asian

Hispanic

Native Hawaiian/Pacific Islander

White

Multiracial

International

Unknown or Not Reported

The following rules, in order of precedence, are used to populate the race and ethnicity reporting categories based on the data submitted on the CBM reports using the two-question format:

*-If "International" is selected, then the reporting category is "International," regardless of other race or ethnicity selections.*

*-If more than one race is selected (excluding "International" and " Unknown or Not Reported"), then the reporting category is "Multiracial."*

*-Any student with a single race selected should be reported in the selected category.*

Census Date Enrollment Status: A part-time student is an undergraduate student enrolled for either 11 semester credit hours or less, or less than 24 contact hours per week each term or a graduate student enrolled for 8 semester credit hours or less. A full-time student is a student who is enrolled in a full or normal workload at the institution during the reporting period. This may include an undergraduate student enrolled in 12 or more semester credit hours in a long semester, a two-year college continuing education student enrolled for 24 or more contact hours a week during a quarter, an academic graduate student enrolled for nine or more semester credit hours in a long term, or students involved in thesis or dissertation preparation.

For health-related institutions, full-time status of a student is the student's percent of time enrolled in relation to a full or normal workload at the institution during the reporting period. Each institution has a policy that determines a full or normal workload.

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Please enter numeric values only for the following questions, with the exception of 'NA'. If for any reason you do not have complete data for any of the fields below, please enter 'NA' in the associated field. Each field must be filled to move to the next part of the survey.

2) Total number of parenting students at your institution enrolled in the Spring 2024 term

3) Provide the number of parenting students in each of the following age ranges, using age of the student as of 1/1/2024

<18

18-21

22-24

25-29

30-34

35-50

51+

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## Appendix B

### Public Information Request Submitted

Pursuant to the Texas Public Information Act, and new rules for identifying and reporting about parenting student populations at publicly funded institutions of higher education, please provide one of the following requested reports:

1. A de-identified (no name, student ID, or individually identifying information) list of student-parents (students who are parents of dependent children) enrolled in fall 2024. For each student-parent, please provide:
  - The student-parent's fall 2024 enrollment modality category (fully online / mixed enrollment / fully in-person enrollment)
  - The percentage of fall 2024 courses taken online (if available)  
(Example, if 3 courses, and one is taken online, % of online courses is 33.3%, regardless of credits per course)
  - The student-parent's full time or part time enrollment status for fall 2024 enrollment
  - The number of semester credit hours enrolled for fall 2024
  - The student-parent's highest credential pursued as of fall 2024 Official Reporting Date (ORD) (certificate level 1 or 2/associate degree/baccalaureate degree post-baccalaureate certificate/graduate degree)
  - The student-parent's sex/gender
  - The student-parent's race/ethnicity group  
(using THECB defined categories: African American, American Indian/Alaskan Native, Asian, Hispanic, Native Hawaiian / Pacific Islander, White, Multiracial, International, and Unknown/Not Reported)
  - The student-parent's marital status (single, married, partnered, divorced) (if available)

OR

2. An aggregated count of student-parents (students who are parents of dependent children) enrolled in an undergraduate program at your institution in fall 2024, using the pre-formatted table in the attached Excel workbook.
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## About the Data: Definitions of fields

- Term
  - Fall 2024 enrollment
  - Enrollment in an undergraduate course or courses (including developmental education courses) beginning between August 1, 2024 and December 31, 2024
  - Exclude graduate coursework, courses that are exclusively offered as continuing education courses, or adult education courses
- Enrollment Modality
  - Fully Online: All courses the student-parent enrolled in can be completed online, even if synchronous in nature. If Hyflex courses can be completed entirely online, these would be considered online courses.
  - Mixed Modalities: The student-parent's fall 2024 enrollment is composed of a mixture of online and in-person courses including hybrid courses.
  - In-person: All courses the student-parent enrolled in for the fall 2024 semester required some in-person attendance.
- Full-Time vs. Part-Time Enrollment
  - Full-Time: student-parent enrolled in 12 or more semester credit hours (SCH) in the fall 2024 term
  - Part-Time: student-parent enrolled in fewer than 12 semester credit hours (SCH) in the fall 2024 term
- Sex or Gender
  - Male: The student's record indicates student is identified as a male
  - Female: The student's record indicates student is identified as a female
  - Unknown or Other: The student's record has missing or other indicators for sex
- Race / Ethnicity
  - Please use categories as defined on THECB parenting-student survey
- Marital Status (only if available)
  - Please use categories associated with the student's demographic record if available

- Divorced
  - Married
  - Separated
  - Single
  - Widowed
  - Unknown, missing, or not available
- Note: if this is not available, please report all student-parents in the field labeled "Unknown, missing, or not available"
- Number of Parenting Students Enrolled
    - Aggregated count of student-parents meeting all categories in columns A-F
    - If no students are reportable, matching all other categories in row, you may note 0 or delete the row.
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Please feel free to reach out if you have questions or need clarification.

Thank you,

April Adams, MA, LPC-S

National University / Northcentral University

## Appendix C

Template Aggregate Table for IHEs not Sharing Student-Level Details

Enrollment Modality (online, mixed, in-person)	Full-Time vs. Part-Time Enrollment	Sex or Gender	Race / Ethnicity(using categories on THECB parenting-student survey)	Marital Status (most recent FAFSA) (if available)	Number of Parenting Students Enrolled
Fully Online	Full-Time	Female	American Indian or Alaskan Native	Divorced	
Fully Online	Full-Time	Female	American Indian or Alaskan Native	Married	
Fully Online	Full-Time	Female	American Indian or Alaskan Native	Separated	
Fully Online	Full-Time	Female	American Indian or Alaskan Native	Single	
In-person	Full-Time	Female	American Indian or Alaskan Native	Unknown, missing, or not available	
In-person	Full-Time	Female	American Indian or Alaskan Native	Widowed	
In-person	Full-Time	Female	Asian	Divorced	
In-person	Full-Time	Female	Asian	Married	
In-person	Full-Time	Female	Asian	Separated	
In-person	Full-Time	Female	Asian	Single	
In-person	Full-Time	Female	Asian	Unknown, missing, or not available	
Mixed Modalities	Full-Time	Female	Native Hawaiian or Other Pacific Islander	Divorced	
Mixed Modalities	Full-Time	Female	Native Hawaiian or Other Pacific Islander	Married	
Mixed Modalities	Full-Time	Female	Native Hawaiian or Other Pacific Islander	Separated	
Mixed Modalities	Full-Time	Female	Native Hawaiian or Other Pacific Islander	Single	
Mixed Modalities	Full-Time	Female	Native Hawaiian or Other Pacific Islander	Unknown, missing, or not available	
Mixed Modalities	Full-Time	Female	Native Hawaiian or Other Pacific Islander	Widowed	