Impact of an Intrusive Advising Model for First-time, Full-time Student Retention Rates at Metropolitan Community College

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Submitted to the Graduate Department and Faculty of the School of Education of

Baker University in partial fulfillment of the requirements for the degree of

Doctor of Education in Educational Leadership

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Date Defended:

January 24, 2024

Abstract

The purpose of this study was to examine the extent to which an intrusive advising intervention impacted fall-to-spring and fall-to-fall retention rates overall and the differential impacts of these potential effects by the student demographic characteristic subgroups of gender, ethnicity, and age for Metropolitan Community College's first-time, full-time students. This causal-comparative quantitative study employed *ex post facto* data and statistical analysis to investigate how the intrusive advising model intervention impacted fall-to-spring and fall-to-fall retention rates overall and by demographic subgroups. The researcher posed sixteen research questions. Descriptive data, clustered bar charts, and a chi-square analysis with a Wald statistic (z^2), also known as a Wald test, were used to test 26 hypotheses.

The study's sample consisted of 2,152 first-time, full-time students enrolled at Metropolitan Community College for 2016-2017 and 2,106 first-time, full-time students enrolled at Metropolitan Community College for the academic year 2021-2022. The hypothesis testing results for fall-to-spring retention for all first-time, full-time students at Metropolitan Community College for 2016-2017 and 2021-2022 showed significant increases in fall-to-spring retention for males and students ages 18-25. The graphed results for fall-to-spring retention for all first-time, full-time students at Metropolitan Community College for 2016-2017 and 2021-2022 showed a slight increase in fall-to-spring retention for Black non-Hispanic and multi-ethnic students, but slight decreases for students ages 17 and under, 26-35, 36-45, and 46 and over.

The hypothesis testing results for fall-to-fall retention for all first-time, full-time students at Metropolitan Community College for 2016-2017 and 2021-2022 showed

significant increases in fall-to-fall retention for males, multi-ethnic, and students ages 18-25, but a significant decrease in fall-to-fall retention for ages 46 and over. The graphed results for fall-to-fall retention for all first-time, full-time students at Metropolitan Community College for 2016-2017 and 2021-2022 showed slight increases in fall-to-fall retention for females, Black non-Hispanic, Hispanic, and students ages 17 and under, but there were slight decreases for students ages 26-35 and 36-45.

The implications of this study for application in higher education suggest that an intrusive academic advising approach is a meaningful intervention to increase student persistence and retention rates. The findings in this study demonstrated that the intrusive advising model implemented at Metropolitan Community College in the fall of 2017 significantly impacted retention resulting in statistically significant increases overall and for several demographic subgroups.

Dedication

I dedicate this work to my family, friends, and colleagues who have supported me throughout my educational and personal journey. Your unconditional love and encouragement helped me to persevere amid challenging life circumstances (and a global pandemic!). The completion of this dissertation is not a solo achievement but a shared accomplishment with those who never stopped believing in me. I am forever grateful.

Acknowledgments

This dissertation would not have been possible without the support of my family: Nancy and Darrall Chamblee and Roger and Linda Dittmar. Your unwavering encouragement empowered me with the fortitude to stay on course and never give up on my dreams. To my children, Gordon and Caroline, who challenge me to be the best version of myself, extend grace in my imperfection and inspire my hope for the future of humankind. My love and gratitude are boundless.

I am thankful for the encouragement, patience, and guidance of my Major Advisor and Committee Chair, Dr. Judy Korb. Dr. Korb never wavered when I took unexpected detours on my dissertation journey. She repeatedly checked in with me and, most importantly, gave me permission to take care of myself first. Her gift of compassion impacted me in ways she will never know.

I would also like to thank the Baker faculty and committee members who offered their time and valuable feedback. Dr. Kayla Supon-Carter kindly offered direction as I learned (struggled) to embrace IBM SPSS® coding, frequency table formatting, and the daunting chi-square analysis with a Wald statistic (z^2). Dr. Supon-Carter's enthusiastic support was unwavering, and I am incredibly grateful. Dr. Arminda "Mindy" McCallum's insightful comments were welcomed and appreciated. Dr. Diana Boyd McElroy served as my supervisor, mentor, committee member and, most importantly, a friend. Your impact on my life is immeasurable. Thank you to my wonderful Baker cohort, who shared their collective wisdom, experience, laughter, and commiseration every Monday night for two years. I miss you all.

Several colleagues offered enthusiastic support as I traveled on this doctoral pilgrimage. Dr. Rowdy Pyle, my former MCC and Baker Cohort 21 brother, your humor and encouragement always made the load feel lighter. Dr. Richard Monroe, thank you for cheering me on from the sidelines and for igniting a fire in me when you completed your dissertation with seemingly lightning speed. Kaitlyn Kelly and Kim Green, my fellow compatriots navigating the peaks and valleys of dissertation writing…the promised land is in sight! I am cheering for your success. Kimberly Madden always called me Dr. A. before the title was officially earned; a small, impactful gesture that continually flamed my desire to legitimately reach that title of distinction. When I announced the decision to enroll in my doctoral program, Lisa Balentine gifted me a card that stated, "It will all be worth it in the end," which became my mantra and still sits prominently on my desk five years later.

Finally, I dedicate this study to the students at Metropolitan Community College, who are the reason for my work and serve as my inspiration each day. Thank you for trusting me and allowing me to be a small part of your educational journey.

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Chapter 1

Introduction

Academic advising is a structured activity in which all students have the opportunity for sustained one-to-one interaction with a representative of the institution (Habley, 2010). An academic advisor: (a) mentors and guides students in academic decision-making; (b) serves as an expert regarding academic degrees and programs; (c) provides encouragement and needed course corrections; and (d) serves as a policy/risk agent for the institution (Ferris, Johnson, Lovitz, Stroud, & Rudisille, 2011). However, students in higher education often need to access support services voluntarily (Cooper, 2010). A report published by the Center for Community College Student Engagement in 2023 found that only 53% of entering students met with an academic advisor. Still, students who met with an academic advisor reported higher levels of engagement than those who did not (CCCSE, 2018).

Compelling evidence has been published in the research literature that post-secondary students who routinely meet with an academic advisor experienced better outcomes. An article by McFarlane in 2017 and published on The National Academic Advising Association (NACADA) website showed evidence supporting the need for students to meet with academic advisors consistently. Klepfer and Hull (2012) found that students who met with an academic advisor achieved notably higher persistence rates. Swecker, Fifolt, and Searby (2013) reported that first-generation students who routinely met with an academic advisor experienced a 13% increase in persistence rates. Other research has indicated students' perceptions of institutional support were positively correlated with the number of times the student met with an academic advisor (Young-

Jones, Burt, Dixon, & Hawthorne, 2012). Students who frequently met with an academic advisor also reported increased satisfaction (Smith & Allen, 2014). The delivery of academic advising can be a crucial component of student development and retention (Habley, 2002). According to Duke (2007), professionally delivered academic advising is essential because it helps clarify a student's goals and connects the student to the appropriate and essential campus resources.

Complete College America (CCA) is a national alliance of states and higher education institutions dedicated to reversing the alarming retention trend, thus increasing college completion rates. One promising strategy CCA promulgated has been implementing more intrusive advising models to monitor academic progress and provide early intervention strategies for struggling students (2017). Students who do not proactively work with an academic advisor frequently take excess credits for courses that do not count toward their degree, accumulate unnecessary debt, and may become discouraged and depart higher education without earning a degree or credential (CCA, 2017).

Many colleges have responded to the published evidence that intrusive academic advising can significantly increase student persistence and retention rates (Pascarella & Terenzini, 2005). Intrusive advising requires institutions to "default students onto highly structured academic maps that layout a semester-by-semester plan toward on-time completion" (CCC, 2017, para. 1). In 2012, Georgia State University implemented an advising model that offered intensive and targeted advising, student academic progress dashboards, and intervention alerts (Kurzweil & Wu, 2015). Implementing the new advising model required a $1.75 million investment in salaries and technology. However,

these costs were “more than offset by the $9-10 million increased revenue derived from the corresponding increase in retention rates” (Kurzweil & Wu, 2015, p. 12), as Georgia State University by 2017, had realized a 22% increase in graduation rates since the implementation of the intrusive advising model (CCC, 2017).

An intrusive advising model was implemented at Metropolitan Community College Kansas City in 2017 to help increase retention rates. However, the model has not been evaluated to examine whether it has contributed to increased retention for first-time, full-time students or whether the model was equally effective across all demographic subgroups. The current study examined the extent to which the intrusive advising intervention has impacted fall-to-spring and fall-to-fall retention rates overall and the differential impacts of these potential effects by the student demographic characteristic subgroups of gender, ethnicity, and age for MCC’s first-time, full-time students.

The remainder of Chapter 1 describes the conceptual basis for this research study. The background provides a brief, historical overview of community college retention rates, followed by a clear and concise statement of the problem. The purpose of the study details what the research will investigate, including the significance, delimitations, assumptions, and guiding research questions associated with the study. Chapter 1 concludes with a definition of terms and outlines the organization of the study.

Background

Founded in 1915, Metropolitan Community College Kansas City (MCC) is a two-year higher education institution that offers 125 associate degrees and certificates and has five campuses within the greater Kansas City, Missouri area. In the fall of 2019, MCC reported an enrollment of 14,486 students (MCC Student Success and Achievement Data,

2020), with 59% women and 41% men. Minority enrollment, defined as excluding white students, at MCC in the fall of 2019 was 39% (MCC Campus Facts & Figures, 2020). In the fall of 2019, 42% of students were enrolled full-time, the average student age was 24, and the median age was 22 (MCC Campus Facts & Figures, 2020).

According to the National Student Clearinghouse (NSC) Research Center, in the fall of 2017, when MCC implemented the intrusive advising model, the total enrollment in U.S. community colleges was approximately 5,624,282 students, comprising 30% of enrollment in all higher education sectors. Among all students who completed a bachelor's degree, 49% had enrolled at a two-year college at some point before their degree attainment; however, only 39% of community college students had earned a credential within six years compared to 69% of students at public, four-year institutions (NCES, 2017). The *First-Year Persistence and Retention Report* published by the NSC Research Center (2017) found that in the fall of 2015, four-year institutions achieved a fall-to-spring student persistence rate of 81.7% and a fall-to-fall retention rate of 69.7%. In comparison, two-year institutions achieved a student fall-to-spring persistence rate of 62.7% and a fall-to-fall retention rate of 49.1% (NSC Research Center, 2017).

The overall fall-to-fall retention rate from 2015 to 2016 for first-time, full-time students at U.S. public, two-year institutions was 62% (NCES, 2018). Comparatively, at Missouri public, two-year institutions, the retention rate from 2015 to 2016 for first-time, full-time students was slightly lower than the national average of 56% (College Insight, 2016). Table 1 displays the percentage of first-time, full-time students who began their studies in the fall of 2014 and returned in the fall of 2015 for Missouri's community colleges (NCES, 2017). From 2014 to 2015, MCC, at 43%, had the lowest retention rate

among all community colleges in Missouri. The fall 2015 retention rate for first-time, full-time students at Metropolitan Community College was 19 percentage points below the national community college average of 62% and 13 percentage points lower than Missouri's 56% state average (see Table 1).

Table 1

Missouri Community College Retention Rates from Fall 2014 to Fall 2015

Missouri Public Community College	Retention Rate for First-Time, Full-Time Students
State Technical College	83%
Mineral Area Community College	66%
Saint Charles Community College	63%
State Fair Community College	63%
Ozarks Technical College	60%
Moberly Area Community College	57%
Three Rivers Community College	57%
Crowder Community College	56%
Jefferson College	56%
East Central Community College	55%
Saint Louis Community College	53%
Metropolitan Community College	43%

Note: National Center for Education Statistics, 2017.

In response to its low retention rates, MCC sought to address this problem. In the fall of 2017, MCC implemented an intrusive advising model as a best-practice strategy to

reverse the decreasing retention trend for all first-time, full-time students. Intrusive advising is comprised of interactions proactively initiated by an advisor at critical points in a student's academic career (Mu & Fosnacht, 2016). Intrusive academic advising occurs when academic advisors proactively make the initial contact with students and encourage them to schedule an appointment within their first semester (Varney, 2007). The goals of the first meeting set the stage for advisors to help students navigate the complexities of the collegiate environment, set long-term goals, and establish a caring and encouraging connection (Varney, 2007). This preemptive approach equips students to respond better when issues, concerns, or barriers arise during their academic experience (Achieving the Dream, 2017).

Statement of the Problem

In the fall of 2017, MCC implemented an intrusive advising model for first-time, full-time students to address the problem of lower-than-average retention rates compared to state and national average rates. To implement the intrusive advising model, a new procedure was developed to place an enrollment hold on all first-time, full-time student accounts, preventing enrollment in subsequent terms. Only an academic advisor could release the enrollment hold, ensuring students developed a long-term educational plan before enrolling in their second semester. Evidence of a relationship between intrusive advising outcomes and higher retention rates has been published in the academic literature (Earl, 1988; Fowler & Bolan, 2010; Glennen & Baxley, 1985; Schwebel, Walburn, Klyce & Jerrolds, 2012; Varney, 2012). Although research about the impact of intrusive advising models has been conducted at both four-year institutions and community colleges, the results have been mixed. Thus, this study focused on whether

the intrusive advising model implemented at MCC in the fall of 2017 had equally impacted the retention rates for all first-time, full-time students.

Purpose of the Study

The first purpose of the current quantitative study was to investigate the potential impacts of the intrusive advising model implemented in the fall of 2017 on fall-to-spring and fall-to-fall retention rates for all first-time, full-time students at Metropolitan Community College. The second purpose of the study was to examine the potential differential impacts of the intrusive advising model on fall-to-spring and fall-to-fall retention rates by gender, ethnicity, and age demographic subgroups.

The current causal-comparative quantitative study employed *ex post facto* data to investigate the extent to which the intrusive advising model intervention had impacted fall-to-spring and fall-to-fall retention rates overall and for demographic subgroups. The fall-to-spring and fall-to-fall retention rates for all MCC's first-time, full-time students from 2016-2017 (before the intrusive advising model implementation) were compared to those overall retention rates of 2021-2022 (five years after implementation). Differential impacts for the retention rate comparisons from 2016-2017 to 2021-2022 by the student demographic characteristic subgroups of gender, ethnicity, and age groupings were also examined. Clustered bar charts for all comparisons were visually inspected to identify trends in the retention rates from 2016-2017 to 2021-2022, regardless of whether the comparisons were statistically significant.

Significance of the Study

The significance of the current study examining the impact of an intrusive advising model at Metropolitan Community College was to identify how the findings

could inform future practice and invite others to determine whether the same advising model could achieve similar results at comparable institutions. The study investigated the impact of the intrusive advising model on institutional fall-to-spring persistence rates and fall-to-fall retention rates, as well as the consistency of these effects across student demographic groups (gender, ethnicity, and age) for MCC's overall student population of first-time, full-time students. Although there is a vast body of literature on the benefits of intrusive academic advising (Earl, 1988; Fowler & Bolan, 2010; Glennen & Baxley, 1985; Schwebel et al., 2012; Varney, 2012) research about the impact of intrusive advising models at both four-year institutions and community colleges have produced mixed results. To date, no research has been conducted regarding the effectiveness of the intrusive advising model to impact retention rates for first-time, full-time students at Metropolitan Community College. The results of the current study could help MCC better understand the relationship between intrusive academic advising and student retention. Based on the study's findings, MCC could revise current strategies or develop strategies to expand the intrusive advising model to include part-time students, second-year students, and adult learners. Findings related to any difference in retention rates between first-time, full-time students before and after implementing the intrusive advising model could inform future professional development offerings, policy, or funding decisions.

Delimitations

Delimitations in research are described as boundaries set by the researcher to narrow and focus the study (Lunenburg & Irby, 2008). For the current study, delimitations were placed on both the research setting and the selection of participants.

The research setting was the five campuses of Metropolitan Community College in Kansas City, Missouri that implemented the intrusive advising model in the fall of 2017. Retention rate data was retrieved from MCC's Institutional Research office and narrowed to first-time, full-time students enrolled at Metropolitan Community College campuses from the 2016-2017 and 2021-2022 academic years. Data regarding the variables analyzed (spring-to-fall retention and fall-to-fall retention) were also delimited. Analysis for the current study did not include other variables that may have impacted retention, such as professional development for academic advisors, student finances, employment, or other personal situations such as the 2020 Coronavirus pandemic.

Assumptions

Research assumptions are aspects of a study that one must presume are realistically accurate (Lunenburg & Irby, 2008). It is essential to describe the research assumptions of any study explicitly so others can evaluate the validity and credibility of the research findings. The primary assumption for the current study was that the data collected from Metropolitan Community College's student information systems and data warehousing platforms (People Soft, Blackboard Analytics, and Starfish) were accurate and complete. It was also assumed that advisors across the five MCC campuses implemented the intrusive advising model with consistency and fidelity.

Research Questions

Research questions help to define and guide the steps required to conduct any study. Clearly defined research questions provide coherence and focus to the study (Lunenburg & Irby, 2008). The current study examined the effect of MCC's intrusive advising model on fall-to-spring and fall-to-fall retention rates from 2016-2017 to 2021-

2022 for all first-time, full-time students at MCC and whether demographic subgroups were differentially impacted. Sixteen research questions guided the current study:

RQ1

To what extent is there a difference between 2016-2017 and 2021-2022 fall-to-spring retention rates for all first-time, full-time students at MCC?

RQ2

What do graphed results show about trends in the fall-to-spring retention rates for all Metropolitan Community College first-time, full-time students at MCC from 2016-2017 to 2021-2022?

RQ3

To what extent is there a differential impact on fall-to-spring retention rates by gender from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

RQ4

What do graphed results show about trends in the fall-to-spring retention rates by gender at MCC from 2016-2017 to 2021-2022?

RQ5

To what extent is there a differential impact on fall-to-spring retention rates by race/ethnicity from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

RQ6

What do graphed results show about trends in the fall-to-spring retention rates by race/ethnicity at MCC from 2016-2017 to 2021-2022?

RQ7

To what extent is there a differential impact on fall-to-spring retention rates by age group from 2016-2017 to 2021-2022 for first-time, full-time students at MCC?

RQ8

What do graphed results show about trends in the fall-to-spring retention rates by age grouping at MCC from 2016-2017 to 2021-2022?

RQ9

To what extent is there a difference between 2016-2017 and 2021-2022 fall-to-fall retention rates for all first-time, full-time students at MCC?

RQ10

What do graphed results show about trends in the fall-to-fall retention rates for all Metropolitan Community College first-time, full-time students at MCC from 2016-2017 to 2021-2022?

RQ11

To what extent is there a differential impact on fall-to-fall retention rates by gender from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

RQ12

What do graphed results show about trends in the fall-to-fall retention rates by gender at MCC from 2016-2017 to 2021-2022?

RQ13

To what extent is there a differential impact on fall-to-fall retention rates by race/ethnicity from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

RQ14

What do graphed results show about trends in the fall-to-spring retention rates by race/ethnicity at MCC from 2016-2017 to 2021-2022?

RQ15

To what extent is there a differential impact on fall-to-fall retention rates by age group from 2016-2017 and 2020-2021 for first-time, full-time students at MCC?

RQ16

What do graphed results show about trends in the fall-to-fall retention rates by age at MCC from 2016-2017 to 2021-2022?

Definition of Terms

Key terms and operational definitions are provided to increase the readers' understanding of the concepts discussed throughout the study (Lunenburg & Irby, 2008). Defining key terms in an academic study helps mitigate potentially different interpretations of the same term. The following terms were identified as essential to the knowledge of the reader for the current study:

Academic Advising

Academic advising applies knowledge of the field to help students successfully navigate academic interactions related to higher education (Larson, Johnson, Aiken-Wisniewski, & Barkemeyer, 2018).

Academic Advisors

Academic advisors are representatives of a higher education institution who "help students weigh options and make good academic decisions and challenge students to grow by asking questions that make students think more critically about who they are and

how the institution can help them reach who they want to become" (Folsom & Scobie, 2010, p. 16).

First-time, Full-time Students

First-time, full-time students at the undergraduate level are those students who maintain a credit load of 12 or more credit hours per semester and are enrolled in post-secondary education courses for the first time since graduating from high school or obtaining a high school equivalency certificate (NCES, 1997).

Gender

Gender categories, according to The National Center for Education Statistics, are identified as male or female (1997).

Intrusive Academic Advising

Intrusive academic advising is an advising model based on the premise that academic advisors will proactively reach out to students to create a holistic approach to meeting student needs instead of waiting for students to take the initiative (Earl, 1998).

Persistence

Persistence is defined as continued enrollment at a higher education institution measured from various intervals, such as fall to spring or fall to fall. (Habley & McClanahan, 2010). The term is often synonymous with the term retention.

Race/Ethnicity

Race and ethnicity categories, according to the National Center for Education Statistics (1997), "are used to describe groups to which individuals belong, identify with or belong in the eyes of the community" (para. 1). In this study, race was categorized into

five groupings: White Non-Hispanic, Black Non-Hispanic, Hispanic, two or more races (or multi-ethnic), and unknown.

Retention

Retention is defined as continued enrollment at a higher education institution from year to year, measured from various time intervals such as fall to spring and fall to fall (Habley & McClanahan, 2010). Retention is often synonymous with the term persistence.

Organization of the Study

The purpose of the current study was to examine the effects of an intrusive advising model implemented in the fall of 2017 for first-time, full-time students at Metropolitan Community College's five campuses and its impact on institutional student fall-to-spring and fall-to-fall retention rates across selected demographic characteristics. Chapter 1 introduced the background, problem statement, the purpose of the study, significance, delimitations, assumptions, research questions, and a definition of terms. Chapter 2 provides a review of the research literature applicable to student development theory, community college demographics, and the field of academic advising. Chapter 3 details the research design, selection of participants, measurement, data collection procedures, data analysis, hypothesis testing, and study limitations. Chapter 4 presents the results of the data analysis, including descriptive statistics and hypothesis testing. Chapter 5 describes and interprets whether an intrusive advising method effectively retains students overall and by demographic subgroups at MCC. Chapter 5 also includes a discussion of the findings related to the literature and contains recommendations for

further research regarding academic advising and retention of community college students.

Chapter 2

Review of the Literature

Intrusive advising is a model that focuses on developing an attentive and thoughtful relationship between the student and academic advisor, leading to increased academic motivation and persistence (Varney, 2007). The purpose of this study is to examine the effects of an intrusive advising model implemented in fall of 2017 for first-time, full-time students at Metropolitan Community College in Kansas City, Missouri, and its impact on institutional student retention rates across various demographic characteristics. Chapter Two provides a literature review that serves as this study's foundation. Guided by the research questions, three themes emerged that served as guideposts in surveying and analyzing the literature related to retention: the history and demographics of community colleges, student development theory, and the effectiveness of academic advising as a retention strategy.

History and Demographics of U.S. Community Colleges

The United States community college movement began early in the twentieth century as part of a broader national agenda to expand higher education access and to respond to the growing "need for workers trained to operate the nation's expanding industries" (Cohen & Brawer, 2008, p. 1). The first iteration of the community college model was established in 1892 by William Rainey Harper, University of Chicago (Cohen & Brawer, 2008). Harper's conception of the community college, also referred to as a junior college, was intended to provide two years of post-secondary education that prepared students to transfer and complete a bachelor's degree at a four-year institution (Thelin, 2011). Affordable and geographically accessible, community colleges grew in

popularity and curricular offerings over the ensuing years, and by 1940, there were 456 community colleges in the United States (Conrad, Hayworth & Miller, 1993).

The Serviceman's Readjustment Act of 1944, or G.I. Bill, was passed at the close of World War II. This bill offered returning veterans guaranteed educational benefits to pay for tuition, fees, and books at any approved institution (Thelin, 2011). Post-secondary enrollments in higher education swelled beyond projection. By 1946, "G.I. Bill college enrollments surpassed one million, and total benefits paid out by the federal government as part of the act exceeded $5.5 billion" (Thelin, 2011, p. 263). The infusion of post-war veterans into the educational ecosystem doubled community college enrollments within a decade to almost 400,000 (Thelin, 2011). Fueled by the post-war baby boom, between 1960 and 1970, "enrollments increased more than fivefold, reaching about 2.1 million" (Thelin, 2011, p. 300), prompting the opening of a new public community college nearly every week during the 1960s. The Higher Education Act of 1965 (which established the Pell Grant) further spurred community college enrollments (Bailey, 2017). The American Association of Community Colleges reports there are currently 1,167 community colleges in the United States (2021).

A lower-cost alternative to traditional universities, community colleges are defined as "any institution regionally accredited to award the associate in arts or the associate in science as its highest degree" (Cohen & Brawer, 2008, p. 5). In addition to associate degrees, most community colleges offer technical or vocational instruction, workforce development training, and non-credit enrichment programming. According to the Community College Research Center, "7.7 million students were enrolled in public two-

year colleges during the 2019-20 academic year, about 40% of undergraduate students" (2021).

Despite the explosive growth in community college enrollments over the past century, some critics question the legitimacy of a community college education. Derek Bok, research professor and former president of Harvard University, stated:

> Only a small fraction of students entering community colleges earn a degree or a certificate of completion within three years…only 36 percent of students entering community colleges have either earned an associate's (two-year) degree or gone on to graduate from a four-year college. To make matters worse, a significant fraction of the students who drop out prior to completion eventually default on repaying the federally guaranteed loans they have accumulated in the course of their unsuccessful effort to earn a degree. (2013, p. 102)

As highlighted by Bok, the disparity in success and completion rates between community colleges and their four-year counterparts requires a deeper analysis of community college demographics and characteristics to provide additional context to this study.

The National Center for Education Statistics provides unduplicated headcount enrollment, gender, and race/ethnicity by institutional type. Table 2 presents the frequencies and percentages of students enrolled by gender and race/ethnicity at public four-year Title IX institutions versus public two-year Title IX institutions in 2019-20.

Table 2

Public 4-year and Public 2-year Title IX Institutions, Unduplicated Headcount Enrollment by Gender and Race/Ethnicity for 2019-20

	4-year Public College Number	Percentage Distribution	2-year Public College Number	Percentage Distribution
Unduplicated Headcount	9,406,384	54.7	7,700,167	44.8
Male	4,172,557	24.3	3,311,166	19.3
Female	7,788,788	30.4	4,389,001	25.5
American Indian or Alaska Native	62,262	.04	64,944	0.4
Asian	667,210	3.9	481,139	2.8
Black or African American	1,036,699	6.0	993,445	5.8
Hispanic or Latino	1,885,102	11.0	1,898,656	11.0
Native Hawaiian or Other Pacific Islander	20,222	0.1	21,680	0.1
White	4,675,411	27.2	3,512,080	20.4
Two or more races	384,264	2.2	284,946	1.7
Race/ethnicity unknown	321,116	1.9	338,556	2.0
Nonresident	354,1098	2.1	104,721	0.6

Note: National Center for Education Statistics, 2021

Apart from white students (a higher distribution attend public four-year institutions), the distribution percentages for gender and race/ethnicity are consistent among four-year and two-year institutions. While the demographic variables are congruent between public institution types, the literature reveals other disparities that

may negatively impact student persistence and retention. A Community College Research Center (CCRC) study indicates that 60% of students who start at a public two-year college take one or more remedial courses compared to 32% of public four-year college students (2021). CCRC found that of 250,000 community college students, “only 20% of those referred to developmental math and 37% of those referred to developmental reading enrolled in a developmental course and went on to pass the relevant entry-level or ‘gatekeeper’ college course within three years” (“Community College FAQs”, para. 5, 2021).

Remedial coursework disproportionately impacts some demographic groups at public two-year colleges, where 78% of Black and 75% of Hispanic students must enroll in remedial coursework (CCRC, 2021). Additionally, 76% of students in the lowest income group (<$20,000) are enrolled in remedial courses at public two-year colleges (CCRC, 2021). Student academic preparedness (or lack thereof) upon college entry influences the likelihood of community college student success, a factor Dr. Bok failed to recognize when criticizing the community college completion rate.

The full-time retention rate for public, degree-granting four-year institutions is 82.4%, while the full-time retention rate for public, two-year degree-granting institutions is 60.5% (NCES, 2021). There remains a gap in college persistence and retention rates between black and white students (National Student Clearing House, 2019). White students’ persistence rates at two-year colleges were 67.1%, compared to 55.3% for black students (NSCH, 2019). Only slightly more than half of black students return after their first year at a community college.

The six-year graduation rate (150% of the standard time required for bachelor's degree completion) for first-time, full-time undergraduate students (who began their studies in 2014) was 63% at public, four-year institutions (NCES, 2021). Conversely, the three-year graduation rate (150% of the standard time required for associate degree completion) for first-time, full-time undergraduates (who began their studies in 2014) was 29% at public, two-year institutions (NCES, 2021). Less than 40% of community college students complete a degree or certificate from any college within six years (Bailey, 2017). To many educators and policymakers, the low community college graduation rate "constitutes a failure for those students to achieve their goals and represents a loss of potential earning power and economic growth and activity for the economy as a whole" (Bailey, para. 1, 2017). To counter low college graduation rates, a national effort called the 'completion agenda,' funded by the federal government and several private foundations, has focused on reforms to increase the number of students who complete a degree or certificate (Kilgore & Wilson, 2017). As best practice, community college reforms must be grounded in research and informed by student development theory.

Student Development Theory

Student development theory provides a framework for practitioners to understand the human development continuum better and leverage this knowledge to create intentional learning experiences to foster students' holistic growth. Multiple student development theories identify quantitative and qualitative factors associated with student persistence and retention. A body of evidence composed of empirical research, statistical

studies, and supportive documentation by experts was collected to better understand the theories associated with student retention.

Vincent Tinto's Theory of Student Departure

According to Vincent Tinto's theory of student departure (1993), higher education persistence and retention is distinguished by the student's ability to effectively interact with the social and academic systems at the institution. Tinto's model is widely referenced in academic literature and serves as a foundation for studying student persistence based on pre-college attributes, including family background, skills and abilities, and prior schooling (Tinto, 1993). Tinto purports that first-time college students bring pre-existing associations and collegial expectations that are either strengthened or weakened based on the student's institutional interactions and experiences.

The social aspect of student persistence includes "levels of social integration based on interactions with peers, their sense of fit within the student culture of an institution, and their engagement with formal student organizations" (Renn & Reason, 2013, p. 178). Academic integration is measured by "feedback from faculty on academic performance and the students' comfort when interacting with faculty members about academic issues" (Renn & Reason, 2013, p. 178). According to Tinto's model, students who report higher levels of academic and social integration experience increased commitment to their educational goals and the institution and were more likely to persist (1993). Conversely, students who report lower academic and social integration levels may be at a greater risk of voluntary departure.

Critics of Tinto's theory of student departure suggest the model is more appropriate to explain the phenomenon of voluntary departure for students at residential

colleges and universities rather than community college or commuter students (Braxton, Hirschy, & McClendon, 2004). Additionally, critics advocate that Tinto's model does not represent the experiences of underserved or underrepresented populations (Tierney, 1999), as students who encounter difficulty in assimilating their "home culture and higher education environments would be likely to result in isolation and eventual departure" (Renn & Reason, 2013, p. 181). Although shortcomings might exist in the original model, Tinto's theory of student departure provided the foundation for later researchers to expand upon and develop additional models to explain student persistence and retention.

Alexander Astin's Theory of Student Involvement

The Astin Theory of Student Involvement refers to the amount of physical and psychological energy a student expends in the academic enterprise (2014). A highly involved student commits considerable time to studying and interacting with faculty members, participates in co-curricular activities, and engages with student organizations and campus life (Astin, 2014). The premise of student involvement theory suggests that the more time and energy students focus on learning experiences (both inside and outside the classroom), the more consistently they will perform academically.

Astin developed a widely accepted inputs-environment-outcome (IEO) model, which asserts that student outcomes (e.g., persistence and retention) are contingent upon two primary factors: inputs (e.g., demographic variables) and environment (e.g., college experiences) (Astin, 1991). Pascarella and Terenzini (2005) describe Astin's conceptual framework as an attempt to "explain the effects of environmental influences on student change or growth, focusing on factors which faculty and administrators have some programmatic and policy control" (p. 53). The quality and frequency of student

involvement with people, programs, and experiences on campus influences overall student outcomes.

Astin's concepts on student involvement have led to a breadth of research and served as the foundation for more recent conceptions of student engagement and its impact on retention. However, critics of Astin's theory of student involvement assert that there is no consideration in the model to factor in life events that occur outside of the college environment (Renn & Reason, 2013). Non-college life events such as the death of a family member, birth of a child, illness, and other life-altering experiences may equally impact student outcomes.

Ernest Pascarella's Model for Assessing Change

Like Astin's IEO model, Ernest Pascarella (1985) developed a causal model for assessing the effects of environments on student learning and cognitive development. Pascarella's model suggests that five variables impact student learning and development: (a) student background and pre-college traits, (b) structural and organizational features of the institution, (c) an institution's environment, (d) interactions with agents of socialization, and (e) quality of student effort in learning (1985). This framework implies that student growth is influenced by a college's environment and the "frequency and content of students' interactions with the major socializing agents on campus" (Pascarella & Terenzini, 2005, p. 57). Influential socializing agents include faculty, student affairs professionals, administrators, and peers.

Terenzini and Reason (2005, 2010) further iterated Pascarella's theory of assessing change in the development of their Parsing the First Year of College Model. In this model, Terenzini and Reason elaborated on Pascarella's variable related to

interactions with agents of socialization to identify three unique student experiences that most influence student outcomes. These experiences are identified as classroom experiences, curricular experiences, and out-of-class experiences (Terenzini & Reason, 2005, 2010). While Astin's model is frequently used to understand student outcomes, Terenzini and Reason's model "advance and add complexity to an understanding of how institutions, and students' experiences within those institutions, can influence persistence behaviors" (Renn & Reason, 2013, p. 186).

One agent of socialization in the higher education context is that of an academic advisor. The National Academic Advising Association (NACADA) proclaims that when leveraged consistently and regularly, academic advising helps to increase student persistence, retention, and completion at the post-secondary level (2016). The researcher reviewed recent studies and publications to determine if empirical evidence exists to support these claims.

Academic Advising

Academic advisors use various models or approaches to guide students' academic journey. Often perceived as the least complex form of practice, prescriptive advising is transactional, limiting advising sessions to the process of registration, course selection, and explanation of degree curricula (Drake, 2011). Under a prescriptive advising approach, students receive the necessary information for course completion and degree progression. However, this approach does not promote an advising relationship (Barbuto, Story, Fritz & Schinstock, 2011); nor promotes a holistic approach to student development and learning.

Developmental or appreciative advising is the practice of asking positive, open-ended questions to guide students toward a better understanding of their academic motivations and goals. Using a developmental approach, the advisor focuses on the whole person sitting before them and addresses every aspect of the student's life in the advising process (Drake, 2011). In this model, advisors use personal, cognitive, career, and psychosocial theories to assist students with goal setting, decision-making, problem-solving, creating self-awareness, and other areas to promote academic success (Williams, 2007).

Intrusive, or proactive advising, integrates the approaches of both prescriptive and developmental advising models with deliberate, early intervention (Varney, 2012). The intrusive model seeks to provide students with information before they request it. Jennifer Varney, NACADA Chair-Elect, Distance Education Advising Commission, wrote in the article, “Proactive (Intrusive) Advising!”:

> Through the use of proactive outreach and a relationship-based approach to advising, students learn that their advisor can be their main connection to the school. Proactive advisors are able to help students determine what kind of obstacles they may be facing along the path to degree completion and help them create plans and short- and long-term goals directed toward overcoming these obstacles. Early alert systems and other methods of identifying students who are potential retention risks can be proactive ways to intervene with students before they ask for help, provide caring and thoughtful support, and give solution options for success. (para. 12, 2012)

An intrusive advising approach creates a vital connection between students and their academic advisor, creating a foundational support system crucial for the student's personal growth, academic achievement, and goal attainment.

In 2016, the *NACADA Journal* published an article titled "First-Year Community College Students' Perceptions of and Attitudes Toward Intrusive Academic Advising" (Donaldson et al.). This study sought to examine students' perceptions of the intrusive academic advising model and its relationship to student success. Much of the research on student success is focused on four-year institutions. Hence, the researchers conducted the case study at a large, diverse community college in Texas with enrollments exceeding 50,000 students. Three research questions framed the qualitative ethnographic study. Interviews were conducted with 12 students during the Fall 2013 semester to capture data for analysis. The benefits of having an assigned advisor, participating in degree-planning activities, and individualized support emerged as the top themes in the study. Most participants agreed that academic advising should be mandatory for first-time college students.

Limitations of the study include the small sample size of student interviews, none of whom were first-generation college students. The results may only apply to some populations or students with academic or social deficits. Also, students in the study reported limited use of available advising tools (e.g., career assessments, an electronic degree planner system) and limited advisor availability to schedule appointments due to high caseloads. The researchers highlighted the federal and state demands community colleges face to produce degree completers.

Donaldson et al. (2016) recommended conducting additional quantitative research to better understand the intrusive advising model and the resulting outcomes at two-year institutions. Positive findings might lead colleges to increase funding for academic advising services and staffing. There is a direct alignment between this study and implementing an academic advising model for first-time students and its impact on student retention rates at Metropolitan Community College. The implications suggest that academic advising positively correlates to student success outcomes, and additional research will help to confirm these findings.

In 2010, Fowler and Boylan published a report titled, "Increasing Student Success and Retention: A Multidimensional Approach," that detailed the results of a study that sought to determine the influence of the Pathways to Success program implemented at a small, public, two-year college in a rural area of the southern United States. Pathways to Success (PWAY) is a program the college designed to assist students who demonstrate academic (e.g., low GPA, remedial coursework) and non-academic (e.g., self-confidence, motivation) precursors that may hinder their success.

Three research questions framed the Pathways to Success study to identify the affective and personal factors related to student success and how institutions can best support students taking developmental coursework. One of the components of the Pathways to Success program was the implementation of prescriptive, developmental, and intrusive advising. The study compared 453 non-PWAY students enrolled in Fall 2003 to 434 PWAY students enrolled in Fall 2008 (2010). Institutional data was generated to ascertain each group's cumulative GPA, academic standing, probationary status, and dismissal rates. Statistical analysis using a *t*-test found that the mean GPA for

the PWAY group (2.151) was significantly higher than the non-PWAY (1.503) group (2010). Similar gains were achieved for good academic standing (70% PWAY group vs. 46% non-PWAY group), probationary status (24% PWAY group vs. 31% non-PWAY group), and rates of dismissal (3% PWAY group vs. 19% non-PWAY group). Additionally, retention of developmental students increased from 29% to 52% after the Pathways to Success program implementation (2010).

The findings suggest a statistically significant increase in student success; however, it is difficult to attribute this success specifically to the advising model or if other program features had a positive influence. The researcher suggested that the study be replicated with a random sampling of students and better-defined variables to generalize to other institutions. The initial results, although modest, suggest that developmental students do benefit from a multidimensional academic advising approach. This study provides moderate evidence that academic advising is a helpful tool for increasing student persistence and retention rates. The implications signify that additional research will provide more substantive evidence on the interrelationship between academic advising and student retention rates.

A 2016 doctoral dissertation study titled, “Building an Evaluation Model of Academic Advising's Impact on Progression, Persistence, and Retention within University Settings,*”* measured the level of evaluative knowledge among higher education academic advisors and constructed a model that would quantify the relationship between advising and student retention. Roy (2010) posed three research questions that guided the study and utilized a mixed methods research design. First, the study design utilized an 11-question survey deployed to staff and faculty members at a

Midwestern flagship university to determine advisors' understanding of evaluation and assessment. Second, a quasi-experimental design was constructed to measure retention rates of students between the academic years of 2012-2015. The sample population was all students eligible for undergraduate academic advising between 2012-2015. Students were purposefully assigned to the experimental and control groups based on the utilization of advising services. Lastly, using questionnaires and panels, the researcher implemented a Delphi study to gather data from six academic advisors.

The results revealed that academic advisors use the terms evaluation and assessment interchangeably, indicating a need for proficiency to accurately measure advising outcomes. The quasi-experimental study used logistical regression and ANOVA analysis to determine the statistical significance of the impact of advising services. The results provide evidence that academic advising influences student progression and retention, most notably for first-time, full-time students. In the Delphi study, respondents ranked 50 evaluative variables of most to least importance. The researcher then devised an advising framework based on the allocation of Delphi survey outcomes into three stages of advising: pre-advising, within advising, and post-advising. There are limitations to the study because it was conducted at a single institution, and not all advisors at the university participated in the survey or Delphi study.

The researcher recommended that additional studies be conducted to move academic advising from "a practice founded on anecdotal evidence to that of empirically based findings" (Roy, 2010, p. 64). This study on the relationship between academic advising and student persistence and retention at Metropolitan Community College seeks to augment the current research.

The Role of Academic Advising in Student Retention and Persistence was published in the educational journal *About Campus* in 2011 by the American College Personnel Association and Wiley Periodicals, Inc. Jayne Drake, past president of the National Academic Advising Association (NACADA), references four decades of groundbreaking research by renowned student development theorists that validate the influence of academic advising on student persistence and retention. Vincent Tinto (1987) established the involvement theory that asserts student retention is directly connected to the interactions students experience with members of the institution.

Joe Cuseo's (2002) report, "Academic Advisement and Student Retention," provided evidence of an empirical connection between student's levels of satisfaction, academic advising, and student retention. George Kuh's (2005) book, *Student Success in College: Creating Conditions That Matter,* purported that a solid academic advising program was vital to connecting students to enriching educational experiences. Ernest Pascarella and Patrick Terenzini's (2005) research indicates that students who are the most satisfied with their college experience have established a strong relationship with an academic advisor who can help them navigate the complexities of college systems.

According to Drake, academic advising "helps teach students to negotiate the higher education maze, to make effective and thoughtful decisions about their futures, to adapt their life skills to the new academic world, and to cultivate the academic skills and knowledge needed to succeed" (2011, p. 11). Drake provided many examples of higher education institutions that have recently championed academic advising as critical to students' success. The article illuminates how student development theory informs and shapes professional practice for student affairs practitioners.

This literature review is limited in scope and does not represent the entire body of scholarly research regarding the impact of academic advising on student persistence and retention. However, a common theme in the literature suggests a positive correlation between academic advising and student persistence and retention. One study found that interview participants "overwhelmingly agreed that academic advising should be required for new students entering college" (Donaldson et al., 2016, p. 37). A study published by Fowler and Boylan provides additional evidence that prescriptive, developmental, and intrusive advising models have a statistically significant impact on increased student GPA, higher rates of good academic standing, lower incidents of probationary status, lower rates of dismissal, and increased retention (2010).

These study results provide various implications for practice for student affairs personnel. One high-impact practice is the recommendation to gather a needs assessment on incoming first-time students to identify both academic and non-academic characteristics risk factors (Fowler & Boylan, 2010). Student development theory and professional practice intersect when academic advisors can pre-assess risk factors and then leverage the most effective advising model to assist students before they are in an academic crisis (Fowler & Boylan, 2010).

In the 2017 article, "Community Colleges and Student Success: Models for Comprehensive Reform," Thomas Bailey identified the community college intake process and student support as an area of needed reform to promote completion:

> With limited resources, community colleges are unable to provide comprehensive advising to all students to help them navigate these complex institutions. There are often many hundreds of students for every counselor or advisor. As a result, college

> intake and advising often consist of a brief face-to-face or online orientation and a short meeting (not always mandatory) with an advisor, focused on registering for the first semester's courses. Most colleges do not provide an organized process to help students form long-term goals and design an academic program to achieve those goals. Rather, students must recognize when they need help and seek it out on their own. Moreover, most colleges do not closely monitor students' progress toward their goals or through programs. (2017)

The empirical evidence obtained in the literature review provided mixed results on the efficacy of academic advising to increase student persistence and retention rates. Variables associated with the impact of academic advising include the advising model (e.g., prescriptive, developmental, intrusive), method of delivery, and frequency of delivery. Additional research will provide valuable insight for higher education institutions seeking to leverage best practices in academic advising to increase student success outcomes.

Summary

Approximately 45% of U.S. undergraduate students attend community colleges (NCES, 2021). The full-time retention rate for public, degree-granting four-year institutions is 82.4%, while the full-time retention rate for public, two-year degree-granting institutions is 60.5% (NCES, 2021). This retention rate disparity has become the focus of reforms to close this gap and increase full-time retention rates of public, two-year degree-granting institutions. Informed by student development theories such as Vincent Tinto’s Theory of Departure and Alexander Astin’s Theory of Student Involvement, higher education practitioners recognize the need for well-designed

assistive programs to increase the quality and frequency of student interaction with the institution. While a common theme in the literature suggests a positive correlation between academic advising and student persistence and retention, many community colleges lack the resources or human capital to provide comprehensive advising services.

Chapter 3 describes the methodology used to address the research questions and hypotheses presented in Chapter 1. Chapter 3 is organized into five sections: (a) selection of participants, (b) measurement, (c) data collection, (d) data analysis, and hypothesis testing.

Chapter 3

Methods

The purpose of the current causal-comparative quantitative study was to examine the potential impacts on institutional student fall-to-spring and fall-to-fall retention rates of an intrusive advising model implemented in the fall of 2017 for first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022, whether there were differential impacts by demographic subgroups from 2016-2017 to 2021-2022, and for visual inspection of the graphed trends overall and by subgroup from 2016-2017 to 2021-2022. Chapter 3 provides an overview of the research methodology utilized in this study, including descriptions of the research design, selection of participants, measurement, data collection procedures, data analysis and hypothesis testing, and limitations.

Research Design

The study employed a causal-comparative, *ex post facto* methodology to investigate the extent to which the intrusive advising intervention has impacted student fall-to-spring and fall-to-fall retention rates and whether there was a differential impact across demographic groups. Archived data were retrieved from the Metropolitan Community College Institutional Research office for first-time, full-time students for 2016-2017 (before implementing the intrusive advising model in the fall of 2017) and 2021-2022 (five years after implementation). The dependent variables compared for pre- and post-intervention were 2016-2017 and 2021-2022 fall-to-spring retention rates and fall-to-fall retention rates for all first-time, full-time students to examine the extent to which the intervention influenced change. The study explored the existence of any

differential impacts on the retention rates by gender (female, male), ethnicity (Black non-Hispanic, Hispanic, White non-Hispanic, two or more races, unknown), or age grouping (17 and under, 18-25, 26-35, 36-45, 46 and over). Following hypothesis testing for significant differences, the researcher visually inspected the graphed results to examine evolving trends in fall-to-spring and fall-to-fall retention rates.

Selection of Participants

The target population for the current quantitative study included all first-time, full-time students for four academic years pre-intervention during 2016-2017, before the implementation of the intrusive advising model, and all first-time, full-time students during 2021-2022, five years after implementation of the intervention at Metropolitan Community College, a five-campus system located in Kansas City, Missouri. The researcher purposely selected archival records for all first-time, full-time students across the five Metropolitan Community College campuses during 2016-2017 and 2021-2022 to compare fall-to-spring and fall-to-fall retention over the five years since implementation of the advising model. Purposive sampling was employed for the study, and participants were included based on the students' enrollment as first-time, full-time students at Metropolitan Community College. Purposive sampling is often selected "based on the researcher's experience or knowledge of the group to be sampled" (Lunenberg & Irby, 2008, p. 175).

Measurement

The current quantitative study measured the retention of first-time, full-time students in two ways at two different points in time. Fall-to-spring and fall-to-fall retention for 2016-2017 (before the intrusive advising model implementation) and 2021-

2022 (five years after implementation) were analyzed. The researcher reviewed this retention data, along with student demographic variables of gender, race/ethnicity, and age, which were retrieved from MCC's student information system warehouse People Soft®. The data were compiled and organized into a Microsoft Excel® worksheet and imported into IBM SPSS® Version 28 Statistics software for analysis.

The continuous dependent variables compared for pre- and post-intervention were fall-to-spring and fall-to-fall retention rates. Students enrolled in fall 2016 or fall 2021 then subsequently enrolled in spring 2017 or spring 2022 were retained fall-to-spring. Students enrolled in fall 2016 or fall 2021 then subsequently enrolled in fall 2017 or fall 2022 were retained fall-to-fall. The categorical independent variables of gender (female or male), race/ethnicity (Black non-Hispanic, Hispanic, White non-Hispanic, two or more races, or unknown) and age group (17 and under, 18-25, 26-35, 36-45, 46 and older) were used to group 2016-2017 and 2021-2022 fall-to-spring and fall-to-fall retention to determine to what extent specific demographic sub-groups were differentially impacted by the fall 2017 implementation of the intrusive advising model.

Data Collection Procedures

Before conducting the research, permission was requested from Baker University by submitting an Institutional Review Board (IRB) application to conduct research. First, the Metropolitan Community College Site Approval Request and permission to conduct research was approved on June 21, 2023 (see Appendix A). The Baker University IRB request and MCC's Site Approval letter were submitted on June 29, 2023, and the committee approved the study on July 25, 2023 (see Appendix B). Metropolitan

Community College archived data for the study was obtained by submitting an Institutional Data Request on July 28, 2023 (see Appendix C).

The Metropolitan Community College Office of Institutional Research provided the quantitative data for the current study from the college's student information system, People Soft®. The researcher requested non-identifying records (no student names) for 2016-2017 to identify the number of all first-time, full-time students, whether they were retained fall-to-spring and fall-to-fall, along with those students' gender, ethnicity, and age. The same data were requested for 2021-2022. The researcher compiled and organized the raw data into a Microsoft Excel® worksheet and imported it into IBM SPSS® Version 28 Statistics software for analysis. All data were stored on a password-protected computer and saved for two years after publication before being deleted. Utilizing data retrieved through MCC's student information system, coupled with the expert assistance of the Metropolitan Community College Institutional Research department, enhanced the study's internal validity and ensured the interpretations of the findings were as accurate as possible.

Data Analysis and Hypothesis Testing

The data were compiled and organized into a Microsoft Excel® worksheet and imported into IBM SPSS® Version 28 Statistics software for analysis. The dependent variables of retained fall-to-spring (2016-2017 or 2021-2022) and retained fall-to-fall (2016-2017 or 2021-2022) were coded for analysis. The demographic independent variables of gender and ethnicity were coded similarly. However, the demographic independent variable of age was recoded from a continuous variable into a categorical variable with five groups (17 and under, 18-25, 26-35, 36-45, 46 and older). A

description of the statistical procedures used to test the hypotheses and visual data analysis conducted to explore the data trends is presented by the research questions. The first eight research questions pertained to fall-to-spring retention rates comparing 2016-2017 to 2021-2022 overall and by disaggregated subgroups. The last eight research questions pertained to fall-to-fall retention rates comparing 2016-2017 to 2021-2022 overall and by disaggregated subgroups.

RQ1

To what extent is there a difference between 2016-2017 and 2021-2022 fall-to-spring retention rates for all first-time, full-time students at MCC?

H1: There is a difference between 2016-2017 and 2021-2022 fall-to-spring retention rates for all first-time, full-time students at Metropolitan Community College.

A chi-square analysis with a Wald statistic (z^2), also known as a Wald test (Agresti, 2007), was conducted to test H1 because the difference between two proportions was analyzed. “When the data consist of frequencies in discrete categories, the chi-square test may be used to determine the significance of differences between two independent groups” (Siegel & Castellan, 1988, p. 111). For binomial dependent variables such as the likelihood or proportion of success (being retained fall-to-spring), the Wald test, which “has a chi-squared distribution with df = 1” and “is asymptotically unbiased” (Agresti, 2007, p. 11), was appropriate for comparing the two independent student samples of all first-time, full-time MCC students from 2016-2017 (before the intrusive advising model implementation) and 2021-2022. A 2 x 2 contingency or frequency table was constructed for the two dichotomous categorical variables of fall-to-spring retention (2 = not retained or 3 = retained) and group year (2016-2017 or 2021-

2022). The proportion of all first-time, full-time MCC students retained fall-to-spring for 2016-2017 and 2021-2022 were compared. The level of significance was set at .05. Confidence intervals were reported when appropriate.

RQ2

What do graphed results show about trends in the fall-to-spring retention rates for all first-time, full-time students at MCC from 2016-2017 to 2021-2022?

To address RQ2, a clustered bar chart of the fall-to-spring retention rates for all first-time, full-time MCC students was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates since the implementation of the intrusive advising model regardless of statistical significance.

RQ3

To what extent is there a differential impact on fall-to-spring retention rates by gender from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H2*:* There is a difference in proportions of female first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

H3*:* There is a difference in proportions of male first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

For each hypothesis, only the students belonging to that demographic subgroup (H2: gender = 2 for female and H3: gender = 3 for male) were selected and analyzed separately. Chi-square analyses with a Wald statistic (z^2), also known as Wald tests (Agresti, 2007), were conducted because the difference in the proportions of students retained fall-to-spring was analyzed for two independent student samples from 2016-2017 (before the implementation of the intrusive advising model) and 2021-2022. For

each hypothesis, a 2 x 2 contingency table was constructed for the two dichotomous categorical variables of fall-to-spring retention (2 = not retained or 3 = retained) and group year (2016-2017 or 2021-2022). The proportions of female (H2) then male (H3) first-time, full-time MCC students retained fall-to-spring for 2016-2017 and 2021-2022 were compared. For each hypothesis, the level of significance was set at .05. Confidence intervals were reported when appropriate.

RQ4

What do graphed results show about trends in the fall-to-spring retention rates by gender at MCC from 2016-2017 to 2021-2022?

To address RQ4, a clustered bar chart of the fall-to-spring retention rates by gender was created and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for male and female students since the implementation of the intrusive advising model regardless of statistical significance.

RQ5

To what extent is there a differential impact on fall-to-spring retention rates by race/ethnicity from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H4*:* There is a difference in the proportions of Black non-Hispanic first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

H5*:* There is a difference in the proportions of Hispanic first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

H6: There is a difference in the proportions of White non-Hispanic first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

H7: There is a difference in the proportions of multi-ethnic first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

H8: There is a difference in the proportions of unknown ethnicity first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

For each hypothesis, only the students belonging to that demographic subgroup (H4: ethnicity = 2 for Black non-Hispanic, H5: ethnicity = 3 for Hispanic, H6: ethnicity = 6 for White non-Hispanic, H7: ethnicity = 5 for multi-ethnic, and H8: ethnicity = 4 for unknown) were selected and analyzed separately. Chi-square analyses with a Wald statistic (z^2), also known as Wald tests (Agresti, 2007), were conducted because the difference in the proportions of students retained fall-to-spring was analyzed for two independent student samples from 2016-2017 (before the implementation of the intrusive advising model) and 2021-2022. For each hypothesis, a 2 x 2 contingency table was constructed for the two dichotomous categorical variables of fall-to-spring retention (2 = not retained or 3 = retained) and group year (2016-2017 or 2021-2022). The proportions of Black non-Hispanic (H4), Hispanic (H5), White non-Hispanic (H6), multi-ethnic (H7), and unknown ethnicity (H8) first-time, full-time MCC students retained fall-to-spring for 2016-2017 and 2021-2022 were compared. For each hypothesis, the level of significance was set at .05. Confidence intervals were reported when appropriate.

RQ6

What do graphed results show about trends in the fall-to-spring retention rates of first-time, full-time students by race/ethnicity at MCC from 2016-2017 to 2021-2022?

To address RQ6, a clustered bar chart of the fall-to-spring retention rates by race/ethnicity was created and trends from 2016-2017 to 2021-2022 were visually

inspected to identify changes in retention rates for White Non-Hispanic, Black Non-Hispanic, Hispanic, Multi-racial, and unknown students since the implementation of the intrusive advising model regardless of statistical significance.

RQ7

To what extent is there a differential impact on fall-to-spring retention rates by age group from 2016-2017 to 2021-2022 for first-time, full-time students at MCC?

H9: There is a difference in the proportions of first-time, full-time students ages 17 years and under retained fall-to-spring between 2016-2017 and 2021-2022.

H10: There is a difference in the proportions of first-time, full-time students ages 18-25 years retained fall-to-spring between 2016-2017 and 2021-2022.

H11: There is a difference in the proportions of first-time, full-time students ages 26-35 years retained fall-to-spring between 2016-2017 and 2021-2022.

H12: There is a difference in the proportions of first-time, full-time students ages 36-45 years retained fall-to-spring between 2016-2017 and 2021-2022.

H13: There is a difference in the proportions of first-time, full-time students ages 46 years and over retained fall-to-spring between 2016-2017 and 2021-2022.

For each hypothesis, only the students belonging to that demographic subgroup (H9: age = 2 for 17 and under, H10: age = 3 for 18-25, H11: age = 4 for 26-35, H12: age = 5 for 36-45, and H13: age = 6 for 46 and over) were selected and analyzed separately. Chi-square analyses with a Wald statistic (z^2), also known as Wald tests (Agresti, 2007), were conducted because the difference in the proportions of students retained fall-to-spring was analyzed for two independent student samples from 2016-2017 (before the implementation of the intrusive advising model) and 2021-2022. For each hypothesis, a 2

x 2 contingency table was constructed for the two dichotomous categorical variables of fall-to-spring retention (2 = not retained or 3 = retained) and group year (2016-2017 or 2021-2022). The proportions of age 17 and under (H9), 18-25 (H10), 26-35 (H11), 36-45 (H12), and age 46 and over (H13) first-time, full-time MCC students retained fall-to-spring for 2016-2017 and 2021-2022 were compared. For each hypothesis, the level of significance was set at .05. Confidence intervals were reported when appropriate.

RQ8

What do graphed results show about trends in the fall-to-spring retention rates of first-time, full-time students by age grouping at MCC from 2016-2017 to 2021-2022?

To address RQ8, a clustered bar chart of the fall-to-spring retention rates by age grouping was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for students ages 17 and younger, 18-25, 26-35, 36-45, and 46 and over since the implementation of the intrusive advising model regardless of statistical significance.

RQ9

To what extent is there a difference between 2016-2017 and 2021-2022 fall-to-fall retention rates for all first-time, full-time students at MCC?

To address RQ9, a clustered bar chart of the fall-to-fall retention rates for all first-time, full-time MCC students was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates since the implementation of the intrusive advising model regardless of statistical significance.

H14*:* There is a difference between 2016-2017 and 2021-2022 fall-to-fall retention rates for all first-time, full-time students at Metropolitan Community College.

A chi-square analysis with a Wald statistic (z^2), also known as a Wald test (Agresti, 2007), was conducted to test H14 because the difference between two proportions was analyzed. “When the data consist of frequencies in discrete categories, the chi-square test may be used to determine the significance of differences between two independent groups” (Siegel & Castellan, 1988, p. 111). For binomial dependent variables such as the likelihood or proportion of success (being retained fall-to-fall) the Wald test, which “has a chi-squared distribution with $df = 1$” and “is asymptotically unbiased” (Agresti, 2007, p. 11) was appropriate for comparing the two independent student samples of all first-time, full-time MCC students from 2016-2017 (before the intrusive advising model implementation) and 2021-2022. A 2 x 2 contingency or frequency table was constructed for the two dichotomous categorical variables of fall-to-fall retention (2 = not retained or 3 = retained) and group year (2016-2017 or 2021-2022). The proportion of all first-time, full-time MCC students retained fall-to-fall for 2016-2017 and 2021-2022 were compared. The level of significance was set at .05. Confidence intervals were reported when appropriate.

RQ10

What do graphed results show about trends in the fall-to-fall retention rates for all Metropolitan Community College first-time, full-time students at MCC from 2016-2017 to 2021-2022?

To address RQ10, a bar chart of the fall-to-fall retention rates for all first-time, full-time MCC students was created, and trends from 2016-2017 to 2021-2022 were visually inspected to examine any changes in the fall-to-fall retention rates since the implementation of the intrusive advising model regardless of statistical significance.

RQ11

To what extent is there a differential impact on fall-to-fall retention rates by gender from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H15: There is a difference in the proportions of female first-time, full-time students retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

H16*:* There is a difference in the proportions of male first-time, full-time students retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

For each hypothesis, only the students belonging to that demographic subgroup (H15: gender = 2 for female and H16: gender = 3 for male) were selected and analyzed separately. Chi-square analyses with a Wald statistic (z^2), also known as Wald tests (Agresti, 2007), were conducted because the difference in the proportions of students retained fall-to-fall was analyzed for two independent student samples from 2016-2017 (before the implementation of the intrusive advising model) and 2021-2022. For each hypothesis, a 2 x 2 contingency table was constructed for the two dichotomous categorical variables of fall-to-fall retention (2 = not retained or 3 = retained) and group year (2016-2017 or 2021-2022). The proportions of female (H15) then male (H16) first-time, full-time MCC students retained fall-to-fall for 2016-2017 and 2021-2022 were compared. For each hypothesis, the level of significance was set at .05. Confidence intervals were reported when appropriate.

RQ12

What do graphed results show about trends in the fall-to-fall retention rates by gender at MCC from 2016-2017 to 2021-2022?

To address RQ12, a clustered bar chart of the fall-to-fall retention rates by gender was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for female students since the implementation of the intrusive advising model regardless of statistical significance.

RQ13

To what extent is there a differential impact on fall-to-fall retention rates by race/ethnicity from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H17: There is a difference in the proportions of Black non-Hispanic first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

H18: There is a difference in the proportions of Hispanic first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

H19: There is a difference in the proportions of White non-Hispanic first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

H20: There is a difference in the proportions of multi-ethnic first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

H21: There is a difference in the proportions of unknown ethnicity first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

For each hypothesis, only the students belonging to that demographic subgroup (H17: ethnicity = 2 for Black non-Hispanic, H18: ethnicity = 3 for Hispanic, H19: ethnicity = 6 for White non-Hispanic, H20: ethnicity = 5 for multi-ethnic, and H21: ethnicity = 4 for unknown) were selected and analyzed separately. Chi-square analyses with a Wald statistic (z^2), also known as Wald tests (Agresti, 2007), were conducted because the difference in the proportions of students retained fall-to-fall was analyzed for

two independent student samples from 2016-2017 (before the intrusive advising model implementation) and 2021-2022. For each hypothesis, a 2 x 2 contingency table was constructed for the two dichotomous categorical variables of fall-to-spring retention (2 = not retained or 3 = retained) and group year (2016-2017 or 2021-2022). The proportions of Black non-Hispanic (H17), Hispanic (H18), White non-Hispanic (H19), multi-ethnic (H20), and unknown ethnicity (H21) first-time, full-time MCC students retained fall-to-spring for 2016-2017 and 2021-2022 were compared. For each hypothesis, the level of significance was set at .05. Confidence intervals were reported when appropriate.

RQ14

What do graphed results show about trends in the fall-to-fall retention rates by race/ethnicity at MCC from 2016-2017 to 2021-2022?

To address RQ14, a clustered bar chart of the fall-to-spring retention rates by race/ethnicity was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for White Non-Hispanic, Black Non-Hispanic, Hispanic, multiracial, and unknown students since the implementation of the intrusive advising model regardless of statistical significance.

RQ15

To what extent is there a differential impact on fall-to-fall retention rates by age group from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H22: There is a difference in the proportions of first-time, full-time students ages 17 years and under retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

H23: There is a difference in the proportions of first-time, full-time students ages 18-25 years retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

H24: There is a difference in the proportions of first-time, full-time students ages 26-35 years retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

H25: There is a difference in the proportions of first-time, full-time students ages 36-45 years retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

H26: There is a difference in the proportions of first-time, full-time students ages 46 years and over retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

For each hypothesis, only the students belonging to that demographic subgroup (H22: age = 2 for 17 and under, H23: age = 3 for 18-25, H24: age = 4 for 26-35, H25: age = 5 for 36-45, and H26: age = 6 for 46 and over) were selected and analyzed separately. Chi-square analyses with a Wald statistic (z^2), also known as Wald tests (Agresti, 2007), were conducted because the difference in the proportions of students retained fall-to-fall was analyzed for two independent student samples from 2016-2017 (before the implementation of the intrusive advising model) and 2021-2022. For each hypothesis, a 2 x 2 contingency table was constructed for the two dichotomous categorical variables of fall-to-fall retention (2 = not retained or 3 = retained) and group year (2016-2017 or 2021-2022). The proportions of age 17 and under (H22), 18-25 (H23), 26-35 (H24), 36-45 (H25), and age 46 and over (H26) first-time, full-time MCC students retained fall-to-fall for 2016-2017 and 2021-2022 were compared. For each hypothesis, the level of significance was set at .05. Confidence intervals were reported when appropriate.

RQ16

What do graphed results show about trends in the fall-to-fall retention rates by student age group at MCC from 2016-2017 to 2021-2022?

To address RQ16, a clustered bar chart of the fall-to-fall retention rates by age grouping was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for students ages 17 and younger, 18-25, 26-35, 36-45, and 46 and over since the implementation of the intrusive advising model regardless of statistical significance.

Limitations

According to Lunenberg and Irby (2008, p. 133), "limitations are factors that may have an effect on the interpretation of the findings or on the generalizability of the results." Although these factors are often outside the researcher's control, it is essential to "state the limitations of your study to avoid misinterpretation of the findings" (Lunenberg & Irby, 2008, p. 133).

Many factors contribute to first-year persistence and retention beyond academic advising services and experiences different than those of first-year, full-time students at MCC during the 2016-2017 to 2021-2022 period of implementing the intrusive advising model may lead to different results for the fall-to-spring and fall-to-fall retention rate comparisons. The fall-to-spring and fall-to-fall retention data analyzed for the current study was from a single community college district in the Midwest; therefore, generalization of the findings may be limited to the geographic region of the Midwestern United States or community colleges with multiple campuses.

The current study did not control for other influences on student retention besides the intrusive advising model implemented in the fall of 2017 or examine the fidelity of implementing the intrusive advising model at any of the five MCC campuses. Factors

outside the intrusive advising model or differences in implementation across the five MCC campuses could have impacted results.

Summary

The purpose of the current quantitative study was to examine the potential impacts of an intrusive advising model implemented in the fall of 2017 for first-time, full-time students at Metropolitan Community College on institutional student retention rates and whether there was a differential impact for demographic subgroups. Chapter 3 provided an overview of the study's methods, including descriptions of the research design, selection of participants, measurement, data collection procedures, data analysis and hypothesis testing, and limitations. The results of the data analysis and hypothesis testing are presented in Chapter 4.

Chapter 4

Results

The first purpose of the current quantitative study was to investigate the potential impacts of the intrusive advising model implemented in the fall of 2017 on fall-to-spring and fall-to-fall retention rates for all first-time, full-time students at Metropolitan Community College by describing and comparing overall retention rates for 2016-2017, before implementation, to 2021-2022, five years after. The second purpose of the study was to examine the potential differential impacts of the intrusive advising model on fall-to-spring and fall-to-fall retention rates by gender, ethnicity, and age demographic subgroups by describing and comparing disaggregated retention rates for 2016-2017, before implementation, to 2021-2022, five years after. This chapter contains an explanation of the data coding and procedures in preparation for analysis, a description of the 2016-2017 and 2021-2022 sample data disaggregated by demographic characteristics, a comprehensive account of the hypothesis testing, and data analysis conducted along with those results for each of the sixteen research questions.

Two Excel spreadsheets containing de-identified data for all first-time full-time students in 2016-2017 and 2021-2022 were provided by the Metropolitan Community College Institutional Research Department. First, both data sets were analyzed to identify completers, students who completed the requirements to graduate with a short-term degree or certificate in the fall or spring, and the completing students were removed from those possibly retained. There were 2,206 total student records in the 2016-2017 data file. Fifty-four of those students completed a short-term degree or certificate in 2016-2017 and were therefore removed from the data to be analyzed; thus, the total number of students

in the 2016-2017 data set was 2,152. There were 2,170 total student records in the 2021-2022 data file. Sixty-four of those students completed a short-term degree or certificate in 2021-2022 and were therefore removed from the data to be analyzed; thus, the total number of students in the 2021-2022 data set was 2,106. The data was recoded utilizing the auto-transform function in IBM SPSS® to change the string of alpha values to numerical values. The groups were coded for year, so 2016-2017 students were coded as group 1, and 2021-2022 students were coded as group 2. The values for gender were recoded as female = 2, male = 3, and not reported = 4. The values for ethnicity were recoded as Black non-Hispanic = 2, Hispanic = 3, other or unknown = 4, two or more races = 5, and White non-Hispanic = 6. The values for age groups were recoded as 17 years old and under = 2, 18–25-year-olds = 3, 26–35-year-olds = 4, 36–45-year-olds = 5, and 46 years and older = 6. The retention values for enrolled fall-to-spring and fall-to-fall were coded as no = 2 and yes = 3. Once the coding was completed, the two files were combined into one data set for analysis.

Descriptive Statistics

The sample group size for the 2016-2017 academic year was 2,152, and the sample group size for the 2021-2022 academic year was 2,106. Each sample group included the demographic variables of gender, race/ethnicity, and age. Table 3 provides the frequencies and percentages of first-time, full-time students by gender at Metropolitan Community College in the 2016-2017 academic year and the 2021-2022 academic year.

Table 3

First-time, Full-time Students by Gender for 2016-2017 and 2021-2022

	2016-217		2021-2022	
Gender	Frequency	Percentage	Frequency	Percentage
Female	1092	50.7	1139	54.1
Male	1059	49.2	966	45.9
Unknown	1	0.0	1	0.0
Total	2152	100	2106	100

Note. Data from Metropolitan Community College Office of Institutional Research

In 2016-2017, females (n = 1092) composed 50.7% of the first-time, full-time student population, while males (n = 1059) composed 49.2% of the first-time, full-time student population. In 2021-2022, females (n = 1139) composed 54.1% of the first-time, full-time student population while males composed 45.9% of the first-time full-time student population. Over the five-year time span, the female student population increased by 3.4 percentage points, and the male student population decreased by 3.3 percentage points.

Table 4 provides the frequencies and percentages of first-time, full-time students by race/ethnicity at Metropolitan Community College during the 2016-2017 and 2021-2022 academic years.

Table 4

First-time, Full-time Students by Race/Ethnicity for 2016-2017 and 2021-2022

	2016-2017		2021-2022	
Race/Ethnicity	Frequency	Percentage	Frequency	Percentage
Black non-Hispanic	291	13.5	218	10.4
Hispanic	225	10.5	286	13.6
White non-Hispanic	1310	60.9	1349	64.1
Two or More Races	168	7.8	140	6.6
Other or Unknown	158	7.3	113	5.4
Total	2152	100	2106	100

Note. Data from Metropolitan Community College Office of Institutional Research

In 2016-2017, White non-Hispanic students (*n* = 1310) composed 60.9% of first-time, full-time students at Metropolitan Community College, followed by 13.5% Black non-Hispanic (*n* = 291), 10.5% Hispanic (*n* = 225), 7.8% two or more races (*n* = 168), and 7.3% students of other or unknown ethnicities (*n* = 158). In 2021-2022, White non-Hispanic students (*n* = 1349) composed 64.1% of the population of first-time, full-time students at Metropolitan Community College, followed by 13.6% Hispanic (*n* = 286), 10.4 % Black Non-Hispanic (*n* = 218), 6.6% two or more races (*n* = 140), and 5.4% students of other or unknown ethnicities (*n* = 113). Over the five-year time span, White non-Hispanic students increased by 3.2 percentage points and Hispanic students increased by 3.1 percentage points. From 2016-2017 to 2021-2022, Black non-Hispanic students decreased by 3.1 percentage points. Students of two or more races decreased by 1.2, and students of other or unknown ethnicities decreased by 1.9 percentage points.

Table 5 provides the frequencies and percentages of the first-time, full-time students by age group at Metropolitan Community College in the 2016-2017 academic year and the 2021-2022 academic year.

Table 5

First-time, Full-time Students Demographics by Age for 2016-2017 and 2021-2022

	2016-2017		2021-2022	
Age Grouping	Frequency	Percentage	Frequency	Percentage
17 & under	56	2.6	54	2.6
18-25	1974	91.7	1995	94.7
26-35	87	4.0	43	2.0
36-45	25	1.2	11	0.5
46 & over	10	0.5	3	0.1
Total	2152	100	2106	100

Note. Data from Metropolitan Community College Office of Institutional Research

In 2016-2017, students ages 18–25 years (n = 1974) composed 91.7% of first-time, full-time students at Metropolitan Community College, followed by 4.0% of ages 26–35 years (n = 87), 2.6% of ages 17 years and younger (n = 56), 1.2% of ages 36-45 years (n = 25), and 0.5% of students ages 46 years and over (n = 10). In 2021-2022, students ages 18-25 years (n = 1995) composed 94.7% of first-time, full-time students at Metropolitan Community College, followed by 2.6% ages of 17 years and younger (n = 54), 2.0% of ages 26–35 years (n = 43), 0.5% of ages 36-45 years (n = 11), and 0.1% of students ages 46 years and over (n = 3). Over the five-year time span for first-time, full-time students at MCC, 18-25-year-old students increased by 3.0 percentage points, students ages 17 years and younger remained the same, while 26-35-year-olds decreased

by 2.0 percentage points, 36-45-year-olds decreased by 0.7 percentage points, and students age 46 years and over decreased by 0.4% percentage points.

Hypothesis Testing and Data Analysis Results

RQ1

To what extent is there a difference between 2016-2017 and 2021-2022 fall-to-spring retention rates for all first-time, full-time students at MCC?

H1: There is a difference between 2016-2017 and 2021-2022 fall-to-spring retention rates for all first-time, full-time students at Metropolitan Community College.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for all first-time, full-time students indicated no statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -1.913$, $p = 0.056$. The proportion of all first-time, full-time students retained fall-to-spring for 2016-2017 (0.782) was not statistically different than the proportion for 2021-2022 (0.805) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis and H1 was not supported as the results indicated no significant difference in the fall-to-spring retention rates of 2016-2017 and 2021-2022 for first-time, full-time students at MCC. Table 6 provides the frequencies and proportions of the first-time, full-time students retained fall-to-spring at Metropolitan Community College in the 2016-2017 academic year and the 2021-2022 academic year.

Table 6

First-time, Full-time Student Fall-to-Spring Retention Rates for 2016-2017 and 2021-2022

	2016-217		2021-2022	
	Frequency	Proportion	Frequency	Proportion
Yes	1682	0.782	1696	0.805
No	470	0.218	410	0.195
Total	2152	1.000	2106	1.000

Note. Data from Metropolitan Community College Office of Institutional Research.

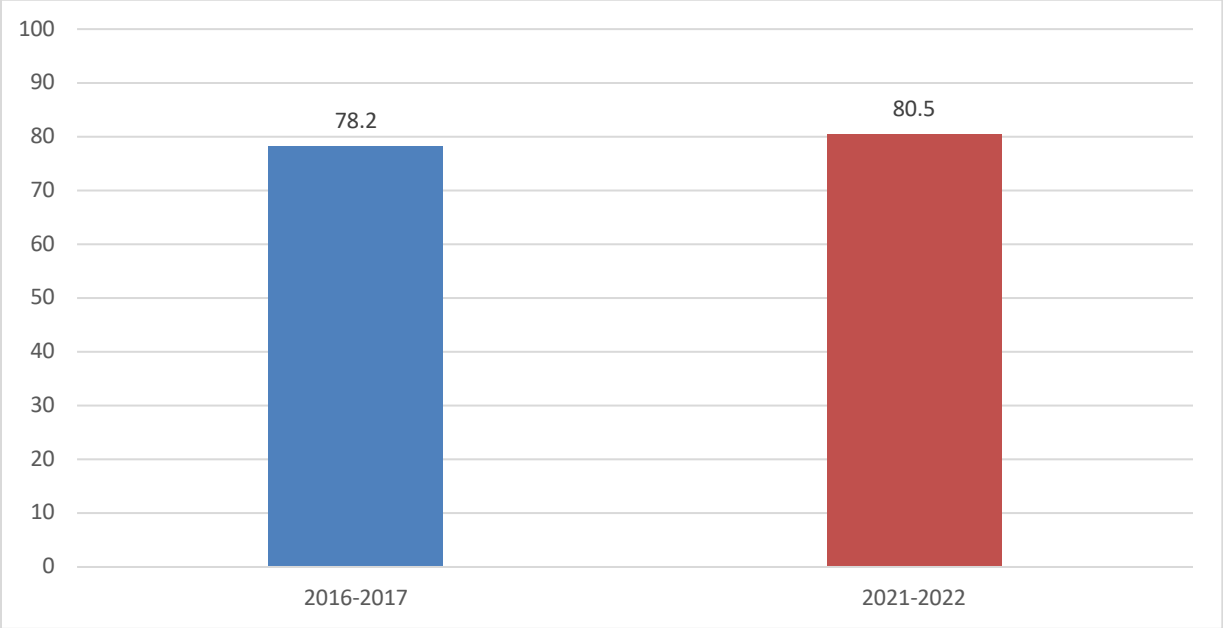
RQ2

What do graphed results show about trends in the fall-to-spring retention rates for all first-time, full-time students at MCC from 2016-2017 to 2021-2022?

To address RQ2, a bar chart of the fall-to-spring retention rates for all first-time, full-time MCC students was created, and trends from 2016-2017 to 2021-21 were visually inspected to examine any changes in the fall-to-spring retention rates since the implementation of the intrusive advising model regardless of statistical significance.

Figure 1

Percent of All First-time, Full-Time Students Retained Fall-to-Spring for 2016-2017 and 2021-2022



Note. Data from Metropolitan Community College Office of Institutional Research.

In 2016-2017, 78.2% of 2152 total first-time, full-time students (*n* = 1682) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 80.5% of 2106 total first-time, full-time students (*n* = 1969) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time students increased by 2.3 percentage points (see Figure 1).

RQ3

To what extent is there a differential impact on fall-to-spring retention rates by gender from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H2*:* There is a difference in the proportions of female first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for female first-time, full-time students indicated no statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -1.103$, $p = 0.918$. The p-value was greater than 0.05; therefore, the proportion of female first-time, full-time students retained fall-to-spring for 2016-2017 (0.810) was not statistically different than the proportion for 2021-2022 (0.811). The decision made was a failure to reject the null hypothesis, and H2 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.810) and 2021-2022 (0.811) for female first-time, full-time students at MCC. Table 7 provides the frequencies and proportions by gender of the first-time, full-time student fall-to-spring retention at Metropolitan Community College in the 2016-2017 academic year and the 2021-2022 academic year.

Table 7

First-time, Full-time Students Retained by Gender Fall-to-Spring for 2016-2017 and 2021-2022

	2016-217			2021-2022		
Gender	Total	Frequency Retained	Proportion	Total	Frequency Retained	Proportion
Female	1092	884	0.810	1139	924	0.811
Male	1059	797	0.753	966	771	0.798
Unknown	1	1	1.000	1	1	1.000

Note. Data from Metropolitan Community College Office of Institutional Research.

H3*:* There is a difference in the proportions of male first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for male first-time, full-time students indicated a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -2.460$, $p = 0.014$ [95% CI -0.082, - 0.009]. The proportion of male first-time, full-time students retained fall-to-spring for 2021-2022 (0.798) was statistically higher than the proportion for 2016-2017 (0.753) as the *p*-value was less than 0.05. Thus, the decision made was to reject the null hypothesis, and H3 was supported as the results indicated there was a significant increase in the fall-to-spring retention rates from 2016-2017 (0.753) to 2021-2022 (0.798) for male first-time, full-time students at MCC (see Table 7).

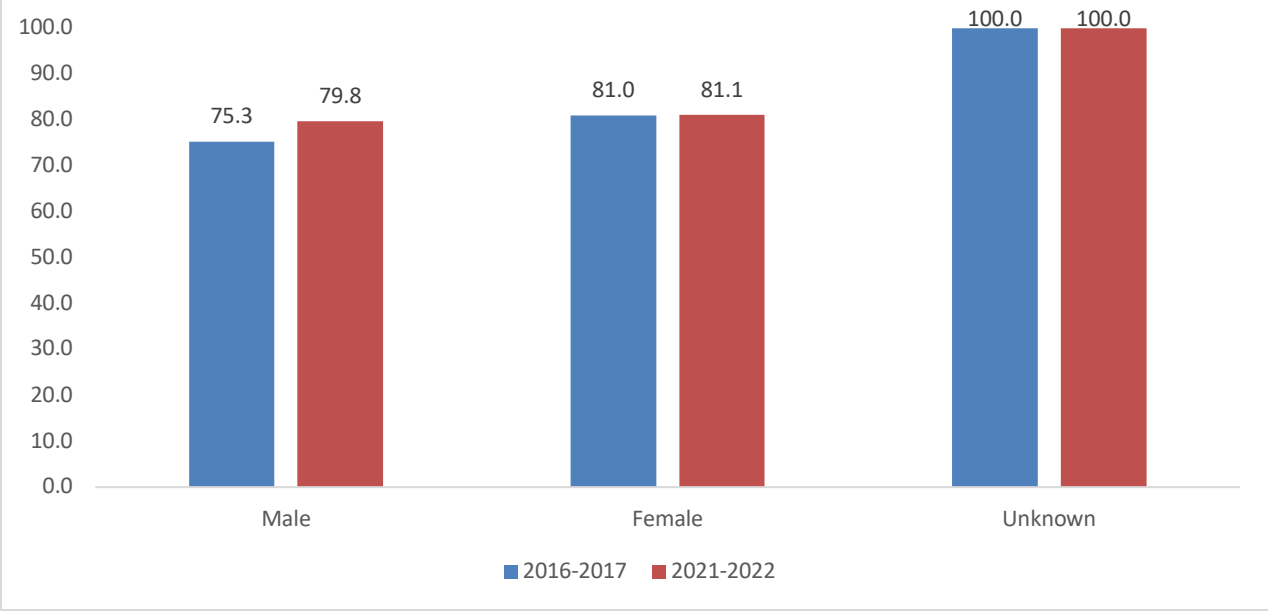
RQ4

What do graphed results show about trends in the fall-to-spring retention rates of first-time, full-time by gender at MCC from 2016-2017 to 2021-2022?

To address RQ4, a clustered bar chart of the fall-to-spring retention rates by gender was created, and trends from 2016-2017 to 2021-21 were visually inspected to identify changes in retention rates for male and female students since the implementation of the intrusive advising model regardless of statistical significance.

Figure 2

Percent of First-time, Full-time Students Retained Fall-to-Spring for 2016-2017 and 2021-2022 by Gender



Note. Data from Metropolitan Community College Office of Institutional Research.

In 2016-2017, 75.3% of the total 1,059 first-time, full-time male students (n = 797) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 79.8% of 966 total first-time, full-time male students (n = 771) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time

male students increased by 1.8 percentage points (see Figure 2). In 2016-2017, 81.0% of the total 1,091 first-time, full-time female students (n = 884) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 81.1% of the total 1,139 first-time, full-time female students (n = 924) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time female students increased by 0.1 percentage points. In 2016-2017 (n = 1) and 2021-2022 (n = 1), 100% of the students with unknown gender were retained fall-to-spring.

RQ5

To what extent is there a differential impact on fall-to-spring retention rates by race/ethnicity from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H4*:* There is a difference in the proportions of Black non-Hispanic first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for Black non-Hispanic first-time, full-time students did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -1.127$, $p = 0.260$. The proportion of Black non-Hispanic first-time, full-time students retained fall-to-spring for 2021-2022 (0.732) was not statistically different than the proportion for 2016-2017 (0.775) as the p-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H4 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.775) and 2021-2022 (0.732) for Black non-Hispanic first-time, full-time students at MCC. Table 8 provides the frequencies and proportions by race/ethnicity of the first-

time, full-time student fall-to-spring retention at Metropolitan Community College in the 2016-2017 academic year and the 2021-2022 academic year.

Table 8

First-time, Full-time Students Retained by Race/Ethnicity Fall-to-Spring for 2016-2017 and 2021-2022

	2016-2017			2021-2022		
Race/Ethnicity	Total	Frequency Retained	Proportion	Total	Frequency Retained	Proportion
Black non-Hispanic	291	213	0.732	218	169	0.775
Hispanic	225	180	0.800	286	231	0.808
White non-Hispanic	1310	1035	0.790	1349	1090	0.808
More than Two Races	168	124	0.738	140	112	0.800
Unknown	158	130	0.823	113	94	0.832

Note. Data from Metropolitan Community College Office of Institutional Research.

H5*:* There is a difference in the proportions of Hispanic first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for Hispanic first-time, full-time students did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -0.217$, $p = 0.828$. The proportion of first-time, full-time Hispanic students who retained fall-to-

spring for 2021-2022 (0.808) was not statistically different than the proportion for 2016-2017 (0.800) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H5 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.800) and 2021-2022 (0.808) for Hispanic first-time, full-time students at MCC (see Table 8).

H6: There is a difference in the proportions of White non-Hispanic first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for White non-Hispanic first-time, full-time students did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -1.153$, $p = 0.249$. The proportion of White non-Hispanic first-time, full-time students retained fall-to-spring for 2021-2022 (0.808) was not statistically different than the proportion for 2016-2017 (0.790) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H6 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.790) and 2021-2022 (0.808) for White non-Hispanic first-time, full-time students at MCC (see Table 8).

H7: There is a difference in the proportions of multi-ethnic first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for multi-ethnic first-time, full-time students did not indicate a statistically significant

difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -1.293$, $p = 0.196$. The proportion of multi-ethnic first-time, full-time students retained fall-to-spring for 2021-2022 (0.800) was not statistically different than the proportion for 2016-2017 (0.738) as the *p*-value greater less than 0.05. The decision made was a failure to reject the null hypothesis, and H7 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.738) and 2021-2022 (0.800) for multi-ethnic first-time, full-time students at MCC (see Table 8).

H8: There is a difference in the proportions of unknown ethnicity first-time, full-time students retained fall-to-spring between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for first-time, full-time students with unknown ethnicity did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -0.195$, $p = 0.845$. The proportion of first-time, full-time students with unknown ethnicity retained fall-to-spring for 2021-2022 (0.832) was not statistically different than the proportion for 2016-2017 (0.823) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H8 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.823) and 2021-2022 (0.832) for first-time, full-time students with unknown ethnicity at MCC (see Table 8).

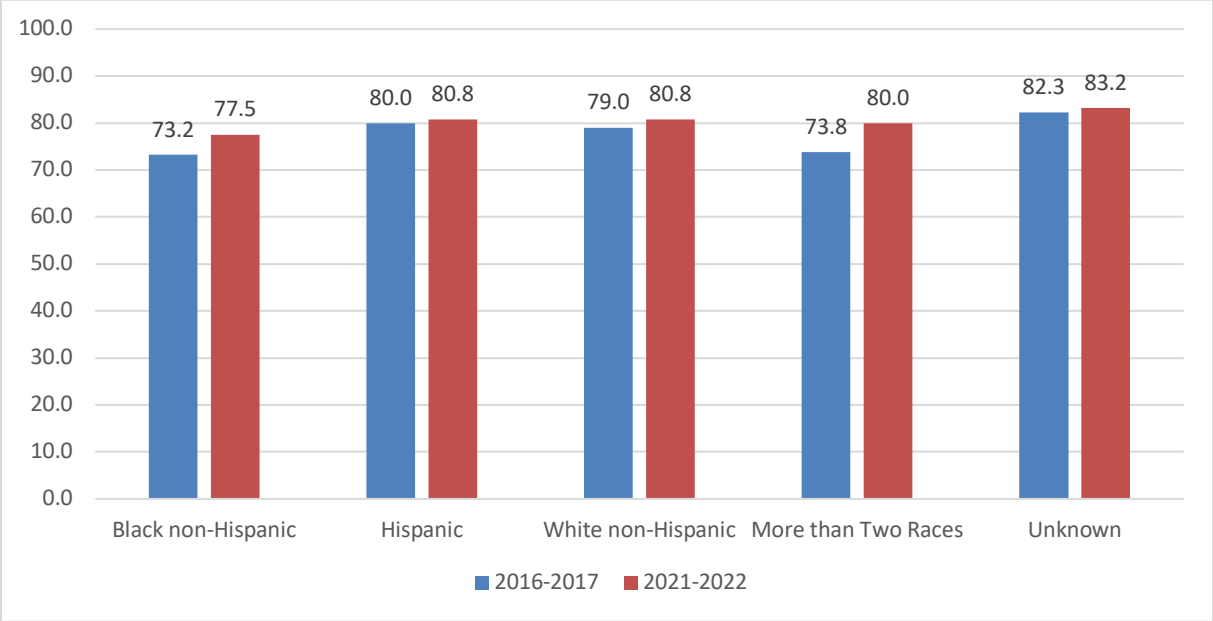
RQ6

What do graphed results show about trends in the fall-to-spring retention rates of first-time, full-time students by race/ethnicity at MCC from 2016-2017 to 2021-2022?

To address RQ6, a clustered bar chart of the fall-to-spring retention rates by race/ethnicity was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for White non-Hispanic, Black non-Hispanic, Hispanic, Multi-racial and unknown ethnicity students since the implementation of the intrusive advising model regardless of statistical significance.

Figure 3

Percent of First-time, Full-time Students Retained Fall-to-Spring by Race/Ethnicity for 2016-2017 and 2021-2022



Note. Data from Metropolitan Community College Office of Institutional Research.

In 2016-2017, 73.2% of 291 first-time, full-time Black non-Hispanic students (n = 213) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 77.5% of 218 total first-time, full-time Black non-Hispanic students (n = 169) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time Black non-Hispanic students increased by 4.3 percentage points (see Figure 3). In 2016-2017, 80.0% of 225 total first-time, full-time Hispanic students (n =

180) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 80.8% of 286 total first-time, full-time Hispanic students (*n* = 231) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time Hispanic students increased by 0.8 percentage points. In 2016-2017, 79.0% of the total 1,310 first-time, full-time White non-Hispanic students (*n* = 1,090) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 64.3% of first-time, full-time White non-Hispanic students (*n* = 1,349) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time White non-Hispanic students increased by 1.8 percentage points. In 2016-2017, 73.8% of 168 total first-time, full-time students identifying as more than two races (*n* = 124) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 80.0% of 140 total first-time, full-time students identifying as more than two races (*n* = 112) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time students identifying as more than two races increased by 6.2 percentage points. In 2016-2017, 82.3% of 158 total first-time, full-time students with an unknown race/ethnicity (*n* = 130) were retained from fall-to-spring. In 2021-2022, 83.2% of 113 total first-time, full-time students with an unknown race/ethnicity (*n* = 94) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time students with an unknown race/ethnicity increased by 0.9 percentage points.

RQ7

To what extent is there a differential impact on fall-to-spring retention rates by age group from 2016-2017 to 2021-2022 for first-time, full-time students at MCC?

H9: There is a difference in the proportions of first-time, full-time students ages 17 years and under retained fall-to-spring between 2016-2017 and 2021-2022.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for first-time, full-time students ages 17 and under did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = 0.365$, $p = 0.715$. The proportion of first-time, full-time students ages 17 and under retained fall-to-spring for 2021-2022 (0.870) was not statistically different than the proportion for 2016-2017 (0.893) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H9 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.893) and 2021-2022 (0.870) for first-time, full-time students ages 17 and under at MCC. Table 9 provides the frequencies and proportions by age group of the first-time, full-time student fall-to-spring retention at Metropolitan Community College in the 2016-2017 academic year and the 2021-2022 academic year.

Table 9

First-time, Full-time Students Retained by Age Group Fall-to-Spring for 2016-2017 and 2021-2022

	2016-2017			2021-2022		
Age Group	Total	Frequency Retained	Proportion	Total	Frequency Retained	Proportion
17 & under	56	50	0.893	54	47	0.870
18-25	1974	1540	0.780	1195	1613	0.809
26-35	87	65	0.747	43	27	0.628
36-45	25	18	0.720	11	7	0.636
46 & over	10	9	0.900	3	2	0.667

Note. Data from Metropolitan Community College Office of Institutional Research.

H10: There is a difference in the proportions of first-time, full-time students ages 18-25 years retained fall-to-spring between 2016-2017 and 2021-2022.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for first-time, full-time students ages 18-25 indicated a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -2.213$, $p = 0.027$ [95% CI -0.504, -0.003]. The proportion of first-time, full-time students ages 18-25 retained fall-to-spring for 2021-2022 (0.809) was statistically higher than the proportion for 2016-2017 (0.780) as the *p*-value was less than 0.05. Thus, the decision made was to reject the

null hypothesis, and H10 was supported as the results indicated there was a significant increase in the fall-to-spring retention rates from 2016-2017 (0.780) to 2021-2022 (0.809) for first-time, full-time students ages 18-25 at MCC (see Table 9).

H11: There is a difference in the proportions of first-time, full-time students ages 26-35 years retained fall-to-spring between 2016-2017 and 2021-2022.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for first-time, full-time students ages 26-35 did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = 1.367$, $p = 0.172$. The proportion of first-time, full-time students ages 26-35 retained fall-to-spring for 2021-2022 (0.628) was not statistically different than the proportion for 2016-2017 (0.747) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H11 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.747) and 2021-2022 (0.628) for first-time, full-time students ages 26-35 at MCC (see Table 9).

H12: There is a difference in the proportions of first-time, full-time students ages 36-45 years retained fall-to-spring between 2016-2017 and 2021-2022.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for first-time, full-time students ages 36-45 did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = 0.490$, $p = 0.624$. The proportion of first-time, full-time students ages 36-45 retained fall-to-spring for 2021-2022 (0.636) was not statistically different than the proportion for 2016-2017

(0.720) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H12 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.720) and 2021-2022 (0.636) for first-time, full-time students ages 36-45 at MCC (see Table 9).

H13: There is a difference in the proportions of first-time, full-time students ages 46 years and over retained fall-to-spring between 2016-2017 and 2021-2022.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-spring by year using the Wald test for first-time, full-time students age 46 and over did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = 0.810$, $p = 0.418$. The proportion of first-time, full-time students ages 46 and over retained fall-to-spring for 2021-2022 (0.667) was not statistically different than the proportion for 2016-2017 (0.900) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H13 was not supported as the results indicated there was no significant difference in the fall-to-spring retention rates of 2016-2017 (0.667) and 2021-2022 (0.900) for first-time, full-time students ages 46 and over at MCC (see Table 9).

RQ8

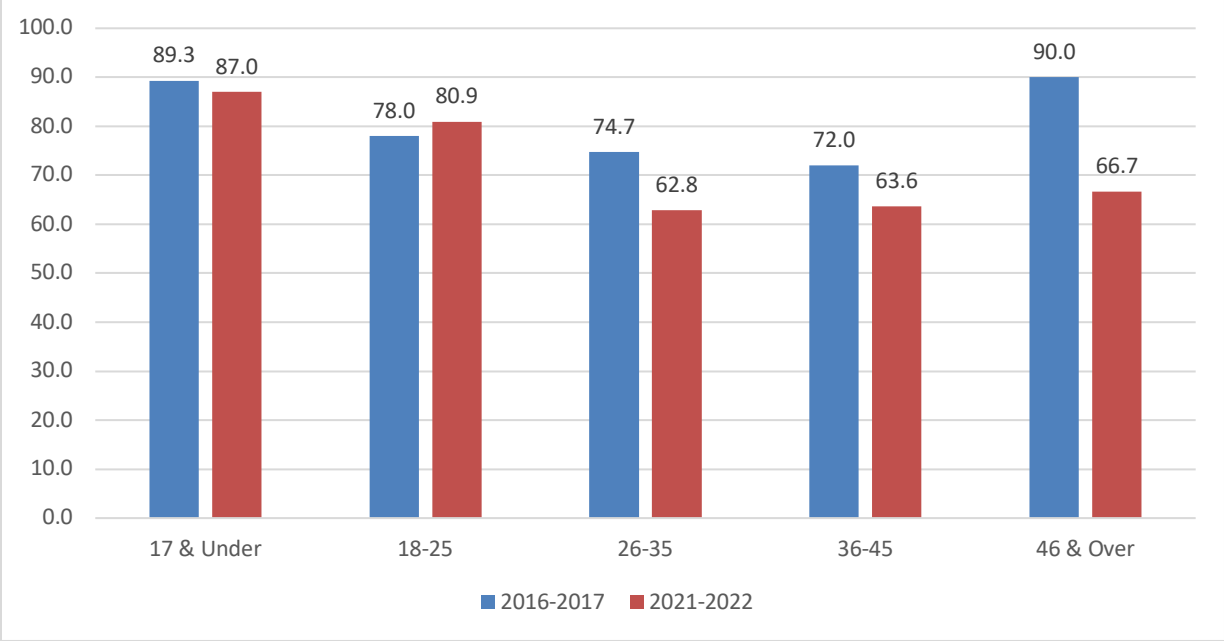
What do graphed results show about trends in the fall-to-spring retention rates of first-time, full-time students by age grouping at MCC from 2016-2017 to 2021-2022?

To address RQ8, a clustered bar chart of the fall-to-spring retention rates by age grouping was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for students ages 17 and under,18-25, 26-35, 36-45,

and 46 and over since the implementation of the intrusive advising model regardless of statistical significance.

Figure 4

Percent of First-time, Full-Time Students Retained Fall-to-Spring by Age Group for 2016-2017 and 2021-2022



Note. Data from Metropolitan Community College Office of Institutional Research.

In 2016-2017, 89.3% of 56 total first-time, full-time students ages 17 and under (n = 50) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 87.0% of 54 total first-time, full-time students ages 17 and under (n = 47) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time students ages 17 and under decreased by 2.3 percentage points (see Figure 4). In 2016-2017, 78.0% of 1,974 total first-time, full-time students ages 18-25 (n = 1,540) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 80.9% of 1,995 total first-time, full-time students ages 18-25 (n = 1613) were

retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time students ages 18-25 increased by 1.9 percentage points. In 2016-2017, 74.7% of 87 total first-time, full-time students ages 26-35 (n = 65) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 62.8% of 43 total first-time, full-time students ages 26-35 (n = 27) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time students ages 26-35 decreased by 11.9 percentage points. In 2016-2017, 72.0% of 25 total first-time, full-time students ages 36-45 (n = 18) at Metropolitan Community College were retained from fall-to-spring. In 2021-2022, 63.6% of 11 total first-time, full-time students ages 36-45 (n = 7) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time students ages 36-45 decreased by 8.4 percentage points. In 2016-2017, 90.0% of 10 total first-time, full-time students age 46 and over (n = 9) were retained from fall-to-spring. In 2021-2022, 66.7% of 3 total first-time, full-time students ages 46 and over (n = 2) were retained from fall-to-spring. In the five-year time span, fall-to-spring retention for first-time, full-time students ages 46 and over decreased by 23.3 percentage points.

RQ9

To what extent is there a difference between 2016-2017 and 2021-2022 fall-to-fall retention rates for all first-time, full-time students at MCC?

H14*:* There is a difference in the proportions of first-time, full-time students retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for

all first-time, full-time students indicated a statistically significant difference between the proportions of 2021-17 and 2021-2022, $z^2(1) = -2.043$, $p = 0.041$ [95% CI -0.061, -0.001]. The proportion of all first-time, full-time students retained fall-to-fall for 2021-2022 (0.597) was statistically higher than the proportion for 2016-2017 (0.566) as the *p*-value was less than 0.05. The decision was made to reject the null hypothesis, and H14 was supported as the results indicated a significant increase in the fall-to-fall retention rates from 2016-2017 (0.566) and 2021-2022 (0.597) for all first-time, full-time students at MCC.

Table 10 provides the frequencies and proportions of all first-time, full-time student fall-to-fall retention rates at Metropolitan Community College in the 2016-2017 and 2021-2022 academic years.

Table 10

First-time, Full-time Student Fall-to-Fall Retention Rates for 2016-2017 and 2021-2022

	2016-217		2021-2022	
	Frequency	Proportion	Frequency	Proportion
Yes	1218	0.566	1257	0.597
No	934	0.434	849	0.403
Total	2152	1.000	2106	1.000

Note. Data from Metropolitan Community College Office of Institutional Research.

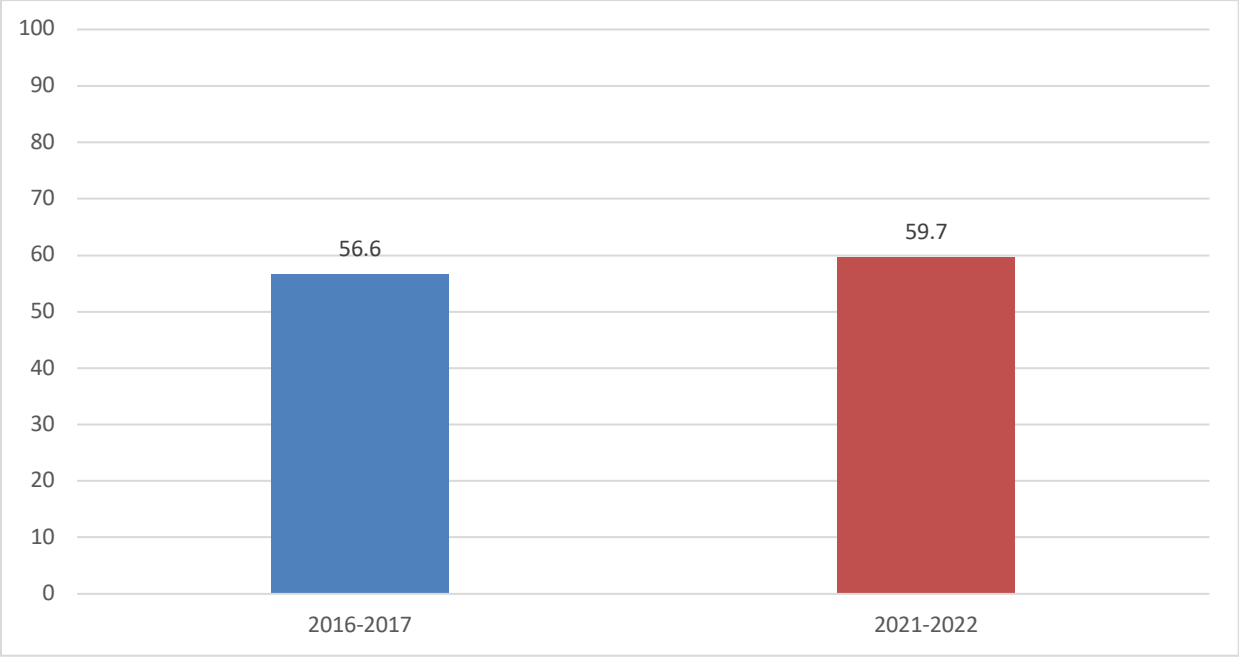
RQ10

What do graphed results show about trends in the fall-to-fall retention rates for all Metropolitan Community College first-time, full-time students at MCC from 2016-2017 to 2021-2022?

To address RQ10, a bar chart of the fall-to-fall retention rates for all first-time, full-time MCC students was created, and trends from 2016-2017 to 2021-2022 were visually inspected to examine any changes in the fall-to-fall retention rates since the implementation of the intrusive advising model regardless of statistical significance.

Figure 5

Percentage of All First-Time, Full-Time Students Retained Fall-to-Fall for 2016-2017 and 2021-2022



Note. Data from Metropolitan Community College Office of Institutional Research.

In 2016-2017, 56.6% of 2,152 total first-time, full-time students (n = 1,218) at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 59.7% of 2,106 first-time, full-time students (n = 1,257) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time students increased by 3.1 percentage points (see Figure 5).

RQ11

To what extent is there a differential impact on fall-to-fall retention rates by gender from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H15: There is a difference in the proportions of female first-time, full-time students retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for female first-time, full-time students indicated no statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -0.643$, $p = 0.521$. The proportion of female first-time, full-time students retained fall-to-fall for 2016-2017 (0.592) and 2021-2022 (0.605) were not statistically different as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H15 was not supported as the results indicated no significant difference in the fall-to-fall retention rates from 2016-2017(0.592) to 2021-2022 (0.605) for female first-time, full-time students at MCC. Table 11 provides the frequencies and proportions by gender of the first-time, full-time student fall-to-fall retention at Metropolitan Community College in the 2016-2017 academic year and the 2021-2022 academic year.

Table 11

First-time, Full-time Students Retained by Gender Fall-to-Fall for 2016-2017 and 2021-2022

	2016-217			2021-2022		
Gender	Total	Frequency Retained	Proportion	Total	Frequency Retained	Proportion
Female	1092	646	0.592	1139	689	0.605
Male	1059	571	0.539	966	568	0.588
Unknown	1	1	1.000	1	0	0.000

Note. Data from Metropolitan Community College Office of Institutional Research.

H16*:* There is a difference in the proportions of male first-time, full-time students retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for male first-time, full-time students indicated a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -2.215$, $p = 0.027$, [95% CI -0.092, -0.006]. The decision was made to reject the null hypothesis as the *p*-value was less than 0.05. H16 was supported as the results indicated that the proportion of male first-time, full-time students retained for 2021-2022 (0.588) was significantly higher than the proportion for 2016-2017 (0.539). The findings indicated there was a significant increase in the fall-to-fall retention rates from 2016-2017 (0.539) to 2021-2022 (0.588) for male first-time, full-time students at MCC (see Table 11).

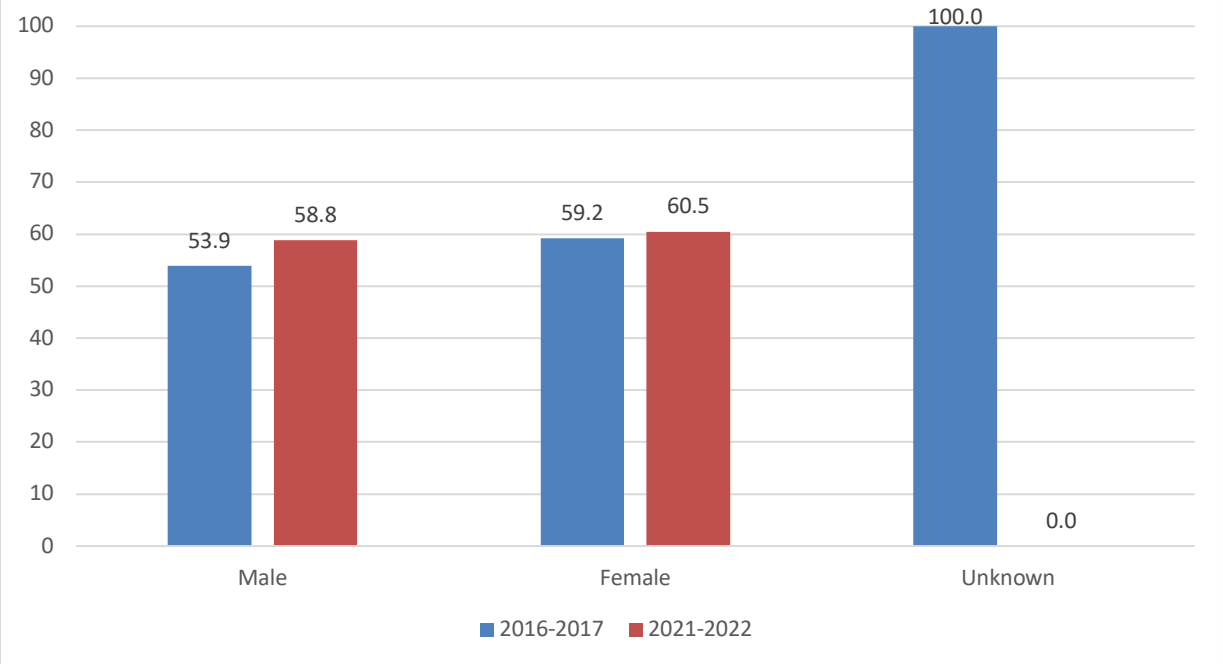
RQ12

What do graphed results show about trends in the fall-to-fall retention rates of first-time, full-time students by gender at MCC from 2016-2017 to 2021-2022?

To address RQ12, a clustered bar chart of the fall-to-fall retention rates by gender was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for female and male students since the implementation of the intrusive advising model regardless of statistical significance.

Figure 6

Percent of First-Time, Full-Time Students Retained Fall-to-Fall by Gender for 2016-2017 and 2021-2022



Note. Data from Metropolitan Community College Office of Institutional Research.

In 2016-2017, 53.9% of the total 1,059 first-time, full-time male students (n = 571) at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 58.8% of 966 total first-time, full-time male students (n = 568) were retained from fall-to-

fall. In the five-year time span, fall-to-fall retention for first-time, full-time male students increased by 4.9 percentage points (see Figure 6). In 2016-2017, 59.2% of 1,092 total first-time, full-time female (n = 689) students at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 60.5% of 1,139 total first-time, full-time female students (n = 689) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time female students increased by 1.3 percentage points. In 2016-2017, with one student of unknown gender, 100.0% were retained fall-to-fall. In 2021-2022, with one student of unknown gender, the percent retained fall-to-fall decreased to 0.0%.

RQ13

To what extent is there a differential impact on fall-to-fall retention rates by race/ethnicity from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H17: There is a difference in the proportions of Black non-Hispanic first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for Black non-Hispanic first-time, full-time students did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -1.398$, $p = 0.162$. The proportion of Black non-Hispanic first-time, full-time students retained fall-to-fall for 2021-2022 (0.537) was not statistically different than the proportion for 2016-2017 (0.474) as the p-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H17 was not supported as the results indicated there was no significant difference in the fall-to-fall retention rates of 2016-2017 (0.474) and 2021-

2022 (0.537) for Black non-Hispanic first-time, full-time students at MCC. Table 12 provides the frequencies and proportions by race/ethnicity of the first-time, full-time student fall-to-fall retention at Metropolitan Community College in the 2016-2017 academic year and the 2021-2022 academic year.

Table 12

First-time, Full-time Students Retained by Race/Ethnicity Fall-to-Spring for 2016-2017 and 2021-2022

	2016-2017			2021-2022		
Race/Ethnicity	Total	Frequency Retained	Proportion	Total	Frequency Retained	Proportion
Black non-Hispanic	291	138	0.474	218	117	0.537
Hispanic	225	134	0.596	286	182	0.636
White non-Hispanic	1310	771	0.589	1349	809	0.600
More than Two Races	168	76	0.452	140	79	0.564
Unknown	158	99	0.627	113	70	0.619

Note. Data from Metropolitan Community College Office of Institutional Research.

H18: There is a difference in the proportions of Hispanic first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for Hispanic first-time, full-time students did not indicate a statistically significant difference

between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -0.941$, $p = 0.347$. The proportion of first-time, full-time Hispanic students retained fall-to-fall for 2021-2022 (0.636) was not statistically different than the proportion for 2016-2017 (0.596) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H18 was not supported as the results indicated there was no significant difference in the fall-to-fall retention rates of 2016-2017 (0.596) and 2021-2022 (0.636) for first-time, full-time Hispanic students at MCC (see Table 12).

H19: There is a difference in the proportions of White non-Hispanic first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for White non-Hispanic first-time, full-time students did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -0.586$, $p = 0.558$. The proportion of White non-Hispanic first-time, full-time students retained fall-to-fall for 2021-2022 (0.600) was not statistically different than the proportion for 2016-2017 (0.589) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H19 was not supported as the results indicated there was no significant difference in the fall-to-fall retention rates of 2016-2017 (0.589) and 2021-2022 (0.600) for White non-Hispanic first-time, full-time students at MCC (see Table 12).

H20: There is a difference in the proportions of multi-ethnic first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for multi-ethnic first-time, full-time students indicated a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -1.969$, $p = 0.049$ [95% CI -0.223, -0.000]. The proportion of multi-ethnic first-time, full-time students retained fall-to-fall for 2021-2022 (0.564) was statistically higher than the proportion for 2016-2017 (0.452) as the *p*-value was less than 0.05. The decision was made to reject the null hypothesis, and H20 was supported as the results indicated a significant increase in the fall-to-fall retention rates from 2016-2017 (0.452) and 2021-2022 (0.564) for all multi-ethnic first-time, full-time students at MCC (see Table 12).

H21: There is a difference in the proportions of unknown ethnicity first-time, full-time students retained between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by age using the Wald test for first-time, full-time students with unknown ethnicity did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = 0.119$, $p = 0.905$. The proportion of first-time, full-time students with unknown ethnicity retained fall-to-fall for 2021-2022 (0.619) was not statistically different than the proportion for 2016-2017 (0.627) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H21 was not supported as the results indicated there was no significant difference in the fall-to-fall retention rates of 2016-2017 (0.627) and 2021-2022 (0.619) for first-time, full-time students with unknown ethnicity at MCC (see Table 12).

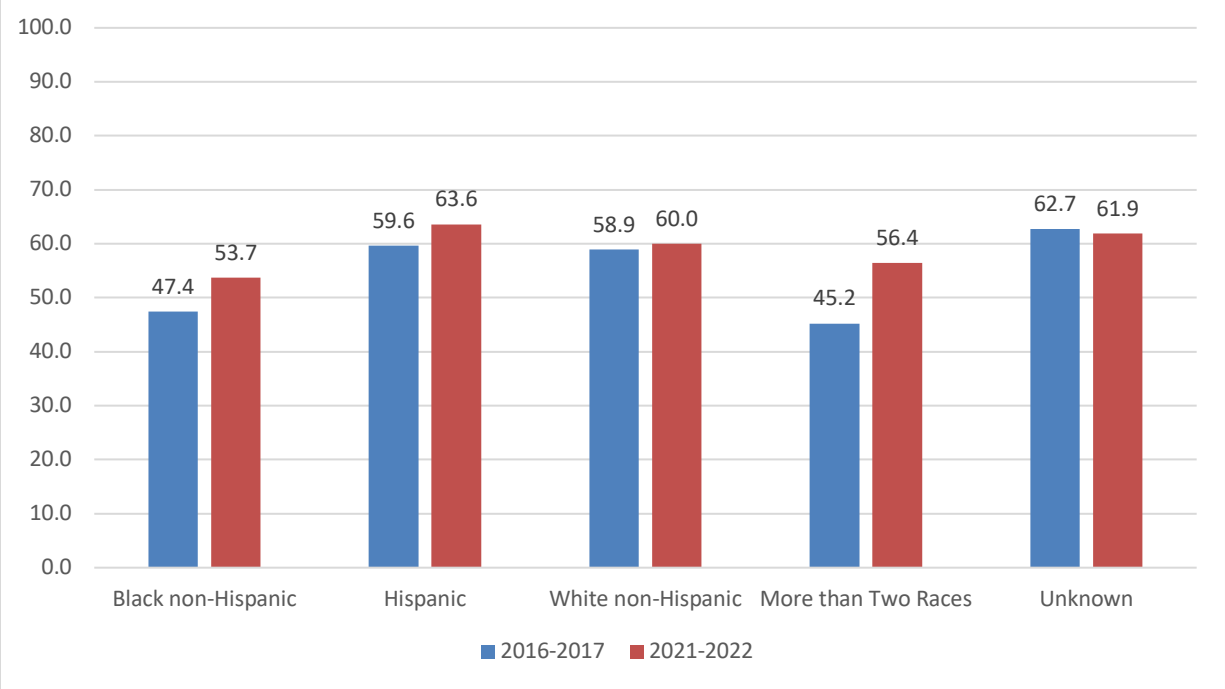
RQ14

What do graphed results show about trends in the fall-to-fall retention rates of first-time, full-time students by race/ethnicity at MCC from 2016-2017 to 2021-2022?

To address RQ14, a clustered bar chart of the fall-to-fall retention rates by race/ethnicity was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for White non-Hispanic, Black non-Hispanic, Hispanic, and multi-ethnic students since the implementation of the intrusive advising model regardless of statistical significance.

Figure 7

Percent of First-time, Full-Time Students Retained Fall-to-Fall by Race/Ethnicity for 2016-2017 and 2021-2022



Note. Data from Metropolitan Community College Office of Institutional Research.

In 2016-2017, 47.4% of the total 291 first-time, full-time Black non-Hispanic students (n = 138) at Metropolitan Community College were retained from fall-to-fall. In

2021-2022, 53.7% of 218 total first-time, full-time Black non-Hispanic students (*n* = 117) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time Black non-Hispanic students increased by 6.3 percentage points (see Figure 7). In 2016-2017, 59.6% of 225 total first-time, full-time Hispanic students (*n* = 134) at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 63.6% of 286 total first-time, full-time Hispanic students (*n* = 182) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time Hispanic students increased by 4.0 percentage points. In 2016-2017, 58.9% of 1,310 total first-time, full-time White non-Hispanic students (*n* = 771) at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 60.0% of 1,349 total first-time, full-time White non-Hispanic students (*n* = 809) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time White non-Hispanic students increased by 1.1 percentage points. In 2016-2017, 45.2% of 168 total first-time, full-time students identifying as more than two races (*n* = 76) at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 56.4% of 140 total first-time, full-time students identifying as more than two races (*n* = 79) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time students identifying as more than two races increased by 11.2 percentage points. In 2016-2017, 62.7% of 158 total first-time, full-time students with an unknown race/ethnicity (*n* = 99) were retained from fall-to-fall. In 2021-2022, 61.9% of 113 total first-time, full-time students with an unknown race/ethnicity (*n* = 70) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time students with an unknown race/ethnicity decreased by 0.8 percentage points.

RQ15

To what extent is there a differential impact on fall-to-fall retention rates by age group from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

H22: There is a difference in the proportions of first-time, full-time students ages 17 years and under retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for first-time, full-time students ages 17 and under did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -0.217$, $p = 0.828$. The proportion of first-time, full-time students ages 17 and under retained fall-to-fall for 2021-2022 (0.574) was not statistically different than the proportion for 2016-2017 (0.554) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H22 was not supported as the results indicated there was no significant difference in the fall-to-fall retention rates of 2016-2017 (0.554) and 2021-2022 (0.574) for first-time, full-time students ages 17 and under at MCC. Table 13 provides the frequencies and proportions by age group of the first-time, full-time student fall-to-spring retention at Metropolitan Community College in the 2016-2017 academic year and the 2021-2022 academic year.

Table 13

First-time, Full-time Students Retained by Age Group Fall-to-Fall for 2016-2017 and 2021-2022

	2016-2017			2021-2022		
Age Group	Total	Frequency Retained	Proportion	Total	Frequency Retained	Proportion
17 & under	56	31	0.554	54	31	0.574
18-25	1974	1115	0.565	1195	1202	0.603
26-35	87	48	0.552	43	20	0.465
36-45	25	17	0.680	11	4	0.364
46 & over	10	7	0.700	3	0	0.000

Note. Data from Metropolitan Community College Office of Institutional Research.

H23: There is a difference in the proportions of first-time, full-time students ages 18-25 years retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for first-time, full-time students ages 18-25 indicated a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = -2.408$, $p = 0.016$ [95% CI = -0.068, -0.007]. The proportion of first-time, full-time students ages 18-25 retained fall-to-fall for 2021-2022 (0.603) was statistically higher than the proportion for 2016-2017 (0.565) as the *p*-value was less than 0.05. Thus, the decision made was to reject the null

hypothesis, and H23 was supported as the results indicated there was a significant increase in the fall-to-fall retention rates from 2016-2017 (0.565) to 2021-2022 (0.603) for first-time, full-time students ages 18-25 at MCC (see Table 13).

H24: There is a difference in the proportions of first-time, full-time students ages 26-35 years retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for first-time, full-time students ages 26-35 did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = 0.932$, $p = 0.351$. The proportion of first-time, full-time students ages 26-35 retained fall-to-fall for 2021-2022 (0.552) was not statistically different than the proportion for 2016-2017 (0.465) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H24 was not supported as the results indicated there was no significant difference in the fall-to-fall retention rates of 2016-2017 (0.465) and 2021-2022 (0.552) for first-time, full-time students ages 26-35 at MCC (see Table 13).

H25: There is a difference in the proportions of first-time, full-time students ages 36-45 years retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for first-time, full-time students ages 36-45 did not indicate a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = 1.834$, $p = 0.670$. The proportion of first-time, full-time students ages 36-45 retained fall-to-fall for 2021-2022 (0.364) was not statistically different than the proportion for 2016-2017

(0.680) as the *p*-value was greater than 0.05. The decision made was a failure to reject the null hypothesis, and H25 was not supported as the results indicated there was no significant difference in the fall-to-fall retention rates of 2016-2017 (0.680) and 2021-2022 (0.364) for first-time, full-time students ages 36-45 at MCC (see Table 13).

H26: There is a difference in the proportions of first-time, full-time students ages 46 years and over retained fall-to-fall between 2016-2017 and 2021-2022 at MCC.

The results of the chi-square analysis of the 2x2 contingency table for the dichotomous categorical variables of retained fall-to-fall by year using the Wald test for first-time, full-time students ages 46 and over indicated a statistically significant difference between the proportions for 2016-2017 and 2021-2022, $z^2(1) = 4.830$, $p = 0.001$ [95% CI 0.416, 0.984]. The proportion of first-time, full-time students ages 46 and over retained fall-to-fall for 2021-2022 (0.000) was statistically lower than the proportion for 2016-2017 (0.700) as the *p*-value was less than 0.05. Thus, the decision made was to reject the null hypothesis, and H24 was supported as the results indicated there was a significant decrease in the fall-to-fall retention rates from 2016-2017 (0.700) to 2021-2022 (0.000) for first-time, full-time students age 46 and over at MCC (see Table 13).

RQ16

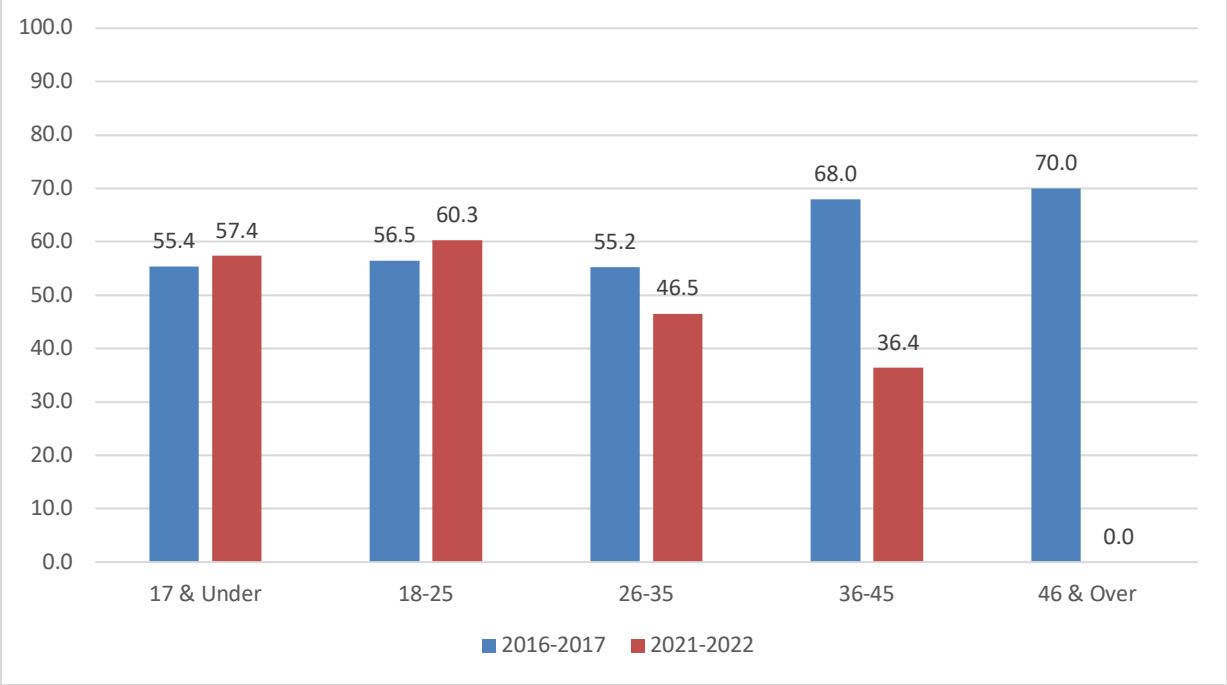
What do graphed results show about trends in the fall-to-fall retention rates of first-time, full-time students by age group at MCC from 2016-2017 to 2021-2022?

To address RQ16, a clustered bar chart of the fall-to-fall retention rates by age grouping was created, and trends from 2016-2017 to 2021-2022 were visually inspected to identify changes in retention rates for students ages 17 years and under, 18-25, 26-35,

36-45, and 46 and over since the implementation of the intrusive advising model regardless of statistical significance.

Figure 8

Percent of First-time, Full-time Students Retained Fall-to-Fall by Age Group for 2016-2017 and 2021-2022



Note. Data from Metropolitan Community College Office of Institutional Research.

In 2016-2017, 55.4% of 56 total first-time, full-time students ages 17 and under (*n* = 31) at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 5704% of 54 total first-time, full-time students ages 17 and under (*n* = 31) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time students ages 17 and under increased by 2.0 percentage points (see Figure 8). In 2016-2017, 56.5% of 1,974 total first-time, full-time students ages 18-25 (*n* = 1,115) at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 60.0% of 1,995 total first-time, full-time students ages 18-25 (*n* = 1202) were retained from fall-to-

fall. In the five-year time span, fall-to-fall retention for first-time, full-time students ages 18-25 increased by 3.8 percentage points. In 2016-2017, 55.2% of 87 total first-time, full-time students ages 26-35 (n = 48) at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 46.5% of 43 total first-time, full-time students ages 26-35 (n = 20) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time students ages 26-35 decreased by 8.7 percentage points. In 2016-2017, 68.0% of 25 total first-time, full-time students ages 36-45 (n = 17) at Metropolitan Community College were retained from fall-to-fall. In 2021-2022, 36.4% of 11 total first-time, full-time students ages 36-45 (n = 4) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time students ages 36-45 decreased by 31.6 percentage points. In 2016-2017, 70.0% of 10 total first-time, full-time students ages 46 and over (n = 7) were retained from fall-to-fall. In 2021-2022, 0.0% of 3 total first-time, full-time students ages 46 and over (n = 0) were retained from fall-to-fall. In the five-year time span, fall-to-fall retention for first-time, full-time students ages 46 and over decreased by 70.0 percentage points.

Summary

Chapter 4 included the results of hypothesis testing for the sixteen research questions. The hypothesis testing results for fall-to-spring retention rates for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022 showed there were significant increases in fall-to-spring retention rates for males (0.753 to 0.798) and students ages 18-25 (0.780 to 0.809). The graphed results for fall-to-spring retention rates for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022 showed that there were increases in fall-to-spring retention

rates for all, Black non-Hispanic, and multi-ethnic students but decreases for students ages 17 and under, 26-35, 36-45, and 46 and over. The hypothesis testing results for fall-to-fall retention rates for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022 showed there were significant increases in fall-to-fall retention rates for all (0.566 to 0.597), males (0.539 to 0.588), multi-ethnic (0.452 to 0.564), and ages 18-25 (0.565 to 0.603) but a significant decrease in fall-to-fall retention rates for ages 46 and over (0.700 to 0.000). The graphed results for fall-to-fall retention rates for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022 showed there were increases in fall-to-fall retention rates for females, Black non-Hispanic, Hispanic, and students ages 17 and under but there were decreases for students ages 26-35 and ages 36-45. Chapter 5 presents an interpretation of the results, significant findings, implications for practice, and recommendations for future research.

Chapter 5

Interpretation and Recommendations

The current study examined the effects on retention rates of an intrusive advising model implemented in the fall of 2017 for first-time, full-time students at Metropolitan Community College's five campuses and its differential impacts on institutional student fall-to-spring and fall-to-fall retention rates from 2016-17 to 2021-2022 across selected demographic characteristics. Chapter 1 introduced the background, problem statement, the purpose of the study, significance, delimitations, assumptions, research questions, and a definition of terms. Chapter 2 provided a review of the research literature applicable to student development theory, community college demographics, and the field of academic advising. Chapter 3 detailed the research design, selection of participants, measurement, data collection procedures, data analysis, hypothesis testing, and study limitations. Chapter 4 presented the results of the data analysis, including descriptive statistics and hypothesis testing. Chapter 5 describes and interprets whether an intrusive advising method impacted first-time, full-time student fall-to-spring and fall-to-fall retention rates from 2016-2017 to 2021-2022 overall and by demographic subgroups at MCC. Chapter 5 also includes a discussion of the findings related to the literature and contains recommendations for further research regarding academic advising and retention of community college students.

Study Summary

Overview of the Problem

In the fall of 2017, MCC implemented an intrusive advising model for first-time, full-time students to address the problem of lower-than-average retention rates compared

to state and national average rates. To implement the intrusive advising model, a new procedure was developed to place an enrollment hold on all first-time, full-time student accounts, preventing enrollment in subsequent terms. Only an academic advisor could release the enrollment hold, ensuring students developed a long-term educational plan before enrolling in their second semester. Evidence of a relationship between intrusive advising outcomes and higher retention rates has been published in the academic literature (Earl, 1988; Fowler & Bolan, 2010; Glennen & Baxley, 1985; Schwebel, et al., 2012; Varney, 2012). Although research about the impact of intrusive advising models has been conducted at both four-year institutions and community colleges, the results have been mixed. Thus, this study focused on whether the intrusive advising model implemented at MCC in the fall of 2017 had equally impacted the retention rates for all first-time, full-time students.

Purpose Statement and Research Questions

The first purpose of this current quantitative study was to investigate the potential impacts of the intrusive advising model implemented in the fall of 2017 on fall-to-spring and fall-to-fall retention rates for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022. The second purpose of the study was to examine the potential differential impacts of the intrusive advising model on fall-to-spring and fall-to-fall retention rates by gender, ethnicity, and age demographic subgroups from 2016-2017 to 2021-2022.

The current causal-comparative quantitative study employed *ex post facto* data to investigate the extent to which the intrusive advising model intervention impacted fall-to-spring and fall-to-fall retention rates overall and for demographic subgroups. The fall-to-

spring and fall-to-fall retention rates for all MCC's first-time, full-time students from 2016-2017 (before implementation of the intrusive advising model) were compared to those overall retention rates of 2021-2022 (five years after implementation). Differential impacts for the retention rate comparisons from 2016-2017 to 2021-2022 by the student demographic characteristic subgroups of gender, ethnicity, and age groupings were also examined. Clustered bar charts for all comparisons were visually inspected to identify trends in the retention rates from 2016-2017 to 2021-2022, regardless of whether the comparisons were statistically significant. Sixteen research questions guided the current study:

RQ1

To what extent is there a difference between 2016-2017 and 2021-2022 fall-to-spring retention rates for all first-time, full-time students at MCC?

RQ2

What do graphed results show about trends in the fall-to-spring retention rates for all Metropolitan Community College first-time, full-time students at MCC from 2016-2017 to 2021-2022?

RQ3

To what extent is there a differential impact on fall-to-spring retention rates by gender from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

RQ4

What do graphed results show about trends in the fall-to-spring retention rates by gender at MCC from 2016-2017 to 2021-2022?

RQ5

To what extent is there a differential impact on fall-to-spring retention rates by race/ethnicity from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

RQ6

What do graphed results show about trends in the fall-to-spring retention rates by race/ethnicity at MCC from 2016-2017 to 2021-2022?

RQ7

To what extent is there a differential impact on fall-to-spring retention rates by age group from 2016-2017 to 2021-2022 for first-time, full-time students at MCC?

RQ8

What do graphed results show about trends in the fall-to-spring retention rates by age grouping at MCC from 2016-2017 to 2021-2022?

RQ9

To what extent is there a difference between 2016-2017 and 2021-2022 fall-to-fall retention rates for all first-time, full-time students at MCC?

RQ10

What do graphed results show about trends in the fall-to-fall retention rates for all Metropolitan Community College first-time, full-time students at MCC from 2016-2017 to 2021-2022?

RQ11

To what extent is there a differential impact on fall-to-fall retention rates by gender from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

RQ12

What do graphed results show about trends in the fall-to-fall retention rates by gender at MCC from 2016-2017 to 2021-2022?

RQ13

To what extent is there a differential impact on fall-to-fall retention rates by race/ethnicity from 2016-2017 and 2021-2022 for first-time, full-time students at MCC?

RQ14

What do graphed results show about trends in the fall-to-spring retention rates by race/ethnicity at MCC from 2016-2017 to 2021-2022?

RQ15

To what extent is there a differential impact on fall-to-fall retention rates by age group from 2016-2017 and 2020-2021 for first-time, full-time students at MCC?

RQ16

What do graphed results show about trends in the fall-to-fall retention rates by age at MCC from 2016-2017 to 2021-2022?

Review of the Methodology

The current study employed a causal-comparative, *ex post facto* methodology to investigate the extent to which the intrusive advising intervention impacted student fall-to-spring and fall-to-fall retention rates from 2016-2017 to 2021-2022 and whether there was a differential impact across demographic groups. Archived data were retrieved from the Metropolitan Community College Institutional Research office for first-time, full-time students for 2016-2017 (before implementing the intrusive advising model in the fall of 2017) and 2021-2022 (five years after implementation). The dependent variables

compared for pre- and post-intervention were 2016-2017 and 2021-2022 fall-to-spring retention rates and fall-to-fall retention rates for all first-time, full-time students to examine the extent to which the intervention influenced changes in retention. The study explored the existence of any differential impacts on the retention rates by gender (female, male), ethnicity (Black non-Hispanic, Hispanic, White non-Hispanic, two or more races, unknown), or age grouping (17 and under, 18-25, 26-35, 36-45, 46 and over). Descriptive data, clustered bar charts, and a chi-square analysis with a Wald statistic (z^2), also known as a Wald test, were used to address the 16 research questions.

Major Findings

The first purpose of the current quantitative study was to investigate the potential impacts of the intrusive advising model implemented in the fall of 2017 on fall-to-spring and fall-to-fall retention rates for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022. The graphed results for fall-to-spring retention for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022 showed a slight increase in fall-to-spring retention for all students. The hypothesis testing results for fall-to-fall retention for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022 showed there was a significant increase in fall-to-fall retention for all students (0.566 to 0.597) after the implementation of the intrusive advising model.

The second purpose of the study was to examine the potential differential impacts of the intrusive advising model on fall-to-spring and fall-to-fall retention rates by gender, ethnicity, and age demographic subgroups. The hypothesis testing results for fall-to-spring retention for all first-time, full-time students at Metropolitan Community College

from 2016-2017 to 2021-2022 showed there were significant increases in fall-to-spring retention for males (0.753 to 0.798) and students ages 18-25 (0.780 to 0.809). The graphed results for fall-to-spring retention for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022 showed that there was a slight increase in fall-to-spring retention for Black non-Hispanic and multi-ethnic students but slight decreases for students ages 17 and under, 26-35, 36-45, and 46 and over. The hypothesis testing results for fall-to-fall retention for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022 showed there were significant increases in fall-to-fall retention for males (0.539 to 0.588), multi-ethnic (0.452 to 0.564), and ages 18-25 (0.565 to 0.603) but a significant decrease in fall-to-fall retention for ages 46 and over (0.700 to 0.000). The graphed results for fall-to-fall retention for all first-time, full-time students at Metropolitan Community College from 2016-2017 to 2021-2022 showed there were slight increases in fall-to-fall retention for females, Black non-Hispanic, Hispanic, and students ages 17 and under, but slight decreases for students ages 26-35 and ages 36-45.

It is important to note that the adult, or non-traditional, student population experienced significant decreases in first-time, full-time enrollment from 2016-2017 to 2021-2022. First-time, full-time enrollment for students age 26-35 decreased by 50.6%; students ages 36-45 decreased by 56.0%; and students ages 46 and over decreased by 70.0% (see Table 9). The decrease in first-time, full-time adult student enrollment may be correlated to the decreases in spring-to-fall and fall-to-fall retention rates for this age group.

Findings Related to the Literature

Approximately 45% of undergraduate students in the United States attend community colleges (NCES, 2021). However, the fall-to-fall retention rate for first-time, full-time students at public, two-year degree-granting institutions is only 60.5% compared to 82.4% at public, four-year degree-granting institutions (NCES, 2021). According to the National Student Clearinghouse (2019), there has been a gap in community college persistence, retention, and graduation rates among demographic subgroups, with black, Hispanic, and male students experiencing the highest disproportionate impacts. To address this gap, community college reforms have focused on interventions to increase student persistence, retention, and completion at the postsecondary level.

Many community colleges have implemented an intrusive academic advising model as a focus of potential reform (Donaldson et al, 2016; Fowler & Boylan, 2010; NACADA, 2016; Varney, 2012). An intrusive advising model seeks to employ a proactive approach, with advisors serving as students' primary connection to the institution and helping them to create short-and long-term educational goals (Varney, 2012). This connection between students and their academic advisors creates a foundational support system for promoting academic success and achievement.

Results in the research literature have suggested a positive correlation between academic advising and student persistence and retention. An intrusive advising model promotes deliberate, early intervention in a relationship-based approach "to help students determine what type of obstacles they may be facing on the path to degree completion and help them create plans and short- and long-term goals directed toward overcoming

these obstacles" (Varney, 2012, para. 12). The current study's findings provide empirical evidence that implementing an intrusive academic advising model led to increased student persistence and retention at Metropolitan Community College.

Additionally, the intrusive advising model appeared to assist in closing the gap in gender and racial disparities reported at public two-year institutions. According to a 2022 "Persistence and Retention" report published by the National Student Clearinghouse Research Center, females enrolled at a community college have higher fall-to-fall retention rates (53.8%) than their male counterparts (50.7%). Five years after implementing the intrusive advising model at Metropolitan Community College, first-time, full-time male students were retained fall-to-fall at 58.8%, a total of 8.1 percentage points higher than the national average in 2020.

Meeting the complex needs of underrepresented community college students is critical to addressing retention and completion. A Community College Survey of Student Engagement report indicated that 32% of community college students report rarely or never using academic advising services, and 70% report rarely or never discussing career plans with a faculty or academic advisor (2014). Studies support that intrusive advising is an effective intervention to reduce attrition, increase enrollments for all students, and is particularly impactful for minority students (Harrell, 2016). The intrusive academic advising model implemented at Metropolitan Community College in 2017 resulted in slight increases in fall-to-spring persistence for Black non-Hispanic and multi-racial students. Fall-to-fall retention rates increased significantly for multi-ethnic students and Black non-Hispanic and Hispanic students both experienced slight increases. The current study's findings supported that providing an intrusive advising model that incorporates

mandatory appointments, supplemental education, and goal setting improved persistence and retention rates for underrepresented students at Metropolitan Community College.

Conclusions

The current quantitative comparative study examined the effects of an intrusive advising model implemented in the fall of 2017 for first-time, full-time students at Metropolitan Community College and its impact on institutional student retention rates across various demographic subgroups. The study results supported that an intrusive advising model implemented at Metropolitan Community College in the fall of 2017 led to significant increases in fall-to-fall retention for all students, significant increases in fall-to-spring retention for males and students ages 18-25, and significant increases in fall-to-fall retention rates for males, multi-ethnic students, and students ages 18-25. The study results demonstrated slight increases in fall-to-spring retention for all students, Black non-Hispanic, and multi-ethnic students. Conversely, the study results indicated slight decreases in fall-to-spring retention in students ages 17 and under, 26-35, 36-45, and 46 and over, slight decreases in fall-to-fall retention in students ages 26-35 and 36-45, and significant decreases in students ages 46 and over.

The results of the current study provided empirical evidence that the intrusive advising model implemented at Metropolitan Community College was a successful intervention to increase student retention rates for all students, males, traditional-aged students (18-25), Black non-Hispanic, and multi-ethnic students. The demographic subgroups that exhibited a decrease in student retention rates over this same period were age-related (17 and under, 26-35, 36-45, 46 and over).

Implications for Action

Community colleges are often criticized for generating poor student success and completion rates. According to the Hechinger Report (2023), written as part of the Saving the College Dream series, nearly half of students drop out within a year of enrolling at a community college and only slightly more than 40% complete a degree within six years. It is incumbent upon community college leaders to provide well-structured and intentionally designed supports to increase student retention and completion. Findings of the current study demonstrated that an intrusive academic advising model is one such intervention that has proven successful at Metropolitan Community College, a large, multi-district college system located in the Midwest.

The study results provide various implications for practice for student affairs professionals. First, institutions must create an infrastructure to support an intrusive advising model. This framework requires academic advisor training, informed by student development theory, focusing on relationship-building, coaching students through challenges, navigating complex systems, and teaching students to make thoughtful and deliberate decisions about their future.

Additionally, institutions must ensure reasonably assigned caseloads that support individual students in having a meaningful and sustained relationship with their academic advisor. The EAB (formerly the Education Advisory Board) suggests smaller caseloads of 250-300 students allow academic advisors to meet more frequently with students for longer durations (Grant, 2023). To ensure reasonable caseloads institutions should earmark adequate funding to establish an infrastructure that provides a suitable number of professional advisors for the student population they serve.

This infrastructure should also include access to advisement tools, such as early alert systems, online scheduling calendars, degree planners, personalized dashboards, automated communications, and student engagement and success metrics. These reporting mechanisms are crucial for advisement staff to provide timely and comprehensive student support. Utilization of an electronic advising platform is a best practice in an intrusive academic advising approach and is critical to caseload management and timely academic intervention (Varney, 2012). Institutions must ensure adequate training and support for all advisors and staff that will interface with the college's electronic advising platform is provided.

An additional recommendation for practice is the development of an advisement survey which could be administered to students to gain insight into the student's perception of their academic advising experience. Information gathered through pre- and post-intrusive advisement surveys could provide valuable information on whether students feel the academic advising experience contributed to their academic progression, increased their understanding of the academic curriculum, assisted in the development of academic and career goals, and how academic advising impacted their success overall. The survey results could help to identify areas of continuous improvement in intrusive advising supports and practices at the institution.

Finally, intrusive academic advising should be intentionally integrated within a comprehensive student support system that incorporates both academic and non-academic barriers. The advisor's role is to understand students' needs and connect them with available supports including financial and scholarship assistance, tutoring, peer mentoring, disability services, campus food pantries, co-curricular experiences, and more.

When integrated within a holistic student support structure, intrusive academic advising can play a crucial role in helping students achieve successful outcomes.

Recommendations for Future Research

Further research should be conducted to measure the impact of an intrusive academic advising model on specific student populations such as international students, first-generation, adult (or non-traditional) students, veterans, online and part-time enrolled students. Furthermore, assessing measurable student learning outcomes associated with a student's experience with academic advising would provide meaningful data to identify if programmatic objectives were being met and can serve as a catalyst for ongoing process improvement.

Additionally, research should also be conducted to identify how intrusive academic advising models integrated with other support services (e.g., learning communities, guided pathways, TRIO, first-year experience, cohort groups) could impact educational outcomes for community college students overall and by demographic subgroups. While community colleges have historically faced substantial persistence and retention challenges, there remains limited research on how the global COVID-19 pandemic further impacted community college success rates and whether there were differential impacts by demographic subgroups. A deeper analysis of the COVID-19 impact on community college retention and completion is an area worthy of further exploration.

Concluding Remarks

The implications of the current study's findings for application in higher education suggest that an intrusive academic advising approach can be a meaningful

intervention to increase student persistence and retention rates. As community colleges grapple with poor retention and completion rates, it is incumbent on community college leaders to implement promising best practice strategies to reverse this trend. According to the U.S. Department of Education in 2023, 70% of jobs will require education or training beyond high school in 2027. Community colleges must be fully engaged and committed to helping students obtain a postsecondary credential so students can be strategically positioned in an increasingly competitive job market. Education can dramatically change a student's life trajectory by providing opportunities for upward social and financial mobility. As student needs, demographics, and circumstances shift, community colleges must adapt and be open to implementing research-based practices shown to increase student success and completion. In this concerted effort, community colleges could regain appropriate recognition for their substantial role in creating a competent workforce within their local communities, regional workforce, and the U.S. economy.

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Appendices

Appendix A: Metropolitan Community College Site Approval Letter

Metropolitan Community College
3200 Broadway
Kansas City, MO 64111

Baker University
Graduate School of Education
7301 College Blvd., Suite 120
Overland Park, KS 66210

June 21, 2023

Subject: Site Approval Letter

To whom it may concern:

This letter acknowledges that I have received and reviewed a request by Christine Atkinson to conduct a research project entitled "Impact of an Intrusive Advising Model for First-time, Full-time Student Retention Rates at Metropolitan Community College." Provisional approval of this research is granted to be conducted at Metropolitan Community College. Final approval will be granted once Baker University's Institutional Review Board approval is received.

Sincerely,
Melissa Giese
Executive Director of Institutional Research & Analytics
Chair of Institutional Review Board

Appendix B: Baker University Institutional Review Board Approval Letter

Baker University Institutional Review Board

July 25, 2023

Dear Christine Atkinson and Judy Korb,

The Baker University IRB has reviewed your project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.
6. If this project is not completed within a year, you must renew IRB approval.

If you have any questions, please contact me at skimball@bakeru.edu or 785.594.4563.

Sincerely,

Scott Kimball, PhD
Chair, Baker University IRB

Baker University IRB Committee
Jiji Osiobe, PhD
Tim Buzzell, PhD
Susan Rogers, PhD

Appendix C: Metropolitan Community College Institutional Data Request

Institutional Research Data Request Form

Please complete the form below. Please allow a minimum of 15 business days for the completion of any data request. While every effort will be made to meet your requested completion date, please understand that current workload and strict compliance reporting deadlines may result in a delayed completion of your data request.

1. First and Last Name * Christine Atkinson
2. If you are submitting this request on behalf of another person, please indicate the requester's first and last name.

   N/A

3. Email Address * christine.atkinson@mcckc.edu
4. What is the intended outcome? *

   To compare persistence and retention rates of first-time, full-time students at MCC for the academic years 2016-2017 and 2021-2022 to measure the impacts across demographic subgroups of an intrusive advising model implemented in 2017.

5. Who is the intended audience? *

   Doctoral dissertation committee (Baker University IRB approval submitted to Melissa Giese on 7/25/23).

6. What type of decision-making will be impacted by the data? *

   The results of the data analysis will inform the institution about academic advising models that best support student success and influence decisions about future academic advising practices implemented at MCC.

7. Please provide the details of the data you are needing. *

   First-time, Full-time, Degree-Seeking Students (district-wide) for the academic years 2016-2017 and 2021-2022 disaggregated by the following demographics: Gender (Male or Female) Race/Ethnicity (White Non-Hispanic, Black Non-Hispanic, Hispanic, two or more races) Age Grouping (18-25, 26- 35, 36-45, 46+) In addition, I am seeking to collect persistence and retention data for each student. Perhaps a column for Fall-to-Spring persistence and a column for Fall-to-Fall persistence might work with some type of indicator or flag. The 2016-2017 cohort needs the following information: Enrolled Fall 2016 to Spring 2017 Enrolled Fall 2016 to Fall 2017 The 2021-2022 cohort needs the following information: Enrolled Fall 2021 to Spring 2022 Enrolled Fall 2021 to Fall 2022

8. Enter the preferred completion date. * 8/17/2023

9. Please provide justification if the preferred completion date is needed in less than 15 business days.

   N/A

10. Are you uploading attachments with this request? * No

7/28/23, 8:43 AM Institutional Research Data Request Form
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