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Community Colleges & Athletics: Academic Success of Student-Athletes

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SHAWNEE STATE UNIVERSITY

Community Colleges & Athletics: Academic Success of Student-Athletes

A Thesis

By

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Department of Mathematical Sciences

Submitted in partial fulfillment of the requirements

for the degree of

Master of Science, Mathematics

7/20/2022

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7/31/2022

Graduate Director, Date

The thesis entitled '**Community Colleges & Athletics: Academic Success of Student-Athletes'** presented by **Courtney Calkins**, a candidate for the degree of **Master of Science in Mathematics,** has been approved and is worthy of acceptance.

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ABSTRACT

This research examines the relationship between community colleges and athletics. There is little research done on the interaction between athletes, on-campus housing, and community colleges. Studies show that the more students are involved in the college, the more likely they are to stay at the school they are at and succeed academically. Little research is done at community colleges because they often lack athletics or housing, but there is a growth in the number of athletic teams in the junior college system as well as the number of schools that provide housing for their students. This research is to help bridge the gap. Community colleges are becoming more sought out by student-athletes because it helps them grow as an athlete, helps them improve their academics, and provides a place for them to play for at least two more years beyond high school.

The data for this study was from Iowa Lakes Community College, a small rural school in Iowa that has both athletics and on-campus housing. Information such as athletic participation, housing status, gender, socioeconomic status, overall GPA, term GPA, and the type of degree being obtained were provided. Using R, the three research questions were analyzed. A multiple regression test, a two-way ANOVA, a one-way ANOVA, and t-tests were all performed to get the results of this research.

The findings of the research show that the interaction between on-campus housing, athletic participation, gender, SES, and degree being sought out are all categorical predictors of overall GPA. There were also findings that the interaction of athletic participation and housing status were not significant predictors of overall GPA, but athletic participation is a significant predictor of overall GPA. It was also discovered

that in-season athletes had a lower overall GPA compared to when they were out-of-season.

The implications of the results show that at Iowa Lakes Community College, the student-athletes tend to have a higher overall GPA. This may have to do that the student-athletes tend to feel more involved and a part of the school community. The results also show that there is also a difference for in-season and out-of-season GPAs, which helps bring attention to how students may need more help and attention in the classroom during the time they are competing because they spend a lot of time focusing on how they are competing.

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CHAPTER I: Introduction

Collegiate athletics have been around since the mid 1840's, and they have only continued to grow and gain more popularity (Lewis, 1970). Many universities and colleges take great pride in their athletic teams. Many programs are revenue generating, while many other programs also help bring pride and unity to their school and surrounding community. While the National Collegiate Athletic Association (NCAA) began in 1906, popularity amongst Junior College athletics began to rise in the 1930's when the National Junior College Athletic Association was founded when the NCAA rejected thirteen junior college's petitions to compete in their Track & Field Championships (National Collegiate Athletic Association, 2021). The NJCAA held its first championship in May of 1939, first starting with track and field, and eventually expanding to 26 different sports, 13 men's sports and 13 women's sports across 24 states (National Junior College Athletic Association, 2017).

Oftentimes community colleges are looked at as schools for non-traditional students, for low-income students, students who didn't have the grades to get into university right out of high school, or for students who want to major in a specific trade. Community colleges serve a wide variety of students which makes for a very diverse population. While community colleges still serve a variety of different students from a wide range of backgrounds, community colleges aren't just for academics, they can also be extremely beneficial for athletes. Athletes choose to go the junior college route for many different reasons, whether it be that they wanted a chance to play collegiately for at least two more years, they didn't get the scholarship offer they wanted out of high school,

or they need help boosting their Grade Point Average (GPA) to get into a higher level of athletics due to NCAA or National Association of Intercollegiate Athletics (NAIA) rules.

In 2019, there were 1.9 million full-time students enrolled within the community college system (Teachers College, Columbia University, 2019). With around 60,000 of those students being student-athletes in the NJCAA, and around 26,000 student-athletes in the California Community College Athletic Association (CCCAA), it is important to take a closer look at the student-athletes relationship within the community college system, their academics, their athletics, and their overall integration into the school itself (National Junior College Athletic Association, 2017; California Community College Athletic Association, 2019).

Theoretical Framework

Vincent Tinto's model of Student Departure (1993) will be the framework behind this research. The idea behind Tinto's model of Student Departure is to look at the three major sources that cause students to "depart" from the school they are at. The three main sources that cause students to leave are having problems with their academics, facing challenges within the education system and their career goals, and failing to connect both academically and socially (University of Maine System, 2019). The main focus from Tinto's (1993) model will be the idea that students who successfully connect academically and socially with others at the school, tend to pursue and improve their academics at the school they are at. Tinto (1993) discusses that students who feel more integrated through social and academic relationships tend to stay at their school.

Tinto has done extensive research on the idea that in order for students to succeed, they need to feel integrated into their environment, both academically and socially. Tinto (1993) says that in order for students to persist towards their academic goals at a specific school, the student must feel incorporated into both the intellectual and social life of the college or university. This includes their academic performance, their interactions with faculty and staff, and their involvement in extracurriculars and peer-groups (Michigan State University, 2021). While social integration and academic integration are very different, when they both occur, they are both increasingly strengthened, and students are more likely to pursue their academics at their given college. Although, as Tinto points out, both don't need to occur at the same level for students to remain integrated at their school (Tinto, 1993). Because Tinto found the correlation between social integration and being successful in school, his theory will be used for the framework for this research.

In general, this theory has been used more for 4-year university and college research because of the stigma that community colleges do not offer enough of the social experience compared to four-year colleges and universities. Tinto (1993) has questioned if his theory applies to community colleges because of the lack of social integration within the college community (Tinto, 1993, p. 78). This study will use Tinto's theory because the community college that will be studied has athletics, on-campus housing, and many academic resources to help students succeed.

Tinto's (1993) model is a huge influence for many studies at the collegiate level. His framework will be the basis for this research because student-athletes tend to have more people they connect with. They have teammates and coaches who support them, smaller class sizes that feel more personal and that allow for more one-on-one with

professors, and on-campus housing that helps them build connections and relationships right on campus.

Statement of the Problem

There are many different factors to take in for each student at a community college, from number of credits taken, to online or in-person classes, to the different degrees the students will earn. There are also factors, such as housing and athletics, which may or may not help students feel more integrated into the school environment which may also help push them to do better academically. Do community colleges help improve the academic success of student-athletes?

Background of the Problem

There was a big surge of research done about ten years ago over community colleges and the impact in athletics, but there are far and few between since then. Because times are constantly changing and schools and athletics are evolving, it is important to look into the role of community colleges and their athletic teams, and it is more important to see if community colleges provide the best opportunity for their athletes to succeed and improve academically.

Community colleges have a wide variety of students who attend. The variety ranges from non-traditional students, those who didn't have the grades to get into a 4-year university or college, first generation students, low-income students, and many more. Oftentimes when research is done about collegiate athletics, it is usually aimed at the 4-year level simply because it is more well-known and surveys a wider population,

and many people believe that four-year institutions have more to offer, such as housing, better funding, and better academic services. Recently, there has been a major shift in the draw towards Junior College athletics. With smaller class sizes, student-athletes, and students in general, get more one on one with teachers, along with the ability to feel more comfortable in the classroom setting because there are fewer students in classes. Teachers and professors tend to have fewer students overall, on average there are about 25-35 students per class, allowing for teachers to be more accessible to students both during class and during office hours (Texas Southmost College, 2018). Community colleges also offer a lot of academic assistance, such as professional tutors, peer tutors, and programs such as TRIO Student Support Services that help low-income, first generation, or students with physical or mental disabilities stay on track academically throughout the year (US Department of Education, 2022). Community colleges can help students focus in on the academics because they tend to be smaller schools with more resources. Many athletic programs also require their student-athletes to take part in weekly study tables, and students must maintain a 2.0 GPA from the previous semester to remain eligible to compete during their season. Student-athletes also choose community colleges for athletics because they are immediately exposed to collegiate level competition. This helps student-athletes get the in-game experience they often need, which in turn makes the athlete more marketable and helps them get more looks from the 4-year institutions. Many junior college teams play 4-year teams during competition, which helps with exposure for the student-athletes. Coaches are also oftentimes working to help get student-athletes recruited after their two years are up at the community college. Teams

also tend to have smaller rosters, allowing for a greater chance to play right away, and the more time to play in games allows for more growth as an athlete.

From 2005 to 2015, the NJCAA saw an increase in number of athletes to jump to 10,000 more, and there were over 280 teams added to the competition (National Junior College Athletic Association, 2018). So why are junior colleges becoming more popular, and why are they successful? Even though there are lots of good reasons for students to go to community colleges for both academics and athletics, there isn't much research within the past 5 years that has proven that community colleges help improve academic success of their students-athletes. There have been two newer series on Netflix, Cheer and Last Chance U, which highlight different community colleges and their sports teams. Aaron Rogers and Albert Pujols are two major names that also attended community college to start their collegiate career and now are, or were, high level athletes. Community Colleges have shown that they are competitive within the world of athletics, but are they as competitive in the world of academics? Do they actually help improve academic success for their student athletes? Junior colleges have become a more popular route for a lot of athletes considering the benefits academically and athletically, but without the research, there isn't evidence to back up the benefits.

Primary Research Questions

Q1: Are on-campus residential status, athletic participation, socioeconomic status, gender, and degree program significant predictors of overall GPA?

Q2: Is the mean overall GPA significantly different across on-campus residential status, athletic participation, and the interaction of on-campus status and athletic participation?

Q3: Is the difference in in-season academic success (GPA) vs. out-of-season success (GPA) statistically significant across student-athletes?

Purpose of the Study

The purpose of this study is to provide more insight on the impact that athletics and housing status has on students at the community college level. With athletics and on-campus housing at community colleges, it is easier for students to feel more integrated into the school environment and can help them feel integrated into the school community. Many student-athletes have a goal of getting to a four-year institution to play on as well, so there is more motivation to study and improve academically.

This study will help athletic directors, coaches, professors, and administrators understand the important role that athletics play in many students lives, and it will help provide more insight as to why student-athletes may or may not be successful academically. It will give more clear understanding as to why community colleges can have successful student-athletes and how being involved in the school can help improve academics overall.

This study will look at quantitative data given from Iowa Lakes Community College. Data will be pulled from the most recent 5 years of the school. This community college has 15 varsity sports and on-campus housing on three of its five campuses. Information will include athletes and non-athletes, gender, housing students and off-

campus students, GPA's from high school and college, different classes the student took, number of credits the student was enrolled in, number of credits the student completed, if the student is Pell eligible, the degree the student was pursuing, and type of classes the student took (in-person, online, or hybrid).

This study will help begin a conversation about junior colleges and athletics and their benefits academically. This study will look more into comparing athletes and non-athletes, housing students to off-campus students, and students who took in-person classes compared to online classes. The results from this study can also spark more questions about the role that athletics play for community colleges and their athletes.

The variables such as athlete or non-athlete, on-campus or off-campus housing, virtual or in person classes will help give an understanding of possible reasons as to why the student is doing well, staying the same, or doing worse academically because they go along with Tinto's theory of integration. Those who are Pell Grant eligible will also help provide more information on their socioeconomic status (SES), as studies show lower SES students tend to have lower GPAs compared to students who come from higher SES backgrounds (Sackett et al, 2009).

Housing also plays an important part in the integration of the students onto the campus. When students have the chance to live next to and with other students, it is easier to make social connections. In Iowa, a majority of the community colleges have on-campus housing, and almost all of them have athletics, so it is a relevant topic to look at for the state of Iowa, and community colleges who have athletics in general. According to The American Association of Community Colleges, as of 2016, about 28 percent of community colleges offer on-campus housing. From 2012 to 2015, 39 more institutions

added housing, and the numbers are still growing (The American Association of Community Colleges, 2016). On-campus housing will have a big impact on the students who attend the school because it allows for students to make genuine friendships at the school, and as Tinto (1993) has suggested, social connections are an important part of keeping students at the school and pursuing their degree.

Community colleges serve a great purpose towards their student-athletes and academics. According to Storch & Ohlson (2009), "One of the most effective practices for the recruitment and retention of student-athletes is a strong student support system." With over 80,000 junior college student-athletes, it is important to provide academic support to keep students eligible and to keep them working towards their academic goals. Because community colleges tend to have smaller numbers of enrollment, it is much easier to keep track of student-athletes and their GPAs and credits taken that go towards their degree. Without a strong support system, student-athletes can easily fall through the cracks. Strong support systems include "eligibility monitoring, academic advising, academic testing, tutorial assistance, personal and career counseling, and mentoring," (Storch & Ohlson, 2009). The more eyes that are on the students, the more likely they are to succeed. Life skills and career development are offered in a variety of ways, from different classes to student services that are open for students to walk in. Schools that have a solid program for life-skills development will help their student-athletes more in the long run as students shift from athletics to jobs and life skills as they get older (Storch & Ohlson, 2009). A strong support system also helps with the integration into the school. The more people that are there to help the students, the more they will feel integrated into

the school because they have people who will help guide them and support them along the way.

In Mechur et. al (2008) research, An Exploration of Tinto's Integration Framework for Community College Students, Tinto's model was used to study the different ways that student integration can occur at the community college level. By interviewing community college students sixth months apart from each interview, they found that 90 percent of the students who felt well integrated into the school and who had a sense of belonging enrolled in a second year at their school. This study looked more into the idea that students had built relationships on campus either with fellow classmates or with faculty and staff that helped keep them enrolled at the school. Mechur et. al (2008) concludes that social and academic integration may look slightly different at community colleges than at four-year institutions, mainly because these schools often don't have the same type of campus environment, school clubs, or athletics. Oftentimes the community colleges that are studied, such as in this research, are ones that do not have on-campus housing or athletic teams, both which help students feel more involved on campus and integrated into the college. This study concluded even if the structure of community college's may be slightly different than four-year institutions, Tinto's theory still applies to community college students, and integration is a major key in retaining students at schools (Mechur et. al, 2008).

Bryan (2018) conducted similar research using Tinto as the framework for his study. In his research, Bryan (2018) looked at NJCAA division III athletes who decided to persist to a four-year institution. He looked into the experiences of these athletes at Junior College in North Carolina. By using Tinto as his framework, he used the idea that

integration into the school community was the main idea as to why student-athletes are able to continue pursuing their degrees at the community college level and even moving on to a four-year institution. He found that there was a major push for student-athletes to succeed from those who supported them. These people included parents, teammates, coaches, and peers. Because these students are involved in athletics, they have more of a support system from their teammates to their coaches, and with more people supporting them, the more the athletes feel involved and motivated to succeed. Bryan (2018) also found that love of sport was a major motivator for the student-athletes in his study. Because these students are in a sport, they generally will build relationships among their teammates, which similarly as before, will help integrate them into the college network.

Significance of the Study

This study is significant because it will help fill the gap of the past few years of community college athletics. There is little research done in the past 5 years, and it will help with starting a conversation about the importance of offering athletics at the community college level. It will also help show the reasons as to why athletes may be more successful at the community college level than they were in high school. It will also look more into the idea that community colleges have housing on campus, which help student-athletes, and students in general, feel more integrated into the school, which can help with motivation within the classroom.

Being able to predict the factors that may influence student success in the classroom is also always important, and because it is under-researched at the junior

college level, this research will help fill some gaps with the understanding of the importance of community college's role with the success of their students.

Research Design

This study is a hypothesis testing design. The sample will be from Iowa Lakes Community College over the past 5 years. Data that will be collected will include student GPAs from high school and the college, classes taken, such as general education classes or tech classes, which degree the student will be earning, such as their A.A., A.S., and tech program degrees, which sport, if any, that the student was involved in, what season the sport took place in, and if the student was Pell eligible. Other information that will be pulled will be number of credits enrolled in and completed, graduation rate, retention rate, and modality of the classes. The students housing situation (on-campus or off-campus) will also be included.

R will be used to analyze the data.

Assumptions, Limitations, and Scope

Assumptions will be that students tried their best to complete their courses to the best of their ability. There will also be the assumption that each student had the intention of graduating with a degree.

Limitations are possible dips in data due to Covid-19 and the impact it had on college life and school. Another limitation is that the data is taken from a small, rural school in Iowa and may not be representative of all community colleges.

The scope of this study will be community colleges with similar housing situations, similar demographics, and those with athletics. Schools that are in more rural areas with lower enrollment numbers will be able to use this study to their advantage.

Definition of Terms

National Junior College Athletic Association (NJCAA): An organization that is dedicated to men's and women's athletics at the community college collegiate level. It consists of three different divisions, Division I, Division II, and Division III and contains 525 schools divided into 24 regions. There are 25 sports and over 60,000 student-athletes. The NJCAA is responsible for making rules and regulations for each sport and eligibility for each athlete.

National College Athletic Association (NCAA): An organization that is dedicated to men's and women's athletics at the 4-year collegiate level. It consists of three different divisions, Division I, Division II, and Division III and contains 1,098 colleges and universities and 102 conferences in which the universities and colleges are divided into. There are 24 sports and over 460,000 student-athletes. The NCAA is responsible for making rules and regulations for each sport and eligibility for each athlete.

California Community College Athletic Association (CCCAA): An organization that is dedicated to men's and women's athletics at the community college collegiate level in the state of California. There are 108 schools in this organization across the state divided into 9 conferences. There are 24 sports and over 26,000 student-athletes. The CCCAA is

responsible for making rules and regulations for each sport and eligibility for each athlete.

Non-traditional students: a student who did not start college immediately after graduating high school, or a student who did not receive a high school diploma but is now pursuing higher education.

Academic Success: Academic success will be defined as receiving a C or above.

Eligibility: The NCAA, NJCAA, or CCCAA decides on the minimum requirements for student-athletes to be able to participate in their respective sport.

Junior College: A college that offers college courses for two years. They are helpful in preparation for a four-year college or to go into a trade. Another term for community college.

On-campus housing: Any form of housing that current students at the college can live in. They can be traditional dorm-style or apartment-style.

In-Season: The season in which the student-athlete is actively playing games.

Out of Season: The season in which the student-athlete is not actively playing games. There may be scrimmages, but they do not count towards the team's wins and losses.

Summary

Chapter 1 introduced the research problem of academic achievement of student-athletes at community colleges. There is a need to do more research over this topic because of the increasing numbers of participants at the junior college level for collegiate sports. These students are looking to remain eligible for their respective sport and get an education at the same time, so it is necessary to research the impact that community colleges have on their students as well as what factors help students succeed in the classroom. There is limited understanding of how much student-athletes improve their academic success at the community college level, so it is important to do more research on the subject.

CHAPTER II: Background and Literature Review

The NCAA has been the powerhouse of athletics in the collegiate world for 115 years, but in 1937, when thirteen community college teams wanted to participate in the National Championship for track and field were turned down, the National Junior College Athletic Association (NJCAA) was formed (National Collegiate Athletic Association, 2021; National Junior College Athletic Association, 2022). The NJCAA has been paving the way for community colleges ever since. There are currently 28 different sports offered, and in 2016-2017, there were 59,196 total participants (22,785 females and 36,411 males) across 3,428 different teams. There are three divisions in the NJCAA, spread across 24 different states with 525 participating schools (National Junior College Athletic Association, 2017). Also, the CCCAA is a major association that supports California community colleges and their athletics. In 2019, there were around 26,000 student-athletes involved in California junior college athletics with 24 different sports offered (California Community College Athletic Association, 2019). With this many student-athletes within the community college system, it is important to look into how they help their student-athletes in the classroom, and if there are other factors that help contribute to their success.

Since organized college athletics have been around, collegiate sports have completely changed the game of the college and university experience. Not only are college athletics good for school spirit, but they are also good for helping with enrollment numbers, commercialization, and community and alumni involvement (Miller, 2003; Williams & Pennington, 2006; Vanover & DeBowes, 2016).

Intercollegiate athletics at the university and college level base a lot of their budgets for their athletic programs on what programs enhance the image of the school, the donations from alumni, and money earned from selling tickets and merchandise (Vanover & DeBowes, 2016). Community colleges on the other hand tend to have lower budgets due to tuition and fees being lower, enrollment numbers aren't as high, and they don't bring in as much from sporting event tickets and merchandise. This means that the draw-in for community college athletics is more for maintaining enrollment numbers and involving the community and alumni (Bush et al., 2009). Because of lower funding and reduced budgets, community colleges may not have the best facilities or the highest operating budgets for sports, so much of the draw-in for student-athletes is the chance to play their sport rather than the material things. Athletics are more for the development and improvement of the athlete, especially because there aren't sold out arenas or big-time brand deals (Burgess & Cisneros, 2018).

There is significant research on intercollegiate athletics and their impact on the universities and colleges, but there is a lack of information on community colleges and their intercollegiate athletics and how their sports teams are impacting their student's academic achievement. According to Katherine Conway in her study on Urban Community College Athletics, there is belief that participation in collegiate sports can positively contribute to the success of the college's student-athletes because it builds a better connection between the athletes and their school (Conway, 2011). According to Mitchell R. Williams and Kevin Pennington, in their survey to community college presidents, 77% of the presidents who had athletics at their school agreed that "intercollegiate athletics encourage local students to continue their education," showing

that there is a need to look more into community college athletics and how they can improve student success.

Enrollment in the Junior College System

In high school, there are nearly 8 million participants in athletics. Some of those students have dreams of going NCAA Division I, some are content with playing for a small four-year, while some decide they don't want to play on. In the NCAA, there are just over 480,000 participants across all male and female sports (National Collegiate Athletics Association, 2020). This means that about 6% of all high school athletes go to compete at either the DI, DII, or DIII level in the NCAA. In the National Association of Intercollegiate Athletics (NAIA), there are approximately 77,000 student-athletes, meaning there are about 0.9625% of all high school students go to compete at the NAIA level ("About Us," 2022). With the NJCAA and CCCAA combined, there are about 85,000 student-athletes, meaning there are about 1.06% of all high school athletes that play at the junior college level.

Even though just barely above 1% of all high school athletes go to play at the community college level, those numbers have been steadily increasing. From 2005-2006 to 2016-2017, the NJCAA saw a 19% increase of participants across all sports and divisions (National Junior College Athletic Association, 2017). Why the continuous growth?

Junior college athletics has its perks for many student-athletes. These two-year institutions provide many different positives. For some athletes, they wanted to get into a high level in the NCAA. There may be a few reasons for not making it right away, such

as lack of exposure for the athlete, insufficient grades, or a need to develop more as a player, and for many of these students, junior colleges are a great way to improve all three (Horton, 2009b). Some athletes, on the other hand, may not know if they want to play at a four-year, so going to a two-year first is a good way to get them involved in collegiate sports while still getting an education. Some athletes go a two-year because financially it is a better option for them. Some athletes attend simply because it is close to home, and some athletes go to two-years because they only want a two-year degree. There are a multitude of reasons as to why athletes will choose the junior college route.

For students who may be struggling as a student-athlete, junior college can help these students because of the smaller class sizes (Burgess & Cisneros, 2018). Smaller class sizes can help students with the transition from high school to college level courses, as well as they can make better connections with the professors. Community colleges are also good for student-athletes who are looking to transfer to a four-year because they can help with the transition, such as helping with the correct classes that will transfer and helping with the athletic transfer as well (Burgess & Cisneros, 2018).

Along with those who transfer, many students are looking to learn a trade or just earn an A.A. or A.S. Earning a two-year degree has become increasingly popular, and the job market would also agree. According to a study by Georgetown University's Center for Education and Workforce outlines, here is around 3.2 million jobs that require just a two-year degree, which is an 83 percent increase from 1991. The associate degree is currently the fastest growing portion of the workforce next to those with a bachelor's degree (Carnevale et al., 2019).

Covid-19 also had a major impact on the world of sports in general. Because of Covid-19, there has also been a big change in the recruiting process. Many student-athletes at four-year institutions have been granted a free fifth year to play (whereas the usual is just four years), so the more students that decide to play a fifth year, the fewer students that the teams need to recruit and fewer scholarships to offer to incomers. With fewer spots open across the NCAA sports, more students may look to go to community colleges first before getting recruited to a four-year (Rashad, 2020). Of course, it is still early to see what the effects will be of the fifth-year grant, but community colleges may see an increase in enrollment numbers from students who didn't get the offer they would have liked due to a lack of scholarships at the four-year level.

Because of the multitude of reasons for athletes to go to a junior college, and the continuous increase of enrollment numbers for student-athletes at community colleges, it is necessary to look further into how well these student-athletes are performing academically. Community colleges have the goal of being available to all types of people from all walks of life (Bahr, 2013). Because of this, it is vital to look into the academic resources it provides the student-athletes, and if the student-athletes can find success in the community college that will help propel them.

Services Offered to Student Athletes

As previously mentioned, some student-athletes will enroll in community colleges because they do not have the grades to get into a higher level, for example, the NCAA requires a minimum requirement of a 2.3 GPA in core classes in high school in order for one to be eligible to play at a Division I school ("Play", 2022). Oftentimes these students

will either have to take an academic red shirt year, or they may decide to go to a junior college where they can play their sport immediately and work to bring their grades up.

Because community colleges serve a wide population, they oftentimes have many academic services that are offered. It is important for schools to have good academic advising. At the community college level, a lot of students, athletes included, transfer on to a university, and having an academic advisor that can help those students stay on track for graduation and for having the proper classes taken for their next academic degree is important. This role may be from a coach, registrar, or teacher. Academic advisors really help athletes stay on track (Storch & Ohlson, 2001; Carodine et al., 2001).

Michelle Cooper (2018) has done research within the community college world and how important student services are to the success of the college. She discusses the idea that the more student-services are offered, the more likely students are to both stay in school and be successful. Community colleges that are effective have the idea that students are the center of everything they do. These different services to help students succeed include academic guidance and advising (Cooper, 2018). Students who are underprepared for college, especially at the community college level, will have better chances of succeeding if there is a big focus on advising (Pascarella & Terenzini, 1991, Cooper, 2018). Cooper (2018) also found that certain courses that students at community colleges can take, such as remedial classes or critical thinking classes are very important for many students, and the more that the academic advisors can help put students into those classes, the better they will do (Cooper, 2018). These classes have found to both help student success and student retention (Teachers College, Columbia University, 2021). Academic advisors play an integral role in helping students, especially student-

athletes (Pascarella & Terenzini, 1991, Cooper, 2018). For student-athletes, they have access to both academic advisors, and many times, their coaches who are willing to help. This allows the student-athlete to get many eyes on them and different inputs on what classes may fit their needs the best.

Community colleges serve a great purpose towards their student-athletes and academics. According to Storch & Ohlson, "One of the most effective practices for the recruitment and retention of student-athletes is a strong student support system," (Storch & Ohlson, 2009). With over 80,000 junior college student-athletes, it is important to provide academic support to keep students eligible and to keep them working towards their academic goals. Because community colleges tend to have smaller numbers of enrollment, it is much easier to keep track of student-athletes and their GPAs and credits taken that go towards their degree. Without a strong support system, student-athletes can easily fall through the cracks. Strong support systems include "eligibility monitoring, academic advising, academic testing, tutorial assistance, personal and career counseling, and mentoring," (Storch & Ohlson, 2009).

Life skills development, academic advising, and counseling are all things that schools should offer, especially for student-athletes in order for them to be successful (Carodine et al., 2001). The more eyes that are on the students, the more likely they are to succeed. Life skills and career development are offered in a variety of ways, from different classes to student services that are open for students to walk in and use at any time. Schools that have a solid program for life-skills development will help their student-athletes more in the long run as students shift from athletics to jobs and life skills as they get older (Storch & Ohlson, 2001). Community colleges are usually

steppingstones for students as they either enter the workforce or as they get into a university or college, so it is important that these schools have resources to help students succeed.

Academic services should be offered to all students and taken advantage of especially by student-athletes. Other important services include tutoring and study skills (Storch & Ohlson, 2001). As athletes spend hours working on their respective sport, they also spend hours in the classroom, so the community colleges that offer more support beyond just academics and athletics will see a lot more academic success within their student-athletes (Storch & Ohlson, 2001).

Tutoring and study hall are two other keys to many student-athlete success. Many athletic programs require study hall, especially for first year freshman or those who are struggling academically. Requirements may vary from school to school, to program to program. For example, at University of South Carolina – Upstate, all first-semester student athletes, transfer students, students below a 2.6 GPA, and those determined by head coach are required to attend study hall hours. At Marshalltown Community College, the school requires first year student-athletes, second year students below a 3.0 GPA, or student-athletes who are referred to by instructors must attend study hall ("Student", 2021, "Study", 2018). These study hall hours may vary, but they are beneficial for student-athletes to have the access to computers, tutors, and quiet study hours ("Student", 2021, "Study", 2018).

Many students have access to peer-tutors. This type of tutoring can be beneficial because it provides a more interactive way to learn, as well as immediate feedback, and oftentimes lower anxiety with learning because it takes place with peers rather than

teachers or professional tutors (Topping, 1996). Peer tutoring can also help better retention of the material and help improve self-esteem and more motivated learning, which in the long run will help the student become more successful in the classroom (Topping, 1996). Peer tutors have also been found to be more understanding of others and have more patient with those they are tutoring, which also helps these students feel more accepted as a person, especially when they are struggling academically (Moust & Schmidt, 1994).

In a study completed by Marcella Otto, J. Martinez, and Christopher Barnhill (2019), they looked into how the perception of the available academic services affects the experience of first year student-athletes. They came to the conclusion that freshman student-athletes have more satisfaction with the school, feel more involved, and adjust better emotionally within the college when they have a higher perception of the academic services that are offered (Otto et. Al, 2019). They found that "academic services were found to significantly impact involvement amongst freshman student-athletes," (Otto et. al, 2019). The overall quality of interactions and the environment in which the academic services are offered has a significant impact on the student-athletes. The more the student-athlete felt encouraged and supported, the more they used the academic services to their advantage (Otto et. al, 2019). The more positive and welcoming interactions that students have outside of their respective sports, the more they feel integrated into the school community and the more likely they will succeed academically (Gayles & Hu, 2009). Although this research was completed in a four-year university, it is applicable to community college students because they offer very similar, if not the same, types of

academic services to their students and because of the smaller school size, it is easier to help more students.

Another study found that when the academic center for student-athletes is in a separate building, they feel as though they are not involved on campus or in the school community because they have a special treatment (Huml et al., 2014). This occurs at larger institutions because they have the funds to be able to afford separate buildings and separate academic advisors, whereas at community colleges have much smaller budgets and a wider variety of students and can't afford to have academic services that are solely for student-athletes.

Research on Academic Success of Student-Athletes in Colleges

According to Horton (2009a), from his research within the community college system in Florida, his findings suggest that there are several factors that play into the success of students at the community college level, but when looking at student-athletes compared to non-athletes, student-athletes had higher GPA's and earned more credit hours per semester. Although this may be because of the student-athletes' requirements to be full-time students so they can be eligible to play their respective sport (at least 12 credit hours per semester), while some non-athlete students are part-time, resulting in fewer credit hours per semester. With there being about 65% of all community college enrollment students being part-time, they tend to earn fewer credit hours than the student-athletes in general (Teachers College, Columbia University, 2021).

Horton (2009a) also found that although student-athletes had higher GPAs and more credit hours earned, they tended to have lower graduation rates. Specific

characteristics were examined and found those who were female, white, or higher SES were the students who had higher graduation rates and academic success.

Horton (2009a) examined some factors that contributed to the success of the athletes, these included financial aid, individual characteristics, and institutional factors, which is very similar to what this research will look into. He focused on factors such as enrollment size and location, but since this study will be done at one college, which will not be taken into consideration. Because Horton's study is done in Florida, it doesn't consider the integration of students in campus life because only seven of the twenty-four community colleges in Florida have on-campus housing (Horton, 2009a; Solodev, 2021). Whereas this study will look into a community college that has on-campus housing.

Horton's (2009a) theoretical framework is based on Human Capital Theory, where the idea of the accumulation of capital is from the earning of a degree that will help provide capital in the future. This framework may be overlooking the idea behind community colleges being a steppingstone for student-athletes to play at a higher level, not as much for their own personal wealth.

In a study completed by Nichols (2014) that looked into the experiences of athletes in the junior college system, it was found that the student-athletes were more often in majors that were unrelated to athletics, meaning many of these students are looking for careers beyond athletics and not taking classes just to be in their sport. This study also found that the relationships for the athletes were strongest with coaches and roommates on campus. There were both high levels of academic support and athletic support for these students. Males rated their experience for student-athletes to be slightly less than what the females rated their experience. An important finding to note was that

55% of those in the research said that they would not have chosen community college if they were not participating in a sport, meaning for over half of the student-athletes, they were drawn to the community college mainly to play collegiately (Nichols, 2014). This plays into the idea that many student-athletes did not get the scholarship offers they wanted out of high school to four-year institutions, or they did not have the grades to be admitted academically, so going the junior college route may have been the option for them to get to play longer and get more exposure to the four-year programs for athletics.

There is lots of contradicting information on whether or not student-athletes do better academically at the collegiate level. One study suggests that student-athletes are just as engaged on campus as non-athletes, and they experience similar struggles within the classroom (Umbach et al., 2006). Maloney and McCormick (1993) completed a study at Clemson University where they found that overall GPA for athletes was about 0.30 points lower than their non-athlete counterparts. Graduation rates were also lower by 10 percent (Maloney & McCormick, 1993). However, Staley (2017) found that female-athletes at the junior college level tend to do better than both male-athletes and non-athlete females, except for in women's basketball.

Another study conducted by Wilson (2011) at a small college found that female athletes out-performed male athletes academically, and student-athletes were also found to perform better when they were out-of-season. This was done by comparing GPAs for all athletes to all non-athletes. When men's basketball and football were taken out of the equation for comparing GPA's, there was no significant difference between student-athlete success and regular student success, so there is more that goes into what makes a student successful. Of course, there are many things to take into consideration, such as

college preparedness, how challenging courses were, and number of credits taken overall. This study was performed at a four-year school, but it can translate to two-year schools as it was comparing success of athletes and non-athletes (Wilson, 2011). Maloney & McCormick (1993) also looked into in-season vs. out-of-season success for athletes. Their findings were that nonrevenue sports received a lower GPA by just 1% when they are in-season compared to out-of-season. They also found that there was no significant difference between their GPA comparing in-season to out-of-season. At community college, most of the sports are nonrevenue generating or very low revenue generating, so this study may be an indication to some findings for community colleges.

Another study was completed looking across the NCAA divisions and comparing GPA in-season and out-of-season. This study found that at all three levels, GPA was lower for in-season athletes compared to their out-of-season GPA. At the DI and DII level, student-athletes who were in higher-profile sports (ie. Football and men's basketball) tended to have lower graduation rates, but student-athletes in other sports had higher graduation rates. (Scott et al., 2008).

Integration into College Life

Junior colleges play an important role for many student-athletes. As mentioned before, they offer a wide variety of services that help improve academics, but they also provide plenty of opportunities to the student in other aspects as well.

Vincent Tinto and Pat Russo (1994) would argue that community colleges struggle with integrating their students into the college world. This is because that a lot of the times community colleges have untraditional students that range from a variety of

people and a variety of backgrounds. They also claim that since most community colleges do not have on-campus housing, it is very difficult for the students to feel like they are involved in the college (Tinto & Russo, 1994). Although many community colleges do not have athletics or on-campus living, more junior colleges are adding these to their schools, and those that have them already have a higher chance of allowing their students to feel involved on campus (Solodev, 2021).

On-campus housing isn't extremely popular with community colleges, but as of late, that is changing. Some community colleges offer on-campus housing, which is about 28% of all community colleges (Solodev, 2021). Of the 28%, about 40% of those schools are associated with the NJCAA (Phillippe, 2015). There are 12 of the 15 Iowa Community Colleges that have on-campus housing, which makes it a relevant topic to look more into for junior colleges in Iowa (Friedrich, 2011). On-campus housing helps make the school have more of a four-year university experience feel to it. It allows for students to meet new people quickly, learn how to live with roommates, and be a part of the campus. It is a great way to help students feel more involved. It also allows those who travel long distances and even from different countries to have one less thing to worry about when moving to a new school.

Murrell et al. (1998) completed a study on community college students that lived on campus. They found that living on campus has a positive effect in academic life. Living on campus allows for more free time for students to study in the library or study centers rather than driving to and from home (Murrell et al., 1998). The negative that Murrell et al. (1998) found for community college students is that the students have lower

perceptions of the residence halls compared to the students at a four-year, which may be due to a smaller number of students living on campus (Murrell et al., 1998).

In a qualitative study by Berson (1996), which was conducted at Broward County Community College, interviewed the softball team. This study found that several athletes claimed that the reason they were continuing their education and athletic career at their community colleges was because of the team they were on. Teammates are big supporters and become friends, coaches who are heavily involved both in the athletic and academic side of things and having classes that are with teammates and other athletes in the school help the student-athletes feel as though they belong, and it allows for them to have a strong support system to rely on (Berson, 1996). There is more of a feel of connection between the students and the school because of being on an athletic team (Berson, 1996).

Another reason that many student-athletes decide to go the junior college route is for them to get playing experience and to hopefully get a better offer to play at a higher level. Community colleges have become more and more popular for student-athletes to start their athletic career. Athletes who don't have the grades coming out of high school to compete at a high-level NCAA school or who don't have the scholarship offers to play at an NCAA school will sometimes decide to go to community college first. At the junior college, they have more support within the classroom to succeed and improve their grades because of the smaller class sizes and focus on the student-athlete. They also have the opportunity to play in their sport immediately, giving them college playing experience and exposure to four-year coaches. Some athletes consider their success to be improving academics and meeting the requirements to remain eligible and having the opportunity to play immediately at the collegiate level (Horton, 2009b).

In Horton's (2009b) study, he found that there was a wide variety of reasons to play at a community college compared to a four-year, which included being able to play collegiately, a chance to grow academically before going to a four-year, the cost was much more affordable, and the ability to be in smaller class sizes instead of large university classes (Horton, 2009b). In his study, he used interviews with community college student-athletes. He found that many students claimed that their time at their respective college allowed for them to grow personally and gain a "valuable learning experience," (Horton, 2009b). Horton was given many different reasons as to why these student-athletes chose community colleges, but overall, with his interviews, he found that the students who were more successful were the students that were involved in academics, had the academic resources to succeed, and they felt integrated into the college life (Horton, 2009b). This study is very similar to what this research paper will cover, but instead of using interviews, it will use statistical data that investigates specifics of each students' academics.

Overall, there is a wide variety as to why students decide to go to junior college first. It is necessary to look further into how the community college experience can help student-athletes improve academically and athletically to get to the next level.

CHAPTER III: METHODOLOGY

Introduction

This study will examine if athletics have a significant impact on students at the community college level. This study will examine multiple different factors, such as housing status, athletic participation, socioeconomic status, and degree programs to see whether or not there are significant predictors of overall college academic success. Chapter 3 will contain an introduction for the type of data that will be used for the research. The population that the data will be taken from and the reasons for using the data set will also be discussed. Chapter 3 will then discuss the instrumentation used to collect the data for this study. Then this chapter will cover the procedure in which the data was obtained. Finally, this chapter will address how the data will be used, processed, and analyzed which includes multiple regression, ANOVA, and t-tests.

Setting and Participants

The data from this study was collected from Iowa Lakes Community College. Iowa Lakes is a rural community college that has five different campuses across northwest Iowa. Three of the campuses contain on-campus housing, and those three campuses also have athletics. There are fifteen varsity sports at Iowa Lakes. With fifteen sports and over 60 different programs offered, from transfer programs to tech programs, Iowa Lakes offers a range of things to its student body, which helps draw in a variety of different people from different backgrounds (“About Iowa Lakes”, 2022). In 2021, the ratio of students to professors if 15:1, there were more than thirty clubs offered, and fourteen different residence halls (“2021 Annual Report”, 2021).

In the 2019-2020 academic year, Iowa Lakes had an enrollment size of 2,859 students. There were 55.8% females and 44.2% males (Iowa Lakes Community College Profile, 2020). About 84% of the population at Iowa Lakes are from Iowa, while 15% are from out of state, and 1% are international students ("2021 Annual Report," 2021). Because the school is located in rural Iowa, there is about 81% of the students who are white, 6% are African American, 5% are Hispanic, and 8% are of different racial backgrounds ("2021 Annual Report", 2021). The age range at Iowa Lakes is a majority of students between the ages 18-22. In 2019-2020, the number of Arts & Science degree seeking students was 2,108, and there were 668 students in the career and technical fields (Iowa Lakes Community College Profile, 2020).

Community colleges tend to have a vastly different group that it is providing for. With many students now looking to play collegiate sports at community colleges, it broadens the population even more. Because there is little research done on community colleges, especially those based off of Tinto's (1993) model with the idea that students tend to leave the school they are at when they lack academic support and social support, that is why this research is using a rural community college to use the data from to study. This specific community college has academic support, athletics, and housing, which help provide a more supportive community for its students.

Sample data from the previous six years was used for this study. The sample will be taken from all of the students that were degree-seeking at Iowa Lakes. This sample will include on-campus and off-campus students, student-athletes and non-athletes, and distance and in-person classes. This population was chosen because it will help give community colleges that have athletes and on-campus housing a better idea of how it

effects their students academically. This study will help generalize results for community colleges that are located in more rural areas, community colleges looking to add athletics or housing, or to help community colleges that already have athletics and housing have a better understanding of how the services they offer help their students. The variety of students at Iowa Lakes will help get a good idea as to if athletics and housing helps those students improve academically.

The desired sample size of this study will be 138. Using G*Power, using a Priori power analysis and linear multiple regression as the statistical test, with alpha at .05 and a standard effect size of .15, the sample size found that was needed to keep a 95% confidence interval was 138.

Instrumentation

This data set will cover a wide variety of things about each chosen student. The instrument used for this research is data that is kept by the college in their database. The data will go over the past five years at the school to be able to cover a wide variety of years and will be presented in Excel forms.

The major instruments of this data are overall college GPA, housing status, sport participation, Pell Grant status, gender, and type of degree being pursued.

Subsection 3: Procedure

This data will be collected from a team at Iowa Lakes Community College who have gone through and refined the necessary data needed. The IRB committee at Shawnee State University approved all methods and procedures of this study (See

Appendix A). The IRB committee at Iowa Lakes Community College has also approved of all methods and procedures that are required to complete this study at the college (See Appendix B).

Jennie Knudson, an Institutional Researcher at the school, David DeVary, the College Management Information Systems Director, and Robert Leifeld, the Vice President of Administration have gotten together to help sort through the data. The data will be over the past five years at Iowa Lakes, looking at all students who were degree seeking. This data will include GPA, both term and cumulative, those who did graduate, those who did not graduate, athletes, non-athletes, male or female, on-campus status, degree they were seeking, course success rates, general education classes and grades, if they were Pell eligible, and completion rates.

This data will be sorted through and cleared of any personal identifiers. Each student will have their own unique ID number which will help protect their personal identities. All personal information, such as name and student ID numbers, have all been removed from the data to help protect each participant, so there will be no threat to any individual.

Data Processing and Analysis

The research will examine the data from Iowa Lakes Community College. The data will have the following information: male or female, on-campus or off-campus, Pell eligible, athlete vs. non-athlete, degree the student is seeking (i.e. A.A., A.S., or Diploma), major or program concentration area (i.e. Criminal justice, wind energy, accounting, etc.), cumulative GPA, term GPA, and running GPA, general education

classes and grades, retention rates, and completion rates.

This specific set of data was chosen based off of findings from other research. The data will show the gender of the student, and this was chosen because females tend to outperform their male counterparts when looking at final course grades at community colleges, meaning that females will be more successful academically (Volchok, 2018). It is important to be able to look at both male and female students separately and be able to compare them.

Because of Tinto's (1993) ideas behind the findings that students who feel more integrated on campus tend to stay longer in school, a student's housing status will be included in this data. Being on-campus allows for students to feel more involved in campus life, so this study will look into if living on-campus or off campus has a major effect on a student's academic success. Another study found that freshman who lived on-campus had enhanced values, attitudes, and personal development in college, as well as more cognitive and intellectual growth (Pascarella et. al, 1992).

Many studies have found that the higher socioeconomic status a student has, the better they tend to do in school (Perry & Mcconney, 2010, Mahmood et al, 2012, Merritt & Buboltz, 2015). Because of this, the data will note if the student is Pell grant eligible, which is based off a student's family's income (NC Assist Loans, 2022).

This data will also indicate whether a student was an athlete or not, and it will indicate whether or not that student was in-season or out-of-season when separated by term. This is because Maloney & McCormick (1993) found that students who were in-season tend to have lower grades compared to when they are out-of-season.

When breaking down if there is a significant difference between athlete success

and nonathlete success in the classroom, GPA, retention rates, general education class grades, completion rates, graduation rates, and whether or not the student planned on transferring to a new school will be taken into consideration. These will help indicate if students are doing better in school, if they stay in school, and if they have goals to continue their education after their two-year degree.

When analyzing the data for the first question, which is whether on-campus status, athletic participation, socioeconomic status, and degree program are significant predictors of overall GPA. Multiple regression techniques will be used to analyze the data. Overall GPA will serve as the dependent variable, on-campus status, athletic participation, socioeconomic status, gender, and degree program will serve as the predictors. Multiple regression assumptions, such as linearity, normality of the errors, and multicollinearity will be examined. On-campus status will be a 0 for no and a 1 for yes. Athletic participation will also be a 0 for no and a 1 for yes, and the same goes for socioeconomic status and gender. For degree program, they will be split into four categories, tech programs, associate in sciences and associate in arts degrees, and diplomas/certifications.

For the question of whether or not GPA is significantly different across on-campus residential status, athletic participation, and the interaction of on-campus status and athletic participation, a two-way ANOVA will be used to analyze the difference among means. The assumptions are that the samples are independent from one another, the sample size is normally distributed, and there is a homogeneity of variances.

Finally, the last question is if there is a difference in in-season success vs. out-of-season success across student-athletes. A paired samples t-test will be conducted to

examine the difference in GPA across the semesters for student athletes to compare if there is statistically difference between in-season and out-of-season success (GPA's) for student-athletes. T-test assumptions, such as normality of data distribution, the data is continuous, and the sample is random, will be held.

Summary

Chapter 3 discussed the setting and participants of this study. The data for this study was collected from Iowa Lakes Community College, a rural college that has fifteen varsity sports and three campuses with on-campus housing. Next the instrumentation of this study was discussed. Then chapter 3 went over the procedure in which the data will be collected, including the research team to collect the data and the IRB committee approvals. Final the data processing and analysis was covered. This includes the statistical analysis tests that will be used in order to analyze each question of the study, as well as the research behind the purpose of using the specific predictors for each question.

CHAPTER IV: RESULTS

The central focus of this study is to gain more insight on the impact that housing and athletics has at the community college level. This chapter will present and discuss the results from the data analysis. This study will compare housing students and non-housing students, athletes and non-athletes, Pell eligible students and non-Pell eligible, and gender. There are three main questions being answered, all three looking at the academic success of the students at a community college. Data was collected from a rural community college.

Materials and methods

Two hundred eighty-four subjects were included in this study. The descriptive information about the p is included in Table 1. The mean age of the patients was 81.19 with a range of 62 to 100 years. The mean number of medications was 5.39 (4.42), while the mean general feeling score was 8.26 (2.27).

Two thousand six hundred eighty-eight students were included in this study. Table 1 has the descriptive information about the students. Each student was a full-time student, meaning they were enrolled in at least 12 credits, and are all degree seeking. Approximately twenty-seven percent of the sample (n=713, 26.5%) participated in athletics. Of those athletes, four-hundred eighty-three also lived on campus (n=483, 18.0%).

Average GPA and term GPA were all calculated and included, as well as degree the student was in, if they were Pell-eligible, athletics status, housing status, and gender.

Table 1. Descriptive information on all-students

(Mean ± standard deviation)

Gender	**Male: 1,516 (56.4%)** **Female: 1,172 (43.6%)**
Lived in Campus Housing:	Yes: 895 (33.3%) No: 1,793 (66.7%)
Participated in Athletics:	713 (26.5%)
Participated in Athletics & Lived On-Campus:	219 (8.15%)
Degrees:	Tech Degrees: 1,177 (43.8%) A.S./A.A. Degrees: 1,282 (47.7%) Certifications/Diplomas: 229 (8.5%)
Cumulative GPA:	
Athletes:	Mean: 2.71±1.03
Non-Athletes:	Mean: 2.63±1.11
Cumulative GPA Housing:	
On-Campus:	Mean: 2.60±1.06
Off-Campus	Mean: 2.68±1.10
Cumulative GPA Degrees:	
Tech Degrees:	Mean: 2.71±1.08
A.A./A.S. Degree:	Mean: 2.59±1.12
Diploma/Certificates:	Mean: 2.74±0.92
Mean GPA Overall	Mean: 2.65±1.09

Research Question 1

For each full-time student, there was a GPA for each semester they were in, and their overall GPA was calculated. The other descriptive information was if they were Pell grant eligible, which program they were seeking, which sport they were involved in, if any, and if they lived on-campus or off-campus.

Multiple Regression techniques were used to compare the mean score for each overall GPA between students using categorical predictors of athletes and non-athletes,

Pell eligible and non-Pell eligible, on-campus and off-campus, and the three different degrees students were pursuing.

Multiple Linear Regression Analysis for Question 1

A multiple linear regression analysis was performed on overall GPA as the dependent variable with five predictors. The independent variables were athletics (athletes and non-athletes), Pell-grant eligible (yes and no), housing status (on-campus and off-campus), gender (male and female) and degree seeking (tech, A.A./A.S., and certifications/diplomas). No cases had missing data, so the results were calculated on the full sample data, n = 2,688 students. Analysis was performed using R.

Before testing the model, categorical predictors were changed to be factors. Athlete: Yes=1, No=0; Gender: Male=1, female=0; Pell-eligible: 1=yes, 0=no; On-campus status: 1=yes, 0=no. R created dummy variables for each degree that the student was completing. The reference group was the tech programs. A.A./A.S. degrees were compared to tech programs, and the Diploma/Certification programs were compared to tech programs. When controlling for all other predictors, both A.A./A.S. seeking students and Diploma/Certification seeking students will be compared to the tech program seeking students.

Examination of the boxplot of cumulative GPA indicated that there are two outliers. Testing to remove these outliers did not statistically affect the outcome of the overall model, so they were kept in for the full model.

Table 2: Multiple Regression Analysis for Question 1

Variables	***B***	**Standard**	**t-value**	**p-value**	**95% CI**	**95% CI**

		Error			Lower	Upper
Dorm	-0.154	.048	56.327	0.002	-0.251	-0.056
Pell	-0.276	0.043	-3.10	1.26e-10	-0.360	-0.192
Athlete	0.226	0.058	3.872	0.0001	0.111	0.340
Gender	-0.226	0.058	3.872	0.002	-0.215	-0.047
Diploma	0.229	0.081	2.829	0.005	0.070	0.388
AA/AS	0.198	0.0478	4.140	3.59e-05	0.104	0.292
(Intercept)	2.725	0.0483	56.327	<2e-16	2.630	2.820

Examining the MR model for Question 1

A standard multiple regression was performed between overall GPA as the dependent variable and on-campus housing (Dorm), SES status (Pell), Athlete involvement (Athlete), Gender, Diploma (compared to Tech programs), and A.A./A.S. degree (compared to Tech programs) as the independent variables. Table 2 shows each value for the specific predictors. Some notable predictors are those who are Pell-eligible have a lower overall GPA by -0.276 points compared to those who are not Pell-eligible. Another notable value is that those who are involved in athletes have an overall GPA that is 0.226 compared to those who are not involved in athletics.

Results of the evaluation of the assumptions indicate no concern with independence, The full model found statistical significance with $F(6,2681)=12.93$, $p<.001$. For this multiple linear regression model, the Residual standard error is 1.075 on 2681 degrees of freedom. This number is on the higher end considering the GPA scores go from 0-4, so the higher residual standard error is noted. The adjusted R^2 value is 0.02596, and there is a small effect size, with Cohen's f^2 value of 0.030.

In R, plotting the model, the Residuals Vs. Fitted (Figure 1) shows there is a randomness of points within the plot. There is no pattern, so linearity has not been violated in this analysis. Homogeneity of variances can also be assumed because also in

Figure 1, the height is fairly across all levels, so variance of error terms is equal. There are a couple of outliers shown on the figure.

For Figure 2, the Normal Q-Q plot is shown. The data does stray away from the line towards the ends. This may be a concern for violating normality in one of the predictors. Figure 3 shows Scale-Location. There is equal deviation from the center line, meaning that there are equal variances, so that assumption is not violated.

After looking at the diagnostics, the biggest concern is the violation of homogeneity of variances, but continuing with analyzing the data, Cooks Distance was evaluated, and there were no concerns with data over 1.

Evaluating variance inflation factors, each of the factors were between 1 and 2, so there are no concerns that there is any multicollinearity between the predictor variables in this model.

Figure 1: Residuals Vs. Fitted Plot

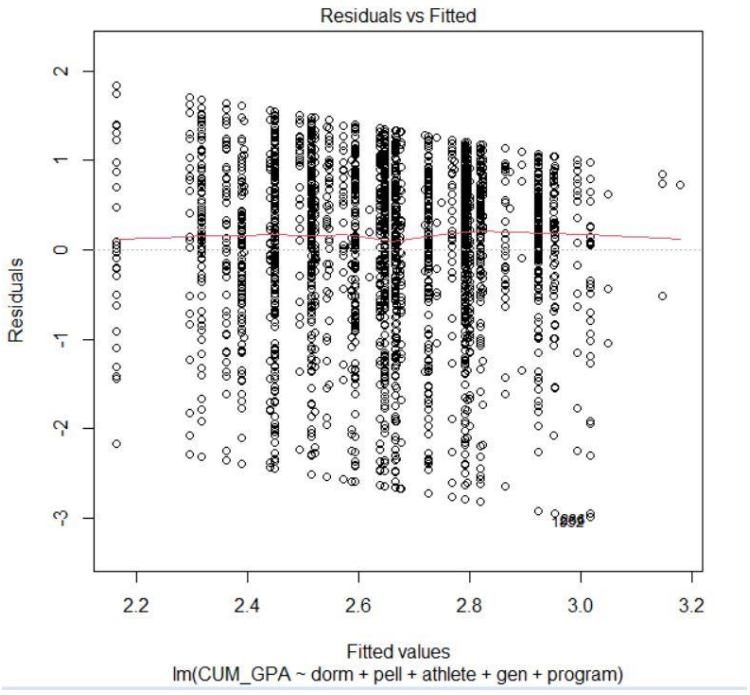


Figure 2: Normal Q-Q Plot

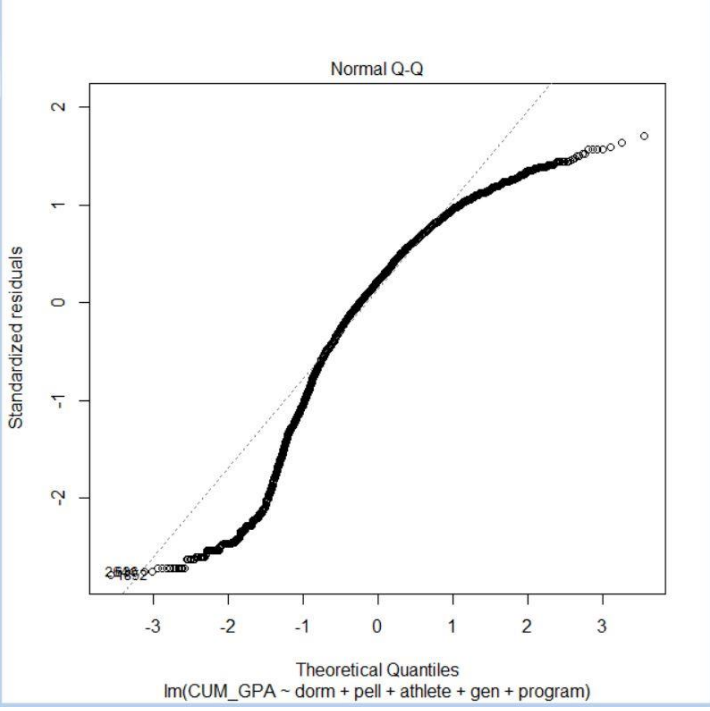
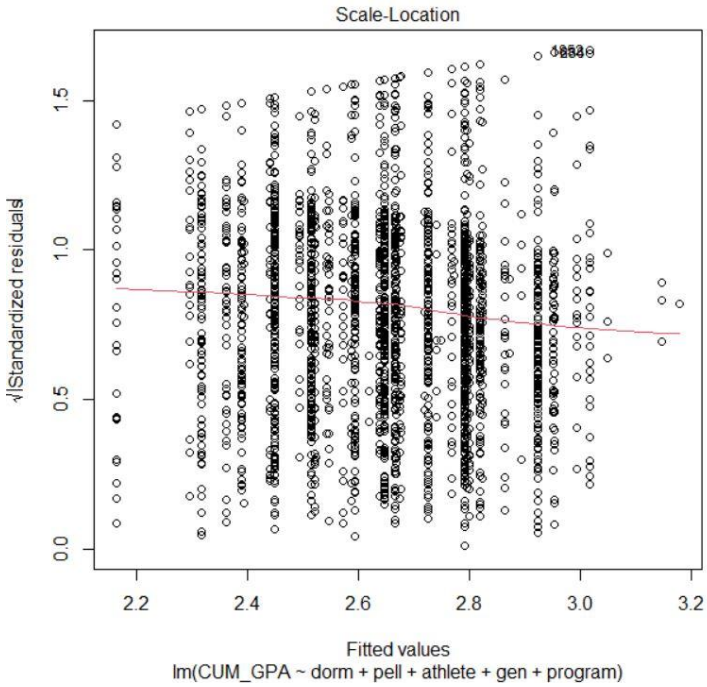


Figure 3: Scale-Location Plot



Research Question 2

A two-way analysis of variance (ANOVA) with a Tukey-HSD pairwise comparison was used to compare the mean cumulative GPAs to evaluate if there is an effect on GPA from being an athlete compared to a non-athlete, if there is an effect on GPA from living on-campus to not living on campus, and to see if there is an interaction between the two factors.

Computing a Levene Test to check for homogeneity of variances, the Levene Test was statistically significant at the .05 level ($F(1,2686)=5.766$, $p<.05$) for athletes and non-athletes, while for on-campus and off-campus housing, there was not statistically significance ($F(1,2686)=0.2393$, $p=0.6247$). For the athletes and non-athletes, there is a violation of the homogeneity of variances, which is a concern.

Testing for normality, using a Shapiro-Wilk normality test, the data violates the assumption that the set of data comes from a normal distribution ($W=0.90576$, $p<.001$). Running a Shapiro Test across GPA and athletes/non-athletes, we are rejecting the null hypothesis of normality across athletes ($W=0.903$, $p<.001$) and non-athletes ($W=0.902$, $p<.001$), showing statistical significance at the .001 level for both. Running a Shapiro Test across GPA and on-campus/off-campus students, the null hypothesis for normality is again rejected for off-campus students ($W=0.893$, $p<.001$) and for on-campus students ($W=0.929$, $p<.001$). Again, both are statistically significant at the .001 level, so all of our categories are violating the assumption of normality.

Two-way ANOVA techniques examined the difference in mean overall GPA across athletes and non-athletes, on-campus or off-campus, and the interaction of the two variables. The results revealed one of the factors to be statistically significant. Athletes and non-athletes came up statistically significant at the .05 level ($F(1, 2684)=7.280$, $p<.01$). The data from this test can be found in Table 3.

Table 3: Two-Way ANOVA findings for Question 2

Variables	*df*	Sum of Squares	Mean Sq	F -value	p-Value
On-Campus/Off-Campus	1	4	3.751	3.172	0.075
Athlete/Non-Athlete	1	9	8.608	7.280	0.007
Housing X Athletics	1	0	0.158	0.134	0.714
Residuals	2,684	3,174	1.182		

Because the interaction of housing and athletics was not found to be statistically significant, a two-way ANOVA without the interaction between the athletics and housing was computed. Statistical significance was found with athletics at the .05 level ($F(1,2685)=7.283$, $p<.05$). A small effect size was observed $\omega^2 = 0.00233$, and a medium power at 64%. There was statistical significance for housing and overall GPA at the 0.1 level, but not at the 0.05 level. The data and confidence intervals can be found in Table 4.

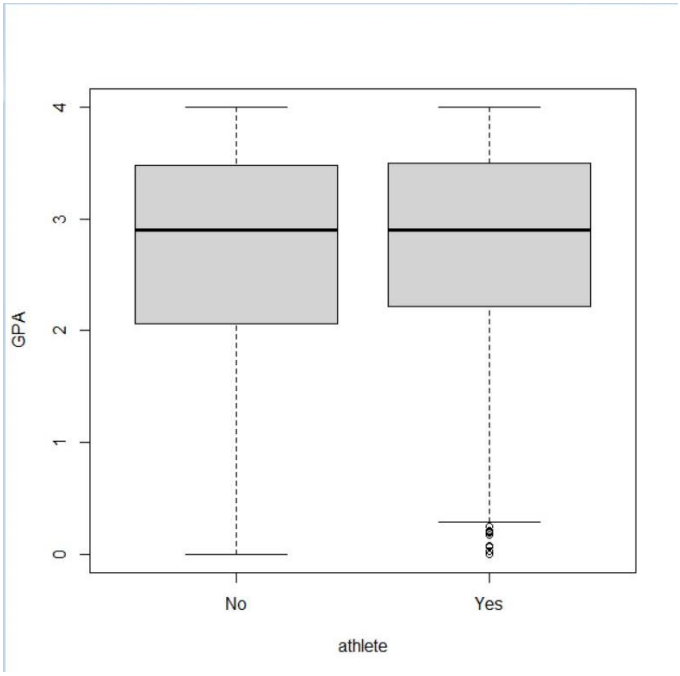
Table 4: Two-Way ANOVA with no interaction of variables for Question 2

Variables	*df*	Sum of	Mean	F Stat	p-	95% CI	95% CI

		Squares	Sq		value	Lower	Upper
Dorm	1	4	3.751	3.173	0.075	-0.167	0.008
Athlete	1	9	8.608	7.283	0.007	0.022	0.208
(Intercept)	2685	3174	1.182				

Athletes were found to be statistically significant, so an independent samples t-test was used to examine overall GPAs across athletes and non-athletes. A boxplot of overall GPA for athletes and non-athletes can be seen in Figure 4. A Shapiro-Wilk test results indicate some concerns for the normality assumption (W=0.906, p<.001). On average, the overall GPA for students involved in athletics (mean=2.709, sd=1.034, n=713) is greater than those not involved in athletics (mean=2.631, sd=1.108, n=1,975). This difference is not statistically significant t(1342)=-1.694, p=0.0904 at the .05 level. A Post Hoc test in G*Power computed a power of .99, with a small effect size of *dz*=0.092.

Figure 4: Boxplot of Overall GPA and Athletes/Non-Athletes



Research Question 3

For the final question, the data was used differently than the previous two questions. The descriptive information can be found in Table 5. Only athletes will be used in this data set to see if there is a difference in GPA when athletes are in season compared to when athletes are out of season. There are one thousand fourteen student-athletes in this data set. There are fourteen student athletes that are dual sport, so both sports have been included for them.

There are two terms that are being examined, the fall term and spring term. For each athlete, every term they participated in and the GPA for that term was added into the data. Then, a yes or no was placed in the "In Season" category. Table 5 demonstrates which sports are in season during which semester. The sports that are during winter seasons received a "yes" during the fall term as being in season, and a "no" during the spring term because a majority of their competitions were performed during the end of the fall semester. The sports that are considered to be year-round receive a "yes" during just the spring terms because a majority of their competitions are during the end of the spring semester. The only major change made was during spring of 2020 and fall of 2021, due to Covid-19, where all sports were cancelled in 2020, and every sport resumed "in season" play during spring of 2021.

Table 5: Descriptive Information: In Season vs. Out of Season Comparison
(Mean ± standard deviation)

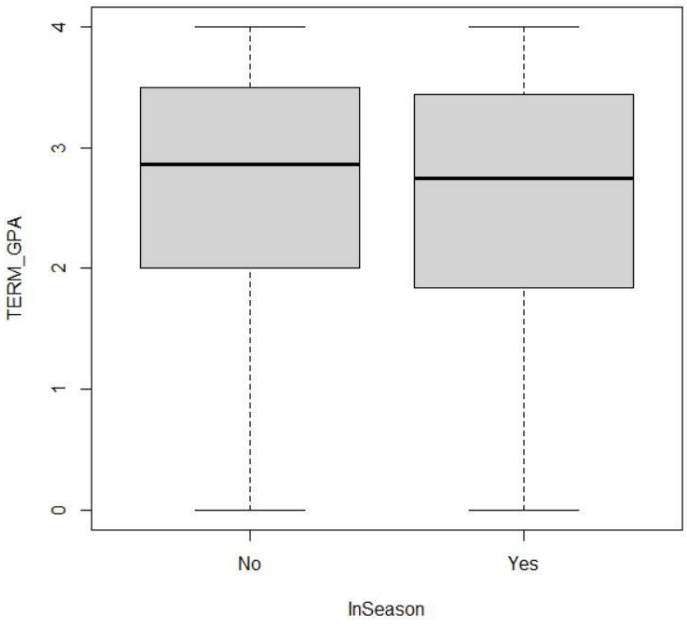
Sport (Female):	**Basketball: 52 (5.10%)** **Cross Country: 5 (0.49%)** **Dance: 31 (3.04%)**

	Golf: 20 (1.96%) **Soccer: 55 (5.39%)** **Softball: 80 (7.84%)** **Sports Shooting: 5 (5.10%)** **Swim: 23 (2.25%)** **Volleyball: 54 (5.29%)**
Sports (Male)	Baseball: 175 (17.16%) Basketball: 74 (7.25%) Cross Country: 9 (0.88%) Golf: 46 (4.51%) Soccer: 179 (17.5%) Sports Shooting: 33 (3.24%) Swim: 44 (4.31%) Wrestling: 143 (14.02%)
Seasons: Fall	Volleyball Men's Soccer Women's Soccer Men's Cross Country Women's Cross Country
Winter:	Dance Men's Basketball Women's Basketball Men's Swim Women's Swim Wrestling
Spring:	Baseball Softball
All Year (Start of fall semester to end of spring semester)	Men's Golf Women's Golf Men's Sport Shooting Women's Sport Shooting
GPA per sport term	
In Season	Mean: 2.49±1.20
Out of Season	Mean: 2.60±1.15
Term GPA Season	
Fall	Mean: 2.69±1.15
Winter	Mean: 2.41±1.16
Spring	Mean: 2.52±1.15
All Year	Mean: 2.64±1.30

In Season Total:	1,286 (53.70%)
Out of Season Total:	1,109 (46.30%)

An independent samples t-test was used to examine the mean difference between overall GPA for athletes in-season compared to mean GPA for athletes out-of-season. A boxplot of GPA for athletes in-season and athletes out-of-season seen in Figure 5. A Shapiro-Wilk test indicates concerns for normality (W=0.906, p<.001). On average, the term GPA for students out-of-season (mean=2.594, sd=1.155) were significantly higher than term GPA for students in-season (mean=2.493, sd=1.193). t(2363)=2.128, p<.05, 95% CI (0.008, 0.196). A small effect size was represented with *dz*=0.087, but a large power was calculated in G*Power with 0.99.

Figure 5: Boxplot of Term GPA and In-Season and Out-of-Season Athletes



Lastly, since there was a statistically significant findings when comparing in season and out of season, a one-way ANOVA was computed to compare the academic success across the different sport seasons which are broken down into fall, spring, winter, and all year.

Equal variances were checked using a Levene's Test, with $F(3,2391)=3.153$, $p<.05$. The null hypothesis was rejected, which was that the population variances are equal, so the assumption of homogeneity of variances is not upheld.

A Shapiro-Wilk normality test was then used to check the assumption that the data comes from a normal distribution. The term GPA alone was found to be statistically significant ($W=0.906$, $p<.001$), so we can't assume a normal distribution. When using the Shapiro-Wilk normality test comparing all four variables to term GPA, all were found to be statistically significant, so none of the four seasons can be assumed that they come from a normal distribution (Table 6).

Table 6: Shapiro-Wilk's Normality Test for Sport Season

Variables	W-Value	p-value
Season Fall	0.876	$p=2.2e^{-16}$
Spring	0.914	$p=2.2e^{-16}$
Winter	0.931	$p=2.2e^{-16}$
All Year	0.854	$p=6.73e^{-15}$

A one-way ANOVA and a Tukey-HSD post HOC test were computed, the results shows that at least one pair of means is statistically significant when comparing term GPA and the different sport season that athletes participate in ($F(3,2391)=10.567$, $p<.001$). Data findings can be seen in Table 7.

Table 7: One-Way ANOVA for Sport Season for Question 3

Variables	*df*	Sum of Squares	Mean Sq	F -value	p-Value
Sport Season	3	32	10.567	7.703	4.03^{e-05}
Residuals	2391	3280	1.372		

A Tukey-HSD post HOC test shows that there is statistical significance between three comparisons, found in table 8. The Confidence Interval can be found in Table 17. A Tukey-HSD Post HOC test revealed a significant difference between term GPA and winter athletes compared to all-year athletes, as well as spring athletes compared to fall athletes, and winter athletes compared to fall athletes. The most notable difference is between winter and fall athletes, with winter athletes having a -0.279 lower GPA than those in fall sports.

Table 8: Tukey HSD Post HOC analysis for sport seasons

Variables	Difference	Lower 95%	Upper 95%	P adj.
Fall X All-Year	0.0480	-0.173	0.269	0.944
Spring X All-Year	-0.122	-0.344	0.100	0.495
Winter X All-Year	-0231	-0.446	-0.016	0.029
Spring X Fall	-0.170	-0.336	-0.003	0.044
Winter X Fall	-0.279	-0.435	-0.122	0.00002
Winter X Spring	-0.109	-0.268	0.0493	0.287

Multiple R-Squared value for this ANOVA was found to be .00957. Eta-squared was found to be 0.09, meaning there is a weak effect. Calculating Omega-Squared (0.0084), the effect size is then found to be ω=0.092, which is a medium effect size. Multiple R-Squared value for this ANOVA was found to be .00957. Using G*Power for a Post hoc test, there was a power of .59.

Summary

A multiple linear regression analysis was used to compute the difference in overall GPA and athletic participation, housing status, gender, Pell-grant eligible, and degree the student was going for. Dummy variables were created for A.A./A.S. degrees and certifications/diplomas, and they were compared to those getting a tech degree. Running the MR regression found that each variable was statistically significant when comparing overall GPA and the five variables. For students who live on campus, they have a predicted -0.153 lower GPA than those who do not live in the dorms. Pell-eligible students were found to have a -0.276 lower GPA than those who were not eligible. Athletes were predicted to have a 0.226 higher overall GPA than non-athletes. Males have a predicted overall GPA -0.131 lower GPA than females. Students who are in diploma or certification seeking degrees they have a predicted higher GPA of 0.230 than those in Tech classes, while those students who are in A.A. and A.S. degrees have a predicted higher overall GPA of 0.198 compared to those who are in tech classes.

A two-way ANOVA and a Tukey-HSD pairwise comparison was used to examine the interaction between athletics, housing, and overall GPA. The interaction between the two was found to be not statistically significant, as well as being in athletics or not. Housing was found to be statistically significant, but after computing a one-way ANOVA comparing housing and overall GPA, the interaction was found to be not statistically significant.

Finally, the interaction between in-season athletes and out-of-season athletes was looked into to see if being in season effects the students GPA. A one-way ANOVA and a

Tukey HSD Post HOC test were run, and it was found to be statistically significant that being in season does have an effect on the term GPA of the student. Then, another one-way ANOVA was run to see if there was any indication of if specific time of year sports had better or worse GPAs. This looked at fall, spring, winter, and all year sports, with findings that at least one of the means was statistically significant, and a Tukey HSD Post HOC test showed that there were significant interactions between winter and all year sports, spring and fall sports, and winter and fall sports.

CHAPTER V: SUMMARY

This chapter discusses the summary and the conclusions that were derived from the study that examined the relationship between student-athletes and academics in community colleges based on several factors including on-campus and off-campus housing, gender, Pell-grant eligible, the program the student was enrolled in, and athletic participation.

The study was conducted from data given by Iowa Lakes Community College. The data set was taken from data over the past six years at the school, including a variety of students who were both athletes and non-athletes. The data was collected and refined before being sent for this research.

Summary of Findings

Q1: Are on-campus residential status, athletic participation, socioeconomic status, gender, and degree program significant predictors of overall GPA?

Running a multiple regression model in R, the findings show that socioeconomic status, athletes, gender, housing, Diploma seeking students, and A.A./A.S. seeking students all were significant predictors of overall GPA, but there was a small effect size of Cohen's F^2 of 0.030.

Q2: Is the mean overall GPA significantly different across on-campus residential status, athletic participation, and the interaction of on-campus status and athletic participation?

Running a two-way ANOVA with a Tukey-HSD pairwise comparison test, on-

campus vs. off-campus status was the only statistically significant finding ($F(1,3684)=7.757$, $p<.001$). The interaction between the two variables that was statistically significant was non-athletes who lived on campus compared to athletes who live off-campus, all other interactions were found to not be statistically significant.

Q3: Is the difference in in-season academic success (GPA) vs. out-of-season success (GPA) statistically significant across student-athletes?

Running a one-way ANOVA, the findings for this comparison of in-season academic success and out-of-season academic success were statistically significant ($F(1,2393)=5.229$, $p<.05$). Student-athletes who were out-of-season were found to have higher GPA's than those student-athletes who were in-season. After, a test comparing the different sports seasons was conducted as well, concluding that at least one pair of means amongst the different sport seasons were statistically significant, and after computing a Tukey-HSD Post HOC test, comparing winter and all-year season GPA, spring and fall GPA, and winter and fall GPA were all found to be statistically significant.

Integrations of Findings into the Literature

This study had the purpose of getting a better understanding of community colleges and how their academic programs, athletic programs, and on-campus housing have affected their student-athletes overall success at the college. Vincent Tinto's model of Student Departure (1993) uses the idea that students will leave their schools when they have problems academically and socially. As previously mentioned, community colleges are now providing more opportunities for students to live on campus, participate in

athletics, as well as continue to have the small class sizes that help students feel more integrated into their school, allowing them to feel as though they belong. This study helped analyze data from a community college that offers on-campus housing and athletics.

The idea behind Tinto's theory is that the more involved students can be at their college, the more likely they are to both to continue their schooling at that particular school and to succeed. The first question for this study took multiple different categories that could influence a student's academic performance, including residential situation and athletic participation. The type of degree that the student was pursuing was also taken into consideration because the tech programs are more hands on and are two-year long degrees, whereas the A.A./A.S. degrees are more for transfer students looking to go on to a four-year school. The other categories of gender and socioeconomic status were included because they have been found to have an influence in academic performance.

The second question helped isolate the main portion that this study wanted to focus on that tied into Tinto's (1993) theory, which was about the involvement of college athletics and living on-campus compared to living off-campus.

Finally, the last question was used to help understand whether being in-season for an athlete had a hindrance on athletic performance compared to when they were out-of-season. Students who are in-season tend to be busier, often times missing classes and have less time to focus on their social lives and academics while student-athletes who are out-of-season still have practice for their athletics, but they have more free-time to pursue other interests, focus on academics, and be more social.

Along with Tinto's model of Student Departure (1993), previous studies had

influenced the style of this study. In one study, there were findings that participation in collegiate athletics at the community college level can positively contribute to the academic success of that student athlete (Conway, 2011). The results of this present study agree with Conway and find that there is statistical significance when looking at athletes compared to non-athletes and what their overall GPA is. The results of this study found that when controlling for the other variables, students who were involved in athletics have a 0.226 higher overall GPA. Conway's study (2011) finds that athletes tend to build a better connection with their school, which can be a conclusion drawn from this study as well.

This data was drawn from Iowa Lakes Community College, which average class sizes are 1:15 professor to student ratio, have multiple student-services offered such as professional and peer tutoring, academic advisors, and counseling services, which provides the opportunities needed for students to succeed. Michelle Cooper (2018) found that the more academic services provided to their students, especially within academic advising, the more likely the students will succeed. Iowa Lakes has both academic advisors as well as many of the athletic coaches help keep an eye on their students to make sure that their students are taking the proper classes need to graduate, so according to the data, the athletes have had a better overall GPA, and as Cooper (2018) found, the more academic advising and focus on academics within the school helps students get prepared and stay prepared. The student-athletes in this study were found to have better overall GPA's, which aligns with Cooper's findings (2018) that the focus on advising and academics helps students succeed academically. Another study found that if schools offer life skill development, academic advising, and counseling, the students at the school

would be more successful (Carodine et al., 2001). As previously stated, Iowa Lakes has offered a multitude of these, allowing for students to feel integrated into the school, and with student-athletes being held accountable by their coaches, it allows for them to be pushed more in the classroom.

At Iowa Lakes, student athletes are required to attend study-tables depending upon their GPA's. Students also have access to the library, success center, tutoring options, and more, which provides a solid foundation for their first-year experience and overall experience at the school. According to two other studies on academic support in community colleges, they both found that the more services offered, and the more that students feel supported, the more likely they will succeed academically (Otto et. Al, 2019; Gayles & Hu, 2009). Iowa Lakes has offered many different services for both their student-athletes and their regular students. The findings of the study that athletics does have an impact on overall GPA can be also traced back to the idea that athletes have access to many academic resources at the college as well.

In Horton's study in 2009, he found that student-athletes tend to have higher GPA's and more credit hours earned, which was found true in this respective study (Horton, 2009a). He also found that students who were female and higher socioeconomic status also had higher academic success, which this study also found that gender and socioeconomic status was statistically significant.

There were two studies found in the literature research that touched on in-season compared to out-of-season academic success for student athletes. One study found that there was statistical significance between in-season and out-of-season GPAs for college athletes, but when they removed basketball and football, it wasn't statistically significant

(Wilson, 2011). This study was performed at a four-year university. The other study that there was no statistical significance (Maloney & McCormick, 1993). This respective study found that at the two-year level, there was a statistically significant difference of GPA when students were in-season compared to when they are out-of-season. This portion of the study helps add to the narrative of community colleges and athletics. Because there is more of a gap on the knowledge of community colleges, this can help bring more information on how student-athletes perform in the classroom.

One finding that will be added to the community college narrative of the effect of living on-campus and overall academic success of the students. The few studies on community colleges and dorm living were generally qualitative studies based off of student's perceptions of the dorms and how they felt (Murrell et al. 1998). This present study helps bring data into the narrative, and although it did come back as a negative effect on overall GPA, it is important to start adding housing to the conversation of community colleges. Although this study shows that there was a negative correlation between overall GPA and living on-campus, that doesn't mean that there aren't positives for on-campus housing.

Limitations

This study does have limitations. This data set did not have the ability to have ACT, SAT, Accuplacer, or high school GPA scores for students. Many community colleges don't require certain test scores or high school GPA to be accepted into their schools unlike many four-year universities. This limits the study because those may have an impact on the students' overall GPA during their time at college.

This study was also completed from data from 2016-2022. Drops in grades and overall performances may have occurred due to Covid-19 during the spring of 2020 season as well as the 2020-2021 school year. Classes were online and not in person which may have hindered some students to learn to their best abilities. Sports were also more limited during that time, which can have an effect on the student performance in the classroom.

This study was also limited in finding everything that students were involved in to take into consideration, such as music or club participation.

Another limitation is that this study applies to one community college in Iowa and does not expand upon other schools.

Suggestions for Future Research

Upon the completion of this study, similar future research may be completed in a similar way. In order to have a better overall view of student success, it may be important and more beneficial to be able to add ACT, SAT, or high school GPA into the factors.

It may be beneficial to have data that was not during Covid-19 because that may be a major influence in academic success in both community colleges and four-year schools.

Another suggestion for bettering the research process for finding out academic success within community colleges and athletics would be to use a school with a larger population and more athletics and housing options. This study was done at a smaller school, which may affect the overall findings because of the smaller demographic.

Future researchers could also add other information into the data set. This may

include choir, band, or orchestra involvement, clubs and activities the students are involved in, student ambassadors, and intramurals. Overall, having more ways to find that students are involved would be a better way of measuring how student academic success is at community colleges.

Summary

Chapter 5 summarized the findings of this study. This study examined the relationship between community colleges, student-athletes, housing, gender, socioeconomic status, and the type of degree being sought out. This study has found that residential status, socio-economic status, athletic participation, gender, and the degree the student is seeking have statistical significance in the overall GPA of the student. Each of these factors play a role in the overall GPA of the student.

Although it was found that living on-campus has a negative effect to overall GPA, it is still important to research more and continue to find out the positive effects that living on-campus has for students. It was also found that students who were in-season had lower GPAs compared to when they were out-of-season. This may spark more questions and hypotheses to examine student-athletes at the community college level.

This chapter then discussed how this study has been tied into the previous literature findings. Using Vincent Tinto's (1993) model of student-departure, this study helps add more information into the community college aspect since there has been a lack of studies completed for athletics and community colleges.

Finally, this chapter discusses the limitations within this study. Although there are limitations, this is still an important topic to continue to research and explore due to the

lower amount of information on community colleges and their athletic programs. Athletic programs do have a major impact for most schools, and they are also seen to have a positive impact on college athlete's success in the classroom.

REFERENCES

"About Iowa Lakes." (2022). *Iowa lakes community college,* 21 Mar. 2022, from https://iowalakes.edu/about/#:~:text=We%20offer%20over%2060%20associate%2C%20Spencer%2C%20and%20Spirit%20Lake.

"About Us." (2022). *NAIA*, National association of intercollegiate athletics, from https://www.naia.org/about/aboutus#:~:text=Each%20year%20more%20than%277%2C000,participate%20in%2027%20national%20championships.

The American Association of Community Colleges. (2016). *On-campus housing*. from https://www.aacc.nche.edu/wp-content/uploads/2017/09/DataPoints_No23.pdf

Bahr, P. R. (2013). *The deconstructive approach to understanding community college students' pathways and outcomes*. Community College Review, 41, 137-153.

Berson, J. S. (1996). *Student perceptions of the intercollegiate athletic program at a community college.* Paper presented at the Annual Convention of the National Association of Student Personnel Administrators, Atlanta, GA, March 13-16. (ED 404 607)

Bryan, C. H. (2018). *A Transcendental phenomenological study of persistence among national junior college athletic association division III student athlete* (dissertation). Liberty University, Lynchburg, VA. From https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=3169&context=doctoral

Burgess, Jonathan, and Jesus Cisneros. (2018). "The Semester of struggle: male junior college student-athletes' experiences." *Journal of Issues in Intercollegiate Athletics,* vol. 11, 2018, pp. 266–286., from http://csri-jiia.org/.

Bush, B. V., Casteñeda, C., Hardy, D. E., & Kastinas, S. G. (2009). What the numbers say about community colleges and athletics. *L. S. Hagedorn & D. Horton* (Eds.), New Directions for Community Colleges, pp. 5-14.

Carnevale, Anthony P, et al. (2019). "The good jobs project." *Georgetown University Center on Education and the Workforce.*, from https://goodjobsdata.org/.

Carodine, K., Almond, K., & Gratto, K. (2001). "College student athlete success both in and out of the classroom." *New Directions for Student Services*, vol. 93, 2001, pp. 19–33.

Conway, K. M. (2001). "Urban community college athletics." *Academic Exchange Quarterly*, vol. 15, no. 2, p. 51.

California Community College Athletic Association. (2019). "A brief overview of the CCCAA's corporate partnership program." *CCCAA*, California Community College Athletic Association. From https://www.cccaasports.org/Partnership_Overview

Friedrich, A. (2011). "Some 2-year colleges that offer a 4-year experience." *On Campus*, 5.

Gayles, J. G., & Hu, S. (2009). "The influence of student engagement and sport participation on college outcomes among division I student athletes." The Journal of Higher Education, 80, 315-333. doi:10.1080/00221546.2009.11779015

Horton, D. (2009a). "Comparative study of the persistence and academic success of florida community college student-athletes and non-athlete students: 2004 to 2007" *University of Florida*, University of Florida, pp. 1–165.

Horton, D. (2009b). “Class and cleats: community college student athletes and academic success.” *New Directions for Community Colleges*, vol. 147, pp. 15 27., doi: 10.1002/cc.374.

Huml, Matthew, et al. (2014). “Additional support or extravagant cost?: student athletes' perceptions on athletic academic centers.” *Journal of Issues in Intercollegiate Athletics*, 2014, pp. 410–430.

“Iowa Lakes Community College Profile 2020.” (2020). *Iowa Department of Education Division of Community Colleges & Workforce Preparation*, Iowa Department of Education, 2020.

Lewis, G. (1970). “The beginning of organized collegiate sport.” *American Quarterly*, vol. 22, no. 2, pp. 222–229., The Johns Hopkins University.

Loans, NC Assist. (2022). “Pell grant eligibility: how to determine if you qualify.” *Pell Grant Eligibility: How to Determine If You Qualify?* College Foundation, 2022, https://ncassist.cfnc.org/ncassistInfo/pell-grant eligibility#:~:text=Federal%20Pell%20Grants%20are%20given,Federal%20Student%20Aid%20(FAFSA).

Maloney, M. T., & McCormick, R. E. (1993). An examination of the role that intercollegiate athletic participation plays in academic achievement. Journal of Human Resources,28(3), 555-570

Mechur Karp, M., Hughes, K. L., & O'Gara, L. (2008). *An exploration of Tinto’s integration framework for community college students*. Community College Research Center. Retrieved February 1, 2022, from https://files.eric.ed.gov/fulltext/ED501335.pdf

Merritt, Devin L., and Walter Buboltz. (2015). “Academic success in college: socioeconomic status and parental influence as predictors of outcome.” *Open Journal of Social Sciences*, vol. 03, no. 05, 2015, pp. 127–135., https://doi.org/10.4236/jss.2015.35018.

Michigan State University. (2021). *Key theories - Michigan State University*. Department of Student Life at Michigan State University. Retrieved February 6, 2022, from https://studentlife.msu.edu/rso-s/Theories.pdf

Miller, R. (2003). “The role of athletics in higher education.” *Major themes in economics*, vol. 5, no. 5, pp. 31–47.

Moust, J.H.C. and Schmidt, H.G. (1994). 'Facilitating small-group learning: a comparison of student and staff tutors' behavior', Instructional Science 22, 287-301.

Murrell, S. P., Denzine, G., and Murrell, P. H. (1998). Community college residence halls: a hidden treasure. Community College Journal of Research and Practice, 22: 663- 674.

National Collegiate Athletic Association. (2021). “History.” *NCAA.org - The official site of the NCAA*, CBS Sports Digital, 21. From https://www.ncaa.org/sports/2021/5/4/history.aspx

National Collegiate Athletics Association (2020). “Estimated probability of competing in college athletics.” *NCAA.org*, National Collegiate Athletics Association, from https://www.ncaa.org/sports/2015/3/2/estimated-probability-of-competing-in college-athletics.aspx.

National Junior College Athletic Association. (2017). “Student-Athlete participation statistics.” *NJCAA*, National Junior College Athletic Association. From https://www.njcaa.org/about/history/SA_Participation/index

National Junior College Athletic Association. (2018). *History of the NJCAA*. Retrieved November 24, 2022, from https://www.njcaa.org/about/history/index

Nichols, Holly. (2014). “The experiences of community college student athletes.” *Eastern Illinois The Keep*, 2014. From https://thekeep.eiu.edu/theses/1293/

Pascarella, E. T., & Terenzini, P. T. (1991). “How college affects students: findings and insights from twenty years of research.” *Contemporary Sociology*, vol. 21, no. 2.

Pascarella, Ernest, et al. (1992). *Cognitive impacts of living on campus versus commuting to college*. Office of Educational Research and Improvement, Washington DC, 1992, pp. 1–24.

Perry, Laura B., and Andrew McConney. (2010). “Does the SES of the school matter? an examination of socioeconomic status and student achievement using Pisa 2003.” *Teachers College Record: The Voice of Scholarship in Education*, vol. 112, no. 4, 2010, pp. 1137–1162., https://doi.org/10.1177/016146811011200401.

Phillippe, K. (2015). “On-campus housing.” *American Association of Community Colleges*, American Association of Community Colleges. From https://www.aacc.nche.edu/wp-content/uploads/2017/09/DataPoints_No23.pdf

“Play Division I Sports.” (2022). *NCAA.org*, National Collegiate Athletic Association, 2022, from https://www.ncaa.org/sports/2014/10/24/play-division-i-sports.aspx.

Rashad, Omar. (2020). “Community colleges could see influx of athletes as coronavirus disrupts sports recruiting.” *CalMatters*, Newspack, 13 May 2020, from https://calmatters.org/education/higher-education/college-beat-higher education/2020/05/california-community-colleges-sports-coronavirus/.

Sackett, P. R., Kuncel, N. R., Arneson, J. J., Cooper, S. R., & Waters, S. D. (2009). *Socioeconomic status and the relationship between the SAT and freshman GPA: an analysis of data from 41 colleges and universities.* The College Board. Retrieved February 7, 2022, from https://files.eric.ed.gov/fulltext/ED580800.pdf

Scott, Brianna M, et al. (2008). “In-Season vs. out-of-season academic performance of college student-athletes.” *Journal of Intercollegiate Sports*, 2008, pp. 202–226.

Solodev. (2021). “Data & reports.” *Florida department of education*, Florida Department of Education.

Staley, Derek J., (2017). "Athletic participation and academic success in junior college" Master of Arts in Sport Management. From https://digitalcommons.csp.edu/cgi/viewcontent.cgi?article=1023&context=sport management_masters

Storch, J., & M Ohlson. (2009). “Student services and student athletes in community colleges.” *New directions for community colleges*, pp. 75–84.

“Student Athlete Handbook.” (2021). *Marshalltown Community College Athletics*, PrestoSports, from https://www.mccathletics.com/athletics/student_athlete_handbook

“Study Hall.” (2018). *Upstate*, SidearmSports, 2018, from https://upstatespartans.com/sports/2019/5/1/academicServices-study-hall.aspx.

Teachers College, Columbia University. (2021). “Community college FAQs.” *Community College Research Center*, Teachers College, Columbia University. From https://ccrc.tc.columbia.edu/community-college-faqs.html

Texas Southmost College. (2018). *Advantages of attending a community college*. Texas Southmost College. Retrieved February 1, 2022, from https://archive.tsc.edu/index.php/new-students/advantages-of-attending-a community-college.html

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.

Umbach, P. D., Palmer, M. M., Kuh, G. D., & Hannah, S. T. (2006). Intercollegiate athletes and effective practices: Winning combination or losing effort? Research in Higher Education, 47(6), 709-733. doi: 10.1007/s11162-006-9012-9

University of Maine System. (2019). *Retention and student success – best practices and successful initiatives*. Maine's Public Universities. Retrieved February 1, 2022, from https://www.maine.edu/student-success/retention-and-student-success-best practices-and-successful-initiatives/

US Department of Education (ED). (2022). *Federal TRIO home page*. Office of Postsecondary Education. Retrieved January 31, 2022, from https://www2.ed.gov/about/offices/list/ope/trio/index.html

Vanover, E. T., & DeBowes, M. M. (2016). “The impact of intercollegiate athletics in higher education.” *Higher Education Politics & Economics*, vol. 1, no. 1, pp. 29 44.

Volchok, Edward. (2018). “Differences in the performance of male and female students in partially online courses at a community college.” *Community College Journal of Research and Practice*, vol. 43, no. 12, 2018, pp. 904–920., https://doi.org/10.1080/10668926.2018.1556134.

Williams, M. R., & Pennington, K. (2006). “Community college presidents' perceptions of intercollegiate athletics.” *The Community College Enterprise* pp. 1-15.

Wilson, D. S. (2011). To play or not to play: A study of athletic participation and its effect on academic performance (Order No. 3450573). Available from Education Database; ProQuest Dissertations & Thses Global. (864833031). From http://ezproxy.csp.edu/login?url=http://search.proquest.com.ezproxy.csp.edu/docview/84833031?accountid=26720

“2021 Annual Report.” (2021). *Iowa Lakes Community College*, 2021, from https://iowalakes.edu/?r3d=2021-annual-report.

Appendix A

Shawnee State University Institutional Review Board (IRB) Approval Form

Shawnee State University

For Office Use Only
12/16/2021
Protocol # 2021-36

8. Based on the "What type of review" form, I believe that my research project only requires an expedited review.

(Yes) No

In submitting this form and the corresponding documents, I acknowledge that I have completed Human Research Participants training and that I understand and will uphold the rights of human participants. I also verify that all information contained in this form and any other corresponding documentation is correct based on my knowledge. I understand that I may not have contact with any research participants until the Shawnee State University IRB has given me their approval. I also understand that I must file a ***Continuing Review Form*** if my project extends beyond a year from my approval date and I must file a ***Study Completion Report*** with all consent forms once the study is complete.

Signature of Principal Investigator 1

Signature of Principal Investigator 2

Signature of Principal Investigator 3

Signature of Principal Investigator 4

Signature of Principal Investigator 5

Signature of Principal Investigator 6

Date of Submission: 10/29/2021

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Appendix B

Iowa Lakes Community College Institutional Review Board (IRB) Approval Form

SECTION III: IRB RESPONSE

FOR IRB USE ONLY	Date Submitted: 2/18/2022
	IRB Committee Review Date: 2/21/2022
	Project approval requires unanimous support of the committee.
	Yes - Project is approved. Email vote
	Robert A. Leifeld 2/23/2022 Signature of Executive Dean of Instruction and Development Date
	Jody A Condon 2/21/2022 Signature of Iowa Lakes Community College Counselor Date
	Annette Wimmer 2/22/2022 Signature of Iowa Lakes Community College Faculty Date
	Martha Olson 2/23/2022 Signature of Iowa Lakes Community College Faculty Date
	XX☐ Project is exempt in accordance with the *Federal Policy for Protection of Human Research Subjects,* 45 Code of Federal Regulations 46.101(b) categories:
	☐ Incomplete; please make the following changes and resubmit:
	Approved by Academic Council

BIBLIOGRAPHY[1]

Courtney Elizabeth Calkins

Candidate for the Degree of

Master of Science Mathematics

Thesis: COMMUNITY COLLEGES & ATHLETICS: ACADEMIC SUCCESS OF STUDENT-ATHLETES

Major Field: Mathematics

Personal Data: Born October 17th, 1996, in Edina, MN. Raised in Osseo, MN. Played college softball at Iowa Lakes Community College and Tennessee Wesleyan University. Previously worked as a softball graduate assistant at Iowa Lakes Community College. Currently the head softball coach at Hawkeye Community College.

Education: Associate of Arts from Iowa Lakes Community College; Bachelor of Science in Mathematics from Tennessee Wesleyan University.

Completed the requirements for the Master of Science in Mathematics, Portsmouth, Ohio in July 2022.

7/31/2022

ADVISER', APPROVAL: Type Adviser's Name Here