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# The Impact of College Recreation Center Renovation on Overall Participant Utilization and Frequency

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THE IMPACT OF COLLEGE RECREATION CENTER RENOVATION ON  
OVERALL PARTICIPANT UTILIZATION AND FREQUENCY

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Arts

By

JAMES R. KILCHENMAN  
B.A., Wright State University, 2004

2009  
Wright State University

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WRIGHT STATE UNIVERSITY  
SCHOOL OF GRADUATE STUDIES

June 10, 2009

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY James R. Kilchenman ENTITLED The Impact of College Recreation Center Renovation on Overall Participant Utilization and Frequency BE ACCEPTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF Master of Arts

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## ABSTRACT

Kilchenman, James R. M.A., Department of Educational Leadership, College of Education and Human Services, Wright State University, 2009. The Impact of College Recreation Center Renovation on Overall Participant Utilization and Frequency.

The purpose of this research study was to investigate changes in student utilization of a campus recreation center following a two-year renovation project that added 3,500 square feet to the existing facility. The variables studied for this investigation were the recreation center user age, class level, ethnicity, and sex. Data for this study were collected through activity reports produced when users swiped their University ID cards for admission to the recreation center. Overall there was a 189% increase with unique users following the renovation project. Mean student uses also increased for most variable categories, most notably with freshman and sophomore students, Black, non-Hispanic students, and both female and male students.

## TABLE OF CONTENTS

	Page
Abstract.....	iv
List of Figures .....	ix
List of Tables.....	x
Acknowledgments .....	xi
Dedication .....	xii
Chapters:	
1. Introduction .....	1
General Background .....	1
Significance of the Study .....	2
Statement of the Problem .....	3
Definition of Terms.....	4
Research Questions and Hypothesis .....	4
Research Question 1 .....	5
Research Question 2.....	5
Assumptions .....	5
Scope and Limitations.....	6
Summary .....	7
2. Review of Literature .....	8
Developmental Benefits .....	8
Social Benefits .....	11

TABLE OF CONTENTS (Continued)

User Demographics.....	13
Summary .....	15
3. Methodology .....	17
Introduction .....	17
Research Design .....	17
Research Question and Hypothesis.....	17
Research Question 1 .....	17
Research Question 2.....	18
Subjects, Participants, and Population .....	18
Unit of Analysis .....	19
Research Variables.....	19
Data Collection Procedures .....	20
Data Collection .....	21
Unique Users.....	21
Uses .....	21
Setting and Environment.....	21
Summary .....	22
4. Results.....	23
Introduction .....	23
Research Question 1.....	23
Unique Users Compared to MSU Population.....	23
Mean Student Uses.....	24
Research Question and Hypothesis .....	25
Research Question 2.....	25

TABLE OF CONTENTS (Continued)

Age .....	25
Unique Users Compared to MSU Population .....	25
Mean Student Uses Between Study Years .....	26
Class Level.....	28
Unique Users Compared to MSU Population .....	28
Mean Student Uses Between Study Years .....	29
Ethnicity.....	31
Unique Users Compared to MSU Population .....	31
Mean Student Uses Between Study Years .....	33
Sex.....	35
Unique Users Compared to MSU Population .....	35
Mean Student Uses Between Study Years .....	36
Research Question and Hypothesis.....	36
Summary .....	37
5. Conclusions, Recommendations, and Summary .....	39
Introduction .....	39
Summary of Results .....	39
Discussion of Results .....	40
Unique Users.....	40
Female Versus Male Uses.....	40
Black, non-Hispanic Uses.....	41
Relationship of Results to Theory .....	42
Implications for Further Research .....	42
Implications for the Profession.....	43

TABLE OF CONTENTS (Continued)

Limitations.....	43
Summary .....	44
References.....	45
Appendixes.....	49
Appendix A .....	49

## LIST OF FIGURES

Figure	Page
Figure 1: Number of Uses Per Unique User Between Study Years .....	24

## LIST OF TABLES

Table	Page
Table 4-1: Comparison of Unique Users and Campus Population by Age Between Study Years.....	26
Table 4-2: Comparison of Mean Uses by Age Category Between Study Years .....	27
Table 4-3: Comparison of Unique Users and Campus Population by Class Level Between Study Years .....	28
Table 4-4: Comparison of Mean Uses by Class Level Between Study Years.....	30
Table 4-5: Comparison of Unique Users and Campus Population by Ethnicity Between Study Years.....	31
Table 4-6: Comparison of Mean Uses by Ethnicity Between Study Years.....	33
Table 4-7: Comparison of Unique Users and Campus Population by Sex Between Study Years .....	35
Table 4-8: Comparison of Mean Uses by Sex Between Study Years .....	36

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## DEDICATION

This project is dedicated to my wife Michelle who is a gleaming example that hard work and dedication leads to success. You have been a constant source of support and encouragement. Thank you.

## CHAPTER 1

### INTRODUCTION

#### General Background

A college campus is a unique environment where students, faculty, and staff come together to pursue a common mission for education. As demands for higher education continue, colleges and universities are continuously expanding their programs and services to attract a diverse population and to remain competitive. One of the most innovative parts of a campus environment is the elaborate and large-scale student recreation center.

Many colleges and universities are investing tens of millions of dollars to design, renovate, and build on-campus recreation centers that rival private fitness clubs and professional sports team facilities. A survey by the National Intramural-Recreational Sports Association (NIRSA, n.d.) found that its members planned to spend \$12 billion on the new construction or renovation of indoor and outdoor college recreational sport facilities between 2000 and 2007.

Woosnam, Dixon, and Brookover (2006) found that more than one-third of students studied at a southeastern United States university were influenced to enroll at the institution based on positive perceptions of the recreation facilities. Haines and Fortman (2008) suggest that participation in college recreational sport clubs helps students

increase their leadership skills, school pride, sense of belonging, and diverse experiences among others.

Many studies have proven the value of recreation centers on a college campus. They can provide a powerful resource not only to attract and retain students on campus, but for students to relax, meet new friends, and interact with the campus community as a whole. However, in order to adequately achieve the aforementioned results, institutions must stay current with technology and social trends, which can leave administrators with the critical decision of either renovating current facilities or constructing a new building all together.

#### Significance of the Study

With university budgets and spending becoming more conservative, it is important to allocate dollars to activities that enhance and enrich the lives of students. Campus recreation centers have developed into expensive multi-million dollar structures that can help university students better transition to college life. Attention to the frequency trends of campus recreation centers will help provide university administrators information that can assist in providing effective on-campus resources that encourage student success and development.

As part of an assessment at the institution, data examined the impact of utilization with regard to college student development. Fifty-two percent of survey respondents indicated that participation in recreational activities had provided them with skills and abilities that they will use after college. Eighty-one percent of students surveyed also responded that campus recreation has *somewhat* or *definitely* helped increase or improve self-confidence, and 91% of students surveyed noted that participation in campus

recreation has increased or improved their sense of well-being. Data also indicated beneficial results from campus recreation utilization with respect to interpersonal skills. The campus assessment data indicated that 65% of campus recreation users *somewhat* or *definitely* increased or improved their respect for others, 59% of users *somewhat* or *definitely* increased or improved their awareness of individuals from other cultures, and 65% of respondents *somewhat* or *definitely* increased or improved their sense of belonging or association on campus.

Additional post-renovation survey data from the campus indicated that 77% of students surveyed had utilized some portion of the campus recreation facility during their time at the university. When deciding to attend the university, over 35% of students surveyed stated that campus recreation facilities were either *very important* or *moderately important*. Likewise, over 45% of students acknowledged that recreation facilities were *very important* to *moderately important* when deciding to continue at this university. Data also showed that 83% of survey respondents *agree* or *strongly agree* that campus recreation activities and programs contribute to the overall quality of life at the university. Seventy-five percent of students surveyed *agree* or *strongly agree* that campus recreation at the university offers something for everyone.

### Statement of the Problem

The purpose of this research study was to investigate changes in student utilization of the Midwest State University (MSU) campus recreation center during the 2004-2005 and 2007-2008 academic years. During the 2005-2006 academic year, the MSU recreation center began a two-year renovation project that added over 3,500 square feet of usable recreational space to its existing facility. The facility increased from 6,000

to 9,500 square feet and the project was completed prior to the start of the 2007-2008 academic year. To study the change in utilization, the variables studied for this investigation were the recreation center user age, class level, ethnicity, and sex. Data for this study were collected through activity reports produced when users swiped their University ID cards for admission to the recreation center.

#### Definition of Terms

The following terms were operationally defined for this study:

1. Class Level – Class standing (Freshman, Sophomore, Junior, Senior, Graduate, Ph.D/Medical) with regard to the particular year studied.
2. MSU – Term given to represent the Institution at which this study took place.
3. Recreation Center – Part of the student union that houses free weights, cardio equipment, fitness classrooms, swimming pool, and locker rooms.
4. Recreation Facility – *See Recreation Center.*
5. Unique User – An MSU student who provided a valid university ID for admission into the campus recreation center. A unique user is only counted one time regardless of the number of visits.
6. Uses – Total number of times any valid university student ID was swiped for admission into the campus recreation center.
7. Utilization – Refers to the combination of unique users and uses.

#### Research Questions and Hypothesis

The following research questions were identified for this study:

### *Research Question 1*

RQ1: What changes in recreation center utilization occurred between the 2004-2005 and 2007-2008 academic years related to the total campus population?

The null hypothesis for this research question is as follows:

H0 = There were no changes in recreation center utilization between the 2004-2005 and 2007-2008 academic years.

H1 = There were changes in recreation center utilization between the 2004-2005 and 2007-2008 academic years.

### *Research Question 2*

RQ2: What changes occurred in recreation center utilization regarding the following variables?

- Age
- Class Level
- Ethnicity
- Sex

The null hypothesis for this research question is as follows:

H0 = There were no changes in recreation center utilization regarding the stated variables.

H1 = There were changes in recreation center utilization regarding the stated variables.

### *Assumptions*

The following assumptions were identified and accepted in this study:

1. All students who utilized the campus recreation center used their University ID for admission.

2. All students that left the campus recreation center without the intention of immediately returning to the center used their University ID for re-admission.
3. During the 2004-2005 and 2007-2008 academic years, the MSU campus recreation center was open and available for use with no barriers to access.

### Scope and Limitations

There were several limitations to this study that should be considered. First, the study was conducted at a large four-year public research institution located in the Midwest United States. Therefore, results should not be generalized to other settings. This research study was limited to the 2004-2005 and 2007-2008 academic years. Access to earlier data was unavailable due to an institutional change with patron record management. As a part of the renovation process in 2005, the university also upgraded its database system from the previous user tracking method. The new database system and the previous system were not able to be merged thus restricting access to demographic data prior to the 2004 academic year.

The summer quarter during each year was not included in this study. Student populations on campus are reduced and recreation center hours are limited during this time, which could affect patron utilization. University breaks including winter, and spring were also not included in the data. The MSU campus recreation center operates under a restricted schedule during winter and spring breaks and data was omitted for that reason. The data analyzed were limited to MSU students who possessed a valid university ID card; this included students from a satellite campus approximately 75 miles northwest of the main campus. Demographic information from visitors and guests to the MSU campus

recreation center was unavailable; these individuals were left out of the study for that reason.

### Summary

This thesis is divided into five chapters for a thorough analysis of the topic. Chapter 1 has described the general background, research questions, and some considerations regarding the study. Chapter 2 examines the current and past literature regarding campus recreation centers and student involvement. Chapter 3 reviews the methodology and analysis methods used to study the data. Chapter 4 highlights the results from the data studied in chapter 3, including findings and trends. Chapter 5 outlines implications from the study and suggestions for future research.

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

#### Developmental Benefits

A college recreation center is one luxury setting in which students can spend time outside of the classroom. In addition, college students are becoming increasingly health-conscious and focused on preventative care. The various activities at a campus recreation center can help to motivate young adults to develop and maintain healthy behavior early in life (Reisberg, 2001).

Dalton and Montgomery (1986) stated, “the development of new recreation facilities provides a rare opportunity to create the kind of physical environment and supporting programs that will encourage the development of wellness behaviors and values” (p.43). Location may also play a vital role in the impact of campus recreation facilities. Large bulky buildings on the fringe of campus decreased overall campus vitality (Kenney, 2005). Conversely, a centrally located facility was found to have a major influence in promoting community on campus and a healthy lifestyle.

Research has also shown that traditional extracurricular programs, such as intramural sports and campus recreation, are primarily designed to enhance learning outside of the classroom and provide for relationship and community building (Whipple, 1996). Furthermore, involvement in extracurricular activities increased students’ satisfaction with their overall academic experiences, led to greater academic successes,

and increased persistence (Berger & Milem, 1999; Peltier, 1999). Moden and Williford (1996) also found that students attended cultural events, socialized with their peers, both on and off campus, and participated in a variety of extracurricular activities, including intramural athletics. On-campus recreation centers serve as a means to promote student involvement by providing a forum for students to socialize with peers and build relationships with the campus community. Students rated personal adjustments, relationships with other students, and perceptions of the campus environments as more important than getting involved in formal organizations and activities (Moden and Williford).

Hall (2006) found that participation in campus recreation programs helped both men and women achieve an increased sense of community at a small, private arts university. Participation in the campus recreation programming encouraged students to meet new friends, develop relationships, gain exposure to diverse groups, and socialize in general. Further analysis indicated that involvement with campus recreation was also a factor in the decision process to persist at the university. The author specifically cited that the friendships and relationships achieved through campus recreation helped the students feel like members of the campus community.

Additional research by Bradley, Bryant, and Milborne (1994) suggested that users of recreational activities reported having an enhanced sense of well-being, skill acquisition, and decision-making skills. Recreational participation also included other benefits related to leadership development, such as communication skills, stress management, and tolerance of cultural differences. Body (1996) stated that student recreation centers are a resource for preventative health and an essential structure for the

education of a young person's body, mind, emotional qualities and self-discipline. A study by Collins, Vaerius, King, and Graham (2001) discovered a positive correlation with the frequency of participation in recreational activities and self-esteem. Study results indicated that students who participated *5 or more times* per week had the highest level of self-esteem compared to the surveyed group. In contrast, students who reported participating no more than once per week showed the lowest levels of self-esteem for the group.

According to Howe and Strauss (2003), college-age students from the millennial generation placed high levels of importance on extracurricular and community activities. They found that sleep deficit disorders can be expected to pose problems for many college-bound millennials. Three typical causes of sleep deficit disorder are habits of irregular meals, over-scheduling, and lack of physical exercise. Research from Howe and Strauss suggested that among the best stress-alleviators are extracurricular activities, including intramural sports.

Astin (1984) proposed that students will experience more development through increased levels of involvement in academic and extracurricular activities. According to this theory, "extensive involvement in sport activities should lead to an enhanced social-emotional development" (Astin, p. 79). Chickering (1976) also noted that varying experiences have the possibility of having a substantial impact on a student's overall development. Chickering further added that experiences for many students include the participation in recreational sports programs, and that such programs have the opportunity to influence the student's psychosocial development.

Along the same lines, Chickering and Reisser (1996) examined the long-term value that extracurricular activities can have in the life of the developing college student. Modern day recreation facilities were found to achieve community characteristics by including the encouragement of regular interactions between students, by providing group diversity, by providing the availability to participate in collaborative problem solving, and by providing a reference group where membership is clear and structured (Chickering & Reisser). Additionally, creating a sense of community with other students at campus recreation centers may help develop group membership benefits and ease the transition into young adulthood (Zizzi, Ayers, Watson, & Keeler, 2004).

#### Social Benefits

Kovac and Beck (1997) found that males and females differed in their views of perceived benefits of recreation centers and participation rates with intramural sports. Females were generally more satisfied with their recreational experiences than males. Participation with recreational sports was viewed by females as both an individual and social benefit while male participation seemed to focus on activities leading to personal benefit.

Recreational sport programs, including intramural sports, provide a powerful medium for student interaction. This interaction may provide freshmen with the opportunity to develop small support groups, to find study partners, and to seek advice from other students regarding academic classes (Belch, Gebel, & Maas, 2001). Faculty and staff are also a highly visible part of recreational membership, which may provide an opportunity for casual interaction with students. Such casual interactions and a recreational facility supportive of student, faculty, and staff member needs can act as a

small community, and by doing so establishes an expectation of engagement and belonging for students. This expectation is symbolic of the individual student's ability to connect to others in the environment and to the university community itself (Belch et al.).

Study results from Belch, et al. (2001) indicated a substantial difference in the retention rates between campus recreation center users and non-users. Traditional freshman students who utilized the campus recreation center were more likely to return to school after one year, earn a higher GPA, and earn more credit hours than non-users. Furthermore, international students and minority students who utilized the campus recreation center increased their academic persistence rates and GPA. Indications from the study showed that the facility provides manageable spaces for all students to engage in recreational activity and interact with each other. More importantly, it may provide freshmen with an initial place where they can feel a sense of belonging as they seek additional or alternative ways of affiliating with the larger campus community. They also found that participation at campus recreation centers may also be a viable means for freshmen to deal with the overwhelming size of a large urban institution.

Artinger et al. (2006) found that students who lived on campus reported that intramural sports had the following effects: increased belonging to the university, improved ability to work within a team, and increased social bonding and support, compared to students who did not live on campus. Females from the study showed an increased level of commitment to peers and community involvement over their male counterparts. First-year students also reported significantly higher social benefits from intramural sports than fourth-year students.

## User Demographics

In a research study at The Ohio State University, Haines (2001) found that 75% of males and 60% of females stated the availability of a recreation facility and related programs were *somewhat important* to *very important* when deciding to attend the university. With regard to ethnicity, 50% of African-Americans, 69% of Caucasians, and 92% of Asian-Americans also responded in the same manner. Within the same study, Haines noted that 75% of males and 62% of females acknowledged the availability of recreational facilities and related programs were *somewhat important* to *very important* when deciding to continue at the university. Sixty percent of African-Americans, 70% of Caucasians, and 83% of Asian-Americans surveyed also responded that campus recreation facilities and related programs were *somewhat important* to *very important* when deciding to continue at the university.

According to a study of 899 undergraduate students, Miller, Noland, Rayens, and Staten (2008) found that men were slightly more likely to visit their campus recreation center versus women. Additionally, freshman and sophomores were more likely to utilize the recreation center than junior and senior level students. Single, non-attached students were also more frequent users of the recreation center versus married patrons. The study did not find any significant differences in recreation center use between racial variables or college GPA levels. However, Shaver (2005) noted that students of the recreation center at a public university in Idaho had on average a four-tenths higher GPA level than students who had never visited the center.

Lindsey and Sessoms (2006) studied the difference in recreational sport participation between class levels at a small southeastern university. Study results

indicated that junior (28%) and seniors (41%) were more likely to participate in on or off campus recreational sports than freshman (11%) or sophomores (12%). Results from Lindsay and Sessoms also revealed benefits related to student recruitment and retention. Thirty-one percent of the 244 students surveyed acknowledged that the availability of recreational sports was *important/very important* in deciding to attend the college and just over 37% over respondents indicated that the availability of recreational sports was *important/very important* in deciding to continue at the university.

Belch, et al. (2001) found that freshmen who used the student recreation center showed a greater persistence rate from their first to second year than freshmen who did not utilize the student recreation center. Results also indicated that freshman users earned more credit hours and a higher GPA during their first year than freshman non-users. These results were consistent between males and females, and diverse ethnic backgrounds, specifically African-Americans, American Indians, and Hispanics.

In a study of recreation center demographics at a large mid-Atlantic university, Zizzi, et. al. (2004) discovered that users of the student recreation center were approximately 55% male and 43% female. Additionally, user class status showed little difference (first year: 21.5%, second year: 24.1%, third year: 17.3%, fourth year: 20.1%, graduate/professional: 16.9%) between the 5 categories. Additional demographic data from Zizzi et. al. revealed that 85% of recreation center users were Caucasian, compared with an 87% Caucasian student population. A slight difference was found between user GPA levels (3.18) and non-user GPA (3.23). Zizzi et al. also found that users of the recreation center exhibited higher levels of participation with high school sports and were more likely to live on campus, be nonsmokers, and participate in intramural sports.

A study by Turman (2004) compared the demographics of users from a perceived outdated recreation facility in 1992 and then 7 years later after the new construction of a recreation center in 1999 at the same institution. Results from the study indicated that while both male and female involvement with the center increased, males outpaced their female counterparts with regard to participation. Additionally, freshman students who lived on campus were found to be the most active participants in both recreational activities and the fitness center. Overall, student satisfaction levels of the new recreation center increased from 1992 to 1999, although perceived benefit levels with the center did not increase, notably with females.

### Summary

Campus recreation centers and their related programs have become expected components of college campuses nationwide. No matter the scale, students have taken advantage of the benefits and interactions that occur within these facilities. This research has described several personal development characteristics such as leadership skills, decision-making skills, and communication skills. Additionally, recreation participation has been shown to produce social benefits including building relationships and friendships with peers, and enhancement of the overall campus community.

Data have also shown that both males and females benefit from recreation participation. Furthermore, students from various age groups and ethnic categories exhibit benefits related to interpersonal and social development. As the millennial generation has moved into higher education, the research indicates that recreation facilities are a useful mechanism for stress relief and preventative health. Recreation centers can often play a vital role in the recruitment, retention, and success of students on

campus. First-year students who participated in recreational activities were shown to have higher GPA levels and were retained by the institution in greater numbers than non-users.

## CHAPTER 3

### METHODOLOGY

#### Introduction

This chapter examines the research methods and design used for this study. Information relating to the research purpose, population, data gathering, and data analysis will be covered.

#### Research Design

This study used an ex post facto research framework for the two academic years being examined. The target population for this study was users of the of MSU on-campus recreation center during the 2004-2005 and/or 2007-2008 academic years. Year-end recreation utilization reports were used to find the total number of unique users and total number of uses for each academic year. The institution's Department of Resource Analysis provided the demographic information outlined as independent variables.

#### Research Questions and Hypothesis

The following research questions were identified for this study:

##### *Research Question 1*

RQ1: What changes in recreation center utilization occurred between the 2004-2005 and 2007-2008 academic years related to the total campus population?

The null hypothesis for this research question is as follows:

H0 = There were no changes in recreation center utilization between the 2004-2005 and 2007-2008 academic years.

H1 = There were changes in recreation center utilization between the 2004-2005 and 2007-2008 academic years.

### *Research Question 2*

RQ2: What changes occurred in recreation center utilization regarding the following variables?

- Age
- Class Level
- Ethnicity
- Sex

The null hypothesis for this research question is as follows:

H0 = There were no changes in recreation center utilization regarding the stated variables.

H1 = There were changes in recreation center utilization regarding the stated variables.

### *Subjects, Participants, and Population*

The target population for this study was student users of the MSU on-campus recreation center during the 2004-2005 and/or 2007-2008 academic years. The summer quarter during each year was not included in this study because student populations on campus are reduced and recreation center hours are limited during this time. The MSU campus recreation center also operates under a restricted schedule during winter and spring breaks, and these times and data were omitted for that reason. The data analyzed

were limited to MSU students who possessed a valid university ID card; this included students from a satellite campus located approximately 75 miles northwest of the main campus.

### Unit of Analysis

The recreation center is a 9,500 square foot facility located in the lower level of MSU's student union. Positioned on the west end of campus, the 300,000 square foot union also houses the university book store, a dining hall, and conference rooms.

Administrative offices associated with financial aid, student activities, admissions, career development, student discipline, and campus recreation also share space within the student union. In addition to the MSU main campus, the university also operates a satellite campus approximately 75 miles northwest of the main campus. Students from the satellite campus are able to utilize the main campus fitness center with their university ID card.

### Research Variables

There were several variables identified for this study. The independent variables for this study were:

1. Age – Students from the study were divided into five groups: 17-20, 21-24, 25-29, 30-45, and 46+.
2. Class Level – Six categories were used for this variable: freshman, sophomore, junior, senior, graduate, and Ph.D./Medical. Students from the medical school and school of Psychology were placed in the Ph.D./Medical category.

3. Ethnicity – Eight categories were used for this variable: American Indian/Alaskan Native, Asian or Pacific Islander, Black non-Hispanic, Foreign/Non-resident Alien, Hispanic, Other, White non-Hispanic, and Unknown. These categories were consistent with the ethnicity categories used by the university.
4. Sex – Two categories, male and female, were used for this variable.

The dependent variables for this study were:

1. Total Number of Unique Users – This variable reflects the number of different students who entered the recreation center.
2. Average Number of Uses – This variable reflects the mean number of times a unique user swiped their valid university ID card to access the recreation center.

#### Data Collection Procedures

Data for the 2007-2008 academic year were collected from the fitness center database management software which generates annual activity reports based on the number of times users swiped their University ID cards for admission to the recreation facility. Data for the 2004-2005 academic year were collected through archived utilization reports housed in the on-campus office that manages the university ID card system. The utilization report from 2004-2005 was generated with a previous version of database software the university used prior to the renovation project.

Demographic information for all users from the study was obtained through the University Department of Resource Analysis. The Department of Resource Analysis

modified the data by removing the individual descriptors from each user in the activity report and then added in the requested demographic information.

There were 113,298 uses of the MSU campus recreation center during the three quarters studied in the 2007-2008 academic year. Of the total uses during the 2007-2008 academic year, there were 6,193 unique users. During the quarters studied from the 2004-2005 academic year, there were 35,289 uses, of which, 2,142 were unique users to the MSU campus recreation center.

### Data Collection

#### *Unique Users*

The percentage of the total and sample population was used to compare the frequency of unique users to the total MSU population for both academic years. The percentages were also compared to each variable between categories and study years.

#### *Uses*

The number of uses for each unique user was used to compare uses between years. In addition, the mean number of uses for each variable was used to compare between variable categories for the age, class level, ethnicity, and sex variables.

### Setting and Environment

This study was conducted at a large four-year public research institution located in the Midwest United States. The on-campus recreation center is a 9,500 square foot facility located on the lower level of the 300,000 square foot student union. During the 2004-2005 academic year, there were 16,944 students at the university with 2,832 living on campus. During the 2007-2008 academic year, there were 16,913 students at the

university with 2,741 living on campus. The recreation center is the only open access recreation facility at the institution.

### Summary

This study used an ex post facto research framework; it was intended to study the differences in student utilization of the MSU campus recreation center with respect to each variable. These differences were explicitly considered within each academic year and between the 2004-2005 and 2007-2008 academic years. Data were collected and analyzed from utilization reports which were provided to the researcher by the institution. Chapter 4 will discuss the results and findings of the statistical analysis of the data.

## CHAPTER 4

### RESULTS

#### Introduction

The purpose of this research study was to investigate changes in utilization of the MSU campus recreation center during the 2004-2005 and during the 2007-2008 academic years. There was a major renovation between the two study years. Additionally, the analyses will provide a basic understanding of the demographic composition of recreation center users following a major renovation. The data include the total number of student uses and unique student users. Results are presented following each research question.

#### Research Question 1

RQ1: What changes in recreation center utilization occurred between the 2004-2005 and 2007-2008 academic years related to the total campus population?

#### *Unique Users Compared to MSU Population*

Total fall enrollment at MSU in 2004 was 16,944 while total fall enrollment in 2007 was 16,913. Data for unique users in the study were available for each academic year studied and were unable to be separated into quarters. Quarterly enrollment numbers were not available for this study. Total MSU population figures were gathered from the student fact book which uses only the fall enrollment numbers for each academic year (Midwest State University, 2008). To make a comparison, the total number of unique

users for each year in the study was compared to the total fall enrollment numbers for each study year.

A comparison between unique users for 2004-2005 (n=2,142) and 2007-2008 (n=6,193) academic years found an increase of 4,051 users. This was an increase of almost three times as many unique users during 2007 than in 2004, despite a flat change in enrollment figures. Between 2004 and 2007, total unique user percentages grew from 13% to 37% of the total campus population. The median unique users increased from 6 to 7 while the mode remained constant at 1 for both study years. Figure 1 represents the increase in the number of uses per unique user for 2007.

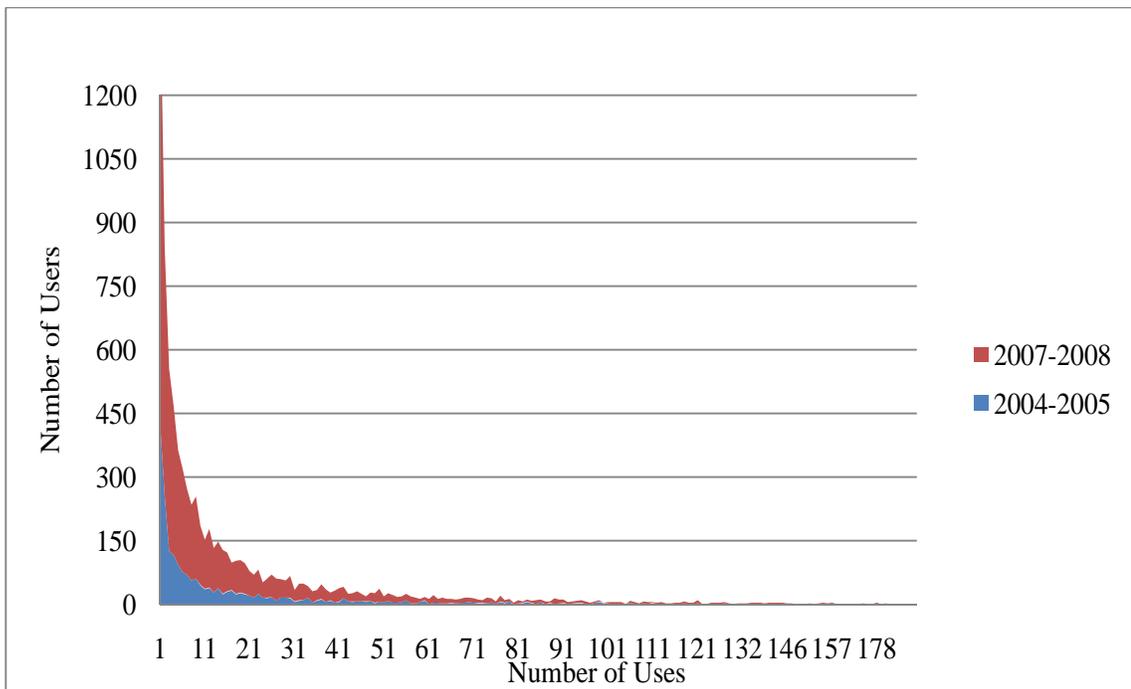


Figure 1. Number of Uses Per Unique User Between Study Years.

#### *Mean Student Uses*

Data for mean student uses reflects the average number of times each unique user entered the recreation center. In 2007-2008 students used the recreation center an average

of 18.29 times as compared to 16.47 in 2004-2005. This was an increase of 1.82 uses per student.

### *Research Question and Hypothesis*

In response to Research Question 1, changes in recreation center utilization increased for unique users and mean student uses between both study years. We reject the null hypothesis that no changes in recreation center utilization occurred between the 2004-2005 and 2007-2008 academic years. Therefore, we accept the hypothesis that changes in recreation center utilization for unique users and mean student uses did occur when comparing 2004-2005 data to 2007-2008 data.

### Research Question 2

RQ2: What changes occurred in recreation center utilization regarding the following variables?

- Age
- Class Level
- Ethnicity
- Sex

#### *Age*

The age variable was divided into five categories for analysis. The five categories used were: 17-20, 21-24, 25-29, 30-45, and 46+.

#### *Unique Users Compared to MSU Population*

When comparing to the total fall enrollment, student age values in the university dataset had two values: traditional (17-24) and non-traditional (25+). The data gathered from user ID card swipes was not divided into the two traditional and non-traditional

datasets. To make the comparison, the original five age categories in the study were combined into the traditional and non-traditional categories in accordance with the available enrollment data from the institution.

A comparison between traditional aged unique users for 2004-2005 (n=1,387) and 2007-2008 (n=5,236) academic years found an increase of 3,849 users. This represents a 277% increase in traditional aged unique users between the two study years and a 23% increase compared to the total campus population. Non-traditional aged unique users also increased from 2004-2005 (n=755) to 2007-2008 (n=957). Table 4-1 gives the complete data for traditional and non-traditional unique users between each academic year.

Table 4-1

*Comparison of Unique Users and Campus Population by Age Between Study Years*

Age	Year	Population N	Sample n	% of Sample to Population	% of Sample to Total Enrollment
<b>Traditional (17-24)</b>					
	2004-2005	12,185	1,387	11.38%	8.19%
	2007-2008	11,609	5,236	45.10%	30.96%
<b>Non-Traditional (25+)</b>					
	2004-2005	4,759	755	15.86%	4.46%
	2007-2008	5,304	957	18.04%	5.66%

*Mean Student Uses Between Study Years*

Mean student uses from each age category were compared between each academic year studied. The 17-20 age category increased mean student uses by 4.44 uses per student. The 21-24 age category increased mean student uses by 2.44 uses per student. The 25-29 age category increased mean student uses by 5.83 uses per student.

The 30-45 age category increased mean student uses by 4.11 uses per student. Finally, the 46+ age category increased mean student uses by 7.75 uses per student. Table 4-2

highlights this information in table format.

Table 4-2

*Comparison of Mean Uses by Age Category Between Study Years*

Age Category	Year	n	Mean	Median	Mode	Std. Dev.
17-20						
	2004-2005	247 <sup>a</sup>	11.26	3.00	1	19.957
	2007-2008	2,894 <sup>a</sup>	15.70	6.00	1	24.617
21-24						
	2004-2005	1,140	17.50	7.00	1	24.765
	2007-2008	2,342	19.94	8.00	1	28.041
25-29						
	2004-2005	630	16.74	7.00	1	23.397
	2007-2008	573	22.57	9.00	1	32.258
30-45						
	2004-2005	95 <sup>b</sup>	18.04	6.00	1	25.961
	2007-2008	316 <sup>b</sup>	22.15	9.00	1	33.615
46+						
	2004-2005	30	10.00	2.50	1	13.188
	2007-2008	68	17.75	4.00	1	32.834

*Note. Superscripts “a” and “b” denote substantial differences between the two study years.*

### *Class Level*

The class level variable was divided into six categories for analysis according to the student fact book. The six categories used were: freshman, sophomore, junior, senior, graduate, and Ph.D./Medical.

#### *Unique Users Compared to MSU Population*

A comparison was made between each class level and the academic years studied. Between 2004 and 2007, freshmen unique user percentages grew from .1% to 12% of total enrollment. Using total enrollment as the base, this was the largest class increase. Sophomore unique user percentages also increased from 1% to 6% of total enrollment; this was the second largest class increase. Additionally, all other class level categories increased unique users between years. Table 4-3 shows the full results for unique users by class level between each academic year of the study.

Table 4-3

#### *Comparison of Unique Users and Campus Population by Class Level Between Study Years*

Class Level	Year	Population N	Sample n	% of Sample to Population	% of Sample to Total Enrollment
Freshman					
	2004-2005	4,358	22	0.50%	0.13%
	2007-2008	4,328	2,074	47.92%	12.26%
Sophomore					
	2004-2005	2,474	205	8.29%	1.22%
	2007-2008	2,290	1,007	43.97%	5.95%

*Table 4-3 (continued)*

Class Level	Year	Population N	Sample n	% of Sample to Population	% of Sample to Total Enrollment
<b>Junior</b>					
	2004-2005	2,356	580	24.62%	3.45%
	2007-2008	2,355	944	40.08%	5.58%
<b>Senior</b>					
	2004-2005	3,659	972	26.56%	5.79%
	2007-2008	3,965	1,289	32.51%	7.62%
<b>Graduate</b>					
	2004-2005	3,216	316	9.83%	1.88%
	2007-2008	3,183	780	24.51%	4.61%
<b>Ph.D./Medical</b>					
	2004-2005	727	47	6.46%	0.28%
	2007-2008	792	88	11.11%	0.52%

*Note. 2004-2005 data does not include 154 student labeled by the University as Unclassified.*

*Mean Student Uses Between Study Years*

Mean student uses from each class level category were compared between each academic year studied. Sophomore mean student uses increased by 8.83 uses per student. Junior mean student uses increased by 6.59 uses per student. Senior mean student uses increased by 2.39 uses per student. Graduate mean student uses increased by 3.96 uses per student. Ph.D./Medical mean student uses increased by 1.09 uses per student. The freshman class level category was the only decrease in mean student uses between the

two study years, a reduction of 5.78 uses per student. Table 4-4 gives the complete results for mean uses by class level between years.

Table 4-4

*Comparison of Mean Uses by Class Level Between Study Years*

Class Level	Year	n	Mean	Median	Mode	Std. Dev.
Freshman						
	2004-2005	22	19.64	8.50	1	24.901
	2007-2008	2,074	13.86	6.00	1	21.844
Sophomore						
	2004-2005	205	9.77	4.00	1	14.772
	2007-2008	1,007	18.60	8.00	1	26.977
Junior						
	2004-2005	580	13.56	5.00	1	20.702
	2007-2008	944	20.15	8.00	1	29.771
Senior						
	2004-2005	972	18.48	8.00	1	25.183
	2007-2008	1,289	20.87	9.00	1	29.626
Graduate						
	2004-2005	316	18.08	7.00	1	26.684
	2007-2008	780	22.04	9.00	1	32.216
Ph.D./Medical						
	2004-2005	47	27.94	10.00	1	32.388
	2007-2008	88	29.03	20.00	1	31.479

### *Ethnicity*

The ethnicity variable was divided into eight categories for analysis according to the student fact book (Midwest State University, 2008). The eight ethnic categories used were: American Indian/Alaskan Native, Asian/Pacific Islander, Black, non-Hispanic, Hispanic, Foreign/Non Resident Alien, Other, Unknown, and White, non-Hispanic. During the 2004-2005 academic year, the category of “Other” was unavailable.

#### *Unique Users Compared to MSU Population*

A comparison was made between each ethnic category and the two academic years studied. Between 2004 and 2007, White, non-Hispanic unique user percentages grew from 9% to 26% of total enrollment. Using total enrollment as the base, this was the largest ethnic category increase. Additionally, Black, non-Hispanic unique user percentages increased from 16% to 49% of the total Black, non-Hispanic enrollment at the university. Each ethnic category experienced an increase with unique users between the two study years. Table 4-5 provides the full results for unique users by ethnicity between the two study years.

Table 4-5

#### *Comparison of Unique Users and Campus Population by Ethnicity Between Study Years*

Ethnicity	Year	Population N	Sample n	% of Sample to Population	% of Sample to Total Enrollment
American Indian/Alaskan Native	2004-2005	60	2	3.33%	0.01%
	2007-2008	60	19	31.67%	0.11%

Table 4-5 (continued)

Ethnicity	Year	Population N	Sample n	% of Sample to Population	% of Sample to Total Enrollment
Asian or Pacific Islander					
	2004-2005	362	102	28.18%	0.60%
	2007-2008	525	230	43.81%	1.36%
Black, non-Hispanic					
	2004-2005	1,757	278	15.82%	1.64%
	2007-2008	1,834	894	48.75%	5.29%
Hispanic					
	2004-2005	176	25	14.20%	0.15%
	2007-2008	240	85	35.42%	0.50%
Foreign/Non-Resident					
	2004-2005	701	44	6.28%	0.26%
	2007-2008	645	363	56.28%	2.15%
Other					
	2004-2005	-	-	-	-
	2007-2008	-	-	-	-
Unknown					
	2004-2005	908	119	13.11%	0.70%
	2007-2008	978	263	26.89%	1.56%
White, non-Hispanic					
	2004-2005	12,980	1,572	12.11%	9.28%
	2007-2008	12,631	4,318	34.19%	25.53%

*Mean Student Uses Between Study Years*

Mean student uses from each ethnic category were compared for each academic year studied. Asian or Pacific Islander mean student uses increased by 7.63 uses per student. Black, non-Hispanic mean student uses increased by 2.51 uses per student. Hispanic mean student uses increased by .35 uses per student. Foreign/Non-Resident mean student uses increased by 7.75 uses per student. Unknown mean student uses increased by 1.55 uses per student. White, non-Hispanic mean student uses increased by 1.38 uses per student. The American Indian/Alaskan Native ethnic category was the only decrease in mean student uses between the two study years, a reduction of 15.97 uses per student. Table 4-6 gives the complete results for mean uses by ethnicity between each academic year.

Table 4-6

*Comparison of Mean Uses by Ethnicity Between Study Years*

Ethnicity	Year	n	Mean	Median	Mode	Std. Dev.
American Indian/Alaskan Native						
	2004-2005	2	34.50	34.50	7 <sup>a</sup>	38.891
	2007-2008	19	18.53	5.00	1 <sup>a</sup>	27.220
Asian or Pacific Islander						
	2004-2005	102	19.31	7.00	1	24.265
	2007-2008	230	26.94	10.00	1	40.230
Black, non-Hispanic						
	2004-2005	278	10.18	5.00	1	15.549
	2007-2008	894	12.69	5.00	1	19.844

Table 4-6 (continued)

Ethnicity	Year	n	Mean	Median	Mode	Std. Dev.
Hispanic						
	2004-2005	25	18.56	9.00	1	23.650
	2007-2008	85	18.91	11.00	1	24.001
Foreign/Non-Resident						
	2004-2005	44	12.70	5.00	2	19.803
	2007-2008	363	20.45	8.00	1	33.106
Other						
	2004-2005	-	-	-	-	-
	2007-2008	14	18.64	9.50	1 <sup>a</sup>	25.343
Unknown						
	2004-2005	119	17.79	7.00	1	24.376
	2007-2008	263	19.34	7.00	1	28.985
White, non-Hispanic						
	2004-2005	1,572	17.35	7.00	1	24.922
	2007-2008	4,318	18.73	8.00	1	27.212

Note. Superscript "a" denotes multiple modes, the smallest value is shown.

## Sex

For the sex variable analysis, the categories used were female and male.

### *Unique Users Compared to MSU Population*

The female unique users for 2004-2005 (n=1,057) and 2007-2008 (n=3,206) academic years increased by 2,149 users. This represents a 203% increase in female unique users between the two study years and a 13% increase compared to the total campus population. Male unique users also increased from 2004-2005 (n=1,085) to 2007-2008 (n=2,987). An increase of 1,902 unique users, or 175% between the two study years. Male users increased 11% compared to the total campus population between years. Table 4-7 shows the complete results for unique users by sex between each academic year.

Table 4-7

### *Comparison of Unique Users and Campus Population by Sex Between Study Years*

Sex	Year	Population N	Sample n	% of Sample to Population	% of Sample to Total Enrollment
Female					
	2004-2005	9,813	1,057	10.77%	10.77%
	2007-2008	9,559	3,206	33.54%	18.96%
Male					
	2004-2005	7,131	1,085	15.22%	6.40%
	2007-2008	7,354	2,987	40.62%	17.66%

*Mean Student Uses Between Study Years*

Mean student uses for each sex category were compared between the two study years. Female mean student uses increased by 3.37 uses per student, while male mean student uses increased by .69 uses per student. Table 4-8 shows the full results for mean uses by sex between the two study years.

Table 4-8

*Comparison of Female and Male Mean Uses Between Study Years*

Sex	Year	N	Mean	Median	Mode	Std. Dev.
Female						
	2004-2005	1,057	11.06	4.00	1	16.200
	2007-2008	3,206	14.43	6.00	1	23.667
Male						
	2004-2005	1,085	21.75	9.00	1	28.498
	2007-2008	2,987	22.44	10.00	1	30.424

*Research Question and Hypothesis*

In response to Research Question 2, changes in recreation center utilization increased for unique users and uses with each of the stated variables between both academic years. We rejected the null hypothesis that no changes in recreation center utilization regarding the stated variables occurred between the 2004-2005 and 2007-2008 academic years. Therefore, we accept the hypothesis that changes in recreation center utilization for unique users and mean student uses regarding the stated variables in

recreation center utilization did occur when comparing 2004-2005 data to 2007-2008 data.

### Summary

Analysis of the data provided several findings related to both research questions. Therefore, the null hypothesis for both research questions was rejected. Unique users to the campus recreation center substantially increased from 2,142 users in 2004-2005 to 6,193 in 2007-2008. The mean number of uses for each unique visitor also increased from 16.47 in 2004-2005 to 18.29 in 2007-2008, an increase of 1.82 mean uses per student.

Both traditional and non-traditional age groups increased unique users from 2004-2005 to 2007-2008 in total number and compared to the total MSU campus population. Additionally, each of the five age categories increased mean student uses from 2004-2005 to 2007-2008.

Freshman, sophomore, junior, senior, graduate, and Ph.D./Medical students showed increases with unique users between years compared to the total MSU population. Also, all class levels had increased unique users in 2004-2005 when compared to 2007-2008. Mean student uses for the sophomore, junior, senior, graduate, and Ph.D./Medical categories were higher in 2007-2008 compared to 2004-2005

The data revealed increases with unique users for all ethnic categories compared to the total MSU campus population between both academic years studied. Furthermore, each ethnic category increased unique users from 2004-2005 to 2007-2008. The mean student uses for all ethnic categories except for American Indian/Alaskan Native increased from between the two study years.

Finally, both female and male categories increased unique users from 2004-2005 to 2007-2008 in total number and compared to overall MSU population. Additionally, both female and male mean student uses increased between 2004-2005 and 2007-2008.

## CHAPTER 5

### CONCLUSIONS, RECOMMENDATIONS, AND SUMMARY

#### Introduction

The purpose of this research study was to investigate changes in student utilization of the MSU campus recreation center between the 2004-2005 and 2007-2008 academic years. A major renovation of the MSU campus recreation center occurred between the two study years. Previous studies have shown that students of all ages and from various demographic backgrounds can benefit from participation in recreational activities. These benefits include higher levels of awareness to cultural diversity, increased interpersonal relationships, an improved sense of belonging to the university, and increased retention rates. Analyses from the current study have found substantial increases in campus recreation center usage with various age categories, class levels, ethnic categories, and sex following the two-year renovation project.

#### Summary of Results

As mentioned, the analysis from the study yielded several significant findings. A few general themes were consistent within the results.

1. Increased total unique users.
2. Increased freshman and sophomore unique users.
3. Increased female and male unique users and mean student uses.

4. Black, non-Hispanic students increased in number of users, however mean student uses was only slightly different between study years.

## Discussion of Results

### *Unique Users*

Overall there were increases with unique users and uses following the renovation project. Although a portion of these results were expected, some of the more dramatic changes were not. While the renovated facility increased square footage by 60%, total unique users increased by over 4,000 students, or almost three times the unique users from 2004. It is possible that the recreation center's location in the main section of the student union helped generate a curiosity among students. This curiosity could account for some of the increased usage; however, the exact cause of the substantial increase of unique users is not known.

Both freshman and sophomore unique user numbers substantially increased during the two study years. Unique freshman users increased by over 2,000 (933%) users while sophomore students increased by over 800 (391%) unique users. A slight increase was expected, but not of this magnitude. Previous literature described the use of a recreation center as a recruiting tool for universities. Further research into the guided campus tour program and orientation programs should examine the possible impact the recreation center has on incoming students.

### *Female Versus Male Uses*

Results demonstrated a 203% increase for female (2,149) unique users and a 175% increase for male (1,902) unique users between both academic years studied. Mean

student uses for female students increased by 3.37 uses per student while mean student uses for males increased by .69 uses per student.

Prior to the renovation, the facility contained mostly free weights and was not visible to students walking through the union. The new recreation center was designed to flow harmoniously with the student union and to be more aesthetically appealing. The new facility design incorporates windows and glass walls which allow students to see through the center and observe the available space and equipment. Furthermore, the new facility increased the number and types of cardio equipment in the new facility, which may have played a role in the higher increases with female versus male users and uses. These equipment changes should be considered as a possible reason for the increases with both females and males following the renovation.

#### *Black, non-Hispanic Uses*

Another finding occurred with the Black, non-Hispanic ethnic category. Unique users increased over three times following the renovation in 2007 and this category had the second largest number of unique users based on ethnic category. However, mean student uses and the median number of uses for the Black, non-Hispanic category was the lowest out of all other ethnic categories in 2007-2008. This means that Black, non-Hispanic students are using the recreation center, but not coming back as repeat users. Although, the causes for the low mean use figure with Black-non, Hispanic students are unknown, a study about the effectiveness of the new equipment and/or activities related to the interests of Black, non Hispanic students should be considered. Qualitative studies should also be developed to find out what types of activities Black, non Hispanic students are interested in and to determine what may be contributing to this low average.

### Relationship of Results to Theory

The basic tenant of theory regarding this research was Alexander Astin's theory of involvement which stated that students will experience more social-emotional development though increased levels of involvement in academic and extracurricular activities. Astin also mentioned that extracurricular activities included sport-type activities. Although this study did not directly address the qualitative side of recreational participation, the results did indicate significant increases in recreation center student involvement following the renovation project. Furthermore, according to Astin, the increased usage numbers should indicate an increased level of social-emotional development within all student users.

### Implications for Further Research

The present study was designed to investigate changes in student utilization of a campus recreation center during the 2004-2005 and 2007-2008 academic years. The results revealed several substantial utilization increases for all variables following the renovation project. At the time of this research, there were concerns over the consistency of funding levels for state supported institutions, and that budget cuts could limit the expansion of recreation related activities. Further research should specifically focus on the types of activities/equipment that encourage student involvement with recreation centers. The 17-20 age category substantially increased unique users between the two study years. Additional research should look into the recreational habits of incoming and first-year students. Results could help professionals effectively allocate funding for student programming with proven success. Additionally, the 30-45 age category had the second highest mean uses during both academic years studied. Future research should

seek to explore utilization by other campus populations that could be included in this age category, such as faculty, staff, and alumni.

### Implications for the Profession

The results of this study have several implications for the student affairs profession. First, by beginning to understand the recreational utilization patterns of all college students, student affairs professionals will be able to effectively integrate recreational activities with current developmental strategies that will help further enhance student growth. Second, recreational activities are often seen as a way to relax and “release” from the pressures and demands of university life. By understanding the recreational habits of university students, student affairs professionals could help increase both individual student success and institutional recruitment and retention rates. Finally, the research suggests an increased level of recreation center utilization following a two-year renovation project. Student affairs professionals should take note of these results when considering why or how to upgrade any university recreation centers. The cost of the renovation project from the current study was completed for less than half of the amount it would have cost to construct a new facility and showed substantial growth in utilization (Midwest State University, 2008). Renovation projects should be considered a viable option compared to new construction and additional data concerning recreational activities could help increase the effectiveness of future renovation projects.

### Limitations

While this study does present some substantial findings, there were several limitations to the study. First, there was limited access to utilization reports prior to the 2004-2005 academic year. The data from the utilization reports was also limited to the

fall, winter, and spring quarters of each year studied. In addition, the data used for the final analysis was also limited because it included only student users from the institution. Demographic information from faculty, staff, visitors, and guests to the MSU campus recreation center was unavailable. Finally, the analysis was done between study years and within each study year; the data would not allow the researcher to execute analyses by quarter.

### Summary

Within the past 20 years, campus recreation centers have shifted from a casual feature to a recruitment and retention tool for universities. Many large-scale recreation centers offer equipment and flexible hours that rival many high-end fitness centers available to the public. It is only fitting for universities to evolve and provide students with the latest recreational and fitness opportunities.

Whether the option is to build new or renovate an old space, the results from this study should be considered following the finding that student recreation utilization substantially increased across several demographic variables after a renovation. Future studies regarding this topic should aim to focus on quality of recreational experience and what specific recreational activities help encourage student involvement. Studies of this type could help identify what keeps students coming back to recreation centers and how to design activities for specific student populations.

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## Appendix A

### Frequency Demographic Information for All Variables

Variable	Year	Unique Users	Percent Within Academic Year
<i>Age: 17-20</i>			
	2004-2005	247	11.5%
	2007-2008	2,894	46.7%
<i>Age: 21-24</i>			
	2004-2005	1,140	53.2%
	2007-2008	2,342	37.8%
<i>Age: 25-29</i>			
	2004-2005	630	29.4%
	2007-2008	573	9.3%
<i>Age: 30-45</i>			
	2004-2005	95	4.4%
	2007-2008	316	5.1%
<i>Age: 46+</i>			
	2004-2005	30	1.4%
	2007-2008	60	1.1%

*Appendix A (continued)*

Variable	Year	Unique Users	Percent Within Academic Year
Age: Total			
	2004-2005	2,142	100%
	2007-2008	6,193	100%
Class Level: Freshman			
	2004-2005	22	1.0%
	2007-2008	2,074	33.5%
Class Level: Sophomore			
	2004-2005	205	9.6%
	2007-2008	1,007	16.3%
Class Level: Junior			
	2004-2005	580	27.1%
	2007-2008	944	15.3%
Class Level: Senior			
	2004-2005	972	45.4%
	2007-2008	1,289	20.9%
Class Level: Graduate			
	2004-2005	316	14.8%
	2007-2008	780	12.6%

*Appendix A (continued)*

Variable	Year	Unique Users	Percent Within Academic Year
Class Level: Ph.D./Medical			
	2004-2005	47	2.2%
	2007-2008	88	1.4%
Class Level: Total			
	2004-2005	2,142	100%
	2007-2008	6,182	100%
Ethnicity: American Indian/Alaskan Native			
	2004-2005	2	0.1%
	2007-2008	19	0.3%
Ethnicity: Asian or Pacific Islander			
	2004-2005	102	4.8%
	2007-2008	230	3.7%
Ethnicity: Black, non-Hispanic			
	2004-2005	278	13.0%
	2007-2008	894	14.4%
Ethnicity: Hispanic			
	2004-2005	25	1.2%
	2007-2008	85	1.4%

*Appendix A (continued)*

Variable	Year	Unique Users	Percent Within Academic Year
Ethnicity: Foreign/Non-Resident			
	2004-2005	44	2.1%
	2007-2008	363	5.9%
Ethnicity: Other			
	2004-2005	0	0.0%
	2007-2008	14	0.2%
Ethnicity: Unknown			
	2004-2005	119	5.6%
	2007-2008	263	4.3%
Ethnicity: White, non-Hispanic			
	2004-2005	1,572	73.4%
	2007-2008	4,318	69.8%
Ethnicity: Total			
	2004-2005	2,142	100%
	2007-2008	6,186	100%
Sex: Female			
	2004-2005	1,057	49.3%
	2007-2008	3,206	51.8%

*Appendix A (continued)*

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Variable	Year	Unique Users	Percent Within Academic Year
<b>Sex: Male</b>			
	2004-2005	1,085	50.7%
	2007-2008	2,987	48.2%
<b>Sex: Total</b>			
	2004-2005	2,142	100%
	2007-2008	6,193	100%

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