A study of the academic performance of

Iowa Valley Community College District transfer students

by

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TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

The purpose of this study was to assess the academic performance of Iowa Valley Community College District transfer students at the Iowa Regent institutions. The study analyzed the Regent first-term and cumulative GPA of IVCCD students who transferred to a Iowa State University, University of Northern Iowa, and the University of Iowa between 2000 and 2004. Four research questions guided the study: (1) What are the academic characteristics of IVCCD students who transferred to Regent institutions? (2) How did students perform at Regent institutions upon transfer? (3) Did transfer students experience a recovery in GPA at the time of baccalaureate degree attainment? (4) Are there significant differences in Regent first-term GPA based upon Regent institution, community college, sex, community college credits earned, degree vs. non-degree recipient, academic year of transfer, or academic discipline? Student-level data for 755 transfer students was obtained from Transfer Student Academic Performance reports provided by Offices of Admissions at ISU, UNI, and UI. Data analysis was accomplished through the use of demographic characteristics, means, standard deviations, and analysis of variance (ANOVA). Findings of the study indicated that students experienced transfer shock at the senior institution and obtained a Regent first-term GPA that was seven-tenths of a grade point less than their community college cumulative GPA. Students who persisted to graduation from the Regent institutions recovered 0.28 of a grade point from their Regent first-term GPA and achieved an overall GPA that was 0.24 lower than their community college cumulative GPA. ANOVA results revealed that students who transfer from MCC, who are female, and who complete degrees prior to transferring achieve a significantly higher Regent first-term GPA. In addition, students who enrolled in Education and Humanities achieved a higher Regent

first-term GPA than those in other disciplines. Recommendations for further study included

expanding the study to include all Iowa community colleges, increasing the number and

nature of the independent variables, integrating the Regent information into the IVCCD

student record-keeping system, and expanding the study to include private, four-year

institutions.

CHAPTER 1. INTRODUCTION

In 1999-2000, 42% of all undergraduates and nearly half of all first-time freshmen were enrolled at public two-year institutions, more commonly known as community colleges (Cohen & Brawer, 2003). In 1965 the American Association of Community Colleges (AACC) reported that 771 two-year colleges enrolled 1,172,952 students. Thirty-five years later, nearly 6.6 million students were enrolled in credit courses in 1,100 community colleges (AACC, 2005). Clearly, community colleges have become the institution of choice for many students entering postsecondary education.

Students are choosing community colleges for various reasons. Created as open-access institutions, community colleges offer transfer and vocational training, remedial education, workforce development, personal and professional development classes, and other enrichment opportunities (Cohen & Brawer, 2003). Due to the open-access nature of these institutions and lower tuition, community colleges attract greater numbers of underprepared students and those who otherwise might not have attended a postsecondary institution. Compared to four-year institutions, community colleges enroll a greater proportion of minority students and a higher percentage of non-traditional age students. In addition, community colleges typically enroll a higher proportion of part-time students than four-year colleges (63% and 22%, respectively).

A primary function of community colleges from the very beginning was to prepare students for transfer (Cohen & Brawer, 2003; Eaton, 1994). The collegiate function, often called college parallel or college transfer, continues to be one of the most important functions of community colleges. Over 82% of students enrolled in community colleges during 1995-96 indicated their educational goal was completion of a bachelor's degree or higher (Phillipe,

2000). Laanan (2001) stated that the transfer function is imperative in maintaining access to

higher education by providing the first two years of college to underprepared and

underrepresented groups.

As such, many individuals and organizations, including administrators, researchers,

state officials, and policymakers, should be interested in the academic success of community

college transfer students. Over the past 30 years, a wealth of research has focused on the

performance of community college transfer students. Typically, these studies have analyzed

student grade point averages (GPAs), persistence rates, and baccalaureate degree attainment.

This study will seek to add to the body of research that considers the academic achievement,

as expressed by GPA, of community college transfer students.

Transfer Function of Iowa Community Colleges

Not unlike national trends in higher education, enrollment in Iowa community

colleges has grown significantly. In fact, Iowa community colleges currently enroll more

students than do any other type of institution. In fall 2002, enrollment in Iowa community

colleges surpassed that of the four-year universities (Table 1.1). By 2004, over 37% of Iowa

students enrolled in postsecondary institutions were taking classes at a community college

(University of Iowa, 2005). Clearly, more students are enrolling in Iowa community

colleges, and as a result, more will be transferring to four-year institutions.

Among the multiple missions of community colleges, Iowa's colleges are mandated

to provide associate's degree transfer education and vocational and technical education (Iowa

Code 1999, 2000). Growth in arts and sciences programs has increased substantially

between 2000 and 2004 (Table 1.2). In 2004, over 75,000 students, or 64.56%, were enrolled

in arts and sciences programs in Iowa community colleges. More significant is the growth

Table 1.1. Iowa College and University Enrollment

	Iowa Regent Institutions	Iowa Community Colleges	Private Colleges & Universities	Other Colleges[a]	Total Enrollment
Fall 2000	68,930	65,836	48,337	5,803	188,906
Fall 2001	70,661	68,581	49,362	5,783	194,559
Fall 2002	71,521	73,805	49,231	5,361	202,960
Fall 2003	70,566	78,292	50,595	11,516	214,409
Fall 2004	68,949	81,803	51,503	14,175	219,649

Note. From Iowa College and University Enrollment Report, by the University of Iowa, 2004.
[a]Iowa professional colleges, private junior colleges & business schools, radiological tech schools.

Table 1.2. Enrollment by Program Type

	Arts & Sciences Programs		Career & Technical Programs		Total
	n	Percent of Total	n	Percent of Total	
FY 2000					
IVCCD[a]	2,657	78.87	712	21.13	3,369
All Iowa Comm. Colleges	68,002	69.17	30,307	30.83	98,309
FY 2001					
IVCCD	2,758	79.80	698	20.20	3,456
All Iowa Comm. Colleges	70,373	69.27	31,225	30.73	101,598
FY 2002					
IVCCD	2,898	82.14	630	17.86	3,528
All Iowa Comm. Colleges	74,779	68.36	34,608	31.64	109,387
FY 2003					
IVCCD	2,977	82.56	629	17.44	3,606
All Iowa Comm. Colleges	78,265	67.49	37,703	32.51	115,968
FY 2004					
IVCCD	2,970	84.69	537	15.31	3,507
All Iowa Comm. Colleges	75,171	64.56	37,143	31.90	116,439

Note. From Condition of Iowa Community Colleges, by the Iowa Department of Education, Bureau of Community Colleges, 2003a; "Condition of Iowa Community Colleges," by the Iowa Department of Education, Bureau of Community Colleges, 2004a.
[a]Iowa Valley Community College District.

in arts and sciences enrollment in the Iowa Valley Community College District (IVCCD) in which nearly 85% of IVCCD students were enrolled during 2004. IVCCD surpassed all other Iowa community colleges in 2004 for having the highest percentage of total enrollment in arts and sciences.

Iowa has a long-standing history of voluntary articulation efforts between public institutions of higher education. In 1973, discussions about transfer issues between Iowa Regent institutions (Iowa State University [ISU], University of Iowa [UI], and University of Northern Iowa [UNI]) and the community colleges became formalized through the formation of the Liaison Advisory Committee on Transfer Students (LACTS, 2004)). LACTS was established as an on-going advisory committee with an initial focus on transcript and grading issues. Representatives from Regent institutions and Iowa community colleges meet several times a year to discuss and update articulation agreements and host an annual statewide articulation meeting. Since its inception, LACTS has been influential in the following areas:

- Common grading symbols and definitions,

- Vocational-technical credit agreement,

- International students academic credential evaluation,

- College Level Examination Program (CLEP) agreement,

- Electronics-based technology agreement,

- Military credit agreement, and

- Associate in Arts articulation agreement (LACTS, 2004).

Building upon the efforts of LACTS, IVCCD has developed several partnerships with the Regent institutions to enhance and encourage student transfer. Most recently, the Ellsworth Community College (ECC) Associate in Arts degree in athletic training was

initiated and articulated with the Bachelor of Science degree in athletic training at UNI. Students completing the two-year program at ECC can transfer to UNI as juniors and have several entry-level athletic training courses already completed. Not unlike the program in athletic training, the Marshalltown Community College (MCC) degree in sustainable and entrepreneurial agriculture was developed in conjunction with ISU. The Leopold Center for Sustainable Agriculture at ISU provided input and grant money to help initiate the MCC program in sustainable and entrepreneurial agriculture with the intent to improve communications and transfer between the two institutions. Furthermore, IVCCD administrators currently are discussing joint application procedures and opportunities for joint learning communities to further enhance the probability and success of students transferring to Regent institutions.

In other statewide efforts, the Iowa Department of Education and Iowa College Student Aid Commission collaborated with the National Student Clearinghouse (NSC) in an effort to track Iowa community college students. Created in 1993 as a means to confirm the enrollment status of financial aid recipients, NSC provides degree and enrollment verification for over 2,700 colleges and universities, covering 91% of the nation's postsecondary students. In fiscal year 2002 (FY02), credit enrollment at Iowa community colleges totaled 105,719 unduplicated students. From this dataset, a cohort of 200 award recipients in FY02 was randomly selected for a pilot test to provide information on Iowa community college transfer students. Table 1.3 provides the number of recipients by degree type.

Results of the pilot test indicated that 180 students continued their postsecondary education upon completion of a degree. Table 1.4 illustrates the institutional type of the receiving institutions. Of the 45 students who transferred to an in-state four-year institution,

Table 1.3. Number of Award Recipients by Award Type

Degree Type	Number of Students in Sample	Percentage of Sample
Associate in Arts (AA)	87	43.50
Associate in Science (AS)	22	11.00
Associate in Applied Science (AAS)	91	45.50
Total	200	100.00

Note. From *Tracking Iowa Community College Transfer Students,* by the Iowa Department of Education, Bureau of Community Colleges, 2003b.

Table 1.4. Number of Degree Recipients and Transfer Institution by Type

Institution Type	Number of Students in Sample	Percentage of Sample
In-state four-year institution	45	22.5
Out-of-state four-year institution	18	9.0
In-state community college	114	57.0
Out-of-state community college	3	1.5
Did not transfer or transferred to an institution not a member of NSC	20	10.0
Total	200	100.0

Note. From *Tracking Iowa Community College Transfer Students,* by the Iowa Department of Education, Bureau of Community Colleges, 2004b.

39 students, or 21.67% of the total sample, transferred to a Regent institution. Fifteen students transferred to ISU, 13 to UNI, and 11 to UI. While much discussion occurred as a result of this project, no further action to track community college transfer students had been taken at the time of this project.

Purpose of the Study

The purpose of this study was to assess the academic performance of IVCCD transfer students at ISU, UI, and UNI. The study analyzed the first-term GPA of 755 ECC and MCC students who transferred to a Regent institution between 2000 and 2004. In addition, this study analyzed the cumulative GPA of ECC and MCC students who attained baccalaureate degrees at the Regent institutions. Four research questions guided the study:

1. What are the academic characteristics of ECC and MCC students who transferred to Iowa Regent institutions?

2. How did ECC and MCC students perform at Regent institutions upon transfer?

3. Did ECC and MCC transfer students experience a recovery in GPA at the Regent institutions?

4. Are there significant differences in Regent first-term GPA based upon Regent institution, community college, sex, community college credits earned, community college degree status, academic year of transfer, or academic discipline?

Hypotheses

Data analysis was performed to address seven hypotheses:

1. There is no significant difference in Regent first-term GPA among community college transfer students at the three Regent institutions.

2. There is no significant difference between ECC and MCC students in mean Regent first-term GPA.

3. There is no significant difference between male and female community college transfer students in Regent first-term GPA.

4. There is no significant difference in mean Regent first-term GPA among five student groups of community college students with (a) 0 to 15 credits earned prior to transfer, (b) 16 to 30 credits earned prior to transfer, (c) 31 to 45 credits earned prior to transfer, (d) 45 to 60 credits earned prior to transfer, and (e) greater than 60 credits earned prior to transfer.

5. There is no significant difference in Regent first-term GPA between community college degree recipients and those who did not have a degree.

6. There is no significant difference in Regent first-term GPA among students transferring from community colleges in the five academic years included in this study.

7. There is no significant difference in Regent first-term GPA by academic discipline upon transfer.

Significance of the Study

Enrollment growth in arts and sciences programs at Iowa community colleges increased substantially between 2000 and 2004. In 2004, 64% of students were enrolled in arts and sciences programs in Iowa community colleges. During the same time period, nearly 85% of students taking classes at IVCCD were enrolled in similar programs. Because the majority of students who enroll in arts and science programs do so with the intent to transfer to a four-year institution, it behooves community colleges to look at the academic performance of transfer students at the senior institutions. Although much research has been conducted to analyze the GPA of community college transfer students, little has focused on the initial success of Iowa transfer students at public, four-year institutions. This study attempts to do just that by providing an initial baseline analysis of transfer student performance by examining the first-term and cumulative GPA of IVCCD students who transfer to Iowa Regent institutions.

Results of this study are of interest to students, counselors and advisors, community college administrators, and faculty. Students can benefit from this study by learning how previous community colleges transfer students performed at Regent institutions. As a result,

they will have a realistic expectation of Regent first-term GPA based upon factual and historical data. Counselors and advisors at community colleges and Regent institutions will also be more informed about community college transfer student achievement at the Regent institutions. Based upon the findings, they can advise potential transfer students on the success of students as related to community college credits completed, community college GPA, prior degree status, and senior institution. Finally, results of this study are valuable to IVCCD administrators and faculty as they look for ways to improve programs and services to students in transfer programs.

This study was undertaken to provide information about the academic performance of IVCCD transfer students at Regent institutions to district administrators, specifically the Chancellor, ECC Provost, MCC Provost, Chief Academic Officer, and Dean of Enrollment Services. Prior to this study, IVCCD administration knew very little about the academic performance of transfer students. Transfer student reports from Regent institutions were received by an IVCCD administrator, most likely reviewed, and filed. Minimal, if any, analysis was performed on the data. This study was designed to provide a baseline of information for the academic achievement of IVCCD students who transferred to Regent institutions. From this, future direction, including benchmarks and timelines, can be developed to track the success of IVCCD transfer students.

Limitations

This study was limited to the specific population of IVCCD students who transferred to ISU, UI, or UNI between 2000 and 2004. As data before that time were provided to IVCCD only in hardcopy and due to the time requirement to enter the data, the researcher decided not to include data from prior years. The selected years (2000-2004) represented the

most recent data available and provided a large enough population to be representative of IVCCD transfer students. Because the focus of the study was primarily to benefit IVCCD administration, no external validity measures were performed and results cannot be generalized to other community college transfer students.

The study examined the academic achievement of transfer students at ISU, UI, and UNI. Of the various colleges and universities that are available in the state, the majority of students who transfer from IVCCD continue their studies at one of the Regent institutions. A number of students transfer to Buena Vista University (BV), which has a satellite campus at each college; however, academic reports on transfer student performance at BV were not available at the time of this study.

Because the size of the population for the UI transfer student group was small, caution must be exercised when interpreting the results. When this group was further analyzed by community college credits earned and academic discipline, the number of observations in several subgroups fell below the generally acceptable reporting threshold. If the timeframe of the study was expanded, the UI data may yield more valuable information.

The data gathered for the study were limited to the information included on the Regent Transfer Student Academic Performance reports. At the time of this study, no mechanism existed to merge data from the Regent reports into the IVCCD student record system. As such, the study was limited to the following information included on the Regent reports: first term at Regent, current major, ACT composite, high school rank, community college hours accepted, community college GPA, degree awarded, Regent first-term hours attempted, Regent first-term GPA, Regent current hours attempted, Regent current GPA, cumulative hours attempted, and cumulative GPA.

There was no attempt to gather additional information or to draw conclusions about the reasons for differing levels of academic achievement. Additional study is required to determine the reasons behind differences in first-term GPA of IVCCD transfer students.

Definition of Terms

For the purposes of this study, the following terms are defined as follows:

Community college transfer student: Students who completed their most recent credits at either ECC or MCC. For this study, the students transferred to a Regent institution during 2000 to 2004.

First-term GPA: Grade point average, as reported by the Regent, at the end of the first term at the Regent institution.

Cumulative GPA: Grade point average of total credits earned at the Regent institution. In most instances, Regent institutions accept community college credits, not GPA. As a result, the cumulative GPA reported by the Regent typically includes grades associated with credits completed at the Regent institution.

Grade point average (GPA): A mathematical equation determined by totaling earned quality points on a 4.0 scale divided by the total earned credit hours. Students included in this study have two GPAs: one GPA earned at the community college and the second GPA earned at the Regent institution.

Regent institutions: One of three public four-year universities under the governance of the Iowa Board of Regents: Iowa State University (ISU), the University of Iowa (UI), or the University of Northern Iowa (UNI).

Transfer credits: The total number of credit hours transferred from the community college to the Regent institutions. Not all of the transfer credits will necessarily apply to a

degree program at a Regent institution; however, this is the number of credits

reported by the Regent institution.

CHAPTER 2. LITERATURE REVIEW

Introduction

The review of selected literature included information regarding the academic success

of community college transfer students. The chapter provides: (a) a brief history of

community colleges in the U.S., (b) an overview of IVCCD, (c) an overview of the Iowa

Regent institutions, (d) the research related to the academic achievement of community

college transfer students, (e) the research related to persistence of community college transfer

students, and (f) the research related to calculation of community college transfer rates.

History of Community Colleges in the U.S.

Originating in the early 20th century, community colleges began as an outgrowth of

the junior college movement. Following the Morrill Land Grant Acts of 1862 and 1890,

four-year public universities became prevalent in the early 1900s (Cohen & Brawer, 2003).

Several prominent educators wanted the early universities to become true research

institutions and determined that this could only be achieved by relinquishing the lower-level

courses to junior colleges. William Rainey Harper, the first president of the University of

Chicago, in conjunction with Joliet, Illinois Township School, established Joliet Junior

College in 1901 with the mission of providing the first two years of a baccalaureate program.

During the initial years, two-year colleges focused on general liberal arts studies to

prepare students for transfer to four-year universities. During the Depression of the 1930s,

two-year colleges began offering job-training programs to ease unemployment (AACC,

2005). Following World War II and the implementation of the GI Bill, academic options and

student enrollment in two-year colleges expanded greatly.

Established in 1946 by President Harry S. Truman, the President's Commission on

Higher Education spurred growth in the community college movement. The commission

was charged to address the problems facing institutions of higher education in the early

1940s. The commission issued its report titled "Higher Education for American Democracy"

and recommended to expand access to higher education by increasing the number of two-

year public institutions. The commission further tasked the community colleges to provide

the first two years of a four-year degree, as well as vocational-technical and adult education.

Since the Truman Commission Report was issued in 1947, the number of two-year

colleges and the number of students enrolled in these colleges has greatly increased. In 1965,

the AACC reported 1,172,952 students enrolled in 771 two-year colleges. By 1996 nearly

5.5 million students were enrolled in over 1,500 community colleges (Table 2.1).

Table 2.1. Number of and Enrollment in Community Colleges

Year	Total Number of Community Colleges	Total Including Branch Campuses	Enrollment
1900	8	8	NA
1920	207	207	NA
1930	436	436	NA
1940	575	575	NA
1950	648	648	NA
1960	663	663	NA
1970	1,091	1,091	2,319,385
1980	1,231	1,231	4,526,287
1990	1,465	1,465	5,240,083
1996	1,090	1,581[a]	5,497,420

Note. From *National Profile of Community Colleges: Trends and Statistics* (3rd ed.), edited by K. Phillippe, 2000. Copyright 2000 by the American Association of Community Colleges, Community College Press.
[a]Estimated based on AACC records.

Iowa Valley Community College District

IVCCD, comprising Ellsworth Community College (ECC) and Marshalltown Community College (MCC), was established on July 9, 1966 after the 61st General Assembly authorized the establishment of a community college system in Iowa in 1965. The district, then called Merged Area VI, includes all of Marshall County and major portions of Hardin, Poweshiek, and Tama Counties and has a population of approximately 95,000. Fourteen secondary school districts are within IVCCD boundaries.

ECC was founded in Iowa Falls in 1890 as a private business college called Ellsworth College. ECC has multiple buildings and residence halls and has a private college atmosphere. ECC has a strong connection to the Iowa Falls community and an extremely supportive foundation. Due to the residential nature of the ECC campus, students are typically traditional-aged, live on campus, and enroll full-time (Table 2.2). The top five academic programs were liberal arts, criminal justice law enforcement, business administration, biotechnology, and practical nursing. In fall 2004, ECC employed 43 full-time faculty and enrolled 1,030 credit students.

MCC was established as Marshalltown Junior College in 1927 under the jurisdiction of the Marshalltown Community School District. Unlike ECC, MCC is primarily a commuter school and faces unique challenges due to the growing Hispanic population in the Marshalltown area. MCC students are typically female students, enroll part-time, and are non-traditional in age (Table 2.2). In fall 2004, MCC employed 44 full-time faculty members and enrolled 1,570 credit students. The top five academic programs were liberal arts, business administration, practical nursing, elementary education, and accounting.

Table 2.2. Fall 2004 Selected Demographics of ECC and MCC Students

	ECC		MCC		IVCCD	
	n	%	*n*	%	*n*	%
Headcount	1,030		1,570		2,600	
Enrollment status						
Full-time	723	70.2	991	63.1	1,714	65.9
Part-time	307	29.8	579	36.9	886	34.1
Sex						
Female	531	51.6	981	62.5	1,071	41.2
Male	494	48.0	577	36.8	1,512	58.2
Race						
White/Non-Hispanic	854	82.9	1,338	88.1	2,192	84.3
Minority	88	8.5	187	11.9	275	10.6
Age Group						
17 or below	99	9.6	131	8.3	230	8.8
18-22	605	58.7	800	51.0	1,405	54.0
23-26	65	6.3	191	12.2	256	9.8
27-30	34	3.3	107	6.8	141	5.4
31-39	61	5.9	162	10.3	223	8.6
40-55	74	7.2	161	10.3	235	9.0
55 and above	65	6.3	10	0.6	75	2.9

Note. From *IVCCD Fact Book*, 2004, by the Iowa Valley Community College District.

Both ECC and MCC provide one-year and two-year career programs as well as

Associate in Arts (A.A.) and Associate in Science (A.S.) transfer degrees. Each year

approximately 230 and 275 students are awarded degrees at ECC and MCC, respectively.

Iowa Valley Continuing Education provides training for business and industry, and hundreds

of non-credit programs and services in cooperation with school districts and other

organizations.

IVCCD embraces the concept of continuous quality improvement embodied in its

participation in the Academic Quality Improvement Program (AQIP) initiative of the Higher

Learning Commission. Through AQIP involvement, the district has built a culture of

evidence through participation in the following national assessments: Community College

Survey of Student Engagement (CCSSE), National Community College Benchmark Project

(NCCBP), AQIP Examiner assessment, and the Collegiate Assessment of Academic

Proficiency (CAAP). Results from these assessments allow the district to prioritize areas of

need, benchmark performance indicators against peers, and develop processes for continual

improvement.

Iowa Regent Institutions

Three public four-year institutions serve the citizens of Iowa: Iowa State University

(ISU), the University of Iowa (UI), and the University of Northern Iowa (UNI). The three

institutions are governed by the Iowa Board of Regents and as such are often referred to as

the Regent institutions. The Iowa Board of Regents, a nine-member board of citizens

appointed by the governor, provides oversight for the three institutions. Operating as

comprehensive universities, the combined enrollment of the Regent institutions for fall 2004

was 68,949 (Table 2.3).

Table 2.3. Fall 2004 Enrollment at Iowa Regent Institutions

Institution	Men	Women	Total
ISU	14,800	11,580	26,380
UI	13,980	15,765	29,745
UNI	5,367	7,457	12,824
Total	34,147	34,802	68,949

Note. From *Iowa College and University Enrollment Report*, 2004, by Iowa
Coordinating Council on Post-High School Education.

ISU, located in the center of the state, was the first land-grant institution established

following the enactment of the Morrill Land Grant Act of 1862. Initially established as the

Iowa Agricultural College, it opened in 1868 enrolling students in agricultural and

mechanical arts programs. In 1959, the name of the university was changed to Iowa State

University of Science and Technology. Today ISU, a Carnegie Doctoral/Research-Extensive

university, is ranked by *U.S. News and World Report* as one of the Top 50 Public National Universities with national and international prominence. Among all public universities in the nation, ISU ranks first in the number of licenses and options executed on its intellectual property. ISU is also noted to have one of the best undergraduate student learning community programs in the nation and boasts a 92.3% placement rate for 2003 graduates (ISU, 2004).

In fall 2004, ISU enrolled 21,354 undergraduate students and 5,026 students in graduate and professional programs (ISU, 2005). Of the entering students in fall 2004, 848 transferred from Iowa community colleges. Minority student enrollment accounted for 8.6% of fall 2004 enrollment, and international students represented 8.7% of total enrollment. Over 100 undergraduate and 200 graduate programs are offered by the Graduate College and eight undergraduate colleges: Agriculture, Business, Design, Engineering, Human Sciences, Liberal Arts and Sciences, and Veterinary Medicine.

UI was founded in 1847 and established the first law school west of the Mississippi (University of Iowa, 2004). Initially enrolling students in liberal arts and sciences, the university was the first U.S. public institution to admit men and women on an equal basis. University faculty and staff were instrumental in developing tests and testing procedures for elementary and secondary students and played a key role in the American College Testing program (ACT) and Iowa Tests of Basic Skills. UI, a Carnegie Doctoral/Research-Extensive university, is the flagship institution in the state and operates one of the nation's most advanced and comprehensive university-owned teaching hospitals.

During fall 2004, 29,745 students enrolled in 91 undergraduate majors, 169 graduate majors, and 7 professional programs at UI (UI, 2005). Students from every Iowa county, all

50 states, 2 U.S. possessions, and 113 foreign countries enrolled during 2004. The university has 11 colleges: Business, Dentistry, Education, Engineering, Graduate, Law, Liberal Arts and Sciences, Medicine, Nursing, Pharmacy, and Public Health.

UNI was founded in 1876 with a strong focus on liberal arts and sciences and teacher education. Located in the northeast part of the state, UNI is ranked second by *U.S. News and World Report* in the Midwestern Universities–Masters category of public institutions. UNI was ranked first for the pass rate of first-time candidates on the Uniform Certified Public Accounting (CPA) Examination in May 2002, the most recent May exam for which data are available. In addition, the university is ranked fourth in the nation among master's degree institutions for the total number of students who study abroad.

In fall 2004, UNI enrolled 11,220 undergraduate students and 1,604 graduate students (UNI, 2005). Students came from 46 states, 73 countries, and all 99 Iowa counties. Over 120 undergraduate majors are offered by five colleges: Business Administration, Education, Humanities and Fine Arts, Natural Sciences, and Social and Behavioral Sciences.

Community College Transfer Student Academic Achievement

Various methods of measuring the academic success of community college transfer students have been noted in the literature. Much of the research has focused on GPA, persistence, and baccalaureate degree attainment. Due to the nature of this research, the literature cited pertains to studies on community college transfer student GPAs.

Many studies analyze the GPAs of community college transfer students upon entry to a senior institution. One of the first studies to synthesize research on transfer student success was conducted by John Hills in 1965. Hills reported that Showman (1928) was the first researcher to study the academic achievement of transfer students. Showman analyzed the

academic records of 53 junior college transfers and 250 natives (students who began their studies at the senior institution) entering the University of California at Los Angeles (UCLA) in 1926. He reported that the mean junior college GPA of transfer students was 1.79 (based upon a 4.0 scale) compared with their mean average GPA at UCLA of 1.32. The native students' lower-division GPA was 1.31 while their upper-division average was 1.54. Thus, the native students performed better in upper-division coursework.

Hills (1965) reviewed 20 studies conducted between 1928 and 1964 and found that the majority of the students included in the studies experienced a temporary drop in GPA during the first semester at a senior institution. Hills coined the term "transfer shock" to describe this phenomenon and concluded:

1. Transfer students suffer an appreciable loss in GPA upon transfer to a senior institution.

2. Transfer students typically experience a recovery from the initial transfer shock.

3. Native students obtain better grades than transfer students.

Much of the subsequent research on community college transfer students explored the magnitude of transfer shock experienced by students. These students should expect an initial decline in GPA of .20 to .50 at the senior institution (Bach et al., 2000; Cohen & Brawer, 1982; Glass & Harrington, 2002; Gold, 1971, 1979; Nolan & Hall, 1978). Diaz (1992) conducted a meta-analysis of research on transfer shock and identified over 62 studies that determined the actual magnitude of transfer shock. Students in 49 studies, or nearly 80%, experienced a drop in GPA of one half of a grade point or less upon transfer. Students in 13 studies reported did not encounter a drop in GPA (defined by a positive GPA, zero change, or

no significant difference at transfer). Of the studies that reported transfer shock, 67% indicated that students recovered portions of their lost GPA.

Other studies have attempted to identify predictive variables associated with transfer student academic achievement. Keeley and House (1993) and Best and Gehring (1993) found that transfer students who had completed an associate's degree received higher GPAs than did those without degrees. Graham and Hughes (1994) developed a multiple regression model in an attempt to predict academic success of transfer students and found that the students' expected GPA, the community college GPA, and degree completion were significant predictors of university GPA in two of three semesters under study.

In an earlier study, Hughes and Graham (1992) reported that out of 40 independent variables, only class attendance at the community college was statistically significant when considering first-term GPA. Phlegar, Andrew, and McLaughlin (1981) found that students who met the key area requirements of senior institutions (i.e., math, science, and English) performed better than other transfers by .2 to .4 of a grade point. Fredrickson (1998) analyzed transfer records of North Carolina community college students (technical and college transfer program students) in 1993 and found that technical program students earned slightly higher grades at the senior institution and persisted at a higher rate than transfer program students.

Berger and Malaney (2001) surveyed 372 community college transfer students who attended a large, public four-year university to determine the students' academic achievement and satisfaction with the university experience. The results indicated that students who were best informed and who actively prepared to transfer were more likely to achieve higher grades and be more satisfied at the university.

Laanan (1999) compared the outcomes and experiences of younger and older liberal arts students who had transferred from California community colleges to a Research I California university in fall 1994 and spring 1995. The focus of the study was on student effort, involvement, and perceptions at the community college and four-year university. At the community college, both student groups had similar GPAs, but the younger students were more involved in extra-curricular and social activities. At the university, older students had significantly higher GPAs, devoted more time to their courses, and were more satisfied with their overall experiences.

While much of the research on transfer student success has focused on public, four-year institutions, a few studies have analyzed the performance of community college students at private institutions. Greive (1967) studied the records of 152 transfer students and found that 11% of those who transferred to private institutions experienced an increase in mean GPA. Miller, Janawsky, and Katz (1977) analyzed the first-year academic performance of two-year college graduates in the state of New Jersey and found an increase in mean GPA (2.80 to 2.90) at private institutions. Cejda and Kaylor (1997) found that community college students who transferred to private institutions experienced an initial decline in first-term GPA of 0.09. They further reported that although more than half of the students in the sample experienced a decline in first-term GPA, nearly 48% achieved an increased GPA or did not suffer a decline in GPA.

During the 1992-93 academic year, the American Association of State Colleges and Universities conducted a study to analyze the records of community college transfer students (Palmer, Ludwig, & Stapleton, 1994). A random sample of 50 four-year colleges and universities from 13 states were asked to analyze the transcripts of community college

students who transferred in fall 1991. Based upon the records of 15,278 community college

transfer students from 30 institutions, the following was concluded:

1. Seventy-five percent of the students completed at least 49 credits prior to transfer.

2. Only 37% earned an associate's degree.

3. Students transferring to doctoral institutions were less likely to have earned an

   associate's degree.

4. Students lost few credits upon transfer.

5. The median number of credits earned was 63, and the median number of credits

   accepted was 60.

6. Evidence suggests that students who transfer have relatively high levels of

   academic ability and are as competent as native students.

Community College Transfer Student Persistence

Student retention and persistence is a primary concern of community colleges. Tinto

(1987, pp. 17–19) has cited a number of statistics that illustrate the importance of retention

and student persistence: (a) only 29.5 % of an entering cohort in two-year colleges will

persist over a two-year period in the institutions in which they first register, (b) only 27%

will complete the program in the institutions in which they first enrolled, and (c) only about

46% of all two-year college entrants will obtain either a two- or four-year degree. He also

reported that the first six weeks following initial enrollment in college is the period in which

the rate of student departure is highest.

Tinto (1987) has developed perhaps the best known and most tested model of student

persistence. Based upon the work of Arnold Van Gennep, a Dutch anthropologist, Tinto

identified specific transitional stages that students navigate when they enter and move through college. Attrition results when a student has difficulty negotiating those stages.

Tinto's model states that individuals enter institutions with different background attributes and experiences over which institutions have no control. These factors influence students' intentions, goals, and commitments to the institutions they are attending. Once a student enters college, subsequent experiences occur within the academic and social systems of the institution that involve interaction with faculty, staff, and students. If these interactions are positive, the student becomes integrated into the system, which strengthens commitment and leads to persistence at the institution. If the interactions are negative, the student becomes more likely to withdraw.

Several researchers have operationalized the Tinto model, determining that it had predictive validity for institutions of higher education. Pascarella and Chapman (1983) applied the model to two-year colleges by comparing the withdrawal from two-year commuter institutions with four-year commuter and four-year residential institutions. They found that academic integration was more important than social integration in two-year commuter institutions. Pascarella, Smart, and Ethington (1986) conducted a longitudinal study of 825 students enrolled in 85 two-year institutions and identified the importance of social and academic integration, concluding that institutional policies and practices should be designed to increase integration of new students. Halpin (1990) surveyed entering full-time freshmen at a small, open-door, nonresidential community college in New York and found that faculty–student academic contact was an important predictor of student persistence.

Other researchers have noted that social and academic integration do not play a role in student persistence. Fox (1986) studied the persistence of disadvantaged students at a

commuter institution and found that social integration was not an important factor for persistence for that group. Nora, Attinasi, and Matonak (1989) analyzed the impact of "getting ready" for college for two-year college students and found that social integration had a negative impact and academic integration had a positive impact on persistence. Mulligan and Hennessy (1990) reported that social integration was not associated with the persistence of two-year students. Voorhees (1987) also found that academic and social integration were not associated with persistence. He reported that purpose for enrolling, intent to leave, and being male were significantly related to persistence. Webb (1989) studied persistence of community college students and found several variables directly affected persistence, but that first semester GPA contributed significantly to the likelihood that students would persist.

Several studies have reviewed persistence and baccalaureate degree completion from a state perspective. Most of these longitudinal studies report transfer rates, degree completion status, and demographic characteristics of completers. The Illinois Community College Board (1990) conducted a study of 66,581 students who initially enrolled in Illinois public community colleges in fall 1980 in either baccalaureate/transfer or occupational programs and who earned a baccalaureate degree in Illinois by 1989. Major findings included:

1. Over 10% of the students who initially enrolled in baccalaureate/transfer programs at a community college eventually earned degrees from public universities, compared with 3.4% of those who initially enrolled in occupational programs.

2. Full-time students had higher completion rates than part-time students, males had higher rates than females, and students under 21 had higher rates than older students.

3. Minority degree completion rates lagged behind those of non-minority students.

4. Nearly 61% of baccalaureate degree recipients completed their degree within five years.

5. Baccalaureate completion rates differed among community colleges.

Conklin (1995) tracked first-time, full-time freshmen attending 17 Kansas community colleges in the fall of 1985 through the spring of 1990 to develop insights into the personal and educational experiences of this segment of community college students. Eight surveys were administered between 1985 and 1990, resulting in a wealth of data describing students' perceptions, opinions, and experiences. Forty percent of the initial cohort indicated that their goal was to receive a bachelor's degree; 36.9% achieved their goal of baccalaureate degree attainment.

McHewitt and Taylor (2003), in conjunction with the Center for the Study of Community Colleges (CSCC), analyzed the transfer rates in the Virginia Community College System and reviewed the records of over 24,500 students who began their education at a community college in fall 1993. Results indicated that over 24% subsequently enrolled at a four-year college or university over the next four years. Fifteen percent of the initial cohort completed a baccalaureate degree or higher within eight years after entering a community college. Of the students who transferred, 62% completed a bachelor's degree or higher.

California is also studying the retention and persistence of community college students through a U.S. Department of Educational Research and Improvement grant

awarded to the Rossier School of Education at the University of Southern California. In 1999, the Transfer and Retention of Urban Community College Students (TRUCCS) project was charged to track 5,000 community college students from the nine campuses of the Los Angeles Community College District to address persistence, remediation, patterns of reverse transfer, social integration, and course-taking patterns. In findings related to student retention, TRUCCS researchers reported that the quality of student life, a composite of perceptions, attitudes, and beliefs, mediates the ability for persistence (Hagedorn, 1999).

Townsend and Barnes (2001) examined the relationship between type of associate's degree and baccalaureate degree completion rate and GPA upon completion of the four-year degree. The researchers studied the academic records of students who received an associate's degree from a Missouri public two-year college during 1995-96. A positive relationship was found to exist between type of associate's degree and baccalaureate degree completion, with A.A. degree recipients more likely to complete a baccalaureate degree within the time period of the study. No statistically significant relationship was found to exist between type of associate's degree and GPA upon attainment of the baccalaureate.

While much research has focused on community college transfer student persistence at public institutions, little has been done to study this trend at private colleges. Cejda, Rewey, and Kaylor (1997) analyzed the records of traditional-aged, full-time students who completed an A.A. degree and transferred to a private, liberal arts college between fall 1990 and fall 1995. They found that the percentage of students with a community college GPA of 3.0 or higher who persisted and graduated was 13% higher than that of students with a community college GPA lower than 3.0. The authors further reported that the rate of

graduation/persistence for the sample (A.A. degree recipients) was substantially higher than for the total transfer population (78.5% and 58.9%, respectively).

Transfer Studies Utilizing National Databases

During the past 10 years, several studies using national longitudinal databases have been conducted to better understand the community college students. Most of these studies analyzed the course-taking patterns, GPA, and persistence of community college students and were conducted using data supplied by the National Center for Education Statistics (NCES).

Transfer Behavior Among Beginning Postsecondary Students: 1989-94

Using data derived from the spring 1994 follow-up of the 1990 Beginning Postsecondary Students Longitudinal Study (BPS), McCormick and Carroll (1997) analyzed attendance patterns of undergraduate transfer students who entered postsecondary education during 1989-90. Of the students who began their education at community colleges, approximately 25% indicated their initial goal was to complete a bachelor's degree. Of this group, 39% transferred directly to a four-year institution by 1994, and another 6% eventually entered a four-year institution. The report also noted that of students who began postsecondary education in a community college in 1989-90, 43% transferred: 22% to a four-year institution, 15% to another two-year institution, and 5% to a less-than-two-year institution. Among the students who transferred from a two-year institution, three out of four students transferred without a credential, and almost all of the others (20%) completed an associate's degree. The report also noted that prospective transfer students who enrolled full-time in the first year were twice as likely as part-time students to transfer to a four-year institution within 5 years.

Descriptive Summary of 1995-96 Beginning Postsecondary Students

Berkner, He, Cataldi, and Forrest (2002) conducted a similar study using the BPS to describe the enrollment, persistence, and degree attainment of students who began postsecondary education for the first time during 1995-96. In 1995-96 the largest proportion of beginning students (46%) enrolled at community colleges. About 26% enrolled at public four-year institutions, 15% enrolled at private not-for-profit four-year institutions, and 13% enrolled at other types of institutions. About one half of the students who began at community colleges indicated a goal of an associate's degree, and another 25% intended to complete a baccalaureate degree. Of those who intended to complete an associate's or bachelor's degree, 23% and 13% reached their respective goal within six years. Not surprisingly, students who began at community colleges were more likely to enroll part time, to have delayed enrolling after high school, and to be nontraditional with one or more persistence risk factors.

Answers in the Toolbox

Using national longitudinal student databases, degree data, and transcript information, Adelman (1999) also analyzed student flow patterns and confirmed McCormick's work by reporting that over 60% of undergraduates attend more than one institution. Adelman found that of students who began at a community college, 27% subsequently transferred to a four-year institution. The graduation rate for these students was 70%, indicating that a typical vertical transfer increases the likelihood of baccalaureate degree completion. Adelman reported that the single most important predictor of baccalaureate degree attainment for all students is the academic intensity and quality of their high school curriculum.

Community College Students: Goals, Academic Preparation, and Outcomes

Hoachlander, Sikora, and Horn (2003) analyzed information from the 1996/01 BPS, the National Education Longitudinal Study of 1988 (NELS), and the 1999-2000 National Postsecondary Student Aid Study (NPSAS) to study goals, academic preparation, and outcomes of community college students. They reported the following findings:

1. Ninety percent of students enrolled intending to obtain a formal credential or to transfer to a four-year institution. Nearly two thirds indicated a goal of bachelor's degree or higher.

2. Slightly more than 50% of BPS community college students who intended to complete a degree or to transfer to a four-year institution had done so within six years of their initial enrollment. Fifty percent of NELS students intending to complete a degree, certificate, or license had done so within six years and an additional 13% had attended a four-year institution.

3. Sixteen percent of BPS students completed an associate's degree with an average time to completion of about 3½ years (41 months). About 10% of the students completed a bachelor's degree within the six-year time period.

4. Approximately 29% of BPS students transferred to a four-year institution. Of those students who transferred, 35% attained a bachelor's degree and 44% were still enrolled in a four-year institution as of 2001.

5. Roughly 54% of NELS students entered college with one or more at-risk characteristics; one third were qualified to attend a four-year institution.

Moving into Town and Moving On: The Community College in the Lives of Traditional-Age Students

Adelman (2005) recently completed a project in conjunction with the U.S. Department of Education titled *Moving into Town—and Moving On, The Community College in the Lives of Traditional-Age Students,* which primarily analyzed data from the National Education Longitudinal Study of 1988 (NELS:88/2000). Adelman provided insight into the following three areas:

1. Students who started their postsecondary careers in a community college,

2. Course-taking rates of community college students, and

3. Degree attainment of community college students.

In the first area, Adelman described the population of students whose initial enrollment was in a community college. He reported that 40% of traditional-age students who entered postsecondary education in the 1990s started out in community colleges, whereas 60% of students aged 24 or more began postsecondary education in a community college. Table 2.4 provides selected characteristics of community college students based upon age. Forty-four percent of those who started in community colleges in the 1990s did not take Algebra 2 in high school, compared with 11% of those who entered four-year institutions. Neither gender, race, second-language background, nor first-generation status was statistically significant in determining who started out in a community college. Only socioeconomic status (SES) was significant in predicting the institution of initial enrollment with the higher the SES quintile, the less likely the student will begin in a community college.

Table 2.4. Characteristics of Community College Beginners in 1995/96

	24 years or younger	24 years and older
Principally employee	27%	74%
Had children	7%	58%
First to second year retention	72%	49%
Transferred by 2001	50%	18%
Always enrolled part-time	17%	55%
Minority	29%	24%

Note. From *Moving into Town and Moving On: The Community College in the Lives of Traditional-Age Students*, by C. Adelman, 2005, U.S. Department of Education.

In the second area, Adelman (2005) reported on the course-taking patterns of students who initially enrolled in community colleges. He divided the universe of traditional-age students who began in community colleges into three categories: (a) "homeowners"— students who earned at least 30 community college credits and earned 60% or more of all their undergraduate credits from community colleges; (b) "tenants"—students who earned at least 30 community college credits, but earned less than 60% of all their undergraduate credits at community colleges; and (c) "visitors"—students who started out in community colleges but earned at least 1 but less than 30 credits from community colleges. Homeowners constituted 37% of the traditional-age group whereas tenants and visitors constituted 18% and 45% of the group, respectively.

Adelman (2005) conducted a multivariate analysis to determine the variables that impact transfer and associate's degree attainment. He reported that the following variables have a positive impact on both transfer and degree attainment:

1. Entering the community college directly from high school,

2. Completion of more than four credits in college-level mathematics,

3. Completion of more than four credits earned during summer terms, and

4. Continuous enrollment.

Adelman found that one variable, no-penalty withdrawals or no-credit course repeats, had a negative impact on transfer and degree attainment.

The third area addressed by Adelman (2005) describes the students who started in community colleges by their final status at the college. Students were divided into three groups: academic, occupational, or unclassifiable. Upon reviewing the transcripts of students in December 2000, half of all the students who started in community colleges left thin or unclassifiable records, 33% of the group fell into the academic category, and 17% was in the occupational category. Sixty percent of the academic group transferred to four-year institutions, and 70% of the transfers earned bachelor's degrees. Of the occupational group, 22% transferred, and 53% of those who transferred completed bachelor's degrees.

Adelman (2005) also considered labor market outcomes by exploring continuity of employment and degree congruence between the student's course of study and occupation at age 25 or 26. He reported a strong tie between degree completion and continuity of employment. Adelmen also found that over 60% of students who earned occupational associate's degrees obtained jobs related to their field of study.

Transfer Rates of Community College Students

Several researchers have attempted to define the rate at which community college students transfer to four-year institutions. One of the most recognized studies on community college transfer rates is the Transfer Assembly Project, based at the Council for the Study of Community Colleges (CSCC) at UCLA. The Transfer Assembly Project, headed by Arthur Cohen, is the longest-standing study focusing on statewide measures of community college–baccalaureate transfer. Since 1989, the project has collected data on transfer rates initially for 18 and now for 24 states, using commonly defined data elements. CSCC defined the

transfer rate as the percentage of all first-time community college students who complete at least 12 units at that college and who take at least one class from a public in-state university within four years of leaving the community college. The authors attribute the decline in transfer rates in the 1980s to overall economic conditions and the emphasis on academic education (Table 2.5).

More recently Bradburn and Hurst (2001) explored the concept of transfer rates using alternative populations of potential transfer students in calculating rates for first-time students enrolling between July 1, 1989 and June 30, 1990. The authors defined transfer as initial enrollment in a community college followed by subsequent enrollment at any four-year institution within a five-year period. The initial pool of potential transfer students included all students eligible for transfer, and the alternative definitions were considerably more restrictive. The findings illustrate the trade-off between restricting the pool of potential

Table 2.5. Transfer Assembly Project: National Transfer Rates

Year Students First Enrolled in College	Number of Participating Colleges	A Number of Entrants	B % of Column A Completing 12+ Credits Within 4 Years	C % of Column B Transferring Within 4 Years
1984	48	77,903	50.5	23.7
1985	114	191,748	46.7	23.6
1986	155	267,150	46.7	23.4
1987	366	507,757	46.9	22.6
1988	395	522,758	45.5	22.1
1989	416	511,996	44.1	21.5
1990	417	543,055	47.1	21.8
1991	424	575,959	47.3	22.1
1993	345	293,149	50.7	23.4
1995	538	619,470	52.5	25.2

Note. From "Minority Student Retention and Academic Achievement in Community Colleges," by K. Szelenyi, 2001.

Table 2.6. Alternative Estimates of Transfer Rates

Definition of Transfer-Eligible Pool	Pool as Percent of All First-Time Community College Enrollments	Percent of Pool Who Transferred to Any Four-Year Institution Within Five Years
All first-time community college students	100	25
Expect to complete a bachelor's degree or more	71	36
Enrolled in an academic program	68	36
Enrolled continuously in 1989-90	63	37
Enrolled any time during 1990-91	62	38
Pursing academic major and/or taking courses toward a bachelor's degree	43	43
Enrolled for 12 or more credits	36	40
Taking courses toward a bachelor's degree	25	45
Academic major and taking courses toward a bachelor's degree	11	52

Note. From *Community College Transfer Rates to Four-Year Institutions Using Alternative Definitions of Transfer*, by E. M. Bradburn & D. G. Hurst, 2001, Department of Education, National Center for Educational Statistics.

transfer students and excluding substantial portions of the original research cohort from the analysis (Table 2.6).

The first research on the academic performance of Iowa community college transfer students was conducted nearly 20 years ago when Giddings (1985) compared the performance, progress, and degree achievement of community college transfer students to native students at the three Regent institutions. When students were grouped by ACT composite score, sex, and number of credits earned prior to transfer, transfer and native students had similar post-transfer success. However, differences in transfer student GPA, retention, and graduation were found among the three Regent institutions. Academic success was higher for transfer students who were female and had a higher number of community college transfer credits.

Several studies since Giddings' (1985) initial work have focused on the academic success of Iowa community college transfer students. Phelan (1990) attempted to determine the effect of community college cumulative GPA and student satisfaction with the community college on the transfer student GPA at graduation from a four-year institution. Results of Phelan's study suggested that the quantity of semester hours earned at the community college had little or no relationship with GPA at the time of baccalaureate degree attainment. Brown (1994) attempted to determine whether community college Associate of Applied Science degree students transferred to four-year institutions and their subsequent success at these institutions. Findings from Brown's study indicated that a higher GPA prior to transfer resulted in a higher GPA at the four-year institution. More recently, Fields (2001) compared GPA, retention, and graduation rates of community college transfer students to native students at the Regent institutions. Analysis of student records indicated that community college transfer students' GPA at graduation was statistically lower than that of the native students. However, when stratified by ACT composite score, the difference in GPA was less than 0.33. Additionally, Fields found that graduation rates for transfer students were significantly lower and attrition rates were significantly higher than for native students. Finally, Emley (2003) analyzed the academic performance of successful community college transfer students by academic discipline courses. Upon review of the grade distributions of transfer and non-transfer students, Emley found significant differences in grades in specific academic disciplines and general education courses.

Summary

The review of literature provided an overview of: (a) the history of community colleges in the United States, (b) an overview of IVCCD, (c) an overview of the Iowa Regent

institutions, (d) the research related to academic achievement of community college transfer students, (e) the research related to persistence of community college transfer students, and (f) the research related to calculation of community college transfer rates.

The review of research related to academic achievement of transfer students showed that most students experience an initial drop in GPA of 0.20 to 0.50 upon entry to the senior institution. In most cases, a recovery in grade point occurs as students progress at the senior institution. Among the variables that increase the likelihood of academic success upon transfer are associate's degree completion, community college GPA, and expected GPA. The review of literature related to persistence of community college transfer students revealed that typically social and academic integration at the four-year institution increases the likelihood students will persist to baccalaureate degree completion. Several national studies focusing on community college students have increased the knowledge about course-taking patterns, transfer, degree completion, and academic performance. This study will add to the body of research on student success by providing an initial baseline analysis of transfer student performance in the state of Iowa.

CHAPTER 3. METHODOLOGY

Introduction

The purpose of this study was to analyze the academic achievement of IVCCD transfer students at ISU, UI, and UNI. This chapter describes the research design, population, data collection, and analysis. A quantitative approach was selected to analyze the first-term and cumulative GPA of ECC and MCC transfer students. The study compared grades from 755 students who transferred to Regent institutions between 2000 and 2004. Although the results of the study cannot be generalized to other community college students, the data provided a baseline of academic performance from which IVCCD administration can develop future plans and benchmarks.

Research Design

This quantitative study describes selected demographic characteristics and analyzes the academic performance of ECC and MCC students who transferred to Regent institutions. The study seeks to address the following research questions:

1. What are the academic characteristics of ECC and MCC students who transferred to Iowa Regent institutions?

2. How did ECC and MCC students perform at Regent institutions upon transfer?

3. Did ECC and MCC transfer students experience a recovery in GPA at the Regent institutions?

4. Are there significant differences in Regent first-term GPA based upon Regent institution, community college, sex, community college credits earned, community college degree status, academic year of transfer, or academic discipline?

Population

This study analyzes the academic records of ECC and MCC students who transferred

to Regent institutions from 2000 to 2004. The data were obtained from the Offices of

Admissions at ISU, UI, and UNI and represented the most current and complete data

available. Table 3.1 provides additional information about the population used for this study.

Table 3.1. Number of Students Transferring to Regent Institutions

Academic Year	ISU	UI	UNI	Total
2000	88	22	66	176
2001	80	11	71	162
2002	47	22	51	120
2003	61	12	77	150
2004	50	19	78	147
Total	326	86	343	755

Data Collection

The data used in this study were obtained from Transfer Student Academic

Performance Reports provided by Offices of Admissions at Iowa Regent institutions.

Following the completion of each semester, the Regent institutions send all Iowa community

colleges hard copies of the transfer reports for all respective community college students

enrolled at the Regent institution. Since 2000, all Regent institutions have included an

electronic copy of the report to enable community college staff to access and analyze the data

more easily. Most of the electronic files are sent in text format; for this study, the files were

converted to Excel spreadsheets and imported into a statistical package for analysis.

Because IVCCD did not have the capability to merge Regent data into the student

records system, the variables analyzed in this study were limited to those included in the

Transfer Student Academic Performance Reports. They include the following:

1. Student name,

2. Student Social Security number,

3. Sex,

4. First-term at Regent institution,

5. Current major at Regent institution,

6. ACT composite score,

7. High school percentile,

8. Community college hours accepted by Regent,

9. Community college GPA,

10. Associate's degree awarded,

11. Regent first-term hours accepted,

12. Regent first-term GPA,

13. Regent current-term hours attempted,

14. Regent current-term GPA,

15. Regent cumulative hours attempted,

16. Regent cumulative GPA, and

17. Regent degree awarded (yes/no).

Since the reports are college specific, the college variable (ECC or MCC) was added during the conversion to Excel.

IVCCD students who transferred to a Regent institution from 2000 to 2004 were included in this study. Because the researcher plans to incorporate this file into the IVCCD student record system in the near future, no sampling technique was utilized. Rather, the

entire population during the specified years was included in the study to simplify the future

import of data.

Data Analysis

The data were analyzed using Windows version 13.0 of Statistical Package for the

Social Sciences (SPSS). Descriptive statistics were compiled to analyze the frequency

distributions of defined variables. The statistical test to analyze the data regarding the

hypotheses was the general linear models analysis of variance (ANOVA).

Due to the focus of the study, descriptive analysis focused primarily on community

college and Regent credit hours and GPA. In addition, summary data on sex and community

college degree status were reported. While ACT composite score and high school percentile

initially were considered as part of this study, fewer than 15% of the students had an ACT

score listed on the transfer reports. Additionally, high school percentile proved problematic

because two Regent institutions reported percentile and the other reported high school decile

rank.

ANOVA was used to test seven hypotheses that tied GPA to community college, sex,

community college credits earned, community college degree status, Regent first year,

Regent institution, and academic discipline. ANOVA is a procedure used to determine

whether two or more means are significantly different from one another (Hinkle, Wiersma, &

Jurs, 2003), and the general linear model form can be adapted to include continuous predictor

variables as well. ANOVA partitions the sum of squares of the values of the dependent

variable (in this case, GPA) into two parts: (a) the variation of the scores within each group

and (b) the variation between the group means and the mean of the total group, or grand

Table 3.2. Summary ANOVA

Source of variation	Sum of squares	Degrees of freedom	Variance estimate (mean square)	F ratio
Between	$\sum\limits_{K=1}^{K} n_K \, (\overline{X}_K - \overline{X})^2$	K - 1	$MS_B = SS_B/K - 1$	MS_B/MS_W
Within	$\sum\limits_{K=1}^{K} \sum\limits_{i=1}^{nK} (X_{ik} - \overline{X}_K)^2$	N - K	$MS_W = SS_W/N - K$	
Total	$\sum\limits_{K=1}^{K} \sum\limits_{i=1}^{nK} (X_{ik} - \overline{X})^2$	N - 1		

Note. MS_B = mean squares between, MS_W = mean squares within, $\overline{X}_K$ = sample mean, $\overline{X}$ = grand mean, K = number of groups, N = number of observations in each sample. From *Applied Statistics for the Behavioral Sciences*, by D. E. Hinkle, W. Wiersma, & S. G. Jurs, 2003, p. 344.

mean (Table 3.2). The probability value for significance was set at $p = .05$. The Tukey HSD post hoc test was used following the rejection of the null hypothesis.

Three underlying assumptions regarding the data must be met in order to accept the ANOVA results as valid. The first assumption is that all observations were randomly and independently selected from each underlying population. Because no sampling techniques were used and all transfer students for the time period were included in the study, creating a random and independent sample was not a concern for this study.

The second assumption is that the dependent variable is normally distributed for each of the populations. In applications with a moderate or large sample size, an ANOVA may yield reasonable p values even when the normality assumption is violated (Green & Salkind, 2005). Because over 700 records were analyzed in this study, the researcher assumed that the resulting data were valid.

The third assumption is that the variances of the distributions in the population are equal. Levene's test for equality of error variance was used to test for homogeneity of variance. The probability value for significance was set at $p = .05$.

Ethical Issues

The research and data analysis for this study was conducted at IVCCD through secured locations and information systems. Student names and Social Security numbers were included during the initial conversion from text to Excel file only to enable a data merge into the IVCCD student record system at a later date. The results of the data analysis were reported in aggregate, thus no individual student information is reported or published in the results. Results were reported for subgroups that contained 10 or more subjects to further ensure confidentiality of student data. The ISU Institutional Review Board reviewed the researcher's request for this study and deemed that approval by the Human Subject Research Compliance Committee was not required. The District Chancellor, ECC Provost, MCC Provost, Chief Academic Officer, and Dean of Enrollment supported the study.

Summary

This chapter describes the design, data collection and analysis, and ethical concerns associated with this study. A quantitative approach was used to analyze the first-term and overall academic performance of 755 ECC and MCC students who transferred to an Iowa Regent institution from 2000 to 2004. The selected characteristics of IVCCD transfer students were described statistically. The general linear model version of ANOVA was used to test seven hypotheses regarding first-term GPA and seven independent variables. Ethical considerations were presented and support was provided by IVCCD administration.

Confidentiality of student records was maintained through secure locations and information systems.

CHAPTER 4. RESULTS

The purpose of this study was to examine the academic achievement of IVCCD students who transferred to ISU, UI, and UNI. Although IVCCD cooperates with the Regent institutions to track the number of students who transfer and receives reports of the GPAs of these students upon transfer, no analysis of how well students perform at the Regent institutions has been conducted. This study attempts to analyze the academic performance of ECC and MCC transfer students by examining the Regent first-term GPA. The study further attempts to analyze the overall success of transfer students as measured by the cumulative GPA of baccalaureate degree recipients. This chapter describes the findings of the study and answers the following research questions:

1. What are the academic characteristics of ECC and MCC students who transferred to Iowa Regent institutions?

2. How did ECC and MCC students perform at Regent institutions upon transfer?

3. Did ECC and MCC transfer students experience a recovery in GPA at the Regent institutions?

4. Are there significant differences in Regent first-term GPA based upon Regent institution, community college, sex, community college credits earned, community college degree status, academic year of transfer, or academic discipline?

For the first research question, the study examined the population of ECC and MCC students who transferred to a Regent institution between 2000 and 2004. The data are summarized by community college, Regent institution, and sex. Transfer student data are

then stratified by community college credits earned and categorized into the following groups: (a) 0 to 15 credits earned prior to transfer, (b) 16 to 30 credits earned prior to transfer, (c) 31 to 45 credits earned prior to transfer, (d) 45 to 60 credits earned prior to transfer, and (e) greater than 60 credits earned prior to transfer. Data are also reported by academic year of transfer. Finally, data are reported by academic discipline at the Regent institution. Academic discipline grouping was identified after reviewing the literature and consulting the ISU Office of Institutional Research (see the Appendix for academic discipline groups and associated majors). The academic disciplines used for this study included the following: Agriculture, Business, Education, Engineering, Humanities, Medicine, Science/Mathematics, and Social Sciences.

For the second research question, the study examined the Regent first-term credits and GPA of IVCCD transfer students. Cumulative community college credits earned, community college GPA, Regent first-term credits earned, and Regent first-term GPA are reported by Regent institution. The difference between community college and Regent GPA is expressed as the magnitude of transfer shock, which is analyzed in response to this research question.

Data analysis for the third research question addressed the academic performance of community college transfer students who obtained a baccalaureate degree at a Regent institution. Community college cumulative GPA, Regent first-term GPA, and Regent cumulative GPA are reported and used to determine the magnitude of GPA recovery at the time of degree attainment. Due to the small number of students who obtained a baccalaureate degree during the time of this study, results are not reported by Regent

institution. Rather, confidentiality of student records is maintained by reporting results in aggregate.

For the fourth research question, the study investigated differences in Regent first-term GPA when stratified by Regent institution, community college, sex, community college credits earned, community college degree status, academic year of transfer, and academic discipline. Data analysis was performed to test the following seven hypotheses that were used to address this research question:

1. There is no significant difference in Regent first-term GPA among community college transfer students at the three Regent institutions.

2. There is no significant difference between ECC and MCC students in mean Regent first-term GPA.

3. There is no significant difference between male and female community college transfer students in Regent first-term GPA.

4. There is no significant difference in mean Regent first-term GPA among five student groups of community college students with: (a) 0 to 15 credits earned prior to transfer; (b) 16 to 30 credits earned prior to transfer; (c) 31 to 45 credits earned prior to transfer; (d) 45 to 60 credits earned prior to transfer; and (e) greater than 60 credits earned prior to transfer.

5. There is no significant difference in Regent first-term GPA between community college degree recipients and those who don't have a community college degree.

6. There is no significant difference in Regent first-term GPA among students transferring from community colleges in the five academic years included in this study.

7. There is no significant difference in Regent first-term GPA by academic

discipline upon transfer.

Findings

The Statistical Package for the Social Science (SPSS), Windows version 13.0, was

used for the data analysis in this study. Descriptive statistics, including frequencies and

percentages, are reported for the first two research questions. For the final research question,

the mean, standard deviation, 95% confidence interval, and ANOVA results are reported for

each hypothesis.

**Research Question 1: What are the academic characteristics of ECC and MCC
students who transferred to Regent institutions?**

This study examined the academic performance of 813 ECC and MCC students who

transferred to Iowa Regent institutions. Fifty-eight student records were eliminated from the

study due to student withdrawal or incomplete grades during the first term at the Regent

institution, leaving 755 complete student records.

Table 4.1 depicts the number of ECC and MCC Iowa Regent transfer students from

spring 2000 through fall 2004. Three hundred seventy-four ECC students and 381 MCC

students transferred to Regent institutions. Overall, 45.4% of ECC and MCC transfer

students enrolled at the UNI and 43.2% enrolled at ISU. Only 11.4% of those students

transferring enrolled at the UI.

Table 4.1. ECC and MCC Transfer Students at Iowa Regent Institutions

	ISU		UI		UNI		Total
	n	%	n	%	n	%	
ECC	152	40.6	40	10.7	182	48.7	374
MCC	174	45.7	46	12.1	161	42.3	381
Total	326	43.2	86	11.4	343	45.4	755

Table 4.2 depicts the breakdown by sex for the population. Overall, 52.3% of students who transferred to a Regent institution were male. The gender data are different from the overall IVCCD population in which 42.7% are male (ECC 48.7%, MCC 38.8%). Of the students who transferred, a greater percentage of male students transferred to ISU (52.8%) and UI (51.2%), whereas a greater percentage of female students transferred to UNI (50.1%). Of the ECC students who transferred, more males than females transferred to each Regent institution. When considering MCC transfer students, a greater percentage of male students transferred to ISU, whereas a greater percentage of female students transferred to UI and UNI.

Table 4.2. ECC and MCC Transfer Students by Sex

	ISU		UI		UNI		Total	
	n	%	n	%	n	%	n	%
ECC								
Male	79	52.0	22	55.0	95	52.2	196	52.4
Female	73	48.0	18	45.0	87	47.8	178	47.6
Total	152		40		182		374	
MCC								
Male	93	53.4	22	47.8	76	47.2	191	50.1
Female	81	46.6	24	52.2	85	52.8	190	49.9
Total	174		46		161		381	
Male	172	52.8	44	51.2	171	49.9	387	51.3
Female	154	47.2	42	48.8	172	50.1	368	48.7

This study included an analysis of the total number of community college credits earned prior to transfer to a Regent institution. Students were categorized into one of the following groups for this analysis: (a) 0 to 15 credits earned prior to transfer, (b) 16 to 30 credits earned prior to transfer, (c) 31 to 45 credits earned prior to transfer, (d) 45 to 60 credits earned prior to transfer, and (e) greater than 60 credits earned prior to transfer. The

analysis of the number of community college credit hours earned revealed a significant

portion of students (63.0%) earned 61 credits or more (Table 4.3). Students who earned 45

to 60 community college credits constituted 16.7% of the population, and 10.1% earned

between 31 and 45 credits. When stratified by college, the largest proportion of students

earned 61 or more community college credits also. Over 91% of ECC students earned 31 or

more credits at the community college, and 87.9% of MCC students earned greater than 30

community college credits.

The Transfer Student Academic Performance reports contained degree attainment

information that was analyzed as part of this study and is summarized in Table 4.4. Overall,

63% of the students who enrolled at a Regent institution completed a two-year degree prior

Table 4.3. ECC and MCC Transfer Students by Community College Credits Earned

	ISU		UI		UNI		Total	
	n	%	*n*	%	*n*	%	*n*	%
ECC								
0–15 cr.	4	2.6	0		7	3.8	11	2.9
16–30 cr.	9	5.9	1	2.5	10	5.5	20	5.3
31–45 cr.	10	6.6	7	17.5	14	7.7	31	8.3
46–60 cr.	31	20.4	6	15.0	34	18.7	71	19.0
> 60 cr.	98	64.5	26	65.0	117	64.3	241	64.4
MCC								
0–15 cr.	0		0		11	6.8	11	2.9
16–30 cr.	17	9.8	3	6.5	15	9.3	35	9.2
31–45 cr.	23	13.2	3	6.5	19	11.8	45	11.8
46–60 cr.	23	13.2	7	15.2	25	15.5	55	14.4
> 60 cr.	111	63.8	33	71.7	91	56.5	235	61.7
Total								
0–15 cr.	4	1.2	0		18	5.2	22	2.9
16–30 cr.	26	8.0	4	4.7	25	7.3	55	7.3
31–45 cr.	33	10.1	10	11.6	33	9.6	76	10.1
46–60 cr.	54	16.6	13	15.1	59	17.2	126	16.7
> 60 cr.	209	64.1	59	68.6	208	60.6	476	63.0

to transfer. When compared by college, a higher percentage of ECC students completed a community college degree than did MCC students (70.3% and 55.9%, respectively). When compared by Regent institution, UNI had the highest percentage of students with degrees conferred (74.6%). ISU had the lowest percentage of students with degrees conferred (53.1%).

Table 4.4. ECC and MCC Transfer Students by Prior Degree Status

	ISU		UI		UNI		Total	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*
ECC								
Degree conferred	89	58.6	25	62.5	149	81.9	263	70.3
No degree	63	41.4	15	37.5	33	18.1	111	29.7
Total	152		40		182		374	
MCC								
Degree conferred	84	48.3	22	47.8	107	66.5	213	55.9
No degree	90	51.7	24	52.2	54	33.5	168	44.1
Total	174		46		161		381	
Total								
Degree conferred	173	53.1	47	54.7	256	74.6	476	63.0
No degree	153	46.9	39	45.3	87	25.4	279	37.0

Data for this study were obtained for the most recent years available, 2000–2004. Table 4.5 provides data by calendar year on the number of students transferring to a Regent institution. During 2000, 176 students, or 6.6% of IVCCD headcount, transferred to a Regent institution; during 2004, 147 students, or 4.9% of IVCCD headcount, transferred to the same institutions.

Table 4.6 illustrates student enrollment by academic discipline at the Regent institutions. Upon consultation with the ISU Office of Institutional Research, the following academic disciplines were identified and used to categorize academic majors: Agriculture,

Table 4.5. ECC and MCC Transfer Students by Academic Year

	ISU		UI		UNI		Total	
	n	%	*n*	%	*n*	%	*n*	%
ECC								
2000	43	28.3	16	40.0	38	20.9	97	25.9
2001	39	25.7	4	10.0	33	18.1	76	20.3
2002	27	17.8	7	17.5	31	17.0	65	17.4
2003	21	13.8	5	12.5	35	19.2	61	16.3
2004	22	14.5	8	20.0	45	24.7	75	20.1
MCC								
2000	45	25.9	6	13.0	28	17.4	79	20.7
2001	41	23.6	7	15.2	38	23.6	86	22.6
2002	20	11.5	15	32.6	20	12.4	55	14.4
2003	40	23.0	7	15.2	42	26.1	89	23.4
2004	28	16.1	11	23.9	33	20.5	72	18.9
Total	326		86		343		755	755
2000	88	27.0	22	25.6	66	19.2	176	23.3
2001	80	24.5	11	12.8	71	20.7	162	21.5
2002	47	14.4	22	25.6	51	14.9	120	15.9
2003	61	18.7	12	14.0	77	22.4	150	19.9
2004	50	15.3	19	22.1	78	22.7	147	19.5

Business, Education, Engineering, Humanities, Medicine, Science/Math, and Social

Sciences. Overall, the most popular academic disciplines were Business and Humanities in

which 23.8% and 20.6% of the transfer students were enrolled. The smallest percentage of

transfer students were enrolled in Medicine (4.1%) and Engineering (5.5%). Of the ECC

transfer students, the largest number of students enrolled at UNI in Business, Humanities,

and Education. At MCC, the largest number of students enrolled at ISU in Business and at

UNI in Humanities and Business.

Table 4.6 ECC and MCC Students by Academic Discipline

	ISU		UI		UNI		Total	
	n	%	*n*	%	*n*	%	*n*	%
ECC								
Agriculture	36	27.1	0		0		36	10.6
Business	26	19.5	6	18.8	49	28.0	81	23.8
Education	8	6.0	1	3.1	37	21.1	46	13.5
Engineering	10	7.5	0		0		10	2.9
Humanities	19	14.3	8	25.0	41	23.4	68	20.0
Medicine	0		7	21.9	4	2.3	11	3.2
Science/Math	21	15.8	3	9.4	14	8.0	38	11.2
Social Sciences	13	9.8	7	21.9	30	17.1	50	14.7
MCC								
Agriculture	11	6.3	0		0		11	3.0
Business	43	24.7	7	17.1	38	24.7	88	23.8
Education	5	2.9	0		34	22.1	39	10.6
Engineering	29	16.7	0		0		29	7.9
Humanities	28	16.1	11	26.8	39	25.3	78	21.1
Medicine	0		12	29.3	6	3.9	18	4.9
Science/Math	30	17.2	4	9.8	19	12.3	53	14.4
Social Sciences	28	16.1	7	17.1	18	11.7	53	14.4
Total								
Agriculture	47	15.3	0		0		47	6.6
Business	69	22.5	13	17.8	87	26.4	169	23.8
Education	13	4.2	1	1.4	71	21.6	85	12.0
Engineering	39	12.7	0		0		39	5.5
Humanities	47	15.3	19	26.0	80	24.3	146	20.6
Medicine	0		19	26.0	10	3.0	29	4.1
Science/Math	51	16.6	7	9.6	33	10.0	91	12.8
Social Sciences	41	13.4	14	19.2	48	14.6	103	14.5

Research Question 2: How did ECC and MCC students perform at Regent institutions upon transfer?

Tables 4.7 through 4.13 illustrate the mean GPA and credits for ECC and MCC

students at the community college and upon transfer to the Regent institutions. Consistent

with the literature on transfer shock (Bach et al., 2000; Cohen & Brawer, 1982; Glass &

Harrington, 2002; Gold, 1971, 1979; Hills, 1965; Nolan & Hall, 1978), ECC and MCC

students experienced varying degrees of transfer shock among the Regent institutions. The difference between community college GPA and Regent first-term GPA is defined as the magnitude of transfer shock.

Table 4.7 presents the mean transfer credits and GPA along with the mean Regent credits and first-term GPA stratified by Regent institution and community college. When grouped by Regent, the community college GPA differs by 0.05 of a grade point with the highest community college GPA achieved by students enrolling at UNI and the lowest by students enrolling at ISU (3.11 and 3.06, respectively). Students who transferred to ISU earned the lowest number of community college credits, completing 54.27 credits, whereas students who transferred to the UI earned the highest number of community college credits with 65.77.

Table 4.7. Comparison of Credits and GPA by Regent Institution

Regent Institution	n	Community College		Regent First-Term		Magnitude of Transfer Shock
		Credits	GPA	Credits	GPA	
ISU	326	57.81	3.06	12.18	2.35	-0.71
UNI	343	54.27	3.11	12.09	2.42	-0.69
UI	86	65.77	3.10	11.51	2.39	-0.71

During their first semester at a Regent institution, transfer students enrolled in approximately 12 credits, achieving a GPA of approximately 2.40, a difference of -0.70 from the community college GPA. Students transferring to ISU and UI experienced a decline in GPA of -0.71 grade point; the Regent first-term GPA for these students was 2.35 and 2.39, respectively. Students transferring to UNI encountered a lesser degree of transfer shock (-0.69 grade point) and obtained a first-term GPA of 2.42.

Table 4.8 provides the mean Regent first-term GPA and associated magnitude of

transfer shock stratified by community college. ECC students who transferred to UI

achieved the highest community college GPA (3.15), whereas MCC students who transferred

to ISU achieved the lowest community college GPA (2.99). Students who transferred from

ECC achieved a higher community college GPA than MCC students across all Regent

institutions.

Table 4.8. Comparison of Credits and GPA by College

Regent Institution	n	Community College		Regent First-Term		Magnitude of Transfer Shock
		Credits	GPA	Credits	GPA	
ISU						
ECC	152	57.54	3.14	12.50	2.32	-0.82
MCC	174	58.05	2.99	11.91	2.37	-0.62
UNI						
ECC	182	56.03	3.13	11.91	2.36	-0.77
MCC	161	52.31	3.09	12.29	2.49	-0.60
UI						
ECC	40	59.8	3.15	11.38	2.10	-1.05
MCC	46	70.96	3.06	11.63	2.64	-0.42

Students completed between 11 and 12 credits during their first term at the Regent

institution. The range for the mean Regent first-term GPA was 2.10 to 2.64 with the lowest

GPA obtained by ECC students who transferred to UI and the highest GPA obtained by

MCC students at UI. Overall, the highest degree of transfer shock was encountered by ECC

students who transferred to UI; these students experienced a change in GPA of -1.05. MCC

students who transferred to UI experienced the smallest change in GPA of -0.42. Across all

Regent institutions, ECC students experienced a greater magnitude of transfer shock than

MCC students.

An analysis of Regent first-term GPA was conducted when students were stratified by sex (Table 4.9). Female students who transferred to UNI achieved the highest community college GPA (3.26), whereas males who transferred to UNI achieved the lowest community college GPA (2.97). On average, females achieved a higher community college GPA than males across all Regent institutions. In addition, females earned more community college credits than males at all Regent institutions.

Table 4.9. Comparison of Credits and GPA by Sex

| | n | Community College | | Regent First-term | | Magnitude of |
		Credits	GPA	Credits	GPA	Transfer Shock
ISU						
Male	172	57.15	2.98	12.30	2.30	-0.68
Female	154	58.55	3.15	12.05	2.40	-0.75
UNI						
Male	171	54.43	2.97	12.04	2.23	-0.74
Female	172	55.13	3.26	12.14	2.62	-0.64
UI						
Male	44	60.52	3.04	11.59	2.21	-0.83
Female	42	71.26	3.17	11.43	2.58	-0.59

The range for the mean Regent first-term GPA was 2.21 to 2.62 with the lowest GPA obtained by males who transferred to UI and the highest GPA obtained by females at UNI. The range for the magnitude of transfer shock was -0.59 to -0.83. Female students who transferred to UI encountered the smallest decline in first-term GPA and males at UI encountered the greatest decline. Except at ISU, female students encountered a lesser degree of transfer shock at Regent institutions than male students.

Table 4.10 summarizes the mean Regent first-term GPA and associated magnitude of the transfer shock stratified by the number of community college credits earned. Students

who transferred between 0 and 15 credits to ISU achieved the highest community college

GPA (3.57). Students who transferred between 46 and 60 credits to ISU achieved the lowest

community college GPA (2.84).

Students completed between 10 and 13.5 credits during their first term at the Regent

institutions. The range for the Regent first-term GPA was between 2.01, achieved by ISU

students who had earned 16 to 30 community college credits, and 2.74, which was achieved

by UI students who had earned 46 to 60 community college credits. No patterns or trends are

apparent when reviewing the magnitude of transfer shock stratified by community college

credits earned. Of the students who transferred to ISU, the greatest magnitude of transfer

shock (-0.94) was experienced by students who transferred between 16 and 30 credits. The

Table 4.10. Comparison of Credits and GPA by Community College Credits Earned

| | n | Community College | | Regent First-Term | | Magnitude of |
		Credits	GPA	Credits	GPA	Transfer Shock
ISU						
0–15 cr.	4	-	-	-	-	-
16–30 cr.	25	24.86	2.95	11.78	2.01	-0.94
31–45 cr.	33	38.30	3.01	12.74	2.14	-0.87
46–60 cr.	54	54.64	2.84	12.36	2.08	-0.76
> 60 cr.	210	66.57	3.13	12.07	2.49	-0.64
UNI						
0–15 cr.	18	8.66	3.01	12.67	2.46	-0.55
16–30 cr.	25	22.94	2.98	11.52	2.31	-0.67
31–45 cr.	35	37.34	3.26	12.06	2.69	-0.57
46–60 cr.	58	55.53	3.02	11.53	2.24	-0.78
> 60 cr.	207	64.31	3.14	12.25	2.43	-0.71
UI						
0–15 cr.	0					
16–30 cr.	4	-	-	-	-	-
31–45 cr.	10	34.50	3.22	13.30	2.30	-0.92
46–60 cr.	13	53.23	3.23	10.38	2.74	-0.49
> 60 cr.	59	76.46	3.07	11.36	2.29	-0.78

ISU transfer students who had earned more than 60 community college credits encountered the smallest drop in GPA (-0.64). Of the students who transferred to UNI, the greatest degree of transfer shock was experienced by those who transferred 46 to 60 credits (-0.78), and the least magnitude of transfer shock was encountered by students who earned 0 to 15 community college credits (-0.55). At UI, students who had earned 31 to 45 community college credits experienced the greatest drop in GPA (-0.92), whereas those who had earned 46 to 60 credits experienced the least amount of transfer shock (-0.49).

Results of the analysis of mean credits and GPA by prior degree status, community college and Regent institution are displayed in Table 4.11. Students who completed a degree prior to transfer to ISU achieved a higher community college GPA than those did not (3.16 and 2.94, respectively). The same was true of students who transferred to UNI where students with a prior degree achieved a 3.15 GPA and those without a prior degree earned a 2.99 GPA. At UI the difference in community college GPA between students who completed a prior degree and those who did not was less than 0.01 of a grade point.

Table 4.11. Comparison of Credits and GPA by Prior Degree Status

	n	Community College		Regent First-Term		Magnitude of Transfer Shock
		Credits	GPA	Credits	GPA	
ISU						
Degree	173	65.73	3.16	12.36	2.54	-0.62
No degree	153	48.86	2.94	11.99	2.13	-0.81
UNI						
Degree	256	59.98	3.15	12.04	2.48	-0.67
No degree	87	37.51	2.99	12.22	2.25	-0.74
UI						
Degree	47	66.49	3.10	11.17	2.26	-0.84
No degree	39	64.90	3.11	11.92	2.54	-0.57

Prior degree status had minimal impact on the number of credits completed during the first term at the Regent institution. On average students completed 12 credits during their first term upon transfer. The range for the mean Regent first-term GPA was 2.13 to 2.54 with the lowest GPA obtained by students without a prior degree who transferred to ISU. The highest GPA was obtained by ISU transfer students with a prior degree and students without a prior degree who transferred to UI (2.54). The largest magnitude of transfer shock was experienced by students who transferred to UI with a prior degree (-0.84), whereas the lowest drop in GPA was encountered by students without a prior degree who transferred to UI (-0.57). At ISU and UNI, transfer students with a prior degree achieved a higher first-term GPA at the Regent institution and experienced a lesser degree of transfer shock than did students without a prior degree. At UI, transfer students without a prior degree achieved a higher first-term GPA and experienced a lesser degree of transfer shock than did students with a prior degree.

The impact of academic year and Regent first-term GPA was analyzed for this study and is reported in Table 4.12. Students who transferred to UI in 2004 achieved the highest community college GPA (3.24), and those who transferred to UI in 2001 achieved the lowest community college GPA (2.84). The range for the mean number of community college credits earn was 52 to 81 credits.

Students completed between 11 and 13 credits during their first term at the Regent institution. The range for the Regent first-term GPA was 2.08 to 2.54 with the lowest GPA obtained by students transferring to UI in 2001. The highest GPA was obtained by students who transferred to UI during 2002 and 2004 and by students who transferred to UNI in 2001 (2.54). The lowest and highest degree of transfer shock was observed in the records of

Table 4.12. Comparison of Credits and GPA by Academic Year

| | n | Community College | | Regent First-Term | | Magnitude of |
		Credits	GPA	Credits	GPA	Transfer Shock
ISU						
2000	88	57.16	3.08	12.36	2.37	-0.71
2001	80	54.10	3.03	12.68	2.29	-0.74
2002	47	58.02	3.10	12.09	2.41	-0.62
2003	61	61.48	3.12	12.20	2.49	-0.63
2004	50	60.20	2.96	11.17	2.17	-0.79
UNI						
2000	66	56.11	3.06	11.86	2.36	-0.70
2001	71	52.93	3.12	12.61	2.54	-0.58
2002	51	51.86	3.09	12.09	2.42	-0.67
2003	77	54.68	3.16	12.48	2.47	-0.69
2004	78	55.15	3.12	11.67	2.32	-0.80
UI						
2000	22	59.59	3.17	10.91	2.34	-0.83
2001	11	55.64	2.84	11.36	2.08	-0.76
2002	22	81.27	3.00	10.59	2.54	-0.46
2003	12	61.58	3.19	12.03	2.23	-0.96
2004	19	63.47	3.24	13.00	2.54	-0.70

students who transferred to UI. Students who transferred to UI in 2002 experienced the least degree of transfer shock where the average change in first-term GPA was -0.46. Students who transferred to UI in 2003 experienced the largest change in GPA where the average change was nearly one grade point (-0.96).

An analysis of Regent first-term GPA was conducted when stratified by academic discipline at the Regent institutions (Table 4.13). UNI students enrolled in Medicine, ISU Engineering students, and Medicine students at UI achieved the highest community college GPAs (3.37, 3.23, and 3.22, respectively). ISU students enrolled in Social Sciences achieved the lowest community college GPA (2.84). The highest post-transfer GPA was achieved by students enrolled in Education at UNI and Medicine at UI where the Regent first-term GPA

Table 4.13. Comparison of Credits and GPA by Academic Discipline

| | n | Community College | | Regent First-Term | | Magnitude of Transfer Shock |
		Credits	GPA	Credits	GPA	
ISU						
Agriculture	47	59.745	3.08	13.59	2.54	-0.54
Business	69	56.23	3.03	11.25	2.38	-0.65
Education	13	51.85	3.03	13.81	2.24	-0.79
Engineering	39	53.95	3.23	12.90	2.39	-0.84
Humanities	47	56.12	3.07	12.99	2.53	-0.54
Medicine	0					
Science/Math	51	60.39	3.11	11.14	2.11	-1.0
Social Sciences	41	61.87	2.84	11.04	2.10	-0.74
UNI						
Agriculture	0					
Business	87	56.60	3.09	12.25	1.99	-1.1
Education	71	56.94	3.18	12.48	2.72	-0.46
Engineering	0					
Humanities	80	52.51	3.05	12.33	2.60	-0.45
Medicine	10	46.60	3.37	6.8	2.49	-0.88
Science/Math	33	54.44	3.11	12.27	2.14	-0.97
Social Sciences	48	52.81	3.13	11.77	2.67	-0.46
UI						
Agriculture	0					
Business	13	59.92	3.18	11.77	2.38	-0.80
Education	1	-	-	-	-	-
Engineering	0					
Humanities	19	56.84	3.05	12.26	2.43	-0.62
Medicine	19	88.58	3.22	11.63	2.63	-0.59
Science/Math	7	-	-	-	-	-
Social Sciences	14	65.64	3.03	10.79	2.21	-0.82

was 2.72 and 2.63, respectively. The lowest Regent first-term GPA was achieved by UNI

Business students (1.99).

The range for the magnitude of transfer shock when stratified by academic discipline

was -.45 to -1.1, with both extremes occurring at UNI. UNI Business students (-1.1) and

Science/Math students at ISU (-1.0) saw a decline in Regent first-term GPA of one grade-

point or more and experienced the greatest degree of transfer shock. UNI students enrolled

in Humanities experienced the smallest decline in Regent first-term GPA (-0.45).

Research Question 3: Did ECC and MCC transfer students experience a recovery in GPA at the Regent institutions?

In a synthesis of data on the academic performance of community college transfer

students, Diaz (1992) reviewed the results of 62 studies. Forty-nine studies reported that

students experienced transfer shock during the first-term at the senior institution. Of these 49

studies, 33 indicated that students recovered portions of their lost GPA. Twelve of the 33

studies reported that students experienced a complete recovery of GPA, and 9 reported that

recovery was nearly complete to within 0.05 to 0.10 of the community college GPA.

To maintain a consistent standard to report GPA recovery, the cumulative GPA of

students who completed a baccalaureate degree was used (Tables 4.14 to 4.20). The

magnitude of recovery in GPA was computed in two ways. First, Regent first-term GPA was

subtracted from Regent cumulative GPA, reported as the within-Regent-recovery (WRR), to

determine the magnitude of recovery while enrolled at the Regent institution. Second, the

community college cumulative GPA was subtracted from the Regent cumulative GPA,

reported as the community-college-Regent-change (CCRC), to determine the impact on GPA

for the overall transfer function.

Of the 755 transfer students included in this study, 178 (23.6%) persisted to

baccalaureate degree completion during the five years under consideration. Overall, transfer

students who received a baccalaureate degree achieved a cumulative GPA of 3.21 at the

community college, a Regent first-term GPA of 2.69, and 2.97 upon graduation from the

Regent institution (Table 4.14). The overall recovery in GPA from initial enrollment at the

Regent institution through graduation (WRR) was 0.28, indicating that students recovered nearly 0.3 of a grade point while enrolled at the Regent institution. The difference in GPA from the community college to the Regent institution (CCRC) was -0.24, indicating that students achieved an overall GPA that was approximately 0.2 of a grade point less than at the community college.

Community college transfer students who completed degrees from ISU achieved the lowest Regent first-term GPA (2.56) and experienced the greatest WRR (0.32), achieving a cumulative GPA of 2.88 at graduation. Students who completed a baccalaureate degree at UI had a Regent first-term GPA of 2.83 and experienced the smallest WRR (0.11), achieving a cumulative GPA of 2.94 at graduation. Upon graduation from the Regent institution, UNI community college transfer students achieved the highest cumulative GPA (3.15) and had the smallest CCRC (-0.13), indicating that their cumulative GPA at graduation was approximately 0.1 of a grade point lower than that obtained at the community college. Students who graduated from ISU had the largest CCRC (-0.30), indicating that their cumulative GPA at graduation was 0.3 of a grade point lower than that obtained at the community college.

Table 4.14. Comparison of Community College and Regent GPA by Regent Institution

	n	Community College Cum. GPA	Regent First-term GPA	Regent Cum. GPA	GPA WRR[a]	GPA CCRC[b]
ISU	109	3.18	2.56	2.88	0.32	-0.30
UNI	59	3.28	2.91	3.15	0.24	-0.13
UI	10	3.17	2.83	2.94	0.11	-0.23
Total	178	3.21	2.69	2.97	0.28	-0.24

[a]GPA WRR = Magnitude of GPA recovery within Regent institution. [b]GPA CCRC = Change in GPA from community college to Regent institution.

Table 4.15 illustrates the magnitude of GPA recovery by community college. ECC

students who completed a baccalaureate degree obtained a higher community college GPA

(3.23) and a lower Regent first-term GPA (2.62) than MCC students. While enrolled at a

Regent institution, ECC and MCC transfer students recovered nearly 0.3 of a grade point by

the time of graduation (0.30 and 0.25, respectively). Upon graduation, MCC students

achieved the smallest CCRC (-0.17) and an overall GPA that was approximately 0.2 of a

grade point lower than that obtained at the community college. ECC students graduated with

a CCRC of -0.31 and a GPA of 2.92.

When grouped by sex, female baccalaureate degree recipients achieved a higher

community college GPA and higher GPAs at the Regent institutions than did male students

(Table 4.16). Males achieved a higher WRR (0.35) than female students (0.23) as their

overall GPA at the Regent institutions increased from 2.51 to 2.86. The CCRC was -0.26 for

males and -0.23 for females, indicating that both groups attained a Regent cumulative GPA

of approximately 0.2 of a grade point less than at the community college.

Table 4.15. Comparison of Community College and Regent GPA by College

	n	Community College Cum. GPA	Regent		GPA WRR[a]	GPA CCRC[b]
			First-term GPA	Cum. GPA		
ECC	88	3.23	2.62	2.92	0.30	-0.31
MCC	90	3.19	2.77	3.02	0.25	-0.17

[a]GPA WRR = Magnitude of GPA recovery within Regent institution. [b]GPA CCRC = Change in GPA from community college to Regent institution.

Table 4.16. Comparison of Community College and Regent GPA by Sex

	n	Community College Cum. GPA	Regent		GPA WRR[a]	GPA CCRC[b]
			First-term GPA	Cum. GPA		
Male	74	3.12	2.51	2.86	0.35	-0.26
Female	104	3.28	2.82	3.05	0.23	-0.23

[a]GPA WRR = Magnitude of GPA recovery within Regent institution. [b]GPA CCRC = Change in GPA from community college to Regent institution.

As illustrated in Table 4.17, baccalaureate degree recipients who earned greater than 60 community college credits achieved the highest community college GPA (3.28) and those who earned 46 to 60 credits obtained the lowest community college GPA (3.05). Students who earned 31 to 45 community college credits experienced the largest growth in Regent GPA (2.47 to 3.01) with a WRR of 0.54 while students who earned 46 to 60 credits achieved the smallest (0.22). Students who earned 31 to 45 and 46 to 60 credits had a CCRC of -0.19 and graduated with a cumulative GPA of 3.01 and 2.86, respectively. Students who earned greater than 60 community college credits achieved a CCRC of -0.27 and an overall GPA of 3.01.

Table 4.17. Comparison of Community College and Regent GPA by Community College Credits Earned

| | n | Community College Cum. GPA | Regent | | GPA WRR[a] | GPA CCRC[b] |
			First-term GPA	Cum. GPA		
0–15 cr.	7	-	-	-	-	-
16–30 cr.	6	-	-	-	-	-
31–45 cr.	18	3.20	2.47	3.01	0.54	-0.19
46–60 cr.	38	3.05	2.64	2.86	0.22	-0.19
> 60 cr.	109	3.28	2.74	3.01	0.27	-0.27

[a]GPA WRR = Magnitude of GPA recovery within Regent institution. [b]GPA CCRC = Change in GPA from community college to Regent institution.

When grouped by prior degree status, baccalaureate degree recipients who completed a degree prior to transfer obtained a higher GPA at the community college and at the Regent institutions than did those who did not receive a prior degree (Table 4.18). Those who did not receive a prior degree achieved a higher WRR (0.41) than degree recipients as their overall Regent GPA increased from 2.44 to 2.85. Upon graduation from the Regent institutions, students with a community college degree achieved a CCRC of -0.24 and those without a previous degree achieved a CCRC of -0.23.

Table 4.18. Comparison of Community College and Regent GPA by Prior Degree Status

	n	Community College Cum. GPA	Regent First-term GPA	Regent Cum. GPA	GPA WRR[a]	GPA CCRC[b]
Degree	117	3.28	2.83	3.04	0.21	-0.24
No Degree	61	3.08	2.44	2.85	0.41	-0.23

[a]GPA WRR = Magnitude of GPA recovery within Regent institution. [b]GPA CCRC = Change in GPA from community college to Regent institution.

Table 4.19 depicts the magnitude of GPA recovery when stratified by academic year of transfer. Community college baccalaureate degree recipients who transferred during 2001 achieved the highest community college GPA (3.23), whereas those who transferred during 2002 achieved the lowest (3.18). Students who transferred during 2002 achieved the largest GPA recovery at the Regent institution (0.37) as their GPA increased from 2.67 to 3.04. Students who transferred during 2001 achieved the smallest WRR (0.22). The CCRC was the smallest for students who transferred during 2002 (-0.14) and the largest for those who transferred during 2000 (-0.26).

Table 4.19. Comparison of Community College and Regent GPA by Academic Year

	n	Community College Cum. GPA	Regent First-term GPA	Regent Cum. GPA	GPA WRR[a]	GPA CCRC[b]
2000	88	3.21	2.65	2.95	0.30	-0.26
2001	66	3.23	2.76	2.98	0.22	-0.25
2002	23	3.18	2.67	3.04	0.37	-0.14

[a]GPA WRR = Magnitude of GPA recovery within Regent institution. [b]GPA CCRC = Change in GPA from community college to Regent institution.

The magnitude of GPA recovery when grouped by academic discipline upon transfer is illustrated in Table 4.20. Community college baccalaureate degree recipients who transferred into Engineering achieved the highest community college GPA (3.55), whereas those who transferred into Science/Math and Social Sciences achieved the lowest (3.10). After transfer, students who enrolled in Education obtained the highest Regent first-term

GPA (3.39) and those enrolled in Science/Math obtained the lowest (2.06). The greatest

WRR was achieved by students who transferred into Science/Math (0.64) and the lowest was

achieved by those who transferred into Education (0.11). Education students achieved a

positive CCRC (0.08) and had a Regent GPA that was higher than their community college

GPA (3.50 and 3.42, respectively). The largest CCRC was achieved by Engineering students

(-0.67).

Table 4.20. Comparison of Community College and Regent GPA by Academic Discipline

	n	Community College Cum. GPA	Regent		GPA WRR[a]	GPA CCRC[b]
			First-term GPA	Cum. GPA		
Agriculture	21	3.20	2.70	2.85	0.15	-0.35
Business	41	3.19	2.57	2.86	0.29	-0.33
Education	23	3.42	3.39	3.50	0.11	0.08
Engineering	10	3.55	2.61	2.88	0.27	-0.67
Humanities	29	3.17	2.70	3.06	0.36	-0.11
Medicine	3	-	-	-	-	-
Science/Math	21	3.10	2.06	2.70	0.64	-0.40
Social Sciences	26	3.10	2.77	2.99	0.22	-0.11

[a]GPA WRR = Magnitude of GPA recovery within Regent institution. [b]GPA CCRC = Change in GPA from community college to Regent institution.

Research Question 4: Are there significant differences in Regent first-term GPA based upon Regent institution, community college, sex, community college credits earned, community college degree status, academic year of transfer, or academic discipline?

Null Hypothesis 1: There is no significant difference in Regent first-term GPA among community college transfer students at the three Regent institutions.

The Regent first-term GPA analysis by Regent institution indicated similar GPAs and

standard deviations (Table 4.21). The highest GPA of community college transfer students

was reported at UNI (2.42) and the lowest at ISU (2.35). An ANOVA was conducted to

evaluate the relationship between Regent institution and Regent first-term GPA. The

Table 4.21. Regent First-Term GPA by Regent Institution

	n	Mean	Standard Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
ISU	326	2.3490	0.91524	2.2493	2.4487
UNI	343	2.4208	0.95874	2.3189	2.5226
U of Iowa	86	2.3867	0.82202	2.2105	2.5630

Table 4.22. ANOVA for Regent First-Term GPA by Regent Institution

	Sum of Squares	df	Mean Squares	F	p
Between groups	0.861	2	0.430	0.503	.605
Within groups	644.038	752	0.856		
Total	644.899	754			

ANOVA was not significant, $F(2, 752) = .503$, $p = .605$ (Table 4.22). Therefore, the null

hypothesis was not rejected.

Null Hypothesis 2: There is no significant difference between ECC and MCC students in mean Regent first-term GPA.

The Regent first-term GPA analysis by community college indicated that MCC

students achieved a higher GPA than ECC students (Table 4.23). MCC students achieved a

mean Regent first-term GPA of 2.45 with a standard deviation of 0.90600. ECC students

achieved a mean Regent first-term GPA of 2.32 with a standard deviation of 0.93969. An

ANOVA was conducted to evaluate the relationship between college and Regent first-term

GPA. The main effect for college included two levels: ECC and MCC. The dependent

variable was Regent first-term GPA. The ANOVA was significant, $F(1, 753) = 4.243$, $p =$

.04 (Table 4.24). Therefore, the null hypothesis was rejected.

Table 4.23. Regent First-Term GPA by College

	N	Mean	Standard Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
ECC	374	2.3161	0.93969	2.2205	2.4116
MCC	681	2.4544	0.90600	2.3632	2.5457

Table 4.24. ANOVA for Regent First-Term GPA by College

	Sum of Squares	df	Mean Squares	F	p
Between groups	3.613	1	3.613	4.243	.040
Within groups	641.285	753	0.852		
Total	644.899	754			

Null Hypothesis 3: There is no significant difference between male and female community college transfer students in mean Regent first-term GPA.

As noted in Table 4.25, the Regent first-term GPA analysis by sex indicated that the mean first-term GPA of females was higher than that for males (2.52 and 2.26, respectively). An ANOVA was estimated to evaluate the relationship between sex and Regent first-term GPA. The ANOVA was significant, $F(1, 753) = 15.820$, $p < .001$ (Table 4.26). Therefore, the null hypothesis was rejected.

Table 4.25. Regent First-Term GPA by Sex

	n	Mean	Standard Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Male	387	2.2566	0.88572	2.1681	2.3451
Female	368	2.5219	0.94655	2.4248	2.6189

Table 4.26. ANOVA for Regent First-Term GPA by Sex

	Sum of Squares	df	Mean Squares	F	p
Between groups	13.270	1	13.270	15.820	.000
Within groups	631.629	753	0.839		
Total	644.899	754			

Null Hypothesis 4: There is no significant difference in mean Regent first-term GPA among five student groups of community college students with: (a) 0 to 15 credits earned prior to transfer, (b) 16 to 30 credits earned prior to transfer, (c) 31 to 45 credits earned prior to transfer, (d) 45 to 60 credits earned prior to transfer, and (e) greater than 60 credits earned prior to transfer.

The Regent first-term GPA analysis by community college credits earned prior to transfer indicated some variance in GPA (Table 4.27). The highest GPA was achieved by students who earned 0 to 15 credits prior to transfer (2.50) and the lowest GPA was achieved by those students who earned 16 to 30 credits prior to transfer (2.21). An ANOVA was conducted to evaluate the relationship between credits earned prior to transfer and Regent first-term GPA. The ANOVA was not significant, $F(4, 750) = 1.814, p = .124$ (Table 4.28). Therefore, the null hypothesis was not rejected.

Table 4.27. Regent First-Term GPA by Credits Earned Prior to Transfer

	n	Mean	Standard Deviation	95% Confidence Interval for Mean Lower Bound	Upper Bound
0–15 cr.	22	2.5023	0.63940	2.2188	2.7858
16–30 cr.	54	2.2080	0.99236	1.9371	2.4788
31–45 cr.	76	2.4024	0.89608	2.1976	2.6071
46–60 cr.	126	2.2352	1.01885	2.0555	2.4148
> 61 cr.	477	2.4379	0.90280	2.3566	2.5191

Table 4.28. ANOVA for Regent First-Term GPA by Credits Earned Prior to Transfer

	Sum of Squares	df	Mean Squares	F	P
Between groups	6.179	4	1.545	1.814	.124
Within groups	638.720	750	0.852		
Total	644.899	754			

Null Hypothesis 5: There is no significant difference in Regent first-term GPA between community college degree recipients and those who did not have a degree.

The Regent first-term GPA analysis by prior degree status revealed that students with community college degrees achieved a higher GPA than those without degrees (2.48 and 2.22, respectively; Table 4.29). An ANOVA was conducted to analyze the relationship between community college degree completion status and Regent first-term GPA. The ANOVA was significant, $F(1, 753) = 13.776$, $p < .001$ (Table 4.30). Therefore, the null hypothesis was rejected.

Table 4.29. Regent First-Term GPA by Prior Degree Status

	n	Mean	Standard Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Degree	476	2.4807	0.91141	2.3986	2.5628
No degree	279	2.2241	0.92671	2.1149	2.3333

Table 4.30. ANOVA for Regent First-Term GPA by Prior Degree Status

	Sum of Squares	df	Mean Squares	F	p
Between groups	11.586	1	11.586	13.776	.000
Within groups	633.313	753	0.841		
Total	644.899	754			

Null Hypothesis 6: There is no significant difference in Regent first-term GPA among students transferring from community colleges in the five academic years included in this study.

The Regent first-term GPA analysis by academic year of transfer indicated similar GPAs among groups (Table 4.31). The highest mean for Regent first-term GPA was achieved during 2003 (2.46), and the lowest mean GPA occurred during 2004 (2.30). An ANOVA was conducted to analyze the relationship between academic year of transfer and

Table 4.31. Regent First-Term GPA by Academic Year of Transfer

	n	Mean	Standard Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
2000	176	2.3606	0.85507	2.2334	2.4878
2001	162	2.3876	0.88034	2.2510	2.5242
2002	120	2.4402	1.00155	2.2591	2.6212
2003	150	2.4581	0.94443	2.3058	2.6105
2004	147	2.2963	0.97037	2.131	2.4544

Table 4.32. ANOVA for Regent First-Term GPA by Academic Year of Transfer

	Sum of Squares	df	Mean Squares	F	p
Between groups	2.430	4	0.608	.709	.586
Within groups	642.469	750	0.857		
Total	644.899	754			

Regent first-term GPA. The ANOVA was not significant, F (4, 750) = 0.709, p = .586

(Table 4.32). Therefore, the null hypothesis was not rejected.

Null Hypothesis 7: There is no significant difference in Regent first-term GPA by academic discipline upon transfer.

Table 4.33 illustrates Regent first-term GPA by academic discipline and revealed that

the lowest GPA was achieved by students enrolled in Science/Math (2.14) and the highest by

students enrolled in Education (2.64). An ANOVA was conducted to analyze the

relationship between academic discipline and Regent first-term GPA. The ANOVA was

significant, F (7, 708) = 4.236, p < .001 (Table 4.34). Therefore, the null hypothesis was

rejected. Tukey's HSD was used to evaluate pairwise differences among the means; results

are indicated in Table 4.33.

Table 4.33. Regent First-Term GPA by Academic Discipline

	n	Mean	Standard Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Agriculture	47	2.5360	.96277	2.2533	2.8186
Business[a]	169	2.1792	.83064	2.0531	2.3054
Education[b]	85	2.6395	1.05625	2.4117	2.8674
Engineering	39	2.3869	.89510	2.0968	2.6771
Humanities[c]	146	2.5570	.81192	2.4242	2.6898
Medicine	29	2.5810	1.01197	2.1961	2.9660
Science/Math[d]	91	2.1430	.99420	1.9359	2.3500
Social Sciences	103	2.3819	.90241	2.2056	2.5583

[a]Significantly different from Education and Humanities. [b]Significantly different from Business and Science/Math. [c]Significantly different from Business and Science/Math. [c]Significantly different from Education and Humanities.

Table 4.34. ANOVA for Regent First-Term GPA by Academic Discipline

	Sum of Squares	df	Mean Squares	F	p
Between groups	24.489	7	3.498	4.236	.000
Within groups	578.995	701	.826		
Total	603.484	708			

CHAPTER 5. SUMMARY, FINDINGS, AND RECOMMENDATIONS

This chapter provides a summary of the design and methodology of the study,

identifies the overall findings, and states recommendations for further research and practice.

The summary will briefly describe the purpose, background, and study design. The findings

for the four research questions will be reviewed and discussed. Finally, recommendations for

further research and practice will be presented.

Summary of Study Design and Methodology

One of the primary functions of community colleges from the very beginning has

been to prepare students for transfer (Cohen & Brawer, 2003; Eaton, 1994). The collegiate

function remains strong today and may be best illustrated by the fact that over 82% of

students enrolled in community colleges during 1995-96 indicated that their educational goal

was completion of a bachelor's degree or higher (Phillipe, 2000). Lanaan (2001) stated that

the transfer function is a crucial component in maintaining access to education by providing

the first two years of college to underprepared and underrepresented groups.

Over the past 30 years, a wealth of research has focused on the academic performance

of community college transfer students. Typically, these studies have analyzed student GPA,

persistence rates, and baccalaureate degree attainment. Other studies have examined student

characteristics, psychosocial adjustment, barriers to transfer, and other factors. In addition,

several studies using national longitudinal databases have been conducted to examine the

characteristics, course-taking patterns, GPA, and persistence of community college students.

Enrollment growth in arts and sciences programs at Iowa community colleges

increased substantially between 2000 and 2004 (University of Iowa, 2004). In 2004, 64% of

students were enrolled in arts and sciences programs in Iowa community colleges (Iowa

Department of Education, 2003a). For the same time period, nearly 85% of students taking classes at IVCCD were enrolled in similar programs. Even though district administrators recognized that many students in arts and sciences programs transferred to the public, four-year institutions, a coordinated analysis of transfer student performance had not been conducted. This study attempted to provide an initial baseline analysis of transfer student performance by examining the first-term and cumulative GPA of IVCCD students who transferred to Regent institutions between 2000 and 2004.

The data for this study were obtained from Transfer Student Academic Performance Reports provided by the Offices of Admissions at Iowa Regent institutions. Confidentiality of student information was maintained through the use of secured locations and information systems. The ISU Institutional Review Board reviewed the study proposal and support was received from the IVCCD Chancellor, ECC Provost, MCC Provost, Chief Academic Officer, and Dean of Enrollment.

Four research questions guided the study:

1. What are the academic characteristics of ECC and MCC students who transferred to Iowa Regent institutions?

2. How did ECC and MCC students perform at Regent institutions upon transfer?

3. Did ECC and MCC transfer students experience a recovery in GPA at the Regent institutions?

4. Are there significant differences in Regent first-term GPA based upon Regent institution, community college, sex, community college credits earned, degree versus no degree received, academic year of transfer, or academic discipline?

Research Question 1 examined selected demographic and academic characteristics to better understand the students who transferred to Regent institutions. Community college, Regent institution, sex, community college credits earned, and academic year of transfer were analyzed to identify trends and patterns. Summary data were gathered to provide an overall picture of the transfer function of IVCCD students.

For Research Question 2, student performance at the Regent institutions was analyzed and reported. Regent first-term GPA and credits completed were examined when students were stratified by Regent institution, community college, sex, community college credits earned, prior degree status, and academic year of transfer. The magnitude of transfer shock was determined by computing the difference between transfer GPA and Regent first-term GPA and reported for each analysis.

Research Question 3 examined the cumulative GPA of those students who obtained a baccalaureate degree. Regent first-term GPA was subtracted from Regent cumulative GPA to determine the magnitude of GPA recovery at the Regent institution. Community college cumulative GPA was subtracted from Regent cumulative GPA to determine if students recovered their lost GPA.

To address Research Question 3, the general linear model ANOVA was used to determine if significant differences existed in Regent first-term GPA based upon Regent institution, community college, sex, community college credits earned, prior degree status, academic year of transfer, and academic discipline. In each analysis, the mean, standard deviation, 95% confidence interval, and ANOVA were reported. The *F* ratio and the probability value for significance were reported and used to determine whether to accept or reject the null hypothesis.

Findings

Student Characteristics

The first research question required a descriptive analysis of ECC and MCC students who transferred to Regent institutions. The analysis indicated that approximately the same number of students from ECC and MCC transferred to a Regent institution between 2000 and 2004. When analyzed by Regent institution, the majority of ECC students who transferred enrolled at UNI (48.7%), whereas the majority of MCC students who transferred enrolled at ISU (45.7%). Approximately 11% of ECC transfer students and 12% of MCC students enrolled at UI.

The analysis by sex revealed that approximately equal numbers of males and females transferred to Regent institutions (51.3% and 48.7%, respectively). A greater percentage of males from ECC transferred to the three Regent institutions, whereas a greater percentage of MCC female students transferred to UI and UNI. Overall, though, it appears that males and females transferred to Regent institutions at the same rate.

The analysis of IVCCD transfer students by community college credits earned indicated that most students (63.0%) earned 61 or more credits prior to transfer. Nearly 90% of the students who were included in this study completed at least one year at the community college, or 31 or more credits, prior to transferring to a Regent institution. These findings were fairly consistent across Regent institutions with the exception of those students who transferred to UI where over 95% of students who enrolled earned 31 or more credits prior to transfer.

The majority of the students included in this study (63.0%) completed a degree prior to transferring to a Regent institution. Given that most associate degrees require 60 or more

credits, this finding was validated by the previous one that indicated that most students earn 61 or more credits prior to transfer. When stratified by community college, more ECC students (70.3%) completed a degree prior to transfer than did MCC students (55.9%).

The analysis by academic year of transfer did not reveal any significant patterns over the years included in this study. Of the students who transferred to Regent institutions, the percentage of students who transferred to ISU declined from 27.0% in 2000 to 15.3% in 2004. The percentage who transferred to UNI increased from 19.2% in 2000 to 22.7% in 2004. The percentage who transferred to UI remained relatively stable over the years included in this study with 25.6% reported in 2000 and 22.1% reported in 2004.

When stratified by academic discipline upon transfer, the largest percentage of students enrolled in Business (23.8%) and Humanities (20.6%). Engineering (5.5%) and Medicine (4.1%) had the smallest percentage of transfer students enrolled.

Transfer Shock

The second research question examined the difference in community college GPA and Regent first-term GPA, defined as the magnitude of transfer shock. The change in GPA for IVCCD students upon transfer was stratified by community college, Regent institution, sex, community college credits earned, prior degree status, academic year of transfer, and academic discipline.

When stratified by Regent institution, students achieved a community college GPA that ranged from 3.06 to 3.11 with UNI students achieving the highest community college GPA. Upon transfer, students experienced a decline in GPA of approximately 0.70, which resulted in a Regent first-term GPA ranging from 2.35 to 2.42. Students who transferred to

UNI encountered the smallest decline in GPA and achieved the highest Regent first-term GPA (2.42).

First-term performance at a Regent institution was also analyzed by community college. ECC students who transferred to ISU and UNI experienced a similar degree of transfer shock as MCC students who transferred to the same institutions. ECC students experienced a decline in Regent first-term GPA of approximately 0.8 of a grade point and MCC students saw a decline of approximately 0.6 of a grade point upon transfer. Students who transferred to UI experienced the greatest variation in transfer shock with ECC students encountering a decline in first-term GPA of 1.05 and MCC students experiencing a decline of 0.42.

When stratified by sex, female students generally experienced a lesser degree of transfer shock than males. At UI, females encountered a decline in first-term GPA of 0.59 and the GPA of male students decreased by 0.83. Female students who transferred to UNI experienced a decline in GPA of 0.64 and males saw their GPA decline 0.74 on average. The inverse was true of students who transferred to ISU where male students experienced a lesser degree of transfer shock than did female students (-0.68 and -0.75, respectively).

Regent first-term GPA was also analyzed based upon the number of community college credits earned prior to transfer. No trends or patterns were apparent in the magnitude of transfer shock in this analysis. Students who had earned 46 to 60 credits prior to transfer to UI experienced the smallest decline in first-term GPA (-0.49), and those who had earned 16 to 30 credits prior to transfer to ISU encountered the largest decline in GPA (-0.94).

An analysis by prior degree status was conducted to determine the difference in the magnitude of transfer shock between students who had and those who had not completed a

degree prior to transfer. Students with a prior degree encountered a lesser magnitude of transfer shock at ISU and UNI than those without a prior degree. At UI, students with a prior degree experienced a higher magnitude of transfer shock (-0.84) than those without a prior degree (-0.57).

There were no clear patterns in the degree of transfer shock when the data were analyzed by academic year of transfer. Students who transferred to UI and ISU during 2002 encountered the smallest decline in first-term GPA at those institutions (-0.46 and -0.62, respectively). Students who transferred to UNI during 2001 experienced the least decline in first-term GPA for the institution (-0.58).

When analyzed by academic discipline upon transfer, UNI Business students and those enrolled in Science/Math at ISU and UNI experienced the largest decline in Regent first-term GPA (-1.1, -1.0, and -0.97, respectively). UNI students in Humanities (-0.45), Education (-0.46), and Social Sciences (-0.46) saw the least decline in Regent first-term GPA.

Recovery of Lost GPA

The third research question analyzed the cumulative GPA of ECC and MCC transfer students who completed baccalaureate degrees at ISU, UI, and UNI. The magnitude of GPA recovery was computed by analyzing the difference in Regent first-term and cumulative GPA (WWR). The difference between cumulative GPA at the community college and at the Regent institutions was also analyzed to determine the level of GPA recovery for the overall transfer function (CCRR).

The overall WWR was -0.28, indicating that ECC and MCC transfer students saw their GPA increase approximately 0.3 of a grade point while enrolled at the Regent

institutions. ISU students experienced the greatest WRR (0.32), and UI students experienced the least (0.11). The overall recovery in GPA from the community college to the Regent institution (CCRR) was -0.24, indicating that students obtained a Regent GPA that was approximately 0.2 of a grade point lower than that at the community college. UNI graduates experienced nearly a full recovery of their community college GPA with a CCRR of -0.13 and ISU students experienced the largest decline from their community college GPA (CCRR = -0.30).

When stratified by community college, ECC and MCC baccalaureate degree recipients experienced a similar growth in GPA while enrolled at Regent institutions. The WRR for ECC students was 0.30 and for MCC students was 0.25. Upon graduation, MCC students achieved a smaller CCRR (-0.17) than did ECC students (-0.31).

Although the WRR for males (0.35) was greater than that for females (0.23), women achieved a higher GPA at the community college and at the Regent institutions than did men. The CCRR for both sexes was similar with men experiencing a decline in Regent cumulative GPA of 0.26 and women a decline of 0.23.

Baccalaureate degree recipients who earned 31 to 45 community college credits experienced the greatest recovery in GPA while enrolled at Regent institutions (WWR = 0.54), whereas those who completed 46 to 60 credits experienced the least growth (WWR = 0.22). Students who earned 31 to 60 credits prior to transfer had a CCRR of -0.19, and those who completed more than 60 credits had a CCRR of -0.27.

When grouped by prior degree status, students who did not complete an associate's degree had a higher WRR than those who did (0.41 and 0.21, respectively). The overall difference between community college and Regent cumulative GPA was similar for both

groups with associate degree recipients having a CCRR of -0.24 and those without an associate degree having a CCRR of -0.23.

Baccalaureate degree recipients who transferred during 2002 achieved the highest WRR (0.37), and those who transferred during 2001 achieved the lowest (0.22). Students who transferred during 2002 experienced a nearly complete recovery in GPA (CCRR = -0.14) and achieved the highest Regent cumulative GPA (3.07). Students who transferred during 2000 had the largest CCRR (-0.26).

When stratified by academic discipline upon transfer, baccalaureate degree recipients enrolled in Science/Math achieved the most growth in Regent GPA (WRR = 0.64) and those enrolled in Education experienced the least (WRR = 0.11). Students enrolled in Education were the only group that achieved a higher cumulative GPA at the Regent institution than at the community college (3.50 and 3.42, respectively). Students enrolled in Engineering had the largest CCRR (-0.67).

Differences in Regent First-Term GPA

The fourth research question required an analysis of the difference in Regent first-term GPA based upon Regent institution, community college, sex, community college credits earned, prior degree status, academic year of transfer, or academic discipline. Seven hypotheses accompanied this research question and provided testable conclusions.

Null Hypothesis 1: There is no significant difference in Regent first-term GPA among community college transfer students at the three Regent institutions.

An ANOVA was conducted to analyze the relationship between Regent institution and Regent first-term GPA. The ANOVA was not significant, $F (2, 752) = 0.503$, $p = .605$,

and therefore, the null hypothesis was not rejected. IVCCD transfer students perform similarly during their first term at the Regent institutions.

Null Hypothesis 2: There is no significant difference between ECC and MCC students in mean Regent first-term GPA.

An ANOVA was conducted to evaluate the relationship between community college and Regent first-term GPA. The ANOVA was significant, $F(1, 753) = 4.243, p = .04$. As a result, the null hypothesis was rejected. The results suggest that the Regent first-term GPA is statistically higher for students who transfer from MCC than for those who transfer from ECC.

Null Hypothesis 3: There is no significant difference between male and female community college transfer students in mean Regent first-term GPA.

An ANOVA was conducted to evaluate the relationship between sex and Regent first-term GPA. The ANOVA was significant, $F(1, 753) = 15.820, p < .001$. Therefore, the null hypothesis was rejected. The model indicates that the Regent first-term GPA of female students is significantly higher than that of males.

Null Hypothesis 4: There is no significant difference in mean Regent first-term GPA among five student groups of community college students with: (a) 0 to 15 credits earned prior to transfer, (b) 16 to 30 credits earned prior to transfer, (c) 31 to 45 credits earned prior to transfer, (d) 45 to 60 credits earned prior to transfer, and (e) greater than 60 credits earned prior to transfer.

An ANOVA model was conducted to evaluate the relationship between credits earned prior to transfer and Regent first-term GPA. The ANOVA was not significant, $F(4, 750) = 1.814, p = .124$, and the null hypothesis was not rejected.

Null Hypothesis 5: There is no significant difference in Regent first-term GPA between community college degree recipients and those who did not receive a degree.

An ANOVA model was conducted to analyze the relationship between community college degree completion status and Regent first-term GPA. The ANOVA was significant, $F(1, 753) = 13.776, p < .001$. The null hypothesis was rejected. The model indicates that the Regent first-term GPA of degree recipients is significantly higher than the GPA of those who did not earn a degree.

Null Hypothesis 6: There is no significant difference in Regent first-term GPA among students transferring from community colleges in the five academic years included in this study.

An ANOVA was conducted to analyze the relationship between academic year of transfer and Regent first-term GPA. The ANOVA was not significant, $F(4, 750) = .709, p = .586$. Therefore, the null hypothesis was not rejected.

Null Hypothesis 7: There is no significant difference in Regent first-term GPA by academic discipline upon transfer.

An ANOVA was conducted to analyze the relationship between academic discipline upon transfer and Regent first-term GPA. The ANOVA was significant, $F(7,708) = 4.236, p < .001$. The null hypothesis was rejected. Analysis of pairwise differences indicated that students who enrolled in Education and Humanities achieved a significantly higher Regent first-term GPA than did students enrolled in Business and Science/Math.

To summarize, students who transferred from MCC, who were female, and who completed degrees prior to transferring to a Regent institution achieved significantly higher first-term GPAs. In addition, students who enrolled in Education and Humanities achieved a higher Regent first-term GPA. Regent institution, community college credits earned, and academic year of transfer did not have an impact on Regent first-term GPA.

Recommendations for Future Research

This study was conducted to assess the academic performance of IVCCD transfer students at the Iowa Regent institutions. It provides a timely assessment of the academic success of community college students at senior institutions in Iowa and lends support to the existing literature on transfer shock and GPA recovery. Consistent with the research studies conducted in the 1970s and 1980s, this study found that community college transfer students experience an initial drop in GPA at the senior institution. Specifically, IVCCD students who transferred to Iowa Regent institutions experienced a greater magnitude of transfer shock that generally noted in earlier studies. Students involved in this study experienced a growth in GPA while enrolled at the Regent institutions, which is consistent with previous research.

As more students begin their postsecondary experience in the community college sector, it becomes more important for community colleges to understand what happens to students who transfer. Since most of the research related to the academic performance of transfer students occurred nearly 30 years ago, current analysis of this process is needed to provide relevant information to community colleges and potential transfer students. Results of this study can be used by community colleges to inform students about the transfer process and assist them in making better decisions. Based upon the findings of this study, the following recommendations are made for further study and practice.

Recommendations for Further Study

1. This study should be expanded to include all Iowa community colleges. Although this study provides comparable data for IVCCD administrators and the individual colleges that comprise the district, it does not allow the colleges the ability to

benchmark against other community colleges in the state. As measures of accountability become more important to internal program review and external accreditation, the ability to compare community college transfer student performance will become more valuable. Expanding this study will require a significant amount of cooperation and resources of both community colleges and Regent institutions. Improved and common reporting processes and computer systems will be required by all institutions to ensure that data is consistent and valid.

2. The results of this study provide valuable information to prospective transfer students, parents, advisors and counselors, faculty, staff, and administrators at IVCCD. The results also indicate a need for further studies at IVCCD. If the data set were expanded, the analysis of variance could include factors such as ACT composite score, high school percentile, and degree type (A.A., A.A.S., A.G.S, A.S., and Diploma). If additional variables were included, predictive analyses could be conducted to provide a better understanding of the factors that contribute to Regent first-term GPA.

3. Data from the Transfer Student Academic Performance Reports should be integrated into the IVCCD Management Information System to allow a richer, more detailed analysis. Currently the data is analyzed in a separate computer program that cannot be tied to the IVCCD system. If the data were imported into the IVCCD system, a wide array of student demographic information could be included in the analysis (i.e., ethnicity, first-generation student status, age, enrollment status, etc.). Implementation of this recommendation would also

allow the analysis of transfer student performance by IVCCD major, which is a

benchmark not currently collected for the internal five-year program review

process.

4. The results of this study call for additional analysis of student academic

achievement for IVCCD students who transfer to Buena Vista University (BV).

BV is a private, four-year institution that has satellite offices on both the ECC and

MCC campuses. An initial review of the IVCCD transfer function indicates that

approximately 30 students transfer to BV each year. The BV Office of

Institutional Research was contacted prior to this study in an attempt to obtain

information similar to that of the Regents. However, due to the time frame of this

study, comparable data could not be obtained from BV. To obtain a more

valuable picture of IVCCD transfer function, the records of students who transfer

to BV should be analyzed and compared to the results from the Regent analysis.

Recommendations for Practice

Based upon this study, the following recommendations are made for practice at

IVCCD. Although further study is clearly warranted, the following recommendations should

be presented to the Chancellor's Cabinet for discussion and review:

1. Create a Research Advisory Committee comprising key administrators, faculty,

and research professionals representing both ECC and MCC. The purpose of this

committee would be to continue to build upon the existing culture of evidence of

research and assessment of student engagement and experiences. The initial

charge of this group would be to review the results of this study, identify

appropriate channels to distribute study findings, and prioritize further research related to the success of transfer students.

2. Identify unanswered questions for students, faculty, and administrators that have arisen as a result of this study, and develop a timeline for addressing these questions. As a potential transfer student, what other factors may decrease the magnitude of transfer shock at the senior institution? As a community college faculty member, what can be done in the classroom to increase the chances of student success after transfer? As a community college administrator, what initiatives can be developed with senior institutions to increase the number of students who transfer and their subsequent success in baccalaureate degree attainment?

3. Charge the information technology department to review the process necessary to integrate information from the Transfer Student Academic Performance Reports into the IVCCD student record-keeping system. At the time of this study, student data from the Regent reports could only be uploaded into SPSS for analysis. The IT department would identify the steps necessary to convert the data into a format that can be easily integrated into the IVCCD system. Once this is achieved, data analysis could be expanded to include such variables as ethnicity, first-generation student status, age, enrollment status, etc. The timeline necessary to implement integration of transfer student data would also be specified.

4. Assign the Student Services Division to develop programming for students who are contemplating transfer. Due to the continuing increase in college tuition, it is anticipated that more students will begin their postsecondary education at a

community college with the intent to transfer to a four-year institution. Deliberate programming targeted toward transfer students could improve the experiences of these students at the senior institution. Transfer orientation programs, IVCCD/ Regent learning communities, degree-planning activities, transitional programs, and other programming for transfer students should be explored.

5. Pursue joint admissions programs with the Regent institutions. Through joint, or cooperative, admissions programs, high school graduates can be admitted to the community college and have the option to later transfer to a Regent institution. Implementation of a joint admissions program would allow IVCCD to immediately identify potential transfer students and target them for specialized programming.

6. Initiate a faculty development workshop to discuss and review course-level assessments. The analyses related to Research Question 2 revealed that IVCCD transfer students experienced a greater degree of transfer shock than what is typically cited in the literature. Perhaps IVCCD faculty use limited types of assessments that do not effectively evaluate the level of student learning, which could lead to inflated grading. A frank discussion of grading and course-level assessments could lead to improved teaching and learning processes and result in improved student learning.

7. Ensure that ECC and MCC advisors, counselors, and faculty are knowledgeable about admissions and academics at the Regent institutions and know where to find pertinent information as they guide and counsel students. Through annual meetings and workshops with Regent representatives, IVCCD student services

professionals and faculty can be briefed and updated on procedural and

programmatic changes at the Regent institutions.

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APPENDIX: ACADEMIC DISCIPLINES AND ASSOCIATED MAJORS

Agriculture
Agribusiness
Agronomy
Agricultural Studies
Agricultural Systems Technology

Business
Accounting
Pre-Business
Finance
Management
Marketing
Real Estate
Transportation and Logistics

Education
Agricultural Education
Early Childhood Education
Elementary Education
Secondary Education
Special Education

Engineering
Agricultural Engineering
Civil Engineering
Computer Engineering
Construction Engineering
Electrical Engineering
Engineering Mechanics
Mechanical Engineering

Humanities
Art
Criminal Justice
Drama
English
Foreign Language
History
Journalism
Literature
Music
Philosophy
Religion

Medicine
Medicine
Pharmacology
Pre-Medicine

Science/Math
Astronomy
Biochemistry
Botany
Chemistry
Computer Science
Ecology
Genetics
Geology
Mathematics
Meteorology
Molecular Biology
Physics
Statistics

Social Sciences
Anthropology
Economics
Geography
Political Science
Psychology
Sociology

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