2012

Utilizing the Composite Financial Index as Strategic Financial Analysis for Measuring Financial Health and Student Success Rates among Iowa Community Colleges

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Utilizing the composite financial index as strategic financial analysis for measuring financial health and student success rates among Iowa community colleges

by

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A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements of the degree of

DOCTOR OF PHILOSOPHY

Major: Education (Educational Leadership)

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Ames, Iowa

2012

This dissertation is dedicated to my children,

Dustin, Keslie, and Dylan:

Modeling scholarly behavior is one of the best gifts I could ever give them. They have been with me in spirit throughout this journey and well know the sacrifice their mother has made to achieve this dream. I thank them for understanding that mom had to study so she couldn't visit as often as she would have liked—perhaps that was much more difficult on mom than on them. I hope this inspires each of them to always reach higher and to be satisfied with their lives but not stagnant in their thoughts or their actions.

To my husband and avid supporter, Keith:

Although I have been the one who strived for the goal of achieving a PhD, you were the foundation and support that I knew would always be there. Regardless of the peaks and valleys along the way, you helped to stay me on task and to meet deadlines. God bless you for your patience, for giving up vacations and for being my sounding board.

A special thank you to each of the following individuals:

***Dr. Mack Shelley**: Your expertise and your willingness to give of your free time to assist me with this project will never be forgotten. You are a truly dedicated educator.*

***Dr. Cynthia Jeffrey and Dr. Jon Perkins**: Your willingness to share your expertise on panel data analysis has been one of the most commendable actions. It has been absolutely wonderful working with other accounting professors—I look forward to hopefully working on more projects with you in the future. Thank you for the generous donation of your time.*

***Dr. Soko Starobin and Dr. Larry Ebbers**: As my co-major professors, you have inspired and motivated me to believe in myself and given me hope for a future career change. Thank you for being a huge part of me achieving this goal.*

***Program of Study Committee:** Thank you for your major role in my life and my career.*

***Mr. Kent Farver:** I truly appreciate your guidance with interpreting the 150 annual financial reports as well as your support along the way. Thank you for the bean-counter conversations as well.*

***Dr. Larry Ebbers:** Both my master's degree and doctor of philosophy degree are all your fault. From participating in CLIC to achieving a PhD, you truly are to blame. Hoping that you are taking the humor as intended, I wanted to thank you for saying, "yes, you can". You have always lent an ear and welcomed conversation—a tribute to your caring and professional nature. Thank you from the bottom of my heart for allowing me to be a part of your legacy.*

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ABSTRACT

The phrase "survival of the fittest" is coming to fruition in higher education today. Less than strategic financial moves have no place in post-secondary education. Facing the realities of our current economy is dictating major changes in how colleges are "doing business."

These changes present enormous challenges to community college administrators. Two of these challenges are meeting the demands of faculty associations and ever-increasing budgets for remedial education. A trend of waning state support is also exacerbating these challenges while major changes occurring at the legislative level have also intensified the need for extremely competent leaders—leaders with a much more diverse set of skills than in the past. One such skill necessary for effective leadership in the community college lies in the area of strategic financial analysis. Annual reporting procedures for the Higher Learning Commission require some ratio analyses. However, the data should be analyzed and evaluated for strategic decision making by each community college and not merely reported for compliance purposes.

The purpose of this study is to analyze the financial statements for Iowa's community colleges and compare the results of this analysis to the success rates of first-time, full-time students who transfer to a four-year institution or graduate with a degree, diploma, or certificate within 150 percent of normal time to complete or three years. The composite financial index conceptual framework was utilized to calculate the overall financial health for Iowa's community colleges for the fiscal years 2001-2010.

CHAPTER ONE
INTRODUCTION

Background and Overview

Graduation rate percentages as an indicator of success rates for community colleges paint a bleak picture of institutional efficiency. "Only 28% of first-time, full-time, associate degree-seeking community college students graduate with a certificate or an associate degree within three years. Fewer than half (45%) of students who enter community college with the goal of earning a degree or certificate have met their goal six years later (2010) according to the Center for Community College Student Engagement (CCCSE).

Another measure of success for community colleges that may be evaluated is transfer rates. One of the primary functions of community colleges is preparing students to transfer to baccalaureate programs at 4-year institutions (Cohen, & Brawer, 2003). As with any measure of success, transfer rate must first be defined. During a November 2010 meeting, the American Association of Community Colleges (AACC) Commission and Board of Directors outlined the following as a possible definition of transfer rate: "Ensure that transfer is seen as a valid and measurable part of the success rate or completion—whether the student takes three credits or 60 credits before transferring" (McPhail, 2011, p. 4).

Educating stakeholders about graduation and transfer rates is crucial to the future of community colleges. Discussion at the federal level of performance-based funding and increased accountability while appropriations for community colleges continue to decline indicate a critical time for these post-secondary institutions. Stated John E. Roueche, Director, Community College Leadership Program, The University of Texas at Austin, "The calls for increased college completion come at a time of increasing student enrollments and

draconian budget cuts" (CCCSE, 2010). Institutional efficiencies while achieving the community college mission of student success should be a priority, especially given the current state of the United States economy. One tool to measure institutional efficiencies while utilizing strategic financial analysis is the composite financial index.

Purpose of the Study

The purpose of this study was to test the conceptual framework of strategic financial analysis that will compare the relationship between the composite financial index and success rates at Iowa's community colleges. The unit of analysis was Iowa's community colleges. The independent variables were the composite financial index (CFI), defined as the financial component of an institution's well-being (Tahey et al., 2010), and the institutional characteristics of full-time equivalent enrollment (FTEE), and enrollment by the student characteristics of ethnicity/race, gender, age groups, program type, and residency. The dependent variable was the success rate which was composed of the transfer rate, defined as the rate of students who transfer to another college/university, and the graduation rate, defined as the rate of students who have fulfilled all the requirements of a program and have earned an award—more specifically, a degree, diploma or certificate (Iowa Department of Education, 2010).

Statement of the Problem

Embracing a trend of decreasing state and federal aid, Iowa's community college administrators struggle to fulfill their college's mission relating to student success while being forced to raise tuition and fees at an alarming rate. According to the Iowa Department of Education (IA DE), between the fiscal years of 2001–2010, Iowa community college tuition and fees as a percentage of general operating fund revenues increased from 38.74% to

48.71%. The average tuition and fees for Iowa's community colleges for fiscal year 2010 was $3,566 (IA DE) while according to The College Board (2011) the national average tuition and fees for community colleges for fiscal year 2010 was only $2,713. For the 2011-12 academic year, tuition at Iowa's community colleges has exceeded the national average by $1,200 (IA DE, 2012). An enormous financial burden is being placed on Iowa's community college students due to the decline in state appropriations, possible operational inefficiencies at Iowa's community colleges, and increased tuition and fees. A logical question to ponder, "can this trend of sharply increasing tuition and fees for Iowa's community colleges continue without becoming a threat to their mission and vision and ultimately a threat to their ability to operate as a going concern as well as a threat to employers?"

One tool to assist Iowa community college administrators in their quest to make sound fiscal decisions is strategic financial analysis (SFA). Financial analysis, in a business context, as defined by WebFinance Inc. (2011) is an: "assessment of the (1) effectiveness with which funds (investment and debt) are employed in a firm, (2) efficiency and profitability of its operations, and (3) value and safety of debtors' claims against the firm's assets…it employs techniques such as 'funds flow analysis' and financial ratios to understand the problems and opportunities inherent in an investment or financing decision." Employing strategic financial analysis, although prevalent at the university level, is a relatively new tool at the community college level.

The Higher Learning Commission (HLC) of the North Central Association of Colleges and Schools presently utilizes a tool for strategic financial analysis which contains some of the ratios also utilized in the composite financial index as designed by Tahey, Salluzo, Prager, et al. (2010). Member institutions of the HLC report these ratios as part of

the Annual Institutional Data Update (AIDU) System. All of Iowa's community colleges are accredited by the HLC (HLC, 2011). However, the CFI, which provides a more comprehensive measure of strategic financial analysis for community colleges, is yet to be researched for Iowa's community colleges.

Research Questions

1) Which financial ratios constitute the composite financial index as designed by Prager, Sealy & Co., LLC; KPMG LLP; and Attain LLC?
2) What are the institutional characteristics of Iowa's 15 community colleges' based on full-time equivalent enrollment, enrollment, fall credit hours, and fiscal year credit hours for 2001-2010?
3) What are the graduation rates of students in Iowa's community colleges from 2008-2010?
4) What are the transfer rates of students in Iowa's community colleges from 2008-2010?
5) What are the success rates of students in Iowa's community colleges from 2008-2010?
6) What are the composite financial indices as a measure of financial health for Iowa's community colleges from 2001-2010?
7) Is there a significant relationship between CFI (or individual components of CFI) and success rate?
8) Is there a significant relationship between fiscal year credit hours (*FY_CR_HR*) and success rate?

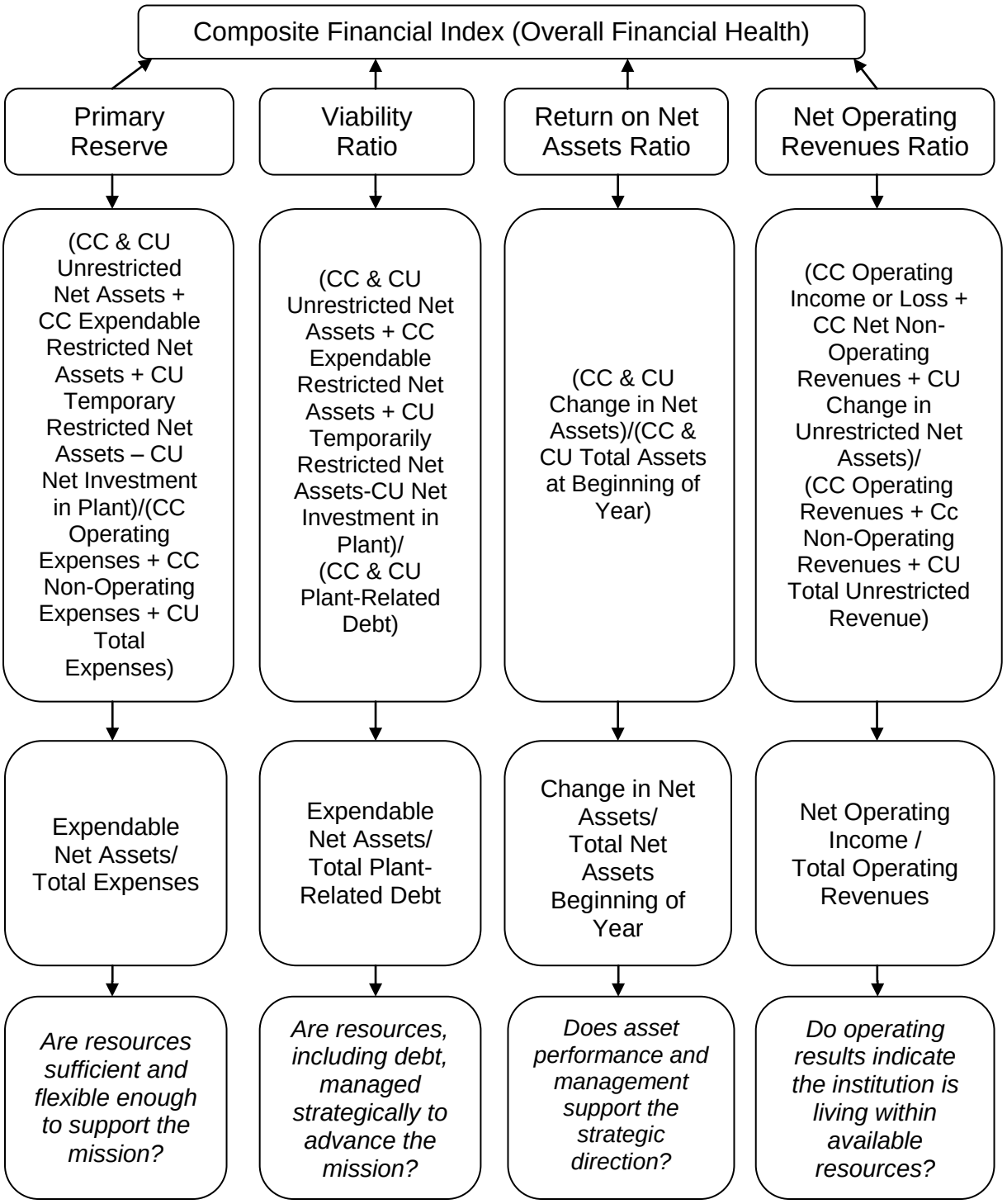
9) Is there a significant relationship between the proportion of female enrollment to total enrollment (*ENR_PROP*_FEM) and success rate?
10) Is there a significant relationship between the proportion of 18 – 55 enrollment to total enrollment (*ENR_PROP_1855)* and success rate?
11) Is there a significant relationship between the proportion of Iowa resident enrollment to total enrollment *(ENR_PROP_IA)* and success rate?

Conceptual Framework

The first version of *Strategic Financial Analysis for Higher Education* was published in 1980. The newest version is in the seventh edition and is titled *Strategic Financial Analysis for Higher Education: Identifying, Measuring, & Reporting Financial Risks* (Tahey et al., 2010). Contained within this seventh edition is the calculation of the overall financial health of an institution. This financial metric is called the Composite Financial Index (CFI) and aids in financial analysis, strategic planning, and risk management (see Figure 1.1). This framework provides a guide

Figure 1.1

CFI Conceptual Framework



Note: CC = community college; CU = component unit. Adapted from "Calculating Financial Ratios and Metrics" and "Calculating the Composite Financial Index (CFI)", by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, and C. Cowen, 2010, *Strategic Financial Analysis for Higher Education: Identifying, Measuring & Reporting Financial Risks,* pp. 109-137. Copyright 2010 by Prager, Sealy & Co., LLC; KPMG LLP; and Attain LLC.

to establishing a baseline or benchmark for future use by college administrators (2010).

Significance of the Study

In this period of increased accountability for higher education, accurate measurement systems must be devised to address this mandated need. According to the American Association of Community Colleges (AACC) (2007), Iowa ranks 8th in the percentage of population 18 and older served by a community college within the state for 2003-2004. As compared to other states, Iowa's community colleges are serving an above-average percentage of students for this time period. However, a study focusing on how efficiently these services are being delivered to the students while they reach their goal of degree attainment or transferring to another institution, to the knowledge of the researcher, has not been conducted for Iowa's community colleges.

Definition of Terms

Asset: a resource with economic value owned by an entity.

Change in net assets: net assets for the reporting year minus net assets for the preceding year.

Change in unrestricted net assets: unrestricted net assets for the reporting year minus unrestricted net assets for the preceding year.

Cohort student loan default rate: The cohort default rate is the percentage of a school's borrowers who enter repayment on Federal Family Education Loan (FFEL) Program or William D. Ford Federal Direct Loan (Direct Loan) Program loans and default prior to the end of the subsequent fiscal year. (Iowa College Student Aid Commission, 2012).

Commonfund Higher Education Price Index (HEPI): an inflation index designed specifically to track the main cost drivers in higher education (CommonFund Institute, 2012).

Component unit (CU): an organization that raises and holds economic resources for the direct benefit of a governmental unit, i.e. community college foundations (Governmental Accounting Standards Board Statement No. 39, 2002).

Composite financial index: overall financial health of an institution; components include the primary reserve ratio, the viability ratio, the return on net assets ratio, and the net operating revenues ratio (Tahey et al., 2010).

Credit hour: fifty minutes of instructional contact between an instructor and student in a scheduled course offering for which students are registered; also known as a course contact hour (IA DE, 2010).

Enrollment: full-time equivalent enrollment (FTEE) used for calculating the distribution of the proportional share of state general financial aid (IA DE, 2010).

Expendable restricted net assets: restricted net assets that may be utilized for their intended purpose.

Financial Accounting Standards Board (FASB): establishes and improves standards of financial accounting and reporting; guides accounting for component units of public community colleges. (Financial Accounting Standards Board, 2012).

First-time, full-time students: those students who have enrolled in a community college as their first post-secondary institution with an enrollment per semester of at least 12 credit hours.

Full-time equivalent enrollment: the students enrolled in courses eligible for general state aid as determined by one FTEE. One FTEE equals twenty-four credit hours for credit courses or 600 contact hours for non-credit courses (IA DE, 2010).

Funds flow analysis: analyzing financial measures for entities who utilize fund accounting such as public colleges.

Governmental Accounting Standards Board (GASB): establishes and improves standards of state and local governmental accounting and financial reporting (Governmental Accounting Standards Board, 2012).

Graduation rate: the rate of first-time, full-time students who have fulfilled all the requirements of a program earn an award within 150% of normal completion or three years (IA DE, 2010).

Liabilities: debts or amounts owed by an entity.

Net assets: the difference between the amount of assets minus the amount of liabilities; also calculated as the amount invested in capital assets, net of related debt, plus the amount restricted and expendable assets plus the amount of unrestricted assets.

Net investment in plant: the fund balance representing the excess of carrying value of assets over liabilities. It is increased through the acquisition of plant assets less associated liabilities, as well as through liquidation of indebtedness incurred for plant purposes (IA DE, 2009).

Net non-operating revenues: the excess of amounts earned from state appropriations, Pell grants, property taxes, etc. over the amounts expended for items such as interest, loss on disposition of capital assets, etcetera.

Net operating revenues ratio: attempts to answer the question, "Do operating results indicate the institution is living within available resources?" calculated as net operating income /total operating revenues (Tahey et al., 2010).

Nominal dollars: the amounts unadjusted for inflation or growth in the state economy.

Non-operating expenses: amounts expended for such items as interest and losses from the sale of capital assets.

Non-operating revenues: amounts earned from state appropriations, Pell grants, property taxes, and etcetera.

Operating expenses: amounts incurred directly for the operation of a community college.

Operating income: the excess of operating revenues over operating expenses.

Operating loss: the excess of operating expenses over operating revenues.

Operating revenues: amounts earned from tuition and fees, federal appropriations, auxiliary enterprises, contributions, etcetera.

Performance based funding: funding based on outputs (successful students) instead of inputs (enrollees).

Primary reserve ratio: attempts to answer the question, "Are resources sufficient and flexible enough to support the mission?" calculated as expendable net assets/total expenses (2010).

Restricted net assets: Net assets that are subject to limitations placed on them by persons or organizations outside the institution in non-exchange transactions.

Revenue: amounts earned for such items as student fees, tuition, local support, state support, federal support, sales and services, and other income.

Return on net assets ratio: attempts to answer the question, "Does asset performance and management support the strategic direction?" calculated as change in net assets/total net assets beginning of year (Tahey et al., 2010).

Success rate: the graduation rate plus the transfer rate.

Temporarily restricted net assets: net assets that are designated for a specific purpose in the short term.

Transfer rate: the rate of first-time, full-time students who fulfill their intent to transfer to another institution as indicated upon registration for classes within 150% of normal completion or three years (IA DE, 2010).

Unrestricted net assets: net assets that are not designated for a specific purpose.

Unrestricted revenue: amounts earned that are available for use.

Viability ratio: attempts to answer the question, "Are resources, including debt, managed strategically to advance the mission?" calculated as expendable net assets divided by total plant-related debt (2010).

Limitations

1. Not all of Iowa's community colleges reported financial information for component units, part of the composite financial index calculations, for all fiscal years of 2001-2010. Reporting component unit financial information became mandatory for all governmental entities when the Governmental Accounting Standards Board (GASB) issued GASB No. 39. This was issued in May of 2002 but did not take effect until the fiscal year after June 13, 2003. However, governmental entities were encouraged to apply GASB No. 39 earlier.
2. One of the ratios pertaining to the Composite Financial Index was omitted. This ratio calculated liquidity in both the short-term and the intermediate-term. The annual reports for Iowa's community colleges for fiscal years 2001-2010 do not contain detailed information to enable computation of this ratio. The minimum liquidity ratio of 1.0 is assumed for this study.
3. Graduation rates were reported only for first-time, full-time students for the fiscal years of 2008 – 2010.
4. Transfer rates were reported only for first-time, full-time students for the fiscal years of 2008 – 2010.
5. Success rates were reported only for first-time, full-time students for the fiscal years of 2008 - 2010.
6. Success may be measured by other measures such as job placement rates, which were not included in this study.
7. Amounts were reported in nominal dollars, unless indicated otherwise.

Delimitations

This study was delimited to Iowa's community colleges over the fiscal years of 2001-2010. The CFI was compared to success rates for the fiscal years of 2008-2010 only because mandatory reporting of success rates to the IA DE did not begin until the 2007-2008 fiscal year, another delimitation of this study.

Summary

In summary, Iowa's community colleges are facing a future of major uncertainty. These institutions may well have functioned under the "ready, fire, aim" operating philosophy merely because they could. As revenue streams dwindle, particularly funding from government, it is even more crucial for decision-makers to investigate the cost drivers, both financial and non-financial. Planning should be integral to all processes. The challenge of remaining flexible to meet the needs of business and industry while providing quality services for students outlines the multi-faceted mission of the community college. Strategic planning should include establishing benchmarks, monitoring for variances, and then investigating the causes of these variances.

CHAPTER TWO
LITERATURE REVIEW

Overview

After reviewing the literature three main themes emerged:

- strategic financial analysis,
- institutional efficiencies,
- institutional effectiveness.

Strategic Financial Analysis Utilizing the Composite Financial Index

Evaluating the financial health of higher education institutions becomes more critical as resources diminish. One tool to assist with this evaluation process is the composite financial index (CFI). The CFI was initially developed by KPMG LLC as a measure for four-year public schools and universities. Since that time, the CFI has been revised and is now in its seventh edition (Tahey et al., 2010). The seventh edition of CFI was also designed for use by public community colleges.

According to Michael Seuring, Chief Financial Officer for the Higher Learning Commission (HLC) of North Central Accreditation, "the Department of Education uses ratios to establish the financial health of institutions. Colleges who fail to meet certain benchmarks are required to post a letter of credit against their Title IV funds. The HLC began using the CFI around six years ago to obtain an annual snapshot of our institutions' financial situation" (personal communication, July 26, 2011). The HLC hopes that institutions use the CFI for internal purposes but they do not have any quantifiable proof. When making on-campus visits, it is possible for institutions to have their accreditation withdrawn due to poor financial health. The HLC establishes benchmarks by classifying institutional CFI scores. Those not

hitting these targets are considered "below the zone" and are required to submit a recovery plan which is reviewed by a panel of peer-reviewers who are financial experts. This may precipitate an interim visit by the HLC. "The CFI is an efficient way for us to have a "first warning" system when a school may be running into financial challenges" (M. Seuring, personal communication, July 26, 2011).

The Texas Legislative Budget Board (LBB) (2010) completed a comprehensive study of the Texas community college system finances. Citing several districts struggling with financial difficulty, the board strived to find a mechanism to "improve financial conditions and minimize financial risks" (p. 2). Three of the four CFI ratios were calculated, omitting the return on net assets ratio. The LBB recommended two additional financial ratios: diversification of revenue sources and revenue-backed debt coverage ratio. The diversification of revenue sources ratio was calculated as (revenue source/total revenue) times 100. Placing the operating revenues in the numerator yielded particularly useful information. If one of the community colleges scored below zero, meaning they had an operating deficit, they were labeled with a "yellow flag." The LBB also looked at trends in this ratio, particularly if a community college operated at a deficit for three years in a row.

Other non-financial indicators were also factored in the study such as audit opinions, community college leadership, bond ratings and the enrollment fluctuation ratio calculated as (current full-time student enrollment – prior year full-time student enrollment) divided by prior year full-time student enrollment. The LBB review used a decline of five percent or an increase of 10 percent or more as thresholds for the enrollment fluctuation ratio. They defined "risky" as an enrollment increase and

the revenue generated per full-time student enrollment was less than 50 percent of the cost per full-time student enrollment.

Saint Bonaventure University, a Catholic Franciscan institution, was highlighted in the NACUBO Business Officer Newsletter (Hudack, Orsini, & Snow, 2003). On a scale of -4 to 10, Saint Bonaventure strived for financial vibrancy. By calculating the four ratios of the CFI: the primary reserve ratio, the net income ratio, the return on net assets ratio, and the viability ratio, and aligning the CFI with their strategic plan, Saint Bonaventure raised their composite financial index to 5.12, a level considered to be financially healthy for that institution.

Institutional Efficiencies

Success rates

The definition of success for community college students has long been debated. Community college success may be measured in several different ways. Students may be successful if they enroll in coursework for enrichment or to improve job skills; to obtain a certification, diploma, or degree; and/or simply to transfer to another institution.

The state of Indiana is one state that awards higher education funding based on performance indicators of success. These metrics include degrees awarded, on-time graduation, and successfully completed credit hours. The state of Florida utilizes time to degree, job placement, and even looks at completion of programs in targeted critical needs areas such as nursing and teacher preparation. The state of Ohio measures success at various points throughout a student's experience in its community colleges: successful completion of developmental coursework, accumulation of 15 and 30 credit hours, degree completion, and transfer with at least 15 credit hours (HCM Strategists, 2011).

Graduation rates

The graduation rate of an institution of higher education has been a widely recognized outcome measure. Congress passed the Student Right-to-Know and Campus Security Act (Public Law No: 101-542) in 1990 as an amendment to the 1965 Higher Education Act. In compliance with this new law, all colleges report graduation rates to the National Center for Education Statistics (NCES) for students to be eligible for federal financial aid. These Student Right-to-Know (SRK) graduation rates are a required part of the Integrated Postsecondary Education Data System (NCES, 2011). The SRK rates, although readily available for all community colleges, have been criticized for not painting a true picture of the success of colleges and are perhaps more appropriate to four-year colleges.

Testing the criticisms of using SRK graduation rates, Bailey, Crosta, and Jenkins (2006) studied the validity of using these rates to measure community college performance. Bailey et al. (2006) studied Florida's community colleges and concluded that even using different students or outcomes the SRK graduation rates did not change substantially.

The battle for privacy versus compiling better data is apparent in higher education today. A unit record tracking system would seem optimal for following students from one institution to another. The opponents of this type of tracking system fear the potential policy implications. "Politicians want not just transparency for consumers, but they also want to reward institutions that do well and punish those that don't measure up" (Selingo, 2012).

Transfer rates

Most research on transfer rates has focused upon the role of community colleges in preparing students for successful transition to a baccalaureate-granting institution. However, recent attention has also been focused on four-year schools. "Four-year colleges and

universities represent the pivotal gatekeepers in the transfer pathway, although they have rarely asserted their role in the transfer process" (Handel, 2011, p. 4). Handel (2011) embarked upon a project to allow leaders at four-year schools who have been successful in working with the transfer students from public community colleges to share their best practices.

Many institutions fund initiatives to aid in the transfer process. UCLA offers a one-week summer program to graduating underserved high school students. Students live on campus, attend classes, meet their adviser, and even plot out a plan for successful transfer after their community college experience. Creative initiatives such as transfer admission guarantee (TAG) and dual enrollment programs have bridged the journey to transfer for community college students (2011). However, to be truly successful with transfer students all institutions involved must strive for a "transfer culture" (p. 24).

Laanan, F.S., Starobin, S.S., Compton, J.I. et al. (2007) studied the transfer rate behaviors in a joint endeavor between the Iowa State Board of Education and Iowa State University. Their findings for those students who were awarded an AA degree in 2002 reported a 67.09% cumulative transfer rate as of 2005. This rate represented the number of individuals transferring to a 4-year institution in 2003, 2004, or 2005 divided by the 2002 cohort group. Projections indicate that for the decade of 2008 – 2018, the U. S. will need approximately 18 percent more employees who have earned a bachelor's degree (United States Bureau of Labor Statistics, 2011). This and the fact that the U.S. is falling behind other countries in producing college graduates warrants careful consideration. "Among 25-to 34-year-olds, the U.S. population has slipped to 10th in the percentage who have an associate degree or higher. This relative erosion of our national "educational capital" reflects

the lack of significant improvement in the rates of college participation and completion in recent years" (The National Center for Public Policy and Higher Education, 2008, p. 5).

As of April 2012, the Department of Education announced that it will soon include part-time and transfer students in its graduation rate tallies for community colleges (Gonzalez, 2012). Under the current system of counting only full-time, first-time degree or certificate-seeking students, "community colleges often appear to be laggards in graduating their students" (p. 1). Clifford Adelman, a senior associate at the Institute for Higher Education Policy (p. 1) explained that the possible key to tracking students "lies in the quality of institutional records and databases." Congress, however, has prohibited the federal government from creating a national student unit-record system. Thomas Bailey, chair of the Committee on Measures of Student Success, reinforces the notion of a tracking system. "If we really want to know what is happening with our students, we need to track them across institutions in a longitudinal way" (Gonzalez, 2012, p. 3).

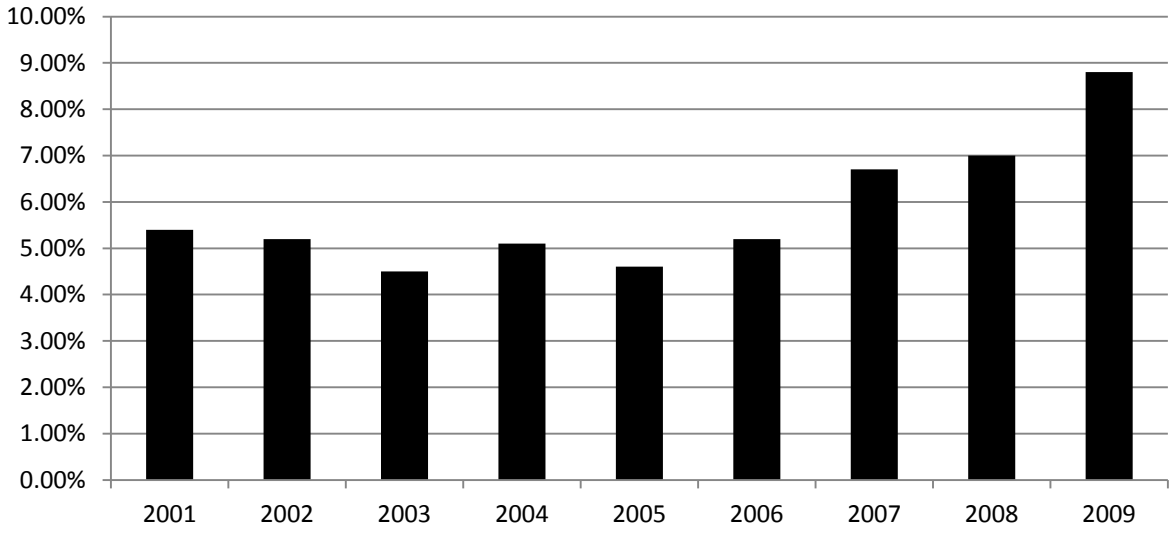
Student loan rates

The national cohort student loan default rate applies to schools that have 30 or more borrowers who are entering repayment in a fiscal year. This two-year cohort default rate is calculated as the percentage of a school's borrowers who enter repayment on certain Federal Family Education Loans (FFELs) and/or William D. Ford Federal Direct Loans (Direct Loans) during that fiscal year and default with the cohort default period. These two-year rates are being phased out and a new three-year rate will soon be calculated as the cohort default rate. The national two-year cohort student loan default rate was 8.8% for the 2009 cohort year as compared to Iowa's cohort default rate for the same year of 11.5%. Figure 2.1 outlines the pattern of cohort default rates from 2001-2009. Since 2006, the rate has been

steadily increasing. The 2010 rate was not yet available (U.S. Department of Education, 2012).

Figure 2.1

National Student Loan Cohort Default Rates



Note. The rate for 2010 is not yet released to the public. Source: "Default Prevention and Management" by the United States Department of Education, 2012.

The percentage of Iowa's community college graduates for the class of 2010 with student loan debt varies by community college (see Table 2.1). Area XII had the highest percentage of graduates with debt at 81% while the lowest percentage was Area IX with 43%. Area XV had the most average debt for the class of 2010 at $15,437 while Area XII had the lowest at $4,615. Area XI had the most total student loan debt on graduation of $15,537,972.

Table 2.1

Student Loan Debt for Iowa's Community Colleges, Class of 2010 (*N* = 15)

Community Colleges	Number of Graduates	Number of Graduates With Debt	Percentage of Graduates With Debt	Total Debt on Graduation	Average Debt on Graduation
Student Loan Debt					
Area I	532	346	65%	$4,712,839	$13,621
Area II	405	209	52%	$1,963,189	$10,679
Area III	429	310	72%	$4,043,465	$13,043
Area IV	181	127	70%	$1,370,760	$10,793
Area V	457	319	70%	$3,774,889	$11,834
[a]Area VI	369	218	59%	$2,450,154	$11,239
Area VII	869	635	73%	$8,505086	$13,394
[b]Area IX	870	378	43%	$5,151,532	$13,628
Area X	665	412	62%	$5,049,423	$12,256
Area XI	1,682	1,023	61%	$15,537,972	$15,189
Area XII	419	338	81%	$1,559,985	$4,615
Area XIII	634	420	66%	$5,325,513	$12,680
Area XIV	131	104	79%	$1,453,530	$13,976
Area XV	739	438	59%	$6,761,242	$15,437
Area XVI	547	302	55%	$3,254,883	$10,778

Note. Source: Iowa College Student Aid Commission Annual Survey of Financial Aid. Colleges report both aggregate loan debt and the number of graduates with debt who began their degree program at the reporting institution. Averages for institutional type represent total loan debt divided by number of students graduating with student loan debt. Debt is reported for student loans from all sources either certified by the institution or reported to the institution by the student or lending organization. In general, institutions have little information concerning alternative student loans. [a]Ellsworth Community College and Marshalltown Community College were merged and reported as Area VI.
[b]There is no merged Area VIII.

Table 2.2

Cohort Student Loan Default Rates for Iowa's Community Colleges (*N* = 15)

Variables	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cohort Student Loan Default Rates									
Area I	7.00%	7.90%	7.30%	8.70%	8.00%	7.90%	7.20%	8.60%	8.90%
Area II	5.80%	7.00%	5.50%	5.70%	7.50%	5.70%	10.10%	10.20%	11.40%
Area III	7.00%	9.10%	11.20%	7.30%	8.50%	7.30%	8.80%	8.90%	10.80%
Area IV	6.50%	3.80%	5.20%	7.50%	4.90%	2.40%	6.40%	5.80%	5.70%
Area V	15.20%	13.50%	12.70%	13.30%	13.90%	9.50%	13.40%	14.20%	14.60%
Area VI	17.90%	12.70%	11.60%	9.50%	10.10%	8.50%	13.20%	12.90%	15.80%
Area VII	8.30%	8.10%	6.00%	6.00%	7.90%	7.10%	9.00%	7.80%	8.40%
[a]Area IX	13.70%	12.90%	12.90%	11.30%	9.90%	9.10%	15.00%	12.70%	9.50%
Area X	9.60%	9.60%	8.90%	10.40%	9.80%	8.70%	11.30%	11.00%	11.00%
Area XI	8.40%	7.80%	7.00%	8.70%	8.80%	8.80%	8.90%	9.80%	10.60%
Area XII	9.60%	11.50%	11.80%	10.80%	11.80%	9.40%	13.20%	12.10%	13.40%
Area XIII	14.20%	11.50%	10.30%	9.40%	9.60%	11.10%	12.80%	11.90%	12.00%
Area XIV	8.40%	7.70%	5.20%	7.30%	7.30%	8.50%	9.50%	7.60%	6.30%
Area XV	9.60%	10.20%	9.80%	7.10%	12.30%	10.60%	11.50%	10.30%	13.70%
Area XVI	11.10%	8.00%	7.10%	9.30%	6.00%	14.20%	16.00%	14.50%	12.90%

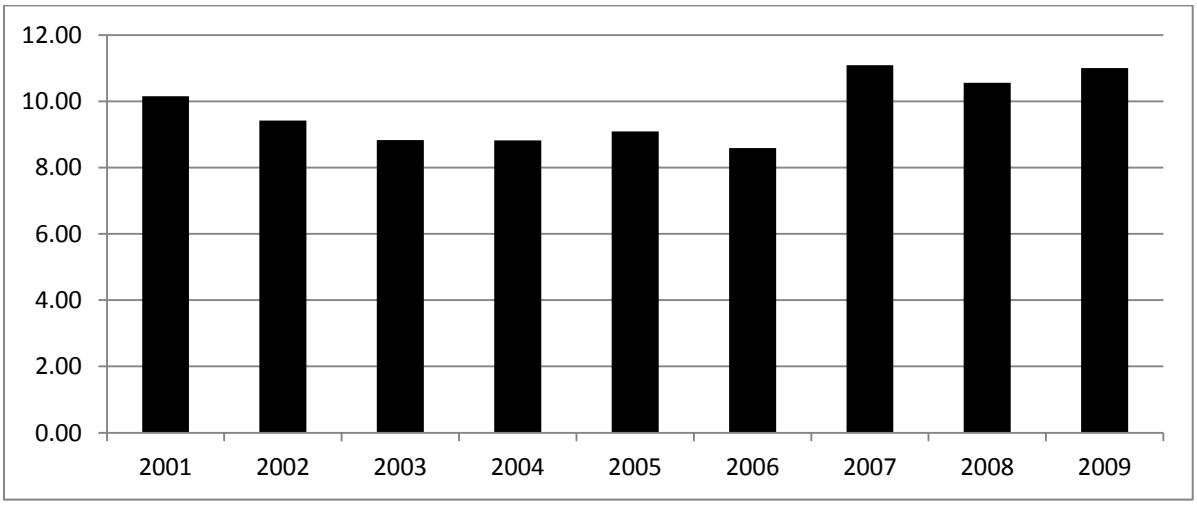
Note. The rate for 2010 was not yet released to the public. Source: Iowa Student Loan, Community Services and Educational Research, 2012.
[a]There is no merged Area XIII.

The 2001 cohort default rates reached a maximum of 17.90% for Area VI followed by the next highest rate at 15.20% for Area V (see Table 2.2). Also six of the fifteen community colleges' cohort default rates were higher in 2001 than they were in 2009 (Areas IV, V, VI, IX, XIII, and XIV). Collectively, the largest percentage of 40% (Areas IV, V, VI, IX, X, and XII) of Iowa's community colleges witnessed their lowest rates in 2006 while the highest rates were observed for one-third of the colleges (Areas VII, IX, X, XIV, and XVI) for 2007 and also one-third of the colleges (Areas I, II, XI, XII, and XV) for 2009. The greatest variability in the lowest and highest cohort default rates fell at 10.0% (Area XVI). Over the 2001 – 2009 time period, the lowest rate was 2.40% (Area IV in 2006) and the highest rate was 17.90% (Area VI in 2001).

Comparing the 2009 national student loan cohort default rate of 8.8% (Figure 2.1) to Iowa's community colleges' rates for 2009, only three colleges (Areas IV, VII, and XIV) were at or below this rate at 5.70%, 8.40%, and 6.30% respectively. Only one of Iowa's community colleges' cohort student loan default rates fell at or below the national rate of 8.8% (2009) for all the fiscal years of 2001-2009 (Area IV). For this same time period four of the fifteen community colleges failed to rate below the national rate for any of the fiscal years (Areas V, IX, XVII, and XVIII). However, the cohort student loan default rates for Iowa's community colleges for 2009 averaged 11.0%, only 2.2% above the national average for this year (see Figure 2.2).

Figure 2.2

Average Cohort Student Loan Default Rates for Iowa's Community Colleges



Note. The rate for 2010 was not yet released to the public. Source: Iowa Student Loan, Community Services and Educational Research, 2012.
[a]There is no merged Area XIII.

The student debt rates are particularly alarming for Iowa's public four-year institutions and private non-profit four-year institutions. Iowa ranks the 4th highest in the nation with 72% of students graduating with debt. The average debt upon graduation for

these bachelor-granting institutions in Iowa is $29,598, making Iowa's average debt the 3rd highest in the nation. According to the Institute for College Access and Success (2011), high-debt states are concentrated in the Northeast and Midwest. The fact that a larger than average share of students in the Northeast and Midwest attend private nonprofit four-year schools may be related to these high rankings.

Community college funding

Dating back to 1964, Iowa's community colleges were operated by the K-12 schools. Offering arts and sciences courses only, they received very little state aid. Citing the need for vocational-technical classes also, the Iowa Senate created Iowa's community college system in 1965, thus the beginning of the community college's funding sources of state aid, local property tax and tuition. Two years later in 1967, the Iowa House attempted to take away local property taxes as a funding stream for the community colleges. A committee was formed to deliberate this issue resulting in a roll back of the operating levy from 27-and-a-half cents to 20 and-a-quarter cents and the bricks-and-mortar levy back to 20-and-a-quarter cents.

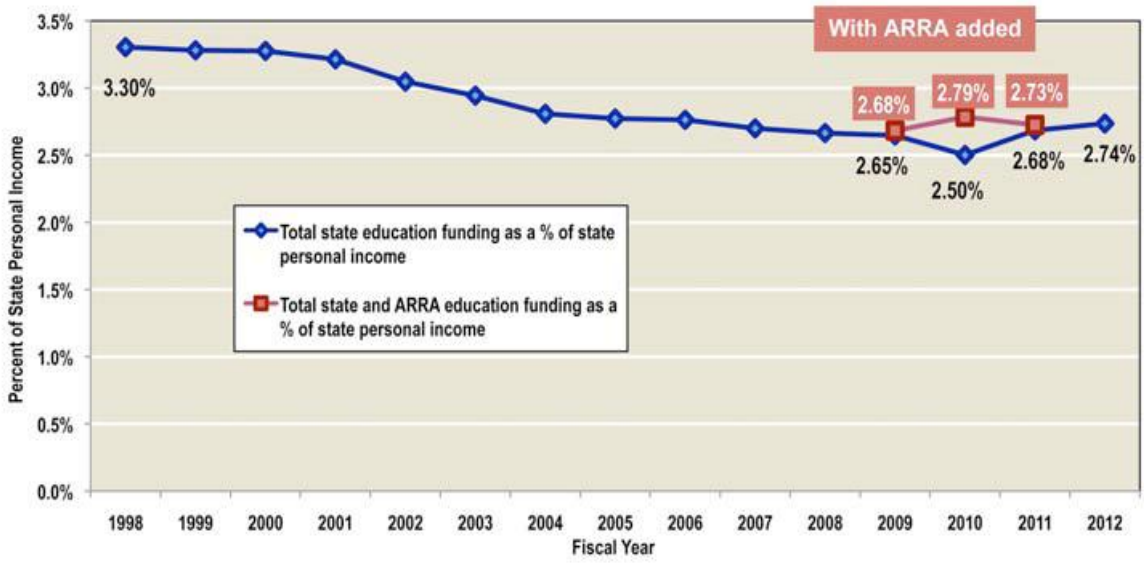
Recently the Des Moines Register (2012) interviewed Senator Jack Kibbie, a long-term advocate for Iowa's community colleges. According to Senator Kibbie, "the biggest shortfall is funding for nontraditional students…per student amount of funding is about the same as ten years ago…it's a huge shortfall" (2012).

Iowa's community colleges are a driving force for Iowa's higher education system and economy. Beginning with the 2001-02 school year, Iowa's community colleges have had total enrollment higher than Iowa's three Regents universities. Although enrollments at the community college level have been increasing overall, Figure 2.3 illustrates the diminishing

trend in community college funding by the state of Iowa over the past decade, adjusted for inflation. (Cannon, 2011).

Figure 2.3

Community College Funding Still Below FY98 Levels for Iowa's Community Colleges



Note. In fiscal year 2010 dollars. Adjusted with the Higher Education Price Index. Assumes 2.3 percent inflation in fiscal year 2011 and fiscal year 2012. Adapted from "World-Class on a Shoestring Budget? Out of Recession but Education Funding Not out of Historical Hole," by A. Cannon, 2011, The Iowa Policy Project; Fiscal Division, Iowa Legislative Services; CommonFund Higher Education Price Index, 2012. Copyright A. Cannon, 2012.

The trend of state support for Iowa's community colleges in dollar amounts has also been on the decline. Table 2.3 delineates the support per fiscal year both unadjusted for inflation and adjusted for inflation in 2010 dollars. During this 10-year period, state support as adjusted for 2010 dollars was at its peak in 2001 with steadily waning amounts through 2005. From 2005 – 2009 state support in dollars actually was on the rise. However, in 2010 support drastically decreased even taking into account the federal stimulus funds of $25.6 million (2011).

Table 2.3

State of Iowa Community College Support

Fiscal Year	State Community College Support Unadjusted for Inflation	[a]State Community College Support Adjusted for Inflation (2010$)
Iowa Community College Support		
2001	$147,577,403	$199,268,386
2002	$137,585,680	$182,283,238
2003	$138,585,680	$174,735,770
2004	$136,127,396	$165,561,934
2005	$139,779,244	$163,578,866
2006	$149,579,244	$166,540,620
2007	$159,579,244	$172,760,011
2008	$171,962,414	$177,375,579
2009	$180,316,478	$181,930,482
2010	$148,754,232	[b]$148,754,232

Note. Adapted from "World-Class on a Shoestring Budget? Out of Recession but Education Funding Not out of Historical Hole," by A. Cannon, 2011, The Iowa Policy Project. Sources: Fiscal Division, Iowa Legislative Services, 2011; CommonFund Higher Education Price Index, 2011. Copyright A. Cannon, 2012.
[a]Adjusted using the Higher Education Price Index.
[b]Fiscal Year 2010 total estimated.

In 2007, community colleges provided services to 43% of all undergraduate students while being funded at only 20% of state tax appropriations for higher education (Mullin, 2010). Mullin stated, "…significantly increasing outputs from community colleges can be achieved only with increased resources" (p. 4).

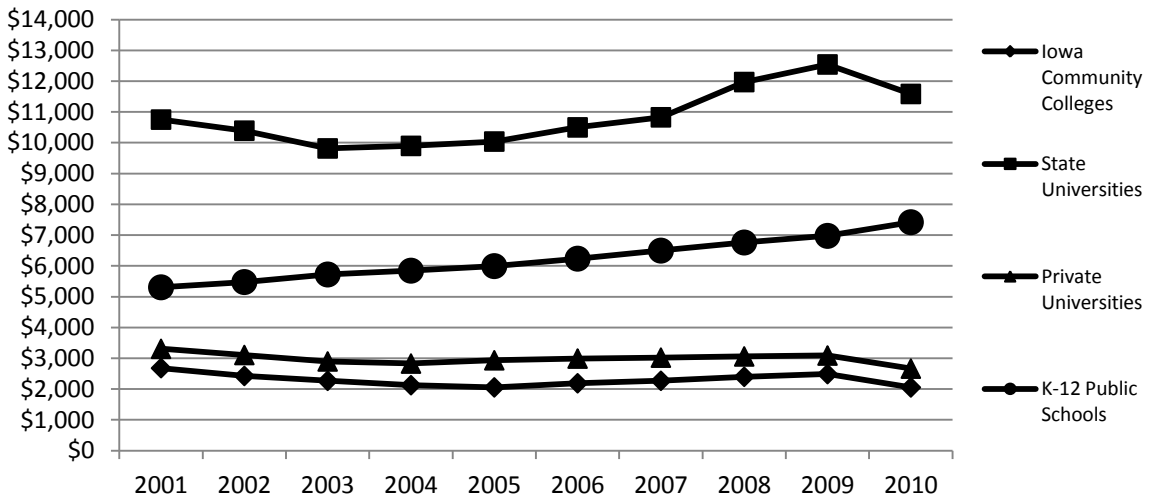
Weighing in on the underfunding conundrum, the American Association of Community Colleges (AACC, 2012) offered the following, "community colleges are not funded at a level permitting them to perform the monumental tasks expected of them...today's society is shortchanging this generation of community college students" (p.

13). Given that funding levels for community colleges may not see an increase, the real issue is being able to utilize funds more efficiently.

Funding per pupil for Iowa's community colleges over the fiscal years of 2001 – 2010 is also diminishing as a trend for this time period. Figure 2.4 outlines this trend of funding per pupil for Iowa's community colleges as compared to the state universities, the private universities in Iowa and the K-12 public schools. Funding for community colleges and private universities had similar patterns over this time period. State universities' funding per pupil decreased through 2004 and then increased dramatically per student until 2009. State universities and private universities have historically been funded at higher levels than Iowa's community colleges during this time period.

Figure 2.4

Trends of Education Funding for Iowa Students: Historical Funding Per Pupil



Note. Per pupil funding for 2010 is estimated. Funding includes property tax receipts related to the operational budgets for K-12 and community colleges. Fiscal year 2010 is the first year of K-12 funding of the State Categorical Supplements through the school aid formula and accounts for $648 per pupil. Source: "Education Funding for Iowa Students: Historical Funding Per Pupil" by Iowa Legislative Services Agency, Fiscal Services Division, 2010.

Estimated figures for fiscal year 2010 indicate funding per pupil for Iowa's community colleges of $2,053 while the state universities were funded at $11,585 per pupil or 564% of the community colleges funding amount per pupil. Educational funding per pupil for K-12 students, as Figure 2.4 indicates, continued to be funded at steadily increasing amounts per pupil. Estimated per pupil funding for 2010 for K-12 ($7,419) was still much higher than the community colleges' funding ($2,053).

Institutional Effectiveness

Institutional effectiveness (IE), as defined by McLeod and Atwell (1992), "is the condition of achieving the set goals of an institution and being able to verify the attainment of these goals with specific data which show the degree or quality of their attainment" (p. 5). IE in higher education first came into the spotlight in December 1984 when the Commission on Colleges of the Southern Association of Colleges and Schools revised its institutional accreditation requirements (Head, 2008a as quoted in Head 2011). Citing the three A's of IE: assessment, accreditation and accountability, Head (2008b) posits that the focus is now much more on accountability.

Accountability

According to Carey (2007, p.1), **"**accountability in American higher education is largely a myth". The U.S. Department of Education's Future of Higher Education Commission (2006) reported that accountability systems in higher education are virtually absent, and are compounded by dismal graduation rates and the lack of learning outcomes.

In January 2002, the No Child Left Behind (NCLB) Act attempted to hold K-12 accountable (Carey, 2007). Higher education was called to act on its own accountability measures. Most higher education accountability efforts have failed because they have not

followed through on their goals because they lack a plan of action to use the data gathered. Carey (2007, p. 29) stated, "Until higher education is more transparently and strongly accountable, it won't be able to compete for public support with Medicaid, K-12 education, and public safety". Carey further states, "Real accountability systems push institutions to act on information in a manner that is designed to change what they do in order to make them more successful than they would otherwise be" (p. 24).

In January of 2011, 40 colleges began pilot-testing the Voluntary Framework of Accountability (VFA). The American Association of Community College's VFA is a joint project among community colleges to delineate alternative success measures for possible use by policymakers and others. The goal was to have institutions measure outcomes related to (1) student progress and persistence; (2) workforce, economic, and community development; and (3) student learning by 2012 (Gonzalez, 2011). According to the American Association of Community Colleges (AACC), the VFA is the first national system of accountability specifically for community colleges and by community colleges. The AACC, the Association of Community College Trustees, and the College Board are developing the VFA with funding from Lumina Foundation for Education and the Bill & Melinda Gates Foundation. The VFA was ending Phase II of the project in fall 2011. Phase III of the project was anticipated to start in 2012. Of the 40 colleges in the pilot only one Iowa community college, Western Iowa Tech Community College (Area XII), participated in this effort (AACC, 2011).

The Aspen College Excellence Program was also seeking ways to measure community college performance and student outcomes by sponsoring the Aspen Institute Aspen Prize for Community College Excellence (Fain, 2011). The Aspen Institute used a

variety of metrics in the Integrated Postsecondary Education Data System (IPEDS), such as graduation rates, number of degrees or certificates awarded relative to total enrollment by taking into account both part-time and full-time students. Of the 120 eligible institutions chosen by the Aspen Institute, three of Iowa's community colleges were selected: Northeast Iowa Community College (Area I), Indian Hills Community College (Area XV), and Northwest Iowa Community College (Area IV) (Fain, 2011).

Efforts were also underway by the U.S. Department of Education's Committee on Measures of Student Success which was authorized by the Higher Education Opportunity Act of 2008 (HEOA) to advise the Secretary of Education about assisting two-year degree-granting institutions of higher education in meeting federal requirements to disclose graduation and completion rates and to explore whether there are alternative measures for capturing student success at two-year institutions (U.S. Department of Education, 2011).

Benchmarking

By the mid 1990s, comparing colleges and benchmarking for the four-year schools became commonplace, particularly through the AAU Data Exchange, the Higher Education Data Sharing Consortium, and the Delaware Project. Community colleges were intentionally left out due to their multi-faceted missions. The National Association of College and University Business Officers (NACUBO) made one of the first efforts of benchmarking in higher education by issuing a benchmarking survey in 1992 (Epper, 1999). This survey sought information on designing the benchmarks to be utilized.

In more recent efforts, the Community College Survey of Student Engagement (CCSSE) spelled out five benchmarks for effective educational practice in community colleges. The five benchmarks included active and collaborative learning, student effort,

academic challenge, student-faculty interaction, and support for learners (CCCSE, 2003). In 2004, the National Community College Benchmarking Project (NCCBP) was launched at Johnson County Community College in Kansas. In Spring of 2011, 210 community colleges participated in this project. Data were compared on twenty-five benchmark measures such as minority participation rates and career program graduates' job placement rates (Ewell, 2011).

Another form of benchmarking at the institutional level is accomplished through the application of institutional dashboards, one to two page documents that present information in a "succinct, visually appealing format" (Association for Institutional Research, 2012, p. 1). Dashboard indicators may be employed to evaluate performance by institutions, boards of directors, and various other stakeholders. To create a dashboard, institutions must first decide upon which indicators are critical. These indicators should be easy to understand, be quantitative in nature, should be utilized separately and also collectively to analyze the big picture of an institution.

In the fall of 2005, many samples of institutional dashboards were collected from colleges and universities across the nation (2012). Of those institutions sampled, over 80% examined financial indicators as part of their dashboard.

Strategic Planning

To effectively apply strategic financial analysis to an institution's mission, the institution "must have a clearly articulated mission with a specific strategic plan that operationalizes the mission" (Tahey et al., 2010, p. 5). A strategic plan should not just outline the goals and objectives but should also include the process of how these goals will be achieved. Helping to ensure appropriate resource allocation may include the following attributes (2010): (1) integration of all planning components, such as academic plans, facility

plans, human resource plans operating budgets, capital budgets, etc.; (2) assessment of strategic risks related to strategic goals and strategies; (3) senior leadership involvement; (4) key faculty input and acceptance; (5) effective communication strategies and methods that are used frequently; (6) realistic time lines and time frames; and (7) developing and periodically reporting key metrics of the plan's status against its goals. Citing the significance of an institution's finance Tahey et al. point out, "it is critical finances do not drive the strategic plan; rather, finances are either an enabler or an inhibitor of the plan" (2010, p. 7).

Focusing on a vision or long-term goals in strategic planning requires identifying an institution's strengths and weaknesses (Morphew, 2000). Morphew, while studying program terminations, suggests that institutions embrace the term "rightsizing" as a possible solution to across-the-board cuts or freezing the hiring process. Concurring with Tahey et al. (2010), Morphew points out that during the planning process (strategic planning), "institutions would do well to consider how they will interpret and apply their strategic plans after they are constructed" (2000, p. 278).

Summary

Three main themes emerged from the review of the literature and informed this study: strategic financial analysis, institutional efficiencies and institutional effectiveness. Strategic financial analysis encompassed the utilization of the composite financial index (CFI) and its relevance to community colleges. It was discovered that the U.S. Department of Education utilized some of the ratios of the CFI and that the Higher Learning Commission also looked at these ratios for possible warnings of financial distress.

Institutional efficiencies relating to the topics of success rates, graduation rates, transfer rates, student loan rates and community college funding were outlined. A definition of success for community college students was discussed in terms of differences in current definitions and possibilities for the future. Graduation rates had been tracked since the 1990 amendment to the Higher Education Act of 1965. Although these may have been an indicator of success, the literature indicated that a unit record system of tracking students may be the solution to ensure accurate measurement of these graduation rates. Transfer rates, unlike graduation rates, have been researched mainly on how community colleges may aid in this process. More recent efforts, however, have also focused upon the four-year schools and their role in this transition.

Student loan rates, according to the literature, revealed several alarming conditions for Iowa's community colleges. Area XII, at a rate of 81%, had the highest percentage of graduates with debt for the class of 2010. For 2009, the cohort student loan default rates for Iowa were looming at 11.5% while the national two-year cohort student loan default rate was only 8.8%. Interestingly, while the cohort student loan default rate for Iowa was 2.7% above the national rate, the funding for Iowa's community colleges was on the decline.

In addition to institutional efficiencies, institutional effectiveness was also investigated in the literature in relation to accountability, benchmarking and strategic planning. The Voluntary Framework of Accountability marked the beginning of a joint project facilitated by the American Association of Community Colleges. The Committee on Measures of Student Success also weighed in on accountability issues.

Benchmarking as well as accountability was explored in the literature. Early efforts, including the readings on the benchmarking survey in 1992 by the National Association of

College and University Business Officers, and more recent efforts beginning in 2004 by the National Community College Benchmarking Project, yielded information that guided this study.

Strategic planning was also investigated in the literature. Citing Tahey et al. (2010) and their guidance of utilizing the CFI as a measure or metric of success provided a framework for this study. Christopher Morphew (2000) also re-emphasizes the importance of strategic planning in relation to program termination.

CHAPTER THREE
METHODOLOGY OF THE STUDY

Overview

This study utilized secondary data drawn from the Iowa Department of Education's Management Information System database. It is hoped this data may be utilized for further study, to educate and to inform future policy decisions.

The first research question was answered by the CFI conceptual framework, specifically referring to the composite financial index within the framework. Questions two through five were answered through the use of descriptive statistics with frequency counts. The sixth research question was answered through the analysis of the CFI over a ten-year period. Microsoft Excel was utilized to calculate and analyze the CFI over this ten-year period. The CFI was computed by analyzing the audited annual reports for all of Iowa's community colleges over the fiscal years of 2001 – 2010. Research questions 7 – 11 were answered through the econometric method of panel data analysis. SAS® software was utilized for data reduction for this study. Statistical significance of less than .05 was applied.

Success rates were composed of both the graduation rates and the transfer rates as captured by the IA DE per fiscal year for 2008-2010. It is anticipated that there will be no perceived threats to validity.

Research Questions

The following research questions served as a direction this study:

1) Which financial ratios constitute the composite financial index as designed by Prager, Sealy & Co., LLC; KPMG LLP; and Attain LLC?

2) What are the institutional characteristics of Iowa's 15 community colleges' based on full-time equivalent enrollment, enrollment, fall credit hours, and fiscal year credit hours for 2001-2010?
3) What are the graduation rates of students in Iowa's community colleges from 2008-2010?
4) What are the transfer rates of students in Iowa's community colleges from 2008-2010?
5) What are the success rates of students in Iowa's community colleges from 2008-2010?
6) What are the composite financial indices as a measure of financial health for Iowa's community colleges from 2001-2010?
7) Is there a significant relationship between CFI (or individual components of CFI) and success rate?
8) Is there a significant relationship between fiscal year credit hours *(FY_CR_HR)* and success rate?
9) Is there a significant relationship between the proportion of female enrollment to total enrollment *(ENR_PROP_FEM*) and success rate?
10) Is there a significant relationship between the proportion of 18 – 55 enrollment to total enrollment *(ENR_PROP_1855)* and success rate?
11) Is there a significant relationship between the proportion of Iowa resident enrollment to total enrollment *(ENR_PROP_IA)* and success rate?

Research Design

The researcher conducted a quantitative study to determine if the variables of the composite financial index determined the success rate for Iowa's community colleges for fiscal years 2008-2010. Institutional size was explored for each of Iowa's fifteen community colleges as determined by FTEE, enrollment and fiscal year credit hours (see Tables 4.8, 4.9 and 4.10). Enrollment was further stratified by program type, age groups, gender, ethnicity/race and residency. This research design is depicted in Figure 3.1.

Population and Sample

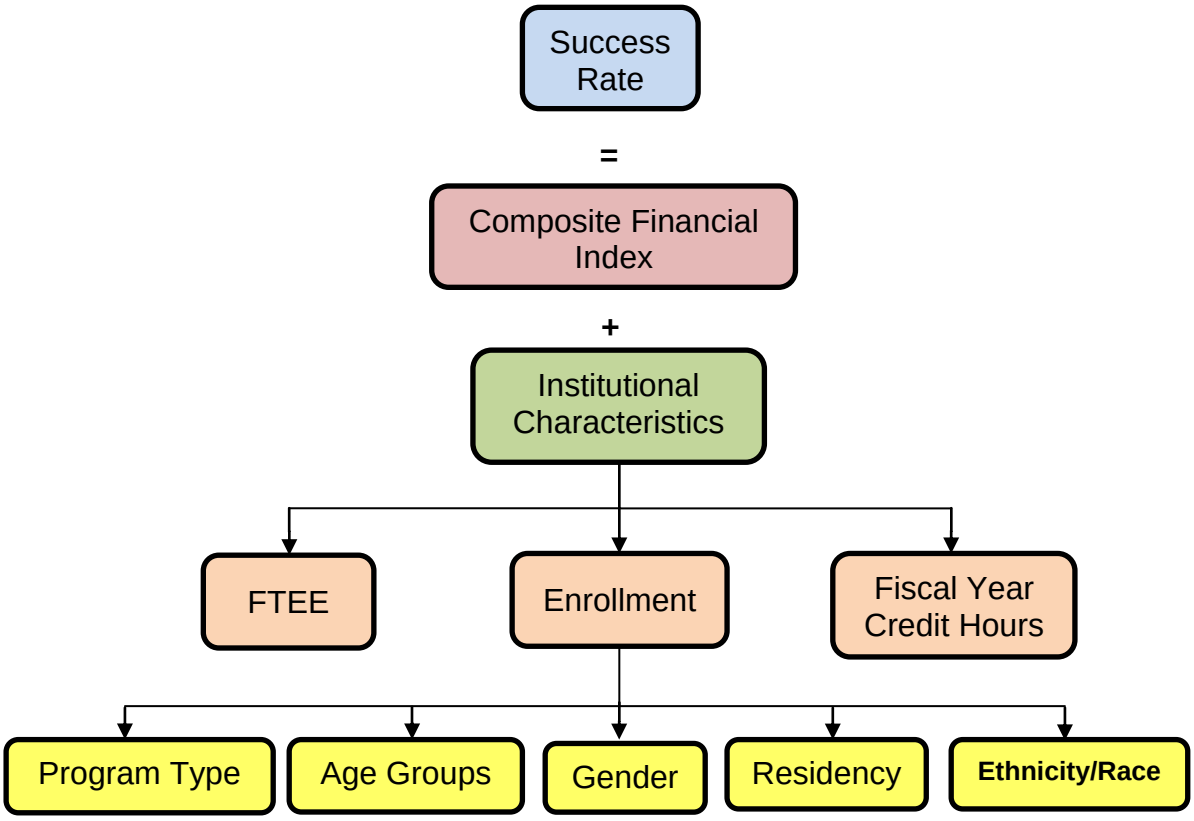
The population for this study consisted of all of Iowa's 15 community colleges over the fiscal years of 2000-2001 through 2009-2010. Selecting all 15 community colleges as the population was determined by the comprehensive nature of this study; thus there was no sampling.

Data Collection Procedures

This study examined the relationship between the composite financial index as calculated for Iowa's 15 community colleges and the success rates including both the graduation rates and the transfer rates for these institutions. The goals of this study were (1) to understand the relationship between the composite financial index and success rates for all of Iowa's community colleges, (2) to understand the relationship between the composite financial index and success rates for each of Iowa's community colleges

Figure 3.1

Success Rate Theoretical Model



Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.

individually, and (3) to analyze any patterns in both (1) and (2) above over the fiscal years of 2008-2010. Each individual community college in Iowa provided the audited annual financial reports for fiscal years 2001-2003. The Iowa Department of Education supplied the audited annual financial reports for fiscal years 2004-2010 for this study as well as the success rates for Iowa's community colleges for fiscal years 2008-2010, and all enrollment figures. Data utilized by this study were captured by the Iowa Department of Education (IA DE) in a secondary dataset as part of the mandatory annual reporting requirements for Iowa's community colleges. Data were contained within the IA DE Management Information System (MIS) database. A quantitative design was employed for this study. This study was

conducted using a postpositivist theoretical perspective. Postpositivists philosophize identifying and assessing causes that sway outcomes (Creswell, 2009). They view the world as being objective, thereby utilizing validity and reliability in research.

Data Analysis

Statistical analysis was executed with the Statistical Analysis System® (SAS) for this study. Statistical significance of less than .05 was applied to this study. All of Iowa's 15 community college districts were included in this study. Table 3.1 lists each institution with its respective name and area.

CFI framework, FTEE, enrollment, fiscal-year credit hours

The first research question was answered by the CFI conceptual framework (Tahey et al., 2010). Research question two was answered through the use of descriptive statistics. The descriptive statistics for research question two were provided by the IA DE. The descriptive statistics examined for research question number two were full-time equivalent enrollment, enrollment with statistics for the sub-groupings of enrollment by program type, enrollment by age groups, enrollment by gender, enrollment by ethnicity/race, enrollment by residency, and fiscal-year credit hours for 2001-2010.

Graduation, transfer and success rates

Research questions three, four and five were answered by descriptive statistics as well including investigation of the graduation rates, transfer rates and success rates for 2008-2010. These statistics were provided by the IA DE.

Table 3.1

Iowa's Community Colleges by Merged Area (*N* = 15)

Merged Area	College
Area I	Northeast Iowa Community College (NICC)
Area II	North Iowa Area Community College (NIACC)
Area III	Iowa Lakes Community College (ILCC)
Area IV	Northwest Iowa Community College (NCC)
Area V	Iowa Central Community College (ICCC)
Area VI	Iowa Valley Community College District (IVCCD)
Area VII	Hawkeye Community College (HCC)
[a]Area IX	Eastern Iowa Community College District (EICCD)
Area X	Kirkwood Community College (KCC)
Area XI	Des Moines Area Community College (DMACC)
Area XII	Western Iowa Tech Community College (WITCC)
Area XIII	Iowa Western Community College (IWCC)
Area XIV	Southwestern Community College (SWCC)
Area XV	Indian Hills Community College (IHCC)
Area XVI	Southeastern Community College (SCC)

Note. Source: Iowa Department of Education, 2011.
[a] There is no merged Area VIII.

Composite financial index

The descriptive statistics relating to research question number six (CFI) were calculated by the researcher. The source documents examined for the numerical information were contained within each community college's annual financial reports. Financial reports

included in the annual reports were the Statement of Net Assets, the Statement of Revenues, Expenses, and Changes in Net Assets, the Statement of Cash Flows, and related notes and supporting schedules. The Statement of Net Assets reported assets, liabilities and net assets for the fiscal year ending June 30 of each particular year. The Statement of Revenues, Expenses, and Changes in Net Assets reported operating revenues, operating expenses, nonoperating revenues and expenses and ending net assets. The Statement of Cash Flows was not utilized for the input of ratios within the CFI. Various information pertaining to plant debt was also extracted from the related notes and supporting schedules.

Microsoft Excel was used to input data from 150 annual reports—15 community colleges for the 10-year period of 2001-2010. The annual reports supplied by the community colleges for the period of 2001-2003 were analyzed with greater scrutiny. The earlier annual reports did not openly contain the numeric information (based on line items reported) required for the calculation of the CFI with its related four ratios. Both the numerator and denominator of the ratios had to be compiled before the ratios could be computed.

For example, operating and nonoperating revenues had to be determined because they were not line items contained within the earliest (2001 – 2003) annual reports. Operating revenues for Iowa's community colleges included tuition and fees; federal appropriations; Iowa Industrial New Jobs Training Program; gifts, grants and special events; contributions; sales and services; auxiliary enterprises revenue; and other miscellaneous items. Nonoperating revenues included state appropriations, property taxes, interest earnings, etc. Operating expenses and nonoperating expenses also had to be determined on the earliest annual reports. Operating expenses included education and support, auxiliary enterprises,

scholarships and grants, Workforce Investment Act and related, depreciation expense, and other. Nonoperating expenses included such items as interest on indebtedness.

According to the Governmental Accounting Standards Board Statement No. 39 (2002), after fiscal year 2003, Iowa's community colleges were required to report information for the primary institution and also for any component units. Most community colleges' foundations qualified as a component unit and were reported separately from the primary institution.

The CFI consisted of four ratio calculations. The first ratio was the primary reserve ratio (PRR). This ratio measures the financial strength of an organization. The PRR sought to answer the question, "are resources sufficient and flexible enough to support the mission?" The numerator of the fraction for PRR contained the amount of expendable net assets plus the component unit (CU) expendable net assets. Expendable net assets are those assets that can be obtained and spent quickly. The formula for expendable net assets is contained in Figure 1.1. The denominator for this ratio contained total expenses plus CU total expenses. Total expenses were used to define the operating size of an institution. A low level of expendable net assets in relation to operating size may signal a fragile financial condition. Although calculating the PRR ratio for one year may yield valuable information, plotting the trend over time is even more important. A ratio of .40 was recommended by the conceptual framework for flexibility within the organization. At a PRR ratio of .40, an institution would have 4.8 months (.40 X 12 months) of reserves to pay for expenses. Any institution falling below .40 was deemed below the target and those above were deemed at or above the target (Tahey, et al., 2010).

The second ratio in the CFI was the viability ratio (VR). The VR served as a statement of net assets indicator of debt capacity. The VR sought to answer the question, "are resources, including debt, managed strategically to advance the mission?" The numerator of this ratio consisted of expendable net assets plus CU expendable net assets—the same numerator served for the PRR ratio. The denominator of this ratio consisted of plant-related debt plus CU plant-related debt. It included all notes, bonds and capital leases payable, both short- and long-term, that had an impact upon an institution's general credit (Tahey, et al., 2010, p. 115). A target of 1.00 was used for this study. Again, those scores falling below 1.00 were below the target and those above were deemed at or above the target. Also like the PRR, the VR was analyzed as a trend for fiscal years 2001-2010.

The third ratio of the CFI was the return on net assets ratio (RONAR). This ratio was calculated as (the change in net assets plus the CU change in net assets) divided by (total net assets plus CU total net assets). This ratio measured the total economic return for an institution and sought to determine if the institution is better off financially than in previous years. The RONAR sought to answer the question, "does asset performance and management support the strategic direction?" Analysis of the RONAR as a trend was also analyzed. A target ratio of .03 was used for this ratio. Those falling below .03 were below the target and those above were at or above the target.

The fourth ratio of the CFI was the net operating revenues ratio (NORR). The formula for this ratio was net operating income or loss divided by total operating revenues. A target ratio of .00 was employed for this study. Those below .00 were below the target and those above were at or above the target. The NORR served as the foremost indicator; that is, it explained how a surplus from operating activities affected the other three core ratios of the

CFI. The NORR sought to answer the question, "do operating results indicate the institution is living within available resources?"

After the PRR, VR, RONAR, and NORR were calculated, the CFI was then determined. The first step in calculating the CFI was to assign a strength factor to each of the ratios. The strength factors with related ratios were as follows: PRR (.133), VR (.417), RONAR (.02), and NORR (.013). The next step in calculating the CFI was to assign a weighting factor to each ratio. The weighting factors were as follows: PRR (.35), VR (.35), RONAR (.20), and NORR (.10). The numerator of the VR included institution total plant-related debt and CU plant-related debt (See Figure 1.1). If an institution had no plant-related debt, the VR was not included in the CFI. The weighting factors used with no plant-related debt were PRR (.54), VR (0), RONAR (.31) and NORR (.15). Lastly, each individual ratio was first multiplied by its related strength factor and then by its related weighting factor. All products from this last step were added together to achieve the CFI. The minimum CFI score was -4.0 and the maximum CFI score was 10.0 for this study as dictated by the KPMG conceptual framework.

Predicting the success rate

Research questions seven through eleven were answered through the statistical technique of panel data analysis. Panel data analysis was utilized to study a subject or subjects over a defined time frame. The panel for this study was Iowa's community colleges over the 2008-2010 fiscal years. "Panel data analysis endows regression analysis with both a spatial and temporal dimension" (Yaffee, 2003, p. 2). SAS® was utilized for this research question due to its ability to perform panel data analysis. The panel dataset contained 45

observations (15 community colleges for 3 years). Since there were no missing values, this was referred to as a balanced panel.

For each of the operational models, the form of model was evaluated for appropriateness. For each model, a regression that imposed the same intercept and slope parameters for all community colleges across time was executed—an equivalent to the pooled OLS model. The OLS model may be used when there are no community college or time (temporal) effects. Additionally, a two-way fixed effects model and a two-way random effects model were run. Both the Hausman test for random effects and the Breusch Pagan test for random effects were completed to determine exactly which of the three models (OLS, fixed effects or random effects) would produce the most robust results for all operational models. The Hausman test for random effects which compares the fixed effects and random effects models was executed. The results of the Hausman test for each of the operational models produced no statistical significance, indicating that the random effects model was better than the fixed effects model. Next the Breusch Pagan test was run to determine if either the random effects or OLS model was more appropriate. This test produced a statistically significant result for all operational models, indicating that the random effects model was more appropriate than the OLS model. In summary, both the Hausman and Breusch Pagan tests produced results that determined that the random effects model was more appropriate for all operational models.

In order to test the effect of financial condition on the success rate behaviors, the following empirical model was utilized for the panel data analysis:

$$SUCCESS_{it} = \alpha_i + \beta_1 FINANCIAL\_CONDITION_{it} + \varepsilon_{it}$$

where *SUCCESS* was the college's success rate, *i* denoted community college, *t* denoted the years of 2008-2010, *FINANCIAL_CONDITION* was the college's financial condition, and ε_{it} was the error term.

Due to data limitations, most of the analyses focus on the 2008-2010 time period. One theoretical model was used (financial condition predicts or explains success) and nine different independent variables in total served as a proxy for (*FINANCIAL*_CONDITION). The independent variable was changed for each of the 9 operational models. These control variables, as well as the proxies for the primary constructs resulted in the following operational model:

$$SUC\_RATE_{it} = \alpha_i + \beta_1 CFI_{it} + \varepsilon_{it}$$

Table 3.2 lists and describes each of the proxy variables for *FINANCIAL*_ CONDITION. Panel A investigated the *CFI* as the proxy variable. The *CFI* was a composite proxy variable. It was calculated as the sum of the primary reserve ratio, viability ratio, return on net assets ratio, and net operating revenues ratio multiplied times both a strength factor and a weighting factor. Panel B explored the *PRR*_RAW as the proxy variable. *PRR_RAW* represented the primary reserve ratio with no factoring for strength or weight (unweighted). The *VR_RAW,* the viability ratio with no factoring for strength or weight (unweighted), served as Panel C. Panel D utilized *RONAR_RAW* as the proxy variable. *RONAR_RAW* represented the return on net assets ratio with no factoring for strength or weight (unweighted). The *NORR_RAW,* net operating revenues ratio with no factoring for strength or weight (unweighted), served as Panel E. Panel F utilized *PRR_WTD* as the proxy variable. *PRR*_WTD represented the primary reserve ratio multiplied by both a strength factor and a weighting factor. The *VR_WTD,* the viability ratio multiplied by both a

strength factor and weighting factor, served as Panel G. Panel H utilized *RONAR_WTD* as the proxy variable. *RONAR_WTD* represented the return on net assets ratio multiplied by both a strength factor and a weighting factor. The *NORR_WTD*, the net operating revenues ratio multiplied by both a strength factor and a weighting factor, served as Panel I. Descriptive statistics for all panel data analysis variables are listed in Table 3.3.

Table 3.2

Panel Data Analysis Variables, Covariates and Descriptions

Panel A: Proxy Variable for Financial Condition	Description
[a]*CFI*	Composite Financial Index. Calculated as the sum of the primary reserve ratio, viability ratio, return on net assets ratio, and net operating revenues ratio with all ratios multiplied times both a strength factor and a weighting factor.
Panel B: Proxy Variable for Financial Condition	
[a]*PRR_RAW*	Primary reserve ratio with no factoring for strength or weight (unweighted).
Panel C: Proxy Variable for Financial Condition	
[a]*VR_RAW*	Viability ratio with no factoring for strength or weight (unweighted).
Panel D: Proxy Variable for Financial Condition	
[a]*RONAR_RAW*	Return on net assets ratio with no factoring for strength or weight (unweighted).
Panel E: Proxy Variable for Financial Condition	
[a]*NORR_RAW*	Net operating revenues ratio with no factoring for strength or weight (unweighted).
Panel F: Proxy Variable for Financial Condition	
[a]*PRR_WTD*	Primary reserve ratio multiplied by both a strength factor and a weighting factor.
Panel G: Proxy Variable for Financial Condition	
[a]*VR_WTD*	Viability ratio multiplied by both a strength factor and a weighting factor.
Panel H: Proxy Variable for Financial Condition	
[a]*RONAR_WTD*	Return on net assets ratio multiplied by both a strength factor and a weighting factor.
Panel I: Proxy Variable for Financial Condition	
[a]*NORR_WTD*	Net operating revenues ratio multiplied by both a strength factor and a weighting factor.
Covariates for Financial Condition	
FY_CR_HR	Fiscal year (July 1 – June 30) credit hours. Fifty minutes equates to one credit hour.
[a]*ENR_PROP_FEM*	Proportion of female enrollment to total enrollment.
[a]*ENR_PROP_1855*	Proportion of 18 – 55 enrollment to total enrollment.
[a]*ENR_PROP_IA*	Proportion of Iowa resident enrollment to total enrollment.

Note. Adapted from "Calculating the Composite Financial Index (CFI)", by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, and C. Cowen, 2010, Strategic Financial Analysis for Higher Education: Identifying, Measuring & Reporting Financial Risks, pp. 109-137. Copyright 2010 by Prager, Sealy & Co., LLC; KPMG LLP; and Attain LLC. Iowa Department of Education MIS Database, 2011.
[a] Calculated by the researcher.

Table 3. 3

Descriptive Statistics *for Panel Data Analysis Variables* (*N* = 45)

Variable	*M*	*SD*	Min	Max
[a]Success Rate	55.12	7.06	39.70	73.10
[b]Composite Financial Index	3.75	2.54	-.61	9.75
[b]Primary Reserve Ratio-Raw	.30	.22	-.11	.90
[b]Viability Ratio-Raw	1.99	2.33	-.23	9.29
[b]Return on Net Assets Ratio-Raw	.09	.08	-.03	.35
[b]Net Operating Revenues Ratio-Raw	.05	.07	-.35	.17
[b]Primary Reserve Ratio-Weighted	.81	.59	-.28	2.38
[b]Viability Ratio-Weighted	1.67	1.96	.-19	7.80
[b]Return on Net Assets Ratio-Weighted	.85	.82	-.42	3.54
[b]Net Operating Revenues Ratio-Weighted	.41	.56	-2.71	1.34
[a]Full-Time Equivalent Enrollment	5872	4484	1571	18184
[a]Fiscal Year Credit Hours	121580	94205	26690	371161
[a]Male Enrollment	3577	3156	744	13040
[a]Female Enrollment	4739	3900	18	16533
[b]Proportion of Female Enrollment	.57	.09	.02	.65
[a]Arts & Sciences Enrollment	4904	4149	1141	17732
[a]Career Option Enrollment	441	703	0	2672
[a]Career & Technical Education Enrollment	2696	2222	438	8614
[a]Combination of Degrees Enrollment	216	359	0	1510
[a]Age 17 & Under Enrollment	930	976	178	4704
[a]Ages 18 – 22 Enrollment	4339	3549	1032	14451
[a]Ages 23 – 26 Enrollment	1015	992	155	3616
[a]Ages 27 – 30 Enrollment	568	520	65	1929
[a]Ages 31 – 39 Enrollment	730	626	86	2460

Table 3.3 (Continued)

Descriptive Statistics for Panel Data Analysis Variables (*N* = 45)

Variable	*M*	*SD*	Min	Max
[a]Ages 40 – 55 Enrollment	628	499	90	2054
[a]Ages Over 55 Enrollment	81	67	4	289
[a]Age No Response Enrollment	61	83	0	419
[b]Proportion of Ages 18 – 55 Enrollment	.87	.04	.80	.95
[a]Iowa Resident Enrollment	7805	6911	1678	28901
[a]Non-Iowa Resident Enrollment	487	369	41	1305
[a]Foreign Resident Enrollment	66	82	0	282
[b]Proportion of Iowa Resident Enrollment	.92	.05	.79	.99
[a]American Indian Ethnicity Enrollment	50	51	3	183
[a]Asian Ethnicity Enrollment	164	248	5	1103
[a]Black Ethnicity Enrollment	353	427	3	1758
[a] Hispanic Ethnicity Enrollment	246	244	16	1021
[a]White Ethnicity Enrollment	6938	5512	1625	23914
[a]Ethnicity/Race No Response	602	700	0	2825

[a] Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.
[b] Compiled by the researcher.

Correlations were run on all variables to be included in this study (see Table 3.4). After analyzing the correlations, the following control variables (covariates) were selected. Fiscal year credit hours (*FY_CR_HR*), the proportion of female enrollment (*ENR_PROP_FEM),* the proportion of 18 – 55 enrollment (ENR_PROP_1855) and the proportion of Iowa enrollment (*ENR_PROP_IA*) were included to control for institutional size. Fiscal year credit hours were defined as fiscal year (July 1 – June 30) credit hours. One credit hour equaled 50 minutes. The proportion of female enrollment to total enrollment was represented by the variable *ENR_PROP_FEM*. The largest enrollment by age group in relation to total enrollment was represented by the variable *ENR_PROP_1855* and lastly, the proportion of enrollment by Iowa residents to total enrollment was indicated by the variable

ENR_PROP_IA. The co-variates were included in the model because they are additional variables, beyond success rate, that we hypothesized might affect success rate. The fact that they were uniformly significant variables indicates that these were important indicators of success.

Institutional size was looked at because of potential increases in class size, fewer resources for students, and therefore potentially negatively impacting success. The gender variable was included because programs may have attracted more of one gender than another. Percent of Iowa students raises the issue of why students might come to an Iowa community college from another state. One potential reason might be to try to raise scores to allow them to accept an athletic scholarship at a 4-year institution.

Table 3.4

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Year	Success Rate	Composite Financial Index	Primary Reserve Ratio-Weighted	Viability Ratio-Weighted	Return on Net Assets Ratio-Weighted
Year		.02028	.03622	.03171	-.04363	.08049
Success Rate	.02028		.11341	.21104	.14040	-.08802
Composite Financial Index	.03622	.11341		.70828*	.87161*	.20436
Primary Reserve Ratio-Weighted	.03171	.21104	.70828*		.55704*	-.07060
Viability Ratio-Weighted	-.04363	.14040	.87161*	.55704*		-.17682
Return on Net Assets Ratio-Weighted	.08049	-.08802	.20436	-.07060	-.17682	
Net Operating Revenues Ratio-Weighted	.17971	-.06767	.42283*	.30818	.10607	.15464
Primary Reserve Ratio-Raw	.02918	.21698	.77188*	.97890*	.62711*	-.02877
Viability Ratio-Raw	-.04371	.14026	.87167*	.55723*	1.00000*	-.17672
Return on Net Assets Ratio-Raw	.08091	-.09240	.20774	-.07311	-.17026	.99854*
Net Operating Revenues Ratio-Raw	.19217	-.06766	.43063*	.28519	.11760	.17047
Full-Time Equivalent Enrollment	.02005	-.58833*	-.14058	-.28880	-.04282	-.10530
Fiscal Year Credit Hours	.02276	-.58077*	-.14254	-.30272*	-.04350	-.10353
Male Enrollment	.02821	-.56289*	-.14305	-.27408	-.05098	-.10845
Female Enrollment	.02976	-.59999*	-.10793	-.26156	-.01461	-.09353
[a]Proportion of Female Enrollment	.16622	-.22792	-.03003	-.01473	-.00580	-.00790
Arts & Science Enrollment	.00059	-.57439*	-.14369	-.25825	-.05789	-.08849

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Year	Success Rate	Composite Financial Index	Primary Reserve Ratio-Weighted	Viability Ratio-Weighted	Return on Net Assets Ratio-Weighted
Career Option Enrollment	.01343	-.34391*	-.28548	-.37289*	-.14355	-.20247
Career & Technical Education Enrollment	.00334	-.59356*	-.03941	-.22348	.03470	-.07547
Combination of Degrees Enrollment	.10341	-.31152*	.00324	-.19325	.14878	-.15496
Ages 17 & Under Enrollment	.08443	-.43561*	-.11933	-.23539	-.04250	-.07005
Ages 18 – 22 Enrollment	.02685	-.55877*	-.15112	-.27696	-.06300	-.10327
Ages 23 – 26 Enrollment	-.00275	-.57784*	-.10063	-.24854	-.01465	-.09311
Ages 27 – 30 Enrollment	.02696	-.61593*	-.08821	-.24898	.00052	-.09106
Ages 31 – 39 Enrollment	.01367	-.65672*	-.04939	-.24464	.04582	-.08053
Ages 40 – 55 Enrollment	-.01042	-.64320*	-.05825	-.24947	.05865	-.11923
Ages Over 55 Enrollment	-.02659	-.39559*	-.08767	-.23612	.06012	-.11065
Age No Response Enrollment	-.17684	-.21986	.32242*	.03183	.49750*	-.19814
[a]Proportion of 18 – 55 Enrollment	-.15524	-.28682	.19280	.17813	.18849	-.02266
Iowa Resident Enrollment	.02152	-.55220*	-.10728	-.25005	-.00759	-.11593
Non-Iowa Resident Enrollment	.06287	-.62223*	-.20089	-.33754*	-.29680*	.27175
Foreign Resident Enrollment	.00873	-.48815*	-.28093	-.37748*	-.16039	-.11196
[a]Proportion of Iowa Resident Enrollment	-.06197	.25176	.23283	.32331*	.33482*	-.29551*
American Indian Ethnicity Enrollment	-.00109	-.57348*	-.13677	-.29628*	-.10093	.08412
Asian Ethnicity Enrollment	.03622	-.49024*	-.09535	-.23310	.00732	-.11276
Black Ethnicity Enrollment	.05349	-.56114*	-.05237	-.09195	.01066	-.11275

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Year	Success Rate	Composite Financial Index	Primary Reserve Ratio-Weighted	Viability Ratio-Weighted	Return on Net Assets Ratio-Weighted
Hispanic Ethnicity Enrollment	.07525	-.69055*	-.09635	-.19482	-.06729	.08412
White Ethnicity Enrollment	.02540	-.56462*	-.11761	-.26650	-.01531	-.11276
Ethnicity/Race No Response Enrollment	-.02016	-.58368*	-.16162	-.36267*	-.10950	-.11275

	Net Operating Revenues Ratio-Weighted	Primary Reserve-Raw	Viability Ratio-Raw	Return on Net Assets Ratio-Raw	Net Operating Revenues Ratio-Raw	Full-Time Equivalent Enrollment
Year	.17971	.02918	-.04371	.08091	.19217	.02005
Success Rate	-.06767	.21698	.14026	-.09240	-.06766	-.58833*
Composite Financial Index	.42283*	.77188*	.87167*	.20774	.43063*	-.14058
Primary Reserve Ratio-Weighted	.30818*	.97890*	.55723*	-.07311	.28519	-.28880
Viability Ratio-Weighted	.10607	.62711	1.0000*	-.17026	.11760	-.04282
Return on Net Assets Ratio-Weighted	.15464	-.02877	-.17672	.99854*	.17047	-.10530
Net Operating Revenues Ratio-Weighted		.31154	.10596	.15217	.99622*	-.02260
Primary Reserve Ratio-Raw	.31154*		.62729*	-.02725	.30294*	-.26994
Viability Ratio-Raw	.10596	.62729*		-.17015	.11749	-.04245
Return on Net Assets Ratio-Raw	.15217	-.02725	-.17015		.16859	-.10218
Net Operating Revenues Ratio-Raw	.99622*	.30294	.11749	.16859		-.01543
Full-Time Equivalent Enrollment	.02260	-.26994	-.04245	-.10218	-.01543	
Fiscal Year Credit Hours	-.01727	-.028072	-.04315	-.09976	-.00844	.99808*
Male Enrollment	-.01415	-.25559	-.05059	-.10720	-.00723	.98966*

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Net Operating Revenues Ratio-Weighted	Primary Reserve-Raw	Viability Ratio-Raw	Return on Net Assets Ratio-Raw	Net Operating Revenues Ratio-Raw	Full-Time Equivalent Enrollment
Female Enrollment	-.01860	-.23915	-.01421	-.09130	-.01077	.98486*
[a]Proportion of Female Enrollment	-.09596	-.01211	-.00580	.00134	-.08935	.02697
Arts & Science Enrollment	-.03780	-.23780	-.05749	-.08789	-.03183	.95970*
Career Option Enrollment	-.09345	-.38635*	-.14309	-.20487	.-.09254	.86900*
Career & Technical Education Enrollment	.04888	-.19723	.03500	-.07137	.05909	.94137*
Combination of Degrees Enrollment	-.07753	-.19527	.14903	-.15750	-.07994	.67634*
Ages 17 & Under Enrollment	-.03150	-.21709	-.04210	-.07183	-.02461	.78299*
Ages 18 – 22 Enrollment	-.01263	-.25798	-.06263	-.10098	-.00560	.99395*
Ages 23 – 26 Enrollment	.00008	-.22378	-.01423	-.09017	.00796	.99207*
Ages 27 – 30 Enrollment	.00006	-.22324	.00091	-.08862	.00856	.98572*
Ages 31 – 39 Enrollment	-.00440	-.21655	.04621	-.07787	.00460	.96791*
Ages 40 – 55 Enrollment	-.02997	-.23521	.05906	-.11816	-.02517	.95556*
Ages Over 55 Enrollment	-.20055	-.25618	.06060	-.11661	-.20397	.70794*
Age No Response Enrollment	-.04849	.05145	.49755*	-.20406	-.04252	.30853*
[a]Proportion of 18 – 55 Enrollment	.05685	.18645	.18878	-.00960	.04786	.23981
Iowa Resident Enrollment	-.01914	-.23022	-.00718	-.11459	-.01223	.98718
Non-Iowa Resident Enrollment	.08870	-.30852*	-.29699*	.27862	.09963	.16177
Foreign Resident Enrollment	-.14493	-.036971*	-.15995	-.11115	-.13947	.92322*

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Net Operating Revenues Ratio-Weighted	Primary Reserve-Raw	Viability Ratio-Raw	Return on Net Assets Ratio-Raw	Net Operating Revenues Ratio-Raw	Full-Time Equivalent Enrollment
[a]Proportion of Iowa Resident Enrollment	-.002394	.30885*	.33499*	-.30123*	-.03281	.30982*
American Indian Ethnicity Enrollment	-.07432	-.26359	-.10059	.08430	-.05815	.77210*
Asian Ethnicity Enrollment	-.04959	-.20621	.00787	-.11441	-.04522	.90443*
Black Ethnicity Enrollment	-.00087	-.06880	.01113	-.10884	.00236	.93693*
Hispanic Ethnicity Enrollment	.00206	-.17011	-.06684	.00787	.01013	.82450*
White Ethnicity Enrollment	-.01818	-.24713	-.01494	-.11620	-.01142	.99047*
Ethnicity/Race No Response Enrollment	-.00768	-.33456*	-.10907	.01796	.02161	.88792*

	Fiscal Year Credit Hours	Male Enrollment	Female Enrollment	Proportion of Female Enrollment	Arts & Science Enrollment	Career Option Enrollment
Year	.02276	.02821	.02976	.16622	.00059	.01343
Success Rate	-.58077*	-.56289*	-.59999*	-.22792	-.57439*	-.34391*
Composite Financial Index	-.14254	-.14305	-.10793	-.03003	-.14369	-.22348
Primary Reserve Ratio-Weighted	-.30272*	-.27408	-.26156	-.01473	-.25825	-.37289*
Viability Ratio-Weighted	-.04350	-.05098	-.01461	-.00580	-.05789	-.14355
Return on Net Assets Ratio-Weighted	-.10353	-.10845	-.09353	-.00790	-.08849	-.20247
Net Operating Revenues Ratio-Weighted	-.01727	-.01415	-.01860	-.09596	-.03780	-.09345
Primary Reserve Ratio-Raw	-.28072	-.25559	.-23915	-.01211	-.23780	-.38635*
Viability Ratio-Raw	-.04315	-.05059	-.01421	-.00580	-.05749	-.14309
Return on Net Assets Ratio-Raw	-.09976	-.10720	-.09130	.00134	-.08789	-.20487

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Fiscal Year Credit Hours	Male Enrollment	Female Enrollment	Proportion of Female Enrollment	Arts & Science Enrollment	Career Option Enrollment
Net Operating Revenues Ratio-Raw	-.00844	-.00723	-.01077	-.08935	-.03183	-.09254
Full-Time Equivalent Enrollment	.99808*	.98966*	.98486*	.02697	.95970*	.86900*
Fiscal Year Credit Hours		.98356*	.97764*	.03122	.94612*	.86268*
Male Enrollment	.98356*		.99067*	-.00066	.98181*	.89369*
Female Enrollment	.97764*	.99067*		.08608	.98335*	.85866*
[a]Proportion of Female Enrollment	.03122	-.00066	.08608		.01780	-.07345
Arts & Science Enrollment	.94612*	.98181*	.98335*	.01780		.86395*
Career Option Enrollment	.86268*	.89369*	.85866*	-.07345	.86395*	
Career & Technical Education Enrollment	.95040*	.91203*	.92099*	.07465	.84967*	.73199*
Combination of Degrees Enrollment	.65641*	.70706*	.70042*	-.01796	.71982*	.69111*
Ages 17 & Under Enrollment	.75895*	.85451*	.85289*	-.00417	.89721*	.80494*
Ages 18 – 22 Enrollment	.99038*	.99677*	.98808*	.00984	.97534*	.88129*
Ages 23 – 26 Enrollment	.99217*	.98089*	.98063*	.02893	.94900*	.84839*
Ages 27 – 30 Enrollment	.98363*	.97244*	.98221*	.05394	.94741*	.82170*
Ages 31 – 39 Enrollment	.96196*	.95696*	.97737*	.07692	.94306*	.79361*
Ages 40 – 55 Enrollment	.94613*	.95045*	.97493*	.09706	.94286*	.81083*
Ages Over 55 Enrollment	.68839*	.71720*	.74069*	.11796	.74229*	.71483*
Age No Response Enrollment	.30336*	.33066*	.35070*	.09962	.34638*	.28406
[a]Proportion of 18 – 55 Enrollment	.25626	.13128	.16155	.03736	.07393	-.03884

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Fiscal Year Credit Hours	Male Enrollment	Female Enrollment	Proportion of Female Enrollment	Arts & Science Enrollment	Career Option Enrollment
Iowa Resident Enrollment	.98051*	.99729*	.99478*	.01728	.98332*	.88831*
Non-Iowa Resident Enrollment	.15928	.12448	.17876	.22427	.15170	-.11663
Foreign Resident Enrollment	.91496*	.91317*	.89317*	-.02760	.90369*	.89063*
[a]Proportion of Iowa Resident Enrollment	.30816*	.34058*	.29579*	-.20698	.30824*	.39169*
American Indian Ethnicity Enrollment	.77724*	.73828*	.74881*	.07627	.68922*	.55736*
Asian Ethnicity Enrollment	.88531*	.94747*	.94257*	-.02178	.96204*	.89690*
Black Ethnicity Enrollment	.92455*	.95183*	.95035*	-.00370	.95893*	.81850*
Hispanic Ethnicity Enrollment	.80075*	.85569*	.86583*	.02840	.87955*	.69979*
White Ethnicity Enrollment	.98524*	.99539*	.99546*	.03214	.98028*	.88137*
Ethnicity/Race No Response Enrollment	.88370*	.89435*	.89356*	.02773	.87317*	.75337*

	Career & Technical Education Enrollment	Combination of Degrees Enrollment	Ages 17 & Under Enrollment	Ages 18 – 22 Enrollment	Ages 23-26 Enrollment	Ages 27-30 Enrollment
Year	.00334	.10341	.08443	.02685	-.02275	.02696
Success Rate	-.59356*	-.31152*	-.43561*	-.05877*	-.57784*	-.61593*
Composite Financial Index	-.03941	.00324	-.11933	-.15112	-.10063	-.08821
Primary Reserve Ratio-Weighted	-.22348	-.19325	-.23539	-.27696	-.24854	-.24898
Viability Ratio-Weighted	.03470	.14878	-.04250	-.06300	-.01465	.00052
Return on Net Assets Ratio-Weighted	-.07547	-.15496	-.07005	-.10327	-.09311	-.09106
Net Operating Revenues Ratio-Weighted	.04888	-.07753	-.03150	-.01263	.00008	.00006

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Career & Technical Education Enrollment	Combination of Degrees Enrollment	Ages 17 & Under Enrollment	Ages 18 – 22 Enrollment	Ages 23-26 Enrollment	Ages 27-30 Enrollment
Primary Reserve Ratio-Raw	-.19723	-.19527	-.21709	-.25798	-.22378	-.22324
Viability Ratio-Raw	.03500	.14903	-.04210	-.06263	-.01423	.00091
Return on Net Assets Ratio-Raw	-.07137	-.15750	-.07183	-.10098	-.09017	-.08862
Net Operating Revenues Ratio-Raw	.05909	-.07994	-.02461	-.00560	.00796	.00856
Full-Time Equivalent Enrollment	.94137*	.67634*	.78299*	.99395*	.99207*	.98572*
Fiscal Year Credit Hours	.95040*	.65641*	.75895*	.99038*	.99217*	.98363*
Male Enrollment	.91203*	.70706*	.85451*	.99667*	.98089	.97244*
Female Enrollment	.92099*	.70042*	.85289*	.98808	.98063*	.98221*
[a]Proportion of Female Enrollment	.07465	-.01796	-.00417	.00984	.02893	.05394
Arts & Science Enrollment	.84967*	.71982*	.89721*	.97534*	.94900*	.94741*
Career Option Enrollment	.73199*	.69111*	.80494*	.88129*	.84839*	.82170*
Career & Technical Education Enrollment		.50003*	.63619*	.92129*	.95833*	.95895*
Combination of Degrees Enrollment	.50003*		.78260*	.68747*	.61666*	.62023*
Ages 17 & Under Enrollment	.63619*	.78260*		.82462*	.75432*	.75584*
Ages 18 – 22 Enrollment	.92129*	.68747*	.82462*		.98599*	.97485*
Ages 23 – 26 Enrollment	.95833*	.61666*	.75432*	.98599*		.99336*
Ages 27 – 30 Enrollment	.95895*	.62023*	.75584*	.97485*	.99336*	
Ages 31 – 39 Enrollment	.94286*	.64188*	.77113*	.95293*	.97398*	.99051*

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Career & Technical Education Enrollment	Combination of Degrees Enrollment	Ages 17 & Under Enrollment	Ages 18 – 22 Enrollment	Ages 23-26 Enrollment	Ages 27-30 Enrollment
Ages 40 – 55 Enrollment	.92102*	.67641*	.79859*	.94233*	.95577*	.97339*
Ages Over 55 Enrollment	.59948*	.64387*	.68278*	.69597*	.68759*	.70419*
Age No Response Enrollment	.28921	.43396*	.34656*	.29631*	.30246*	.31393*
[a]Proportion of 18 – 55 Enrollment	.35978*	-.10862	-.28601	.18168	.28990	.29132
Iowa Resident Enrollment	.91557*	.70589*	.85608*	.99389*	.98238*	.97650*
Non-Iowa Resident Enrollment	.19943	.09574	.10413	.12685	.14193	.20122
Foreign Resident Enrollment	.77567*	.67610*	.73072*	.91745*	.89704*	.88074*
[a]Proportion of Iowa Resident Enrollment	.30450	.12966	.24520	.33852*	.33581*	.29195
American Indian Ethnicity Enrollment	.83521*	.28395	.45728*	.73553*	.79916*	81405*
Asian Ethnicity Enrollment	.77634*	.79200*	.94649*	.92511*	.89190*	.88939*
Black Ethnicity Enrollment	.84049*	.66433*	.82841*	.94970*	.93817*	.93645*
Hispanic Ethnicity Enrollment	.74727*	.60179*	.83765*	.82483*	.81587*	.84494*
White Ethnicity Enrollment	.92217*	.70483*	.84617*	.99493*	.98326*	.97866*
Ethnicity/Race No Response Enrollment	.85161*	.61598*	.74423*	.88982*	.88884*	.88733*

	Ages 31-39 Enrollment	Ages 40-55 Enrollment	Ages Over 55 Enrollment	Age No Response Enrollment	Proportion of 18-55 Enrollment	. Iowa Resident Enrollment
Year	.01367	-.01042	-.02659	-.17684	-.15524	.02152
Success Rate	-.065672*	-.64320*	-.39559*	-.21986	-.28682	-.55220*
Composite Financial Index	-.04939	-.05825	-.08767	.32242*	.19280	-.10728
Primary Reserve Ratio-Weighted	-.24464	-.24947	-.23612	.03183	.17813	-.25005

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Ages 31-39 Enrollment	Ages 40-55 Enrollment	Ages Over 55 Enrollment	Age No Response Enrollment	Proportion of 18-55 Enrollment	. Iowa Resident Enrollment
Viability Ratio-Weighted	.04582	.05865	.06012	.49750*	.18849	-.00759
Return on Net Assets Ratio-Weighted	-.08053	-.11923	-.11065	-.19814	-.02266	-.11593
Net Operating Revenues Ratio-Weighted	-.00440	-.02997	-.20055	-.04849	.05685	-.01914
Primary Reserve Ratio-Raw	-.21655	-.23521	-.25618	.05145	.18645	-.23022
Viability Ratio-Raw	.04621	.05906	.06060	.49755*	.18878	-.00718
Return on Net Assets Ratio-Raw	-.07787	.18816	-.11661	-.20406	-.00960	-.11459
Net Operating Revenues Ratio-Raw	.00460	-.02517	-.20397	-.04252	.04786	-.01223
Full-Time Equivalent Enrollment	.96791*	.95556*	.70794*	.30853*	.23981	.98718*
Fiscal Year Credit Hours	.96196*	.94613*	.68839*	.30336*	.25626	.98051*
Male Enrollment	.95696*	.95045*	.71720*	.33066*	.13128	.99729*
Female Enrollment	.97737	.97493*	.74069*	.35070*	.16155	.99478*
[a]Proportion of Female Enrollment	.07692	.09706	.11796	.09962	.03736	.01728
Arts & Science Enrollment	.94306*	.94286*	.74229*	.34638*	.07393	.98332*
Career Option Enrollment	.79361*	.81083*	.71483*	.28406	-.03884	.88831*
Career & Technical Education Enrollment	.94286*	.92102*	.59948*	.28921	.35978*	.91557*
Combination of Degrees Enrollment	.64188*	.67641*	.64387*	.43396*	-.10862	.70589*
Ages 17 & Under Enrollment	.77113*	.79859*	.68278*	.34656*	-.28601	.85608*
Ages 18 – 22 Enrollment	.95293*	.94233*	.69597*	.29631*	.18168	.99389*

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Ages 31-39 Enrollment	Ages 40-55 Enrollment	Ages Over 55 Enrollment	Age No Response Enrollment	Proportion of 18-55 Enrollment	. Iowa Resident Enrollment
Ages 23 – 26 Enrollment	.97398*	.95577*	.68759*	.30246*	.28990	.98238*
Ages 27 – 30 Enrollment	.99051*	.97339*	.70419*	.31393*	.29132	.97650*
Ages 31 – 39 Enrollment		.98984*	.73035*	.37645*	.26727	.96420*
Ages 40 – 55 Enrollment	.98984*		.78686*	.43274*	.21275	.96175*
Ages Over 55 Enrollment	.73035*	.78686*		.45044*	-.00941	.73974*
Age No Response Enrollment	.37645*	.43274*	.45044*		-.17819	.35058*
[a]Proportion of 18 – 55 Enrollment	.26727	.21275	-.00941	-.17819		.14477
Iowa Resident Enrollment	.96420*	.96175*	.73974*	.35058*	.14477	
Non-Iowa Resident Enrollment	.25926	.22510	-.06191	-.04684	.12457	.09955
Foreign Resident Enrollment	.85648*	.85061*	.75589*	.24867	.18109	.90397*
[a]Proportion of Iowa Resident Enrollment	.23983	.25620	.34068	.22091	.01445	.36571*
American Indian Ethnicity Enrollment	.81226*	.78293*	.63461*	.23046	.29506*	.73514*
Asian Ethnicity Enrollment	.89435*	.90711*	.77187*	.37364*	-.03972	.95072*
Black Ethnicity Enrollment	.92153*	.90233*	.68873*	.23715	.21548	.95523*
Hispanic Ethnicity Enrollment	.87924*	.87405*	.70641*	.32360*	-.01537	.85172*
White Ethnicity Enrollment	.96640*	.96276*	.72876*	.33341*	.16359	.99781*
Ethnicity/Race No Response Enrollment	.88515*	.88127*	.61889*	.42273*	.09684	.88599*

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Non-Iowa Resident Enrollment	Foreign Enrollment	Proportion of Iowa Resident Enrollment	American Indian Ethnicity Enrollment	Asian Ethnicity Enrollment	Black Ethnicity Enrollment
Year	.06287	.00873	-.06197	-.00109	.03622	.05349
Success Rate	-.62223*	-.48815*	.25176	-.57348*	-.49024*	-.56114*
Composite Financial Index	-.20089	-.28093	.23283	-.13677	-.09535	-.05237
Primary Reserve Ratio-Weighted	-.33754*	-.37748*	.32331*	-.29628*	-.22310	-.09195
Viability Ratio-Weighted	-.29680*	-.16039	.33482*	-.10093	.000732	.01066
Return on Net Assets Ratio-Weighted	.27175	-.11196	-.29551*	.08412	-.11276	-.11275
Net Operating Revenues Ratio-Weighted	.08870	-.14493	-.02394	-.07432	-.04959	-.00087
Primary Reserve Ratio-Raw	-.30852*	-.36971*	.30885*	-.26359	-.20621	-.06880
Viability Ratio-Raw	-.29699*	-.15995	.33499*	-.10059	.00787	.01113
Return on Net Assets Ratio-Raw	.27862	-.11115	-.30123*	.08430	-.11441	-.10884
Net Operating Revenues Ratio-Raw	.09963	-.13947	-.03281	-.05815	-.04522	.00236
Full-Time Equivalent Enrollment	.16177	.92322*	.30982*	.77210*	.90443*	.93693*
Fiscal Year Credit Hours	.15928	.91496*	.30816*	.77724*	.88531*	.92455*
Male Enrollment	.12448	.91317*	.34058*	.73828*	.94747*	.95183*
Female Enrollment	.17876	.89317*	.29579*	.74881*	.94257*	.95035*
[a]Proportion of Female Enrollment	.22427	-.02760	-.20698	.07627	-.02178	-.00370
Arts & Science Enrollment	.15170	.90369*	.30824*	.68922*	.96204*	.95893*
Career Option Enrollment	-.11663	.89063*	.39169*	.57736*	.89690*	.81850*
Career & Technical Education Enrollment	.19943	.77567*	.30450*	.83521*	.77634*	.84049*

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Non-Iowa Resident Enrollment	Foreign Enrollment	Proportion of Iowa Resident Enrollment	American Indian Ethnicity Enrollment	Asian Ethnicity Enrollment	Black Ethnicity Enrollment
Combination of Degrees Enrollment	.09574	.67610*	.12966	.28395	.79200*	.66433*
Ages 17 & Under Enrollment	.10413	.73072*	.24520	.45723*	.94649*	.28241*
Ages 18 – 22 Enrollment	.12685	.91745*	.33852*	.73553*	.92511*	.94970*
Ages 23 – 26 Enrollment	.14193	.89704*	.33581*	.79916*	.89190*	.93817*
Ages 27 – 30 Enrollment	.20122	.88704*	.29195	.81405*	.88939*	.93645*
Ages 31 – 39 Enrollment	.25926	.85648*	.23983	.81226*	.89435*	.92153*
Ages 40 – 55 Enrollment	.22510	.85061*	.25620	.78293*	.90711*	.90233*
Ages Over 55 Enrollment	-.06191	.75589*	.34068*	.63461*	.77187*	.68873*
Age No Response Enrollment	-.04684	.24867	.22091	.23046	.37364*	.23715
[a]Proportion of 18 – 55 Enrollment	.12457	.18109	.01445	.29506*	-.03972	.21548
Iowa Resident Enrollment	.09955	.90397*	.36571*	.73514*	.95072*	.95523*
Non-Iowa Resident Enrollment		.08989	-.80984*	.28204	.06401	.08311
Foreign Resident Enrollment	.08989		.25835	.69610*	.86567*	.86860*
[a]Proportion of Iowa Resident Enrollment	-.80984*	.25835		.17012	.32269*	.37386*
American Indian Ethnicity Enrollment	.28204	.69610*	.17102		.62290*	.66411*
Asian Ethnicity Enrollment	.06401	.86567*	.32269*	.62290*		.92857*
Black Ethnicity Enrollment	.08311	.86860*	.37386*	.66411*	.92857*	
Hispanic Ethnicity Enrollment	.32461	.74962*	.15464	.74398*	.88197*	.86319*
White Ethnicity Enrollment	.12852	.90384*	.33873*	.72609*	.93911*	.95166*

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (N = 45)

	Non-Iowa Resident Enrollment	Foreign Enrollment	Proportion of Iowa Resident Enrollment	American Indian Ethnicity Enrollment	Asian Ethnicity Enrollment	Black Ethnicity Enrollment
Ethnicity/Race No Response Enrollment	.30115	.80659*	.13167	.80322*	.83336*	.77712*

	Hispanic Ethnicity Enrollment	White Ethnicity Enrollment	Ethnicity/Race No Response Enrollment
Year	.07525	.02540	-.02016
Success Rate	-.69055*	-.56462*	-.58368*
Composite Financial Index	-.09635	-.11761	-.16162
Primary Reserve Ratio-Weighted	-.19482	-.26650	-.36267*
Viability Ratio-Weighted	-.06729	-.01531	-.10950
Return on Net Assets Ratio-Weighted	.00730	-.11844	.02072
Net Operating Revenues Ratio-Weighted	.00206	-.01818	.00768
Primary Reserve Ratio-Raw	-.17011	-.24713	-.33456*
Viability Ratio-Raw	-.06684	-.01494	-.10907
Return on Net Assets Ratio-Raw	.00787	-.16620	.01796
Net Operating Revenues Ratio-Raw	.01013	-.01142	.02161
Full-Time Equivalent Enrollment	.82450*	.99047*	.88792*
Fiscal Year Credit Hours	.80075*	.98524*	.88370*
Male Enrollment	.85569*	.95539*	.89435*
Female Enrollment	.85683*	.99546*	.89356*
[a]Proportion of Female Enrollment	.02840	.03214	.02773
Arts & Science Enrollment	.87955*	.98028*	.87317*

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Hispanic Ethnicity Enrollment	White Ethnicity Enrollment	Ethnicity/Race No Response Enrollment
Career Option Enrollment	.69979*	.88137*	.75337*
Career & Technical Education Enrollment	.74727*	.92217*	.85161*
Combination of Degrees Enrollment	.60179*	.70483*	.61598*
Ages 17 & Under Enrollment	.83765*	.84617*	.74423*
Ages 18 – 22 Enrollment	.82483*	.99493*	.88682*
Ages 23 – 26 Enrollment	.81587*	.98326*	.88884*
Ages 27 – 30 Enrollment	.84494*	.97866*	.88733*
Ages 31 – 39 Enrollment	.87924*	.96640*	.88515*
Ages 40 – 55 Enrollment	.87405*	.96276*	.88127*
Ages Over 55 Enrollment	.70641*	.72876*	.61889*
Age No Response Enrollment	.32360*	.33341*	.42273*
[a]Proportion of 18 – 55 Enrollment	-.01537	.16359	.09684
Iowa Resident Enrollment	.85172*	.99781*	.88599*
Non-Iowa Resident Enrollment	.32461*	.12852	.30115*
Foreign Resident Enrollment	.74962*	.90384*	.80659*
[a]Proportion of Iowa Resident Enrollment	.15464	.33873*	.13167
American Indian Ethnicity Enrollment	.74398*	.72609*	.80322*
Asian Ethnicity Enrollment	.88197*	.93911*	.83336*

Table 3.4 (Continued)

Correlations for Panel Data Analysis Variables with Related Covariates (*N* = 45)

	Hispanic Ethnicity Enrollment	White Ethnicity Enrollment	Ethnicity/Race No Response Enrollment
Black Ethnicity Enrollment	.86319*	.95166*	.77712*
Hispanic Ethnicity Enrollment		.84004*	.79496*
White Ethnicity Enrollment	.84004*		.87361*
Ethnicity/Race No Response Enrollment	.79496*	.87361*	

Note. Adapted from "Calculating the Composite Financial Index (CFI)", by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, and C. Cowen, 2010, Strategic Financial Analysis for Higher Education: Identifying, Measuring & Reporting Financial Risks, pp. 109-137. Copyright 2010 by Prager, Sealy & Co., LLC; KPMG LLP; and Attain LLC. Additional Source: Iowa Department of Education MIS Database, 2011.
[a] Calculated by the researcher.

Econometric method

Because the data has a panel structure, panel data models were used to investigate the above relationships. The use of panel data models also allows for investigation of data over two dimensions: (1) across community colleges (cross-sectional), and (2) over time from 2008 – 2010 (temporal). Analysis of panel data analysis is generally done using two primary models: (1) fixed-effects models, and (2) random-effects models. The difference between the two types of models depends upon the assumptions about ε_{it}.

A two-way fixed-effects model handled differences across time periods by also including time-period-specific terms that are constant for all of Iowa's community colleges. A two-way random-effects model handled differences across time periods by including an additional random error term that is constant for all community colleges and captured the effects of excluded time-specific factors. If the community college-specific terms were correlated with the independent variables, then a fixed-effects model was more appropriate; if not, then a random-effects model was more appropriate.

Summary

The purpose of this study was to understand the extent to which the composite financial index for the fiscal years of 2008-2010 predicted the success rate for Iowa's community colleges. This time period was chosen due to the availability of the success rate data provided by the IA DE. The conceptual framework chosen for this study was the CFI framework (Tahey et al., 2010). Results from the study are presented in Chapter 4.

CHAPTER FOUR
RESULTS

Overview

"The mission of the community colleges of Iowa in the 21st century is to provide exemplary educational and community services to meet the needs and enhance the lives of Iowans" (IA DE, 2006). This mission is spelled out in the five-year plan for Iowa's community colleges. As part of this five-year plan, the IA DE reported annually on performance indicators. A new performance indicator was identified in 2008. This was the student success rate, a combination of both the graduation rate and the transfer rate. A new cohort group was tracked to begin identifying rates. The 2006 cohort group was compared to the success rate for 2008 assuming 150% of the normal time to graduate with an associate's degree. This performance indicator, as well as the other variables of full-time equivalent enrollment, enrollment, fiscal year credit hours, graduation rates, transfer rates, and composite financial indices as a measure of financial health that were analyzed for this study, follow. Also, enrollment by program type, enrollment by age groups, enrollment by gender, enrollment by ethnicity/race, and enrollment by residency were analyzed as covariates of enrollment. The descriptive statistics for all of the above variables are displayed in the following tables.

Descriptive Statistics

Descriptive statistics for the composite financial index

The overall financial health (the composite financial index or CFI) for all of Iowa's community colleges for the fiscal years of 2001-2010 are presented in Table 4.1.

Table 4.1

Overall Financial Health Scores for Iowa's Community Colleges (*N* = 15)

Variable	Financial Distress (-4.00 - .99)	Below Target (1.00 – 2.99)	At or Above Target (3.00 – 9.99)	Maximum Score (10.00)	*M*	*SD*
Composite Financial Index						
2001	2 (13%)	5 (33%)	8 (53%)	0 (0%)	2.71	1.71
2002	3 (20%)	4 (27%)	5 (33%)	3 (20%)	3.88	3.77
2003	2 (13%)	4 (27%)	6 (40%)	3 (20%)	4.42	3.60
2004	3 (20%)	4 (27%)	5 (33%)	3 (20%)	4.17	3.48
2005	1 (7%)	5 (33%)	6 (40%)	3 (20%)	4.44	3.45
2006	2 (13%)	4 (27%)	6 (40%)	3 (20%)	4.65	3.42
2007	2 (13%)	3 (20%)	9 (60%)	1 (7%)	4.87	3.65
2008	1 (7%)	7 (47%)	7 (47%)	0 (0%)	3.88	2.77
2009	2 (13%)	7 (47%)	6 (40%)	0 (0%)	3.23	2.45
2010	1 (7%)	6 (40%)	8 (53%)	0 (0%)	4.12	2.44
Composite Financial Index						
2001-2010	19 (13%)	49 (33%)	66 (43%)	16 (11%)		

Note. Adapted from "Calculating the Composite Financial Index (CFI)," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 132. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

Scores were scaled between -4.00 and 10.00. Most of Iowa's community colleges were at or above the target of 3.00 for all fiscal years except for 2008 and 2009. For the 2008 fiscal year, only 47% of Iowa's community colleges scored at or above 3.00. For the 2009 fiscal year, only 40% scored at or above 3.00. This pattern follows the approximate timeframe for the 2008 recession that started in the U.S. with the collapse of the subprime mortgage market in early 2007 (Bordo, 2008).

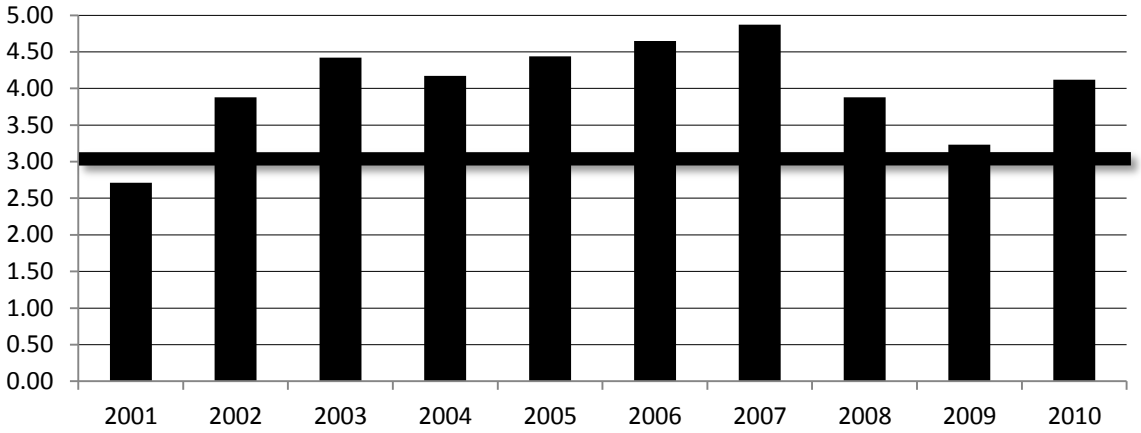
Although fiscal years 2008 and 2009 saw the most community colleges below the target of 3.00, fiscal year 2001 had the lowest mean CFI at 2.71. The greatest percentage of community colleges below the target CFI occurred in 2009. A combined 60 percent of community colleges were either in financial distress or below the target of 3.00. Fiscal years 2002 and 2004 were identified as having the most community colleges at risk at 3 or 20% for each year. A combined 67% of all community colleges' CFI scores were at or above the target or had a maximum score of 10.00 for fiscal year 2007, also the fiscal year with the highest mean CFI of 4.87. Figure 4.1 depicts the mean CFI scores for all of Iowa's community colleges per fiscal year. The target CFI ratio of 3.00 is represented by the thick black horizontal line. The mean CFI scores for all fiscal years except for 2001 were above 3.00. Table C.1 lists the expanded CFI scores for fiscal years 2001-2010 in ascending order.

Descriptive statistics for the primary reserve ratio

Table 4.2 outlines the primary reserve ratio (PRR) scores by fiscal year for Iowa's community colleges. According to the conceptual framework, the primary reserve ratio measures as a trend whether an institution has increased its net worth in proportion to the rate of growth in its operating size.

Figure 4.1

Composite Financial Index Means by Fiscal Year for Iowa's Community Colleges



Note. Adapted from "Calculating the Composite Financial Index (CFI)," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 132. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

A score of .40 would allow for 4.8 months of expenditures in reserves. For the fiscal year 2001, all 15 community colleges' PRR scores were below the target of .40. The mean score for 2001 was .20, only allowing for 2.4 months of reserves for expenditures. The strongest fiscal year in terms of the PRR was 2010. However, only five community colleges were at or above the target of .40. Looking at the total PRR scores for fiscal years 2001-2010, 83% were below the target. With this level of PRR, little or no room is left for innovation or for funding new initiatives.

Figure 4.2 displays the PRR means for the fiscal years of 2001-2010. The horizontal line at .40 marks the target according to the conceptual framework. The mean for each year during this time period fell well below the target. Expanded PRR scores are located in Table C.2.

Table 4.2

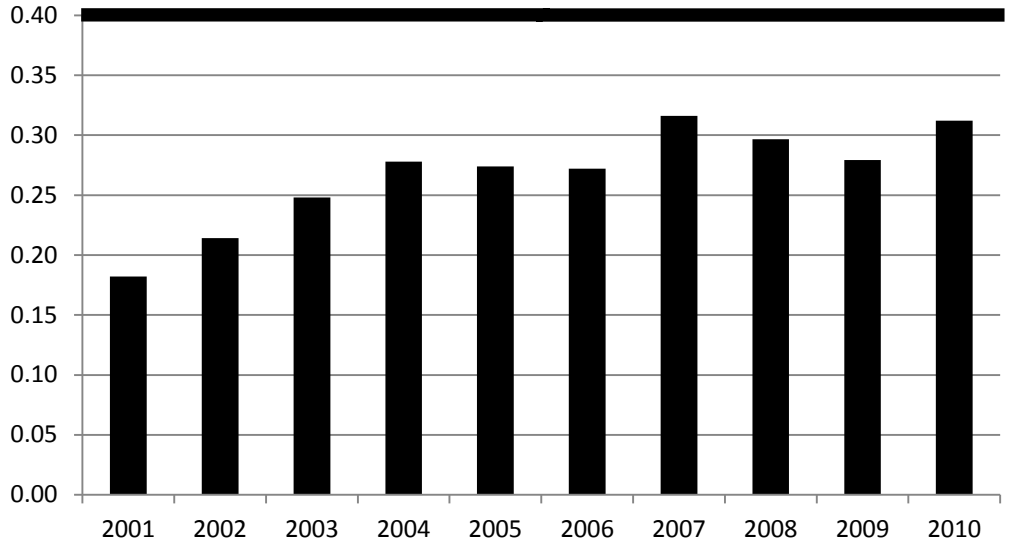
Primary Reserve Ratio Scores for Iowa's Community Colleges (*N* = 15)

Variable	Below Target (< .40)	At or Above Target (≥ .40)	*M*	*SD*
Primary reserve ratio				
2001	15 (100%)	0 (0%)	.20	.09
2002	14 (93%)	1 (7%)	.21	.37
2003	13 (87%)	2 (13%)	.25	.15
2004	13 (87%)	2 (13%)	.28	.16
2005	13 (87%)	2 (13%)	.27	.17
2006	12 (80%)	3 (20%)	.27	.17
2007	11 (73%)	4 (27%)	.32	.23
2008	12 (80%)	3 (20%)	.30	.24
2009	12 (80%)	3 (20%)	.28	.21
2010	10 (67%)	5 (33%)	.31	.22
Primary reserve ratio				
2001-2010	125 (83%)	25 (17%)		

Note. Adapted from "Calculating Financial Ratios and Metrics," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 113. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

Figure 4.2

Primary Reserve Ratio Means by Fiscal Year for Iowa's Community Colleges



Note. Adapted from "Calculating Financial Ratios and Metrics," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 113. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

Descriptive statistics for the viability ratio

The second core ratio of the CFI is the viability ratio. The numerator of the viability ratio is the same as the primary reserve ratio. The viability ratio indicates the availability of expendable net assets to cover debt should the institution need to settle its obligations as of the statement of net assets date. This date is usually the last day of the fiscal year. Table 4.3 displays the viability ratio scores per fiscal year for Iowa's community colleges. In terms of the viability ratio all of the fiscal years' means were above the target of 1.0. However, the target for this ratio may be adapted to a particular institution (Tahey et al., 2010). The denominator of the viability ratio (VR) contains total plant-related debt, both short- and long-term. Most of Iowa's community colleges had plant-related debt through the fiscal years of

Table 4.3

Viability Ratio Scores for Iowa's Community Colleges (*N* = 15)

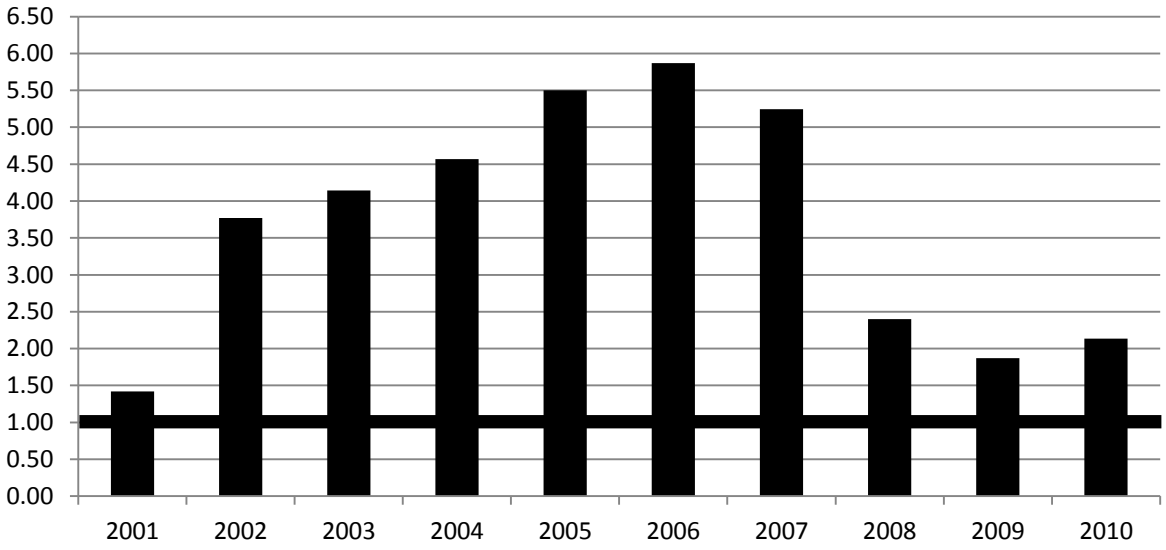
Variable	Below Target (< 1.0)	At or Above Target (≥ .1.0)	[a]Missing	*M*	*SD*
Viability ratio					
2001	5 (33%)	8 (53%)	2 (13%)	1.42	1.09
2002	6 (40%)	9 (60%)	0 (0%)	3.77	5.48
2003	6 (40%)	9 (60%)	0 (0%)	4.14	5.21
2004	6 (40%)	9 (60%)	0 (0%)	4.57	5.90
2005	7 (47%)	7 (47%)	1 [b](6%)	5.50	8.05
2006	6 (40%)	8 (53%)	1 (7%)	5.87	8.90
2007	6 (40%)	8 (53%)	1 (7%)	5.24	10.44
2008	6 (40%)	8 (53%)	1 (7%)	2.40	2.46
2009	7 (47%)	7 (47%)	1 [b](6%)	1.87	2.06
2010	5 (33%)	9 (60%)	1 (7%)	2.14	2.64
Viability ratio 2001-2010	60 (40%)	82 (55%)	8 (5%)		

Note. Adapted from "Calculating Financial Ratios and Metrics," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 115. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.
[a]Zero plant-related debt. Viability ratio is not applicable.
[b]Adjusted for rounding.

2001-2010. However, five percent of the VR scores were missing. This five percent represents those community colleges with no plant-related debt. According to the CFI framework, if an institution has no plant-related debt, the viability ratio is weighted at zero and thus does not enter into the calculation of the overall CFI for a particular institution. The fiscal year with the lowest mean was 2001 with a mean score of 1.42. The highest mean score of 5.87 occurred in 2006. The fiscal year 2007 saw standard deviation of 10.44 (before truncating for -4 at the bottom and 10 at the top of the scale), indicating the most variability from the mean of 5.24. The only three fiscal years in which all community colleges had plant-related debt on their statement of net assets were 2002, 2003 and 2004. Another commonality of those particular years was that 40% of the community colleges were below the target of 1.0 and 60% of the community colleges were at or above the target of 1.0. A visual chart depicting the trends in the VR for 2001-2010 can be found in Figure 4.3. From the period of 2001-2006, the VR means showed a pattern of steadily increasing scores. After 2007 the VR means decreased dramatically through 2009 and then increased slightly in 2010. The target ratio is depicted by the solid horizontal line at 1.0. Expanded VR scores in ascending order by fiscal year may be found in Table C.3.

Figure 4.3

Viability Ratio Means by Fiscal Year for Iowa's Community Colleges



Note. Adapted from "Calculating Financial Ratios and Metrics," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 115. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

Descriptive statistics for the return on net assets ratio

The third ratio of the CFI is the return on net assets ratio (RONAR). Table 4.4 lists the RONAR ratios per fiscal year for Iowa's community colleges. This ratio is calculated as the (change in net assets plus the component unit change in net assets) divided by (total net assets plus component unit total net assets). The change in net assets is computed by taking the end of fiscal year net assets minus the beginning of fiscal year net assets. A measure of total economic return, the RONAR is best assessed over a period of years. Some institutions may also use a three-year rolling average (Tahey et al., 2010).

The target for the RONAR was .03. Two of the fiscal years in Table 4.4, 2008 and 2010, listed all community colleges meeting or exceeding the target ratio. A score of .13 in 2008 topped the mean scores for the 10-year period. As with the primary reserve ratio and

the viability ratio, 2001 had the lowest mean score. The largest percentage (40%) of those institutions below the target ratio of .03 occurred during 2002 and 2009. Over this ten-year period, 83% of the scores were at or above the target ratio of .03.

Figure 4.4 displays the mean scores per fiscal year for the return on net assets ratio. The solid horizontal line indicates the target ratio of .03. The 10-year period ended with a solid mean RONAR score of .11, much higher than in 2001 with a mean of .05. Expanded RONAR scores for each fiscal year in ascending order may be found in Table C.4.

Table 4.4

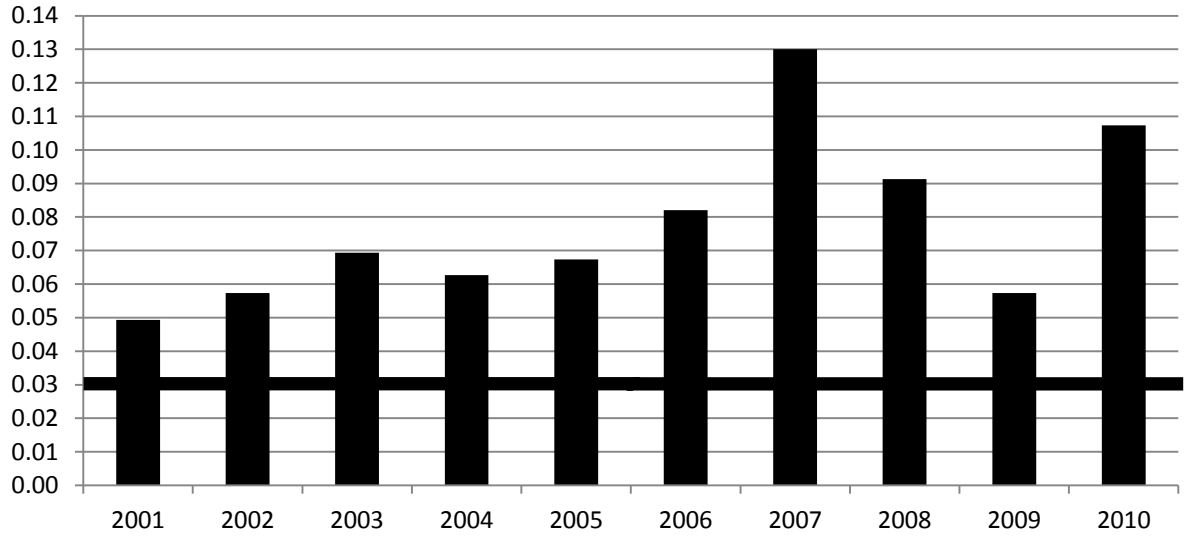
Return on Net Assets Ratio Scores for Iowa's Community Colleges (*N* = 15)

Variable	Below Target (< .03)	At or Above Target (≥ .03)	*M*	*SD*
Return on Net Assets Ratio				
2001	4 (27%)	11 (73%)	.05	.73
2002	6 (40%)	9 (60%)	.06	.17
2003	3 (20%)	12 (80%)	.07	.07
2004	3 (20%)	12 (80%)	.06	.07
2005	1 (7%)	14 (93%)	.07	.51
2006	1 (7%)	14 (93%)	.07	.65
2007	1 (7%)	14 (93%)	.08	.13
2008	0 (0%)	15 (100%)	.13	.07
2009	6 (40%)	9 (60%)	.06	.92
2010	0 (0%)	15 (100%)	.11	.78
Return on Net Assets Ratio				
2001-2010	25 (17%)	125 (83%)		

Note. Adapted from "Calculating Financial Ratios and Metrics," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 122. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

Figure 4.4

Return on Net Assets Ratio Means by Fiscal Year for Iowa's Community Colleges



Note. Adapted from "Calculating Financial Ratios and Metrics," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 122. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

Descriptive statistics for the net operating revenues ratio

The fourth ratio in the calculation of the CFI was the net operating revenues ratio. This ratio served as a primary indicator in explaining how a surplus from operating activities affected the behavior of the other three core ratios (primary reserve ratio, viability ratio, and return on net assets ratio). A large operating surplus or deficit impacted the amount either added to or subtracted from net assets, thereby affecting the other three core ratios. A positive ratio (.00 or greater) indicated an operating surplus for the year. Table 4.5 lists the net operating revenue ratios

for Iowa's community colleges. This ratio was based on the GASB statement of revenues, expenses and changes in net assets and the FASB component unit statement of activities (Tahey et al., 2010).

Table 4.5

Net Operating Revenues Ratio Scores for Iowa's Community Colleges (N = 15)

Variable	Below Target (< .00)	At or Above Target (≥ .00)	*M*	*SD*
NORR				
2001	2 (13%)	13 (87%)	.07	.08
2002	3 (20%)	12 (80%)	.03	.07
2003	1 (7%)	14 (93%)	.04	.03
2004	4 (27%)	11 (73%)	.01	.10
2005	1 (7%)	14 (93%)	.04	.03
2006	1 (7%)	14 (93%)	.05	.04
2007	1 (7%)	14 (93%)	.03	.10
2008	1 (7%)	14 (93%)	.03	.07
2009	0 (0%)	15 (100%)	.06	.09
2010	0 (0%)	15 (100%)	.07	.08
NORR 2001-2010	14 (9%)	136 (91%)		

Note. NORR = net operating revenues ratio. Adapted from "Calculating Financial Ratios and Metrics," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 128. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

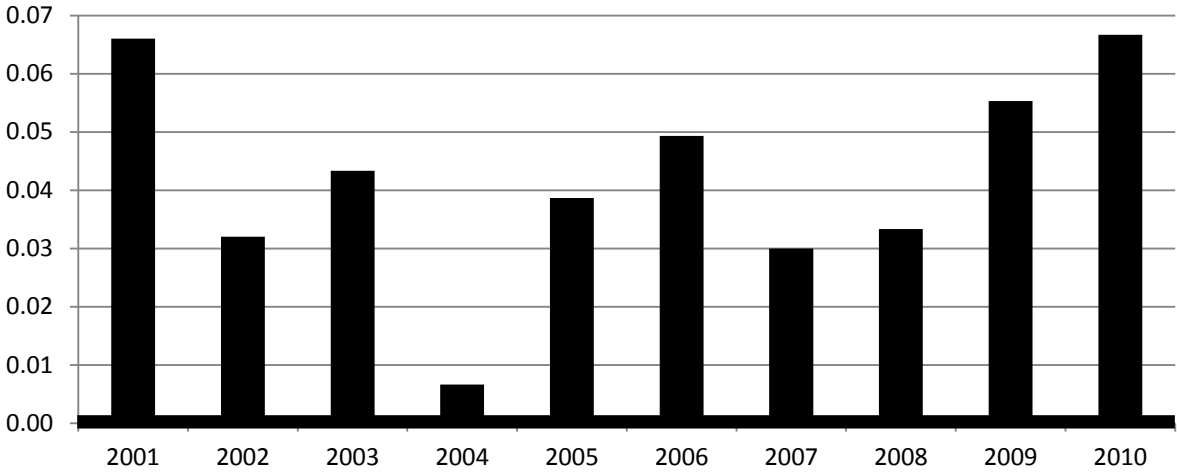
The numerator of the net operating revenues ratio (NORR) was operating income or loss plus net nonoperating revenues plus the component unit change in unrestricted net assets. The denominator of the NORR was operating revenues plus nonoperating revenues plus component unit total unrestricted revenue. During 2009 and 2010, all of Iowa's community colleges achieved an NORR score of .00 or higher. Twenty-seven percent of Iowa's community colleges were below the target of .00 or had an operating deficit during

2004. The fiscal year 2004 also had the lowest mean score of .01 (rounded), indicating an operating surplus. Overall, from the 2001-2010 time period, 91% of Iowa's community colleges scored at or above the target of .00, in other words, had an operating surplus. Expanded NORR scores in ascending order by fiscal year are found in Table C.5.

Figure 4.5 shows a visual depiction of the mean scores for the NORR from 2001-2010. Fiscal years 2001-2006 displayed a sporadic pattern for the NORR. However, from 2006-2010, the mean NORR scores showed an increase for each year.

Figure 4.5

Net Operating Revenues Ratio Mean Scores by Fiscal Year for Iowa's Community Colleges



Note. Adapted from "Calculating Financial Ratios and Metrics," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 128. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

Descriptive statistics for graduation rates

Table 4.6 outlines the graduation rates per gender for Iowa's community colleges by merged area. These graduation rates are tracked by cohort year given 150% of normal time to complete. In evaluating this table, it was noteworthy that Area IV had the highest cohort graduation rates for males (63.6%, 72.2%, and 78.5%) followed by Area III (54.0%, 52.4%, and 52.5%).

Table 4.6

Expanded Graduation Rate by Gender for Iowa's Community Colleges by Merged Area (*N* = 15)

Variable	2008 (2006 Cohort)	2009 (2007 Cohort)	2010 (2008 Cohort)
Graduation Rate by Gender			
Area I			
Male	46.1%	48.2%	46.0%
Female	49.5%	45.0%	33.7%
Area II			
Male	33.0%	29.4%	32.3%
Female	54.3%	48.5%	45.7%
Area III			
Male	54.0%	52.4%	52.5%
Female	53.0%	43.3%	50.3%
Area IV			
Male	63.6%	72.2%	78.5%
Female	60.8%	62.5%	47.4%
Area V			
Male	34.9%	35.2%	32.3%
Female	32.0%	40.8%	26.1%
Area VI			
Male	37.7%	35.2%	32.0%
Female	42.8%	56.9%	35.4%
Area VII			
Male	42.1%	43.9%	41.9%
Female	46.9%	45.4%	48.3%
[a]Area IX			
Male	22.0%	31.3%	29.3%
Female	29.6%	27.0%	24.6%
Area X			
Male	30.5%	32.9%	28.2%

Table 4.6 (Continued)

Variable	2008 (2006 Cohort)	2009 (2007 Cohort)	2010 (2008 Cohort)
Female	29.9%	35.0%	30.4%
Area XI			
Male	28.1%	27.2%	28.4%
Female	27.7%	30.8%	24.6%
Area XII			
Male	40.2%	38.3%	30.0%
Female	37.0%	44.7%	25.9%
Area XIII			
Male	33.3%	35.5%	38.5%
Female	39.9%	40.6%	40.8%
Area XIV			
Male	46.9%	60.7%	43.2%
Female	40.5%	55.1%	57.0%
Area XV			
Male	45.3%	44.5%	43.1%
Female	50.8%	52.1%	51.3%
Area XVI			
Male	30.8%	32.7%	32.0%
Female	41.4%	38.7%	42.4%

Note: Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.
[a]There is no merged area VIII.

Descriptive statistics for success rates

Expanded student success rates for Iowa's community colleges by merged area are presented in Table 4.7. These success rates, as defined by the IA DE, were a combination of both the graduation rate plus the transfer rate for first-time, full-time students. Using this definition of success, Area III had the highest rate for 2008 (67.4%), and Area IV had the highest rates for 2009 (70.0%) and 2010 (73.1%).

Table 4.7

Expanded Student Success Rates for Iowa's Community Colleges by Merged Area (N = 15)

Variables	2008 ([b]2006 Cohort)	2009 ([b]2007 Cohort)	2010 ([b]2008 Cohort)
Graduation Rate			
Area I	39.0%	34.3%	41.9%
Area II	38.2%	36.7%	28.7%
Area III	42.5%	43.3%	44.3%
Area IV	60.8%	58.9%	38.1%
Area V	37.4%	40.9%	36.9%
Area VI	39.8%	28.5%	33.8%
Area VII	27.2%	44.2%	48.4%
[a]Area IX	45.8%	31.4%	36.7%
Area X	30.0%	26.4%	29.1%
Area XI	38.6%	30.2%	46.6%
Area XII	19.0%	32.9%	35.4%
Area XIII	23.4%	24.2%	44.6%
Area XIV	41.2%	47.2%	48.1%
Area XV	40.0%	38.1%	69.7%
Area XVI	27.0%	24.1%	58.0%
Transfer Rate			
Area I	19.4%	24.4%	13.9%
Area II	18.9%	21.8%	22.0%
Area III	24.9%	15.4%	15.9%
Area IV	-3.7%	11.1%	35.0%
Area V	17.2%	9.9%	15.4%
Area VI	21.1%	26.9%	26.1%
Area VII	32.7%	12.1%	8.3%
[a]Area IX	0.0%	8.3%	9.3%
Area X	19.1%	22.5%	20.7%
Area XI	7.1%	18.8%	1.3%
Area XII	32.6%	15.8%	15.3%
Area XIII	29.1%	27.1%	7.9%
Area XIV	25.8%	14.9%	20.6%
Area XV	13.5%	20.3%	-10.5%
Area XVI	20.9%	27.5%	-7.8%

Table 4.7 (Continued)

Variables	2008 ([b]2006 Cohort)	2009 ([b]2007 Cohort)	2010 ([b]2008 Cohort)
Success Rate			
Area I	58.4%	58.7%	55.8%
Area II	57.1%	58.5%	50.7%
Area III	67.4%	58.7%	60.2%
Area IV	57.1%	70.0%	73.1%
Area V	54.6%	50.8%	52.3%
Area VI	60.9%	55.4%	59.9%
Area VII	59.9%	56.3%	56.7%
[a]Area IX	45.8%	39.7%	46.0%
Area X	49.1%	48.9%	49.8%
Area XI	45.7%	49.0%	47.9%
Area XII	51.6%	48.7%	50.7%
Area XIII	52.5%	51.3%	52.5%
Area XIV	67.0%	62.1%	68.7%
Area XV	53.5%	58.4%	59.2%
Area XVI	47.9%	51.6%	50.2%

Note: Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.
[a]There is no merged area VIII.
[b]Cohort rates are based on 150% of normal time to graduate.

Descriptive statistics for full-time equivalent enrollment

The IA DE defined FTEE as fiscal year credit hours divided by 24 plus total non-credit hours divided by 600 (2010). Table 4.8 delineates the FTEE's for Iowa's community colleges by area. All of Iowa's community colleges experienced the largest amount of FTEE's for the 2001-2010 time period during 2010. Only one, Area XI, had a 10-year period of increasing FTEE's. FTEE as an amount and as a percentage, respectively, for Area XI for each year was as follows: 2001 (12,350, 7.6%), 2002 (13,487 8.3%), 2003 (14,055, 8.7%), 2004 (14,459, 8.9%), 2005 (15,023, 9.4%), 2006 (15,900, 9.8%), 2007 (17,292, 10.7%), 2008 (18,184, 11.2%), 2009 (18,794, 11.6%), and 2010 (22,332, 13.8%). Area XI also had four

years of consistently ranking highest in percentage of FTEE increases in fiscal years 2007 (10.7%), 2008 (11.2%), 2009 (11.6%) and 2010 (13.8%).

During 2001, Area II had the highest percentage of FTEE's compared to their total for the 10-year period (10.4%). The next two years, 2002 (10.5%) and 2003 (10.8%), the largest percentages belonged to Area XII. Area I lead the percentages in 2004 (10.4%). In 2005, Area I (10.6%) and Area VI (10.6%) tied in FTEE's compared to their 10-year total. Area IX (10.3%) had the highest percentage in 2006. Collectively over the 10-year period, Area XI had the highest total FTEE (161,876, 18.5%) compared to the total FTEE count of 876,025. Total FTEE for Iowa's community colleges increased each year for the 10-year period. The mean and standard deviation showed increasing amounts each year.

Table 4.8

Full-time Equivalent Enrollment for Iowa's Community Colleges by Merged Area (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Totals
Full-time Equivalent Enrollment											
Area I	4,255 (9.0%)	4,274 (9.1%)	4,665 (9.9%)	4,924 (10.4%)	5,020 (10.6%)	4,583 (9.7%)	4,510 (9.6%)	4,525 (9.6%)	4,924 (10.4%)	5,529 (11.7%)	47,209 (5.4%)
Area II	3,792 (10.4%)	3,547 (9.7%)	3,472 (9.5%)	3,702 (10.1%)	3,696 (10.1%)	3,579 (9.8%)	3,519 (9.6%)	3,569 (9.8%)	3,816 (10.5%)	3,841 (10.5%)	36,533 (4.2%)
Area III	2,786 (9.0%)	2,880 (9.4%)	2,850 (9.3%)	3,022 (9.8%)	3,124 (10.2%)	3,092 (10.1%)	3,117 (10.2%)	3,032 (9.9%)	3,148 (10.3%)	3,631 (11.8%)	30,682 (3.5%)
Area IV	1,628 (10.1%)	1,573 (9.8%)	1,604 (9.9%)	1,579 (9.8%)	1,511 (9.4%)	1,617 (10.0%)	1,614 (10.0%)	1,610 (10.0%)	1,576 (9.8%)	1,812 (11.2%)	16,124 (1.8%)
Area V	4,770 (8.9%)	5,351 (9.9%)	5,446 (10.1%)	4,772 (8.9%)	4,963 (9.2%)	5,027 (9.3%)	5,329 (9.9%)	5,768 (10.7%)	5,969 (11.1%)	6,461 (12.0%)	53,856 (6.1%)
Area VI	3,086 (9.6%)	3,187 (9.9%)	3,138 (9.8%)	3,025 (9.4%)	3,423 (10.6%)	3,22 (10.0%)	3,158 (9.8%)	3,118 (9.7%)	3,276 (10.2%)	3,553 (11.0%)	32,193 (3.7%)
Area VII	5,514 (9.4%)	5,640 (9.6%)	6,207 (10.6%)	5,898 (10.1%)	5,770 (9.9%)	5,644 (9.7%)	5,850 (10.0%)	5,782 (9.9%)	5,843 (10.0%)	6,280 (10.8%)	58,428 (6.7%)
[a]Area IX	7,151 (9.2%)	7,422 (9.5%)	7,737 (10.0%)	7,637 (9.8%)	7,721 (9.9%)	8,006 (10.3%)	7,483 (9.6%)	7,606 (9.8%)	7,867 (10.1%)	9,147 (11.8%)	77,777 (8.9%)
Area X	12,913 (8.3%)	14,233 (9.1%)	15,304 (9.8%)	15,807 [b](10.0%)	16,315 (10.5%)	15,493 (9.9%)	16,161 (10.4%)	15,590 (10.0%)	16,011 (10.3%)	18,231 (11.7%)	156,058 (17.8%)
Area XI	12,350 (7.6%)	13,487 (8.3%)	14,055 (8.7%)	14,459 (8.9%)	15,023 [b](9.4%)	15,900 (9.8%)	17,292 (10.7%)	18,184 (11.2%)	18,794 (11.6%)	22,332 (13.8%)	161,876 (18.5%)
Area XII	4,998 (9.9%)	5,280 (10.5%)	5,428 (10.8%)	4,896 (9.7%)	5,047 (10.1%)	4,883 (9.7%)	4,820 (9.6%)	4,800 (9.5%)	4,737 (9.4%)	5,454 (10.8%)	50,343 (5.7%)
Area XIII	4,767 (9.0%)	4,879 (9.2%)	4,642 (8.7%)	4,834 (9.1%)	5,137 (9.7%)	5,339 (10.0%)	5,505 (10.4%)	5,543 (10.4%)	5,911 (11.1%)	6,591 (12.4%)	53,148 (6.1%)
Area XIV	1,601 (9.7%)	1,548 (9.4%)	1,692 (10.2%)	1,585 (9.6%)	1,546 (9.4%)	1,571 (9.5%)	1,691 (10.2%)	1,697 (10.3%)	1,710 (10.4%)	1,872 (11.3%)	16,513 (1.9%)
Area XV	4,617 (9.2%)	4,798 (9.5%)	4,902 (9.7%)	4,981 (9.9%)	4,851 (9.6%)	4,792 (9.5%)	5,030 (10.0%)	5,083 (10.1%)	5,241 (10.4%)	6,113 (12.1%)	50,408 (5.8%)
Area XVI	3,087 (8.9%)	3,485 (10.0%)	3,360 (9.6%)	3,579 (10.3%)	3,465 (9.9%)	3,490 (10.0%)	3,417 (9.8%)	3,504 (10.0%)	3,526 (10.1%)	3,964 (11.4%)	34,877 [b] (3.9%)
Totals	77,315	81,584	84,502	84,700	86,612	86,245	88,496	89,411	92,349	104,811	876,025
M	5,154	5,439	5,634	5,647	5,774	5,750	5,900	5,967	6,145	6,987	
SD	3,366	3,754	4,029	4,164	4,324	4,347	4,668	4,740	4,886	5,780	

Note. Amounts are rounded to the nearest whole number. Horizontal percentages represent the year's full-time equivalent enrollment for each individual institution divided by the total full-time equivalent enrollment for the institution for 2001-2010. Vertical percentages represent the institution's total full-time equivalent enrollment for 2001-201 divided by all institutions' total full-time equivalent enrollment for 2001-2010. Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database.
[a]There is no merged Area VIII in Iowa.
[b]Adjusted for rounding.

Descriptive statistics for enrollment

Enrollment as defined by the IA DE is FTEE used for calculating the distribution of the proportional share of state general financial aid (2010). Enrollment per institution per year may be found in Table 4.9. Following the same pattern as FTEE, all institutions witnessed their largest percentage of enrollment in 2010. Area III had the largest percentage of enrollment compared to their total enrollment for 2001-2010 in 2001 (9.5%) and 2002 (9.9%). For 2003, Area XV experienced the largest percentage of enrollment among the community colleges (6,601, 10.2%) as compared to its total (65,001, 5.4%), followed by Area XII (7,979, 10.5%) for 2004, Area VI (4,068, 10.7%) for 2005 and Area I (7,033, 10.6%) for 2006. Area IV experienced a two-year trend of the highest percentage of enrollment as compared to their total—2007 (2,004, 10.9%) and 2008 (2,116, 11.5%). With enrollment at 30,949 (11.9%), Area XI had the highest percentage for 2009. Area XI also had the largest total enrollment (260,598, 21.5%) over the 10-year period. This also follows the pattern established with FTEE over the 10-year period. The mean and standard deviation showed increasing amounts per year.

Table 4.9

Enrollment for Iowa's Community Colleges by Merged Area (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Totals
ENR											
Area I	5,383 (8.1%)	5,603 (8.4%)	6,412 (9.6%)	6,816 (10.2%)	6,951 [b](10.5%)	7,033 (10.6%)	6,739 (10.1%)	6,827 (10.3%)	7,047 (10.6%)	7,741 (11.6%)	66,552 (5.5%)
Area II	4,027 (9.1%)	3,991 (9.1%)	3,930 (8.9%)	4,073 (9.3%)	4,267 (9.7%)	4,366 (9.9%)	4,475 (10.2%)	4,718 (10.7%)	4,958 (11.3%)	5,201 (11.8%)	44,006 (3.6%)
Area III	4,263 (9.5%)	4,404 (9.9%)	4,381 (9.8%)	4,428 (9.9%)	4,516 (10.1%)	4,558 (10.2%)	4,581 (10.3%)	4,402 (9.9%)	4,322 (9.7%)	4,774 (10.7%)	44,629 (3.7%)
Area IV	1,447 (7.8%)	1,585 (8.6%)	1,575 (8.5%)	1,699 (9.2%)	1,661 (9.0%)	1,766 (9.6%)	2,004 (10.9%)	2,116 (11.5%)	2,108 (11.4%)	2,486 (13.5%)	18,447 (1.5%)
Area V	4,961 (7.1%)	6,183 (8.8%)	6,431 (9.2%)	6,528 (9.3%)	6,932 (9.9%)	6,919 (9.9%)	7,456 (10.6%)	7,916 (11.3%)	8,161 (11.6%)	8,657 (12.3%)	70,144 (5.8%)
Area VI	3,226 (8.5%)	3,310 (8.7%)	3,398 (8.9%)	3,507 (9.2%)	4,068 (10.7%)	3,869 (10.2%)	4,023 (10.6%)	3,977 (10.5%)	4,176 (11.0%)	4,460 (11.7%)	38,014 (3.1%)
Area VII	6,125 (7.8%)	6,536 (8.3%)	7,371 (9.4%)	7,821 (10.0%)	7,750 (9.9%)	7,837 (10.0%)	8,376 (10.7%)	8,374 (10.7%)	8,691 (11.1%)	9,464 (12.1%)	78,345 (6.5%)
[a]Area IX	9,632 (8.7%)	9,990 (9.0%)	10,513 (9.5%)	10,721 (9.7%)	11,223 (10.1%)	11,355 (10.2%)	11,114 (10.0%)	11,278 (10.2%)	11,609 (10.5%)	13,452 (12.1%)	110,887 (9.2%)
Area X	17,105 (8.2%)	18,580 (8.9%)	19,946 (9.5%)	20,846 (10.0%)	21,468 (10.2%)	20,418 (9.7%)	21,674 (10.3%)	21,461 (10.2%)	22,606 (10.8%)	25,658 (12.2%)	209,762 (17.3%)
Area XI	18,844 (7.2%)	20,736 (8.0%)	21,913 (8.4%)	23,465 (9.0%)	24,780 (9.5%)	26,801 (10.3%)	28,054 (10.8%)	29,573 (11.3%)	30,949 (11.9%)	35,483 (13.6%)	260,598 (21.5%)
Area XII	6,366 (8.4%)	7,113 (9.4%)	7,565 (10.0%)	7,979 (10.5%)	8,026 (10.6%)	7,802 (10.3%)	7,665 (10.0%)	7,570 (10.0%)	7,630 (10.1%)	8,196 (10.7%)	75,912 (6.3%)
Area XIII	6,115 (9.3%)	5,817 (8.9%)	5,624 (8.6%)	6,032 (9.2%)	6,243 (9.5%)	6,610 (10.1%)	6,888 (10.5%)	6,855 (10.5%)	7,299 (11.1%)	8,097 (12.3%)	65,580 (5.4%)
Area XIV	1,662 (8.9%)	1,719 (9.2%)	1,810 (9.7%)	1,800 (9.7%)	1,727 (9.3%)	1,810 (9.7%)	1,868 (10.0%)	1,992 (10.7%)	2,037 (10.9%)	2,211 (11.9%)	18,636 (1.5%)
Area XV	5,811 (8.9%)	6,053 (9.3%)	6,601 (10.2%)	6,255 (9.6%)	6,132 (9.4%)	6,068 (9.3%)	6,464 (10.0%)	6,544 (10.1%)	7,008 (10.8%)	8,065 (12.4%)	65,001 (5.4%)
Area XVI	3,635 (8.1%)	4,099 (9.2%)	4,275 (9.6%)	4,469 (10.0%)	4,473 (10.0%)	4,541 (10.2%)	4,609 (10.3%)	4,543 (10.2%)	4,786 (10.7%)	5,230 (11.7%)	44,660 (3.7%)
Totals	98,602	105,719	111,745	116,439	120,217	121,753	125,990	128,146	133,387	149,175	1,211,173
M	6,573	7,048	7,450	7,763	8,015	8,117	8,399	8,543	8,892	9,945	
SD	5,056	5,554	5,949	6,326	6,632	6,855	7,207	7,467	7,847	9,044	

Note. Horizontal percentages represent the year's enrollment for each individual institution divided by the total enrollment for the institution for 2001-2010. Vertical percentages represent the institution's total enrollment for 2001-201 divided by all institutions' total enrollment for 2001-2010. Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database.

[a]There is no merged Area VIII in Iowa.

[b]Adjusted for rounding.

Descriptive statistics for fiscal-year credit hours

As defined by the IA DE, one credit hour was equal to 50 minutes of instructional contact between an instructor and student in a scheduled course offering for which students are registered (2010). Table 4.10 shows the fiscal-year credit hours for Iowa's community colleges for 2001-2010. For 2001, Area II had the largest percentage of credit hours as compared to its total for 2001-2010 (9.8%) followed by Area XVI for 2002 (9.6%). Area XII lead in percentages for 2003 (10.2%) and tied with Area I (10.4%) in 2004. For 2005, Area VI experienced its highest percentage (10.9%) followed by Area IX (10.4%) in 2006. In 2007 Area X and Area XIII had the highest percentage (10.7%). Area XI dominated the highest percentages in 2008 (11.3%), 2009 (12.0%) and 2010 (14.6%).

Table 4.10

Fiscal-Year Credit Hours for Iowa's Community Colleges by Merged Area (N = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Totals
Credit Hours											
Area I	82,384 (8.5%)	85,418 (8.8%)	94,171 (9.7%)	101,816 (10.4%)	104,437 (10.7%)	95,769 (9.8%)	92,109 (9.5%)	97,481 (10.0%)	102,771 (10.5%)	118,145 (12.1%)	974,501 [b](5.4%)
Area II	67,369 (9.8%)	65,963 (9.6%)	64,098 (9.3%)	66,528 (9.7%)	67,511 (9.8%)	66,246 [b](9.7%)	66,027 (9.6%)	68,219 (9.9%)	74,898 (10.9%)	80,476 (11.7%)	687,335 (3.9%)
Area III	61,396 (8.8%)	63,841 (9.2%)	64,550 (9.3%)	68,268 (9.8%)	71,013 (10.1%)	70,472 (10.1%)	71,587 (10.3%)	69,415 (10.0%)	71,822 (10.3%)	84,096 (12.1%)	696,460 (3.9%)
Area IV	22,311 (8.2%)	23,789 (8.8%)	25,164 (9.3%)	25,636 (9.5%)	24,757 (9.1%)	26,690 (9.8%)	28,512 (10.5%)	29,668 (10.9%)	29,557 (10.9%)	35,260 (13.0%)	271,344 (1.5%)
Area V	78,685 (7.4%)	91,893 (8.7%)	98,535 (9.3%)	98,431 (9.3%)	102,600 (9.7%)	103,484 (9.8%)	108,405 (10.3%)	117,381 (11.1%)	122,711 (11.6%)	135,545 (12.8%)	1,057,670 (5.9%)
Area VI	52,999 (8.6%)	55,257 (8.9%)	55,368 (9.0%)	61,044 (9.9%)	67,048 (10.9%)	61,685 (10.0%)	62,105 (10.0%)	61,988 (10.0%)	66,248 (10.7%)	73,990 (12.0%)	617,732 (3.5%)
Area VII	98,554 (8.1%)	106,454 (8.8%)	118,987 (9.8%)	124,205 (10.2%)	122,127 [b](10.0%)	120,959 (10.0%)	127,104 (10.5%)	126,222 (10.4%)	127,914 (10.5%)	141,643 (11.7%)	1,214,169 (6.8%)
[a]Area IX	139,184 [b](9.1%)	144,843 (9.4%)	153,123 (10.0%)	153,070 (9.9%)	154,483 (10.0%)	160,349 (10.4%)	149,251 (9.7%)	149,518 (9.7%)	152,300 (9.9%)	182,627 (11.9%)	1,538,748 (8.6%)
Area X	256,845 (7.8%)	282,597 (8.6%)	314,362 (9.6%)	329,923 (10.0%)	342,063 (10.4%)	332,694 (10.1%)	351,067 (10.7%)	337,606 (10.3%)	342,516 (10.4%)	397,813 (12.1%)	3,287,486 (18.5%)
Area XI	230,544 (7.0%)	253,469 (7.7%)	274,666 (8.4%)	297,319 (9.1%)	309,718 [b](9.5%)	325,384 (9.9%)	345,204 (10.5%)	371,161 (11.3%)	394,903 (12.0%)	478,186 (14.6%)	3,280,554 (18.4%)
Area XII	80,487 (8.1%)	89,311 (9.0%)	100,609 [b](10.2%)	102,749 (10.4%)	106,498 (10.7%)	102,455 (10.3%)	101,623 (10.2%)	99,937 (10.1%)	96,903 (9.8%)	111,09 (11.2%)4	991,666 (5.6%)
Area XIII	88,207 (8.3%)	90,406 (8.4%)	88,688 (8.3%)	96,516 (9.0%)	103,785 (9.7%)	109,566 (10.3%)	114,618 (10.7%)	114,261 (10.7%)	122,700 (11.5%)	139,617 (13.1%)	1,068,364 (6.0%)
Area XIV	29,078 (9.3%)	29,222 (9.4%)	30,969 (9.9%)	30,883 (9.9%)	29,300 (9.4%)	29,499 (9.4%)	32,455 (10.4%)	32,228 (10.3%)	32,217 (10.3%)	36,586 (11.7%)	312,437 (1.8%)
Area XV	92,720 (8.7%)	101,659 (9.5%)	102,622 (9.6%)	104,837 (9.8%)	101,692 (9.5%)	100,558 (9.4%)	107,736 [b](10.0%)	109,797 (10.2%)	114,089 (10.6%)	135,617 (12.7%)	1,071,327 (6.0%)
Area XVI	62,556 (8.4%)	71,490 (9.6%)	74,632 (10.0%)	76,686 (10.3%)	75,157 (10.1%)	75,217 (10.1%)	73,360 (9.8%)	74,034 (9.9%)	75,816 (10.2%)	86,246 (11.6%)	745,194 (4.2%)
Totals	1,443,319	1,555,612	1,660,544	1,737,911	1,782,189	1,781,027	1,831,163	1,858,916	1,927,365	2,236,941	17,814,987
M	96,221	103,707	110,703	115,861	118,813	118,735	122,078	123,928	128,491	149,129	
SD	66,297	73,352	81,785	87,003	90,660	91,934	97,540	99,552	103,879	124,883	

Note. Horizontal percentages represent the year's credit hours for each individual institution divided by the total credit hours for the institution for 2001-2010. Vertical percentages represent the institution's total credit hours for 2001-201 divided by all institutions' total credit hours for 2001-2010. Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database.

[a]There is no merged Area VIII in Iowa.

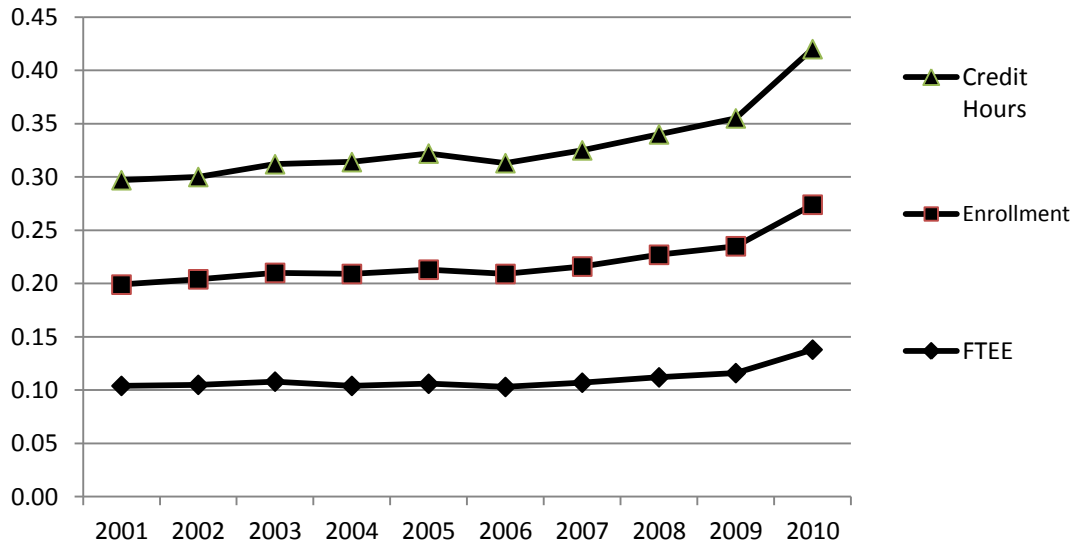
[b]Adjusted for rounding.

Descriptive statistics comparisons for FTEE, enrollment and fiscal-year credit hours

Figure 4.6 displays the trends of FTEE, enrollment and fiscal-year credit hours for 2001-2010. The highest percentage for each year as compared to an institution's total over the 10-year period is depicted. Two interesting findings in this trend were noted. For 2005, Area VI had the highest percentage FTEE, enrollment and fiscal-year credit hours. For 2009 and 2010, Area XI had the highest percentage FTEE, enrollment and fiscal-year credit hours.

Figure 4.6

Highest Percentage of FTEE, Enrollment and Fiscal-Year Credit Hours



Note. Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.

Descriptive statistics for fiscal year enrollment by program type

Enrollment by program type is listed in Table 4.11. Enrollment for both the AS (70,373, 74,779, 78,265) and CTE (31,225, 34,608, 37,703) program types increased steadily from 2001-2003. However, in 2004 enrollment by AS (45,858) and CTE (30,303) program types dropped significantly—the same year the CO or career option enrollment (5,507) started as well as enrollment for combined program types (135). The only enrollment by program type that increased steadily beginning with 2004 was AS (45,858, 47,200, 48,910, 50,644, 72,554, 84,099, and 97,060). Over the 10-year period collectively, the AS program type had the highest percentage enrollment (62%). Expanded enrollment by program type may be found in Table C.6.

Table 4.11

Enrollment by Program Type for Iowa's Community Colleges (*N* = 15)

Variables	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Totals
Program Type											
Arts & Sciences	70,373 (69%)	74,779 (68%)	78,265 (67%)	45,858 (56%)	47,200 (57%)	48,910 (58%)	50,644 (58%)	72,554 (59%)	84,099 (60%)	97,060 (65%)	669,742 (62%)
Career Option	0 (0%)	0 (0%)	0 (0%)	5,507 (7%)	5,330 (7%)	5,258 (6%)	5,284 (6%)	6,636 (5%)	6,230 (4%)	6,519 (4%)	40,764 (4%)
Career & Technical Education	31,225 (31%)	34,608 (32%)	37,703 (33%)	30,303 (37%)	29,221 (36%)	29,731 (35%)	30,407 (35%)	40,500 (33%)	45,265 (32%)	40,172 (27%)	349,135 (32%)
Combined	0 (0%)	0 (0%)	0 (0%)	135 (0%)	748 (0%)	1062 (1%)	737 (1%)	4113 (3%)	5,476 (4%)	5,424 (4%)	17,695 (2%)
Totals	101,598	109,387	115,995	81,803	82,499	84,961	87,072	123,803	141,070	149,175	1,077,336

Note. Horizontal percentages represent the year's enrollment by program type divided by the total enrollment by program type for 2001-2010. Vertical percentages represent the total enrollment for each program type divided by the total enrollment for all program types for 2001-2010. Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.

Descriptive statistics for fiscal year enrollment by age groups

Table 4.12 displays that the only two groups that increased in enrollment every year for the 10-year period were the 17 and under age group (5,230, 6,816, 7,750, 9,162, 10,593,

12,222, 14,432, 15,217, 16,516, 18,607) and the 18-22 age group (52,502, 56,172, 58,500, 61,150, 62,764, 63,302, 65,193, 66,764, 68,602, and 73,271). The enrollment for the 18-22 age group in total from 2001-2010 was the largest of any age group in amount (628,220) and as a percentage (52%) of the total enrollment by age group for 2001-2010. The next largest enrollment was in the 23-26 age group (148,228, 12%) followed by the 17 and under age group (116,545, 10%). For 2010, all age groups except for the 27-30 age group, experienced their largest percentage enrollment (16%, 12%, 12%, 13%, 12%, 14%) compared to their total for the 10-year period. Expanded enrollment by age groups may be found in Table C.7.

Table 4.12

Enrollment by Age Groups for Iowa's Community Colleges (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Totals
Age Groups											
17 & under	5,230 (5%)	6,816 (6%)	7,750 (7%)	9,162 (8%)	10,593 (9%)	12,222 (10%)	14,432 (12%)	15,217 (13%)	16,516 (14%)	18,607 (16%)	116,545 (10%)
18-22	52,502 (8%)	56,172 (9%)	58,500 (9%)	61,150 (10%)	62,764 (10%)	63,302 (10%)	65,193 (10%)	66,764 (11%)	68,602 (11%)	73,271 (12%)	628,220 (52%)
23-26	11,991 (8%)	12,967 (9%)	14,225 (10%)	14,904 (10%)	15,582 (11%)	15,260 (10%)	15,276 (10%)	15,161 (10%)	15,421 (10%)	17,441 (12%)	148,228 (12%)
27-30	6,791 (8%)	7,128 (8%)	7,529 [a](8%)	8,019 (9%)	8,264 (10%)	8,221 (10%)	8,602 (10%)	8,730 (10%)	11,754 (14%)	11,284 (13%)	86,322 (7%)
31-39	10,018 (9%)	10,419 (9%)	11,044 (10%)	10,953 (10%)	10,996 (10%)	10,795 [a](9%)	10,939 (10%)	11,106 (10%)	11,106 (10%)	14,292 (13%)	111,668 (9%)
40-55	9,752 (10%)	10,039 (10%)	10,370 [a](11%)	10,230 (10%)	9,889 (10%)	9,498 (9%)	9,467 (9%)	9,309 (9%)	9,677 (10%)	12,092 (12%)	100,323 (8%)
Over 55	959 (8%)	971 (8%)	1,035 (9%)	1,050 (9%)	1,129 (10%)	1,250 (11%)	1,219 (10%)	1,185 (10%)	1,338 (11%)	1,647 (14%)	11,783 [a](1%)
No response	1,359 (14%)	1,207 (12%)	1,292 (13%)	971 (10%)	1,000 (10%)	1,205 (12%)	862 (9%)	674 (7%)	715 (7%)	541 (6%)	9,826 [a](1%)
Totals	98,522	105,719	111,745	116,439	116,439	121,753	125,990	128,146	135,129	149,175	1,209,057

Note. Horizontal percentages represent the year's enrollment by age group divided by the total enrollment by age group for 2001-2010. Vertical percentages represent the total enrollment for each age group divided by the total enrollment for all age groups for 2001-2010.
Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.
[a]Adjusted for rounding.

Descriptive statistics for fiscal year enrollment by gender

Table 4.13 displays that enrollment for each of the 2001-2010 fiscal years witnessed the largest numbers from female enrollees (56,330, 60,594, 64,377, 67,201, 69,450, 69,748, 71,553, 72,965, 75,092 and 82,569). Expanded results are located in Table C.8.

Table 4.13

Enrollment by Gender for Iowa's Community Colleges (*N* = 15)

Variable	Gender: Male		Gender: Female		
	Amount	Percentage	Amount	Percentage	Totals
2001	42,241	8%	56,330	8%	98,571
2002	45,010	9%	60,594	9%	105,604
2003	47,213	9%	64,377	9%	111,590
2004	49,160	9%	67,201	10%	116,361
2005	50,762	10%	69,450	10%	120,212
2006	51,771	10%	69,748	10%	121,519
2007	54,189	10%	71,553	10%	125,742
2008	55,006	11%	72,965	11%	127,971
2009	57,891	11%	75,092	11%	132,983
2010	65,935	13%	82,569	12%	148,504
Totals by Gender	519,178	[a]43%	689,879	[a]57%	1,209,057

Note. Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011. Percents were calculated by dividing the enrollment by gender for each year by the total for that gender for the ten-year period.
[a]Totals by gender percentages were calculated by dividing each respective gender total by the total for male plus female enrollment.

Descriptive statistics for fiscal year enrollment by ethnicity/race

All ethnicity/race categories experienced their largest enrollment in 2010 (935, 2,915, 8,268, 5,223, 114,499, and 17,335) (see Table 4.14). The American Indian ethnicity/race as a percentage dipped slightly in 2006 (10%) from 2005 (11%) and again in 2008 (9%) from 2007 (10%). The White category consumed the most enrollment over 2001-2010 as a percentage at 83%. Excluding the No Response category (96,376), only 112,943 enrollments were from the American Indian, Asian, Black and Hispanic categories out of the total enrollment for 2001-2010 of 1,211,177 (9%). In 2001, 7,368 enrollments were from the American Indian, Asian, Black and Hispanic categories. By 2010, the number of enrollments in these categories increased to 17,341. Expanded descriptive statistics for enrollment by ethnicity/race may be found in Table C.9.

Table 4.14

Enrollment by Ethnicity/Race for Iowa's Community Colleges (*N* = 15)

Variable	American Indian	Asian	Black	Hispanic	White	No Response	Totals
2001	623	2,072	2,866	1,807	84,837	6,397	98,602
2002	719	2,084	3,234	2,046	90,993	6,643	105,719
2003	752	2,082	3,750	2,235	94,657	8,269	111,745
2004	773	2,143	4,316	2,629	97,684	8,894	116,439
2005	824	2,227	4,583	3,044	99,675	9,864	120,217
2006	751	2,290	4,874	3,308	101,256	9,274	121,753
2007	755	2,461	5,321	3,800	104,615	9,038	125,990
2008	749	2,616	5,704	3,974	106,345	8,761	128,149
2009	839	2,743	6,372	4,235	107,297	11,901	133,387
2010	935	2,915	8,268	5,223	114,499	17,335	149,175
Totals	7,720	23,633	49,288	32,302	1,001,858	96,376	1,211,177

Note. Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation MIS database, 2011.

Descriptive statistics for fiscal year enrollment by residency

Foreign enrollment by residency (see Table 4.15) was at its peak during 2001 (1,873) and steadily declined for 2002-2009. However, in 2010 foreign enrollment increased slightly (1,423) as compared to 2009 (1,275). Enrollment by residency for Iowa residents had the largest enrollment for each of the years (93,211, 100,314, 105,907, 110,071, 112, 797, 114,089, 117,661, 119,493, 124,183, and 137,660) as well as for the total over the 2001-2010 time period (1,135,386). The next largest percentage of the total enrollment over 2001-2010, is from the non-Iowa residency category (6%). The combined percentage of non-Iowa and foreign residency categories for 2001-2010 (6% and 1%) only account for 7% of the enrollment in Iowa's community colleges from 2001-2010. Most of the community colleges' mission is to serve their communities. Branching out to more non-Iowa and foreign students will not only increase enrollment for state funding but also will produce more operating revenue in the form of tuition and fees. Table C.10 contains expanded results for enrollment by residency for 2001-2010.

Table 4.15

Enrollment by Residency for Iowa's Community Colleges (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Totals
Residency											
Iowa	93,211 (8%)	100,314 [a](9%)	105,907 (9%)	110,071 (10%)	112,797 (10%)	114,089 (10%)	117,661 (10%)	119,493 (11%)	124,183 (11%)	137,660 (12%)	1,135,386 (93%)
Non-Iowa	3,944 (6%)	4,101 (6%)	4,575 (7%)	5,160 (8%)	6,447 (9%)	6,846 (10%)	11,382 (17%)	7,688 (11%)	7,987 (11%)	10,163 (15%)	68,293 (6%)
Foreign	1,873 [a](14%)	1,696 (12%)	1,699 (12%)	1,552 (11%)	1,465 (11%)	975 (7%)	1,013 (7%)	1,001 (7%)	1,275 (9%)	1,423 (10%)	13,972 (1%)
Totals	99,028	106,111	112,181	116,783	120,709	121,910	130,056	128,182	133,445	149,246	1,217,651

Note. Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.
[a]Adjusted for rounding.

Predicting the success rate

Research questions seven through eleven were examined using panel data analysis. Panel data analysis, sometimes referred to as longitudinal data analysis "represents a marriage of regression and time-series analysis" (Frees, 2004, p. 1). There were 15 observational units (Iowa's community colleges). The two main advantages of using panel data analysis were to model the differences or heterogeneity among the subjects and the capability to examine dynamic relationships (2004).

Correlations were run on all variables (see Table 3.3). After scrutinizing the correlations and descriptive statistics for the enrollment data (see Tables 3.4, 4.9 – 4.15), the following control variables or covariates were selected. Fiscal year credit hours were selected as the best proxy for institutional size. Showing the largest percentage enrollment, enrollment by females was selected for better predictability. The descriptive statistics indicated that both the 17 and under and over 55 age groups had the lowest enrollments. Thus, the other age groups were combined into the 18 – 55 age group. Again, the largest enrollments in Iowa's community colleges were from those students who were residents of

Iowa, so that residency status was selected. Enrollment by program type was not included because errors were found in the data. Enrollment by ethnicity/race was not included because all categories were negatively correlated with the success rate. The operational model was utilized to conduct analyses of panel data.

$$SUC\_RATE_{it} = \alpha_i + \beta_1 CFI_{it} + \varepsilon_{it}$$

The results for all 9 analyses were consistent (see Table 4.16). Across 9 operationalizations of *FINANCIAL_CONDITION*, the relationship between financial condition and success (the combination of both the transfer rate and graduation rate) was not significant. With respect to the covariates, negative statistical significance of <.0001 was found for *FY_CR_HR* across all 9 operationalizations. *ENR_PROP_IA* was positively significant (p = .0011, .0014, .0017, .0044, .0034, .0011, .0017, .0046, .0033) across all 9 operationalizations of *FINANCIAL_CONDITION*.

Table 4.16

Panel Data Analysis Results with CFI as Independent Variable—Random Effects Model (*N* = 45)

	Predicted Sign	Two-Way Random Effects
Panel A: *CFI*		
Number of observations[a]		45
Adjusted R^2		0.3634
Hausman test for no random effects		4.39
Intercept	?	27.40543 (27.4301)
CFI	-	-0.46752 (0.3189)
FY_CR_HR	-	-0.00005** (0.000011)
ENR_PROP_FEM		-4.77388 (4.7756)
ENR_PROP_1855		-25.2571 (28.6723)
ENR_PROP_IA		65.50543** (18.5380)
Panel B: *PRR_RAW*		
Number of observations[a]		45
Adjusted R^2		.3716
Hausman test for no random effects		2.93
Intercept	?	28.00878 (31.2537)
PRR_RAW	-	-3.39369 (5.8082)
FY_CR_HR	-	-.00005** (0.000010)
ENR_PROP_FEM		.3.74164 (4.7778)
ENR_PROP_1855		-27.0244 (29.4471)
ENR_PROP_IA		65.13897** (18.9944)
Panel C: *VR_RAW*		
Number of observations[a]		45
Adjusted R^2		.3402
Hausman test for no random effects		5.87

Table 4.16 (Continued)

	Predicted Sign	Two-Way Random Effects
Intercept	?	28.27333 (28.7665)
VR_RAW	-	-.38756 (0.4774)
FY_CR_HR	-	-.00005** (.000011)
ENR_PROP_FEM		-3.82704 (4.9761)
ENR_PROP_1855		-27.6121 (28.7340)
ENR_PROP_IA		64.88493** (19.2968)
Panel D: *RONAR_RAW*		
Number of observations[a]		45
Adjusted R^2		.3675
Hausman test for no random effects		2.82
Intercept	?	37.43072 (28.1477)
RONAR_RAW	-	-2.86495 (5.6783)
FY_CR_HR	-	-.00005** (0.000011)
ENR_PROP_FEM		-4.06192 (5.1227)
ENR_PROP_1855		-31.2237 (26.7432)
ENR_PROP_IA		57.75908** (19.1022)
Panel E: *NORR_RAW*		
Number of observations[a]		45
Adjusted R^2		.3735
Hausman test for no random effects		2.58
Intercept	?	37.75763 (28.1155)
NORR_RAW	-	-5.95205 (5.0237)
FY_CR_HR	-	-.00005** (0.000011)
ENR_PROP_FEM		-4.40274 (5.0613)

Table 4.16 (Continued)

	Predicted Sign	Two-Way Random Effects
ENR_PROP_1855		-32.2763 (26.9354)
ENR_PROP_IA		58.65024** (18.8269)
Panel F: PRR_*WTD*		
Number of observations[a]		45
Adjusted R^2		.3841
Hausman test for no random effects		3.03
Intercept	?	23.79351 (31.6053)
PRR_WTD	-	-1.77313 (2.2038)
FY_CR_HR	-	-.00005** (0.000010)
ENR_PROP_FEM		-3.76182 (4.5662)
ENR_PROP_1855		-24.7875 (29.4071)
ENR_PROP_IA		68.35363** (19.3358)
Panel G: *VR_WTD*		
Number of observations[a]		45
Adjusted R^2		.3401
Hausman test for no random effects		5.90
Intercept	?	28.2493 (28.7556)
VR_WTD	-	-.4641 (.5691)
FY_CR_HR	-	-.00005** (0.000011)
ENR_PROP_FEM		-3.82799 (4.9753)
ENR_PROP_1855		-27.6022 (28.7336)
ENR_PROP_IA		64.90791** (19.2983)
Panel H: *RONAR_WTD*		
Number of observations[a]		45
Adjusted R^2		.3675

Table 4.16 (Continued)

	Predicted Sign	Two-Way Random Effects
Hausman test for no random effects		2.82
Intercept	?	37.82414 (28.1860)
RONAR_WTD	-	-.32698 (.5453)
FY_CR_HR	-	-.00005** (0.000011)
ENR_PROP_FEM		-4.11498 (5.1268)
ENR_PROP_1855		-31.3745 (26.8422)
ENR_PROP_IA		57.54242** (19.1429)
Panel I: *NORR_WTD*		
Number of observations[a]		45
Adjusted R^2		.3751
Hausman test for no random effects		2.57
Intercept	?	37.46473 (27.9337)
NORR_WTD	-	-.78513 (.6565)
FY_CR_HR	-	-.00005** (0.000011)
ENR_PROP_FEM		-4.45964 (5.0624)
ENR_PROP_1855		-32.0474 (26.8069)
ENR_PROP_IA		58.8154** (18.7801)

Standard errors are shown in parentheses.
[a] Includes data from 15 community colleges over a three-year period (2008 – 2010).
**Denotes statistical significance at the .05 level.

Summary

This study used the econometric model called panel data analysis and investigated the success (proxied as *SUC_RATE)* of Iowa's community colleges and whether it was related to the *FINANCIAL_CONDITION* (proxied as *CFI, PRR_RAW, VR_RAW, RONAR_RAW,*

NORR_RAW, PRR_WTD, VR_WTD, RONAR_WTD, and *NORR_WTD)*—the 9 operational models, as well as the covariates of *FY_CR_HR* (fiscal-year credit hours) , *ENR_PROP_FEM* (proportion of female enrollment), *ENR_PROP_1855* (proportion of 18-55 enrollment), and *ENR_PROP_IA* (proportion of Iowa enrollment).

Although no statistical significance was found between Iowa's community colleges' success and financial condition for all 9 operational models, the sample size over the years 2008 – 2010, a time period of a significantly weak national economy, may have been a limiting factor. This could have an impact on the nature of student bodies, as lack of jobs may encourage different levels of students to take college courses. It may be that if the financial condition was lower than it might be during this period, perhaps community college may still "hang on" until economic times improve. To test this, one would need data for a longer time frame. More exploration into this relationship as a trend over a period of years may yield data of value to the Iowa Department of Education, community college policymakers, Iowa's community colleges, and Iowa's taxpayers.

Another issue was that Iowa may fund education at a higher rate than other states, and that the community colleges in Iowa may be financially "strong enough" relative to community colleges nationwide. If they are stronger than a "floor" whereby financial condition separates successful from unsuccessful performance, there would not necessarily be a significant relationship between financial condition and success in Iowa even though the metric (CFI) might be very important nationally. To test this, one would need data for more states than Iowa.

CHAPTER FIVE
DISCUSSION, IMPLICATIONS FOR RESEARCH, POLICY, PRACTICE AND CONCLUSIONS

Discussion

CFI as a measure of overall financial health for community colleges

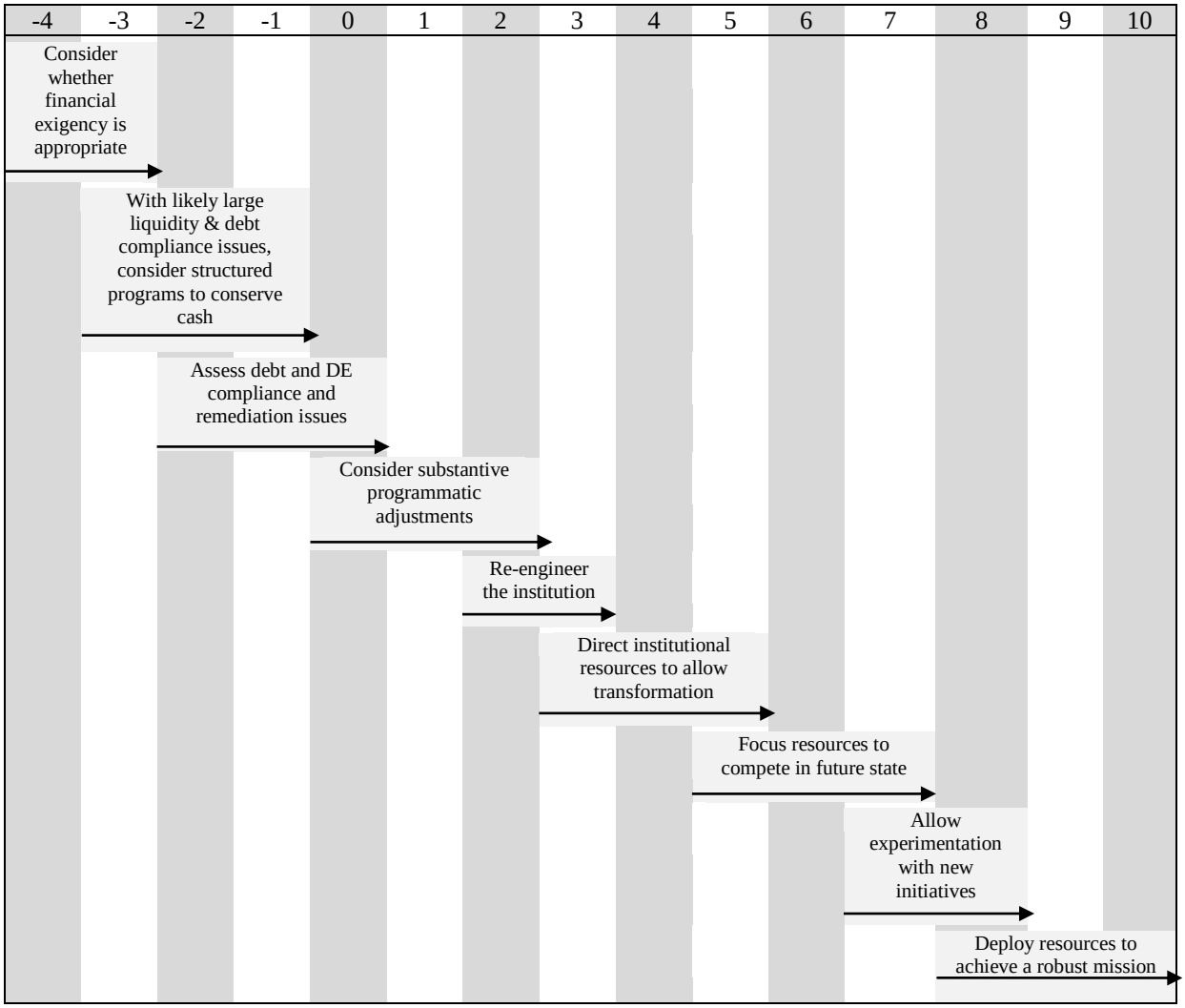
Utilizing the composite financial index as a measure of overall health for community colleges is not currently a prevalent practice. However, the ratios calculated as part of the calculation of the CFI, were very similar to performance measures reported to the U.S. Department of Education. During the 1990's the U. S. Department of Education hired the KPMG consulting firm to assist with two issues: high default rates on student loans and issues with for-profit schools. For-profit schools were charging an exorbitant amount of money to educate students with no marketable skills. "These schools would open up subsidiaries, pull out dividends, and then close campuses," states Ron Salluzzo, (personal communication, 2012). Ron Salluzzo, a retired partner of KPMG LLP, was on the grass roots level with developing the CFI. Phil Tahey, also a retired partner of KPMG LLP, called Ron Salluzzo, "the birth mother of the CFI" (personal communication, 2012).

With the increasing usage of dashboards as institutional indicators, it would seem timely to include the CFI as a target. Boards of directors for colleges could benefit greatly by using the CFI as a dashboard indicator, especially with their stewardship responsibility. Once a target is established for an institution, a board member can easily assess interim marks to ascertain how a college is doing.

Figure 5.1 depicts the scale for charting CFI performance (Tahey et al., 2010). The researcher did not use this as part of the conceptual framework. To effectively use this, an institution needs to first decide on what targets it is striving

Figure 5.1

Scale for Charting CFI Performance



Note. Adapted from "Calculating the Composite Financial Index (CFI)," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 87. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

for financially while keeping in mind the mission of the college. Strategic goals must be set before they are analyzed using this scale. This scale was merely introduced for possible future thought on the seriousness of low CFI scores as well as the opportunities for growth that are presented at the far right end of the scale.

The negative statistical significance noted with success as the dependent variable and *FY_CR_HR* (fiscal-year credit hours) as covariate for all 9 operational models may be explained by the surge in number of credit hours being taken at Iowa's community colleges during the 2008 – 2010 time period (1,858,916; 1,927,365, and 2,236,941 from Table 4.10). This significance may also be explained by an increase in class sizes, an increase in faculty-to-student ratios, and an increase in staff and full-time faculty workloads.

ENR_PROP_IA (proportion of Iowa enrollment) was found to be positively statistically significant with success as the dependent variable for all 9 operational models. This relationship may have served as an indicator that Iowa's community colleges were more successful in serving Iowa residents.

Implications for the future

Implications for research

Further expanding the *Washington Monthly* top 50 list (Carey, 2010), a comparison of student success rates, the composite financial index and CCSSE findings may further yield information on best practices already in place for the state of Iowa. Specifically in regard to the CCSSE findings, the impact that faculty have upon facilitating learning, the culture of an institution, and an institution's financial health may be investigated to determine any causal effects.

As Iowa community colleges' cohort student loan default rates surge (see Table 2.2), opportunities exist to research the various causes or contributing factors, especially in light of the fact that Iowa's default rates are higher than the national levels. Are there causes that are significant to the state of Iowa? And if so, what can be done to ease the burden of taxpayers and students?

The research conducted in this study was intended to serve as merely a beginning of investigating how well Iowa's community colleges achieve success as compared to their financial health. More research in pinpointing the drivers of both revenues and costs would aid not only Iowa's community colleges, but perhaps other community colleges as well.

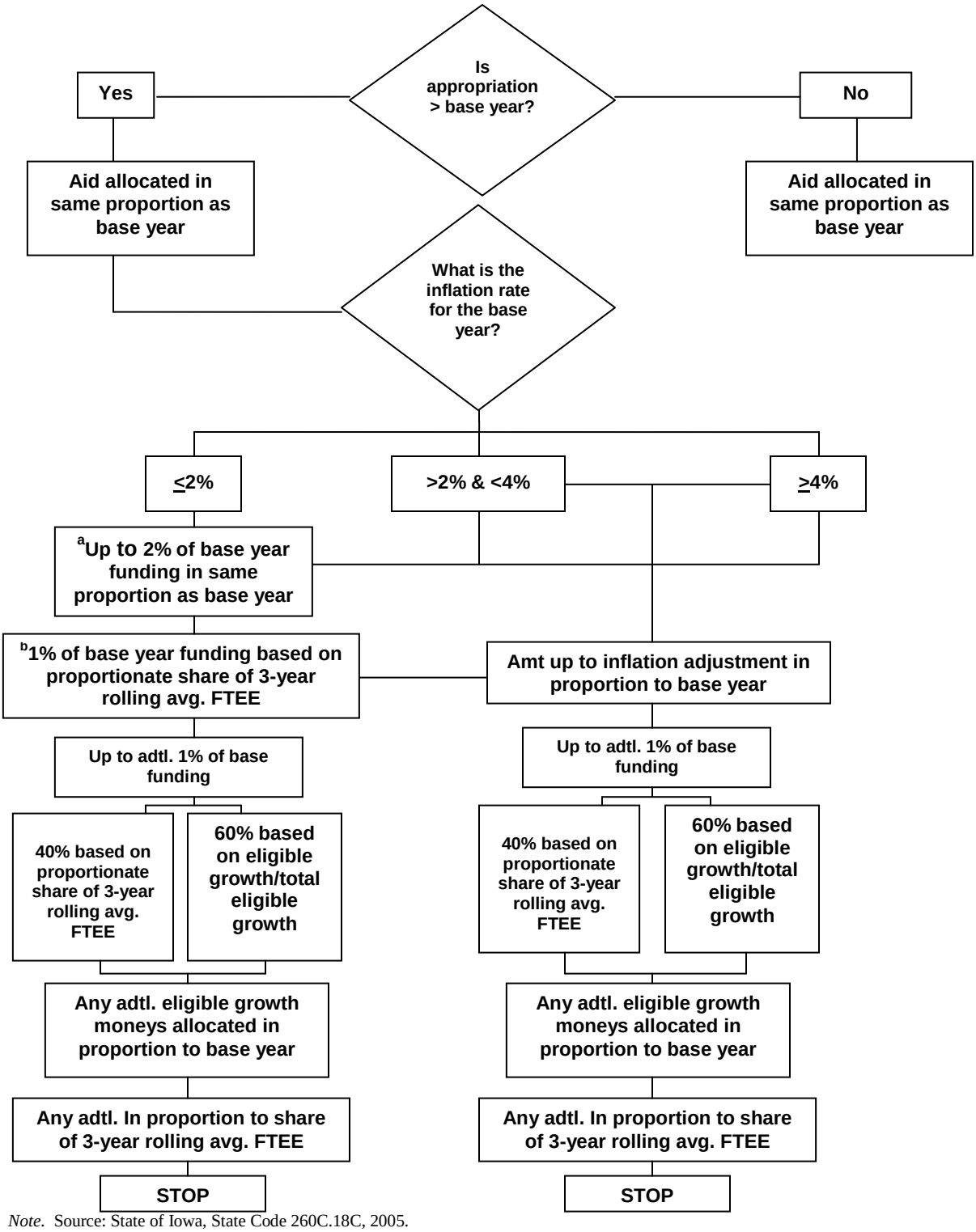
Implications for policy

Understanding the complexity of the state funding formula for Iowa's community colleges (State of Iowa, 2005) may be a daunting task. The formula was based on the inflation rate as determined by the Consumer Price Index for the base year—the fiscal year immediately preceding the budget year. Three main methods of distribution were utilized depending upon this inflation rate: if the inflation rate was equal to two percent or less, if the inflation rate was greater than two percent but less than four percent, and if the inflation rate equals or exceeds four percent. Most of the calculations were based upon FTEE as reported by each individual community college (see Figure 5.2).

Revising the funding formula for Iowa's community colleges may be the best solution to force institutions to focus their resources on "getting students through

Figure 5.2

State of Iowa Aid Distribution Formula



Note. Source: State of Iowa, State Code 260C.18C, 2005.
[a]Base funding allocation.
[b]Marginal cost adjustment.

college than just enrolling them in the first place" (Lederman, 2011, p. 1). "To increase the proportion of Americans with degrees and credentials to 60 percent by 2025, you have to start by turning freshman into sophomores" (Kiley, 2011, p. 1).

In 2010, the state of Tennessee tied as much as 80 percent of an institution's unrestricted appropriations to outcome-based measures instead of enrollment. Thomas Sanford, associate director of research at the Tennessee Higher Education Commission (as quoted in Lederman, 2011), stated "there's a real sense that this is going to make a difference…at the institutional level, we're seeing more and more focus on strategically developing plans to hit these goals."

Implications for practice

The time is crucial for the future of Iowa's community colleges. Seven out of the fifteen community colleges in Iowa scored below the target of 3.00 or were in financial distress (score of -4.00 - .99) for fiscal year 2010 (see Table 4.1). Over the ten-year period, 46% of the CFI calculations resulted in scores below the target of 3.00. Most of the ratios of the CFI are already reported to the U.S. Department of Education annually as part of their Annual Institution Data Update system. However, it was not uncommon for these ratios to be calculated by the business office department and then reported by their institutional researcher—no analyses of these amounts were required by the community colleges. Why not use the data that was already being collected to initiate targets as performance measures? And taking it a step further, why not use the CFI targets as part of the dashboard indicators and write them into an institution's strategic plan?

The accrediting bodies for the nation's community colleges also factor in the CFI scores as reported to the U.S. Department of Education. In 2011, the Commission on

Colleges of the Southern Association of Colleges and Schools, placed five colleges on probation and placed or continued another 13 other institutions on warning status. Three of the institutions placed on probation for persistent financial problems were Bennett College for Women, Tougaloo College and Saint Paul College. Placing a school on probation is the most serious status—just short of stripping accreditation (Lederman, 2011). All three of the schools were historically black colleges. Saint Paul College, although placed on probation for financial instability, ranked number one in the 2010 findings by the *Washington Monthly*. CCSSE results were combined with graduation rates published by the U.S. Department of Education to determine the top 50 community colleges. Saint Paul's graduation rate was only 41% but it ranked high on active and collaborative learning, student effort, academic challenge, student-faculty interaction, and support for learning to secure the number one spot. (Carey, 2010). A noteworthy aspect of the list of the top 50 community colleges was that none of Iowa's community colleges were on the list.

Conclusions

Iowa's educational system has long been touted as one of the finest in the United States. A challenge for Iowa's community colleges is the decline in students enrolled in Iowa's public school system. Table 5.1 outlines this pattern of pre-kindergarten through grade 12 enrollment in Iowa's public school districts. Most of the school years' enrollment figures indicate a decline in enrollment as compared to

Table 5.1

Iowa Public School Enrollment for School Years 2001-2012

School Year	Enrollment Per School Year	Increase/(Decrease) from 2001-2010 School Year
2000-2001	492,022	--
2001-2002	485,932	(6,090)
2002-2003	482,210	(9,812)
2003-2004	481,226	(10,796)
2004-2005	478,319	(13,703)
2006-2007	483,122	(8,900)
2007-2008	485,115	(6,907)
2008-2009	487,559	(4,463)
2009-2010	490,417	(1,605)
2010-2011	468,689	(23,333)
2011-2012	496,099	4,077
2012-2013	[a]477,714	(14,308)
2013-2014	[a]483,120	(8,902)
2014-2015	[a]485,739	(6,283)
2015-2016	[a]484,905	(7117)

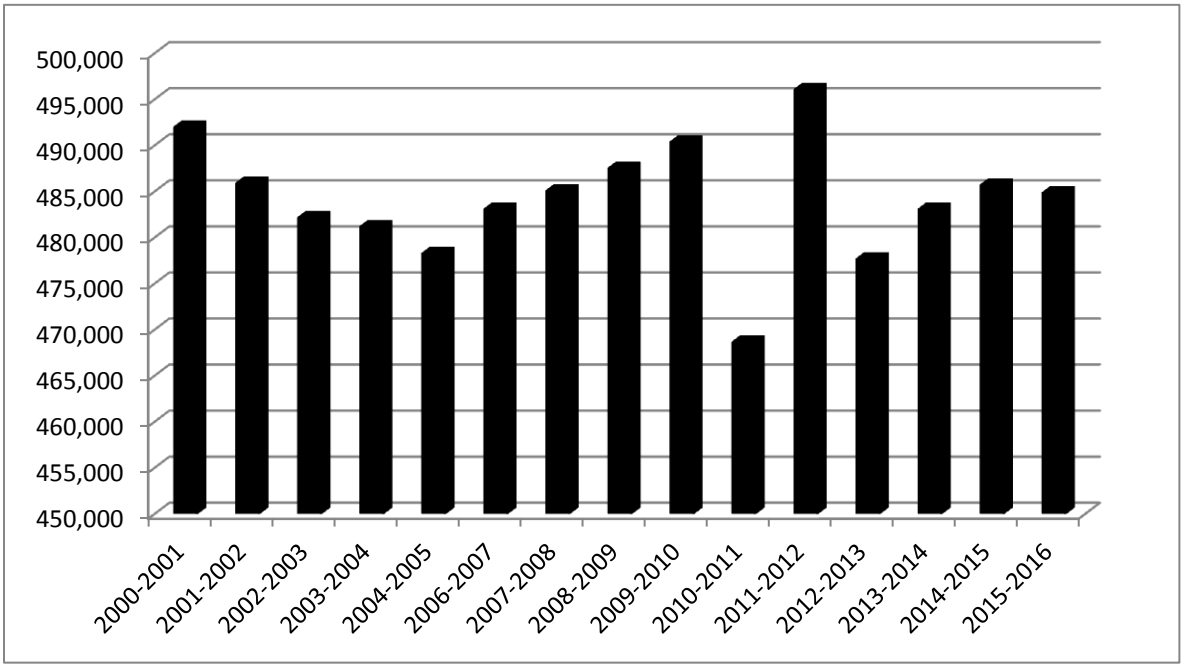
Note: Source: Iowa Department of Education, Bureau of Information and Analysis Services, Basic Educational Data Survey (BEDS), Address File and Merged 1112 file, 2012 and The University of Iowa, Department of Geography, 2012.
[a]The public school enrollment projections are based upon trends observed in the number of students moving from grade to grade. The Grade Progression Rate Method was used to project enrollments for 2nd through 12th grade. This is a ratio of the students enrolled in each grade-level and year who then enroll in the successive grade-level and year. This ratio is then multiplied by the number of enrollees in previous grade level and year. The kindergarten and first grade enrollees are projected using historical ratios of past estimates of numbers of births in each school district in relation to past enrollments of kindergarten students five years later (and first grade students six years later).

the base year of 2000-2001. Even the projections for the next four school years are showing a decline. The largest decline of 23,333 enrollees was experienced in the 2010-2011 school year. Enrollment for the 2011-2012 school year is the only exception with an increase of 4,077 enrollees as compared to the 2000-2001 base year. Figure 5.3 depicts this sharp

increase in the enrollment in Iowa's public schools for the 2011-2012 school year. The extent to which this bubble of enrollment surge will impact Iowa's community colleges enrollment will soon be answered.

Figure 5.3

Iowa Public School Enrollment By School Year



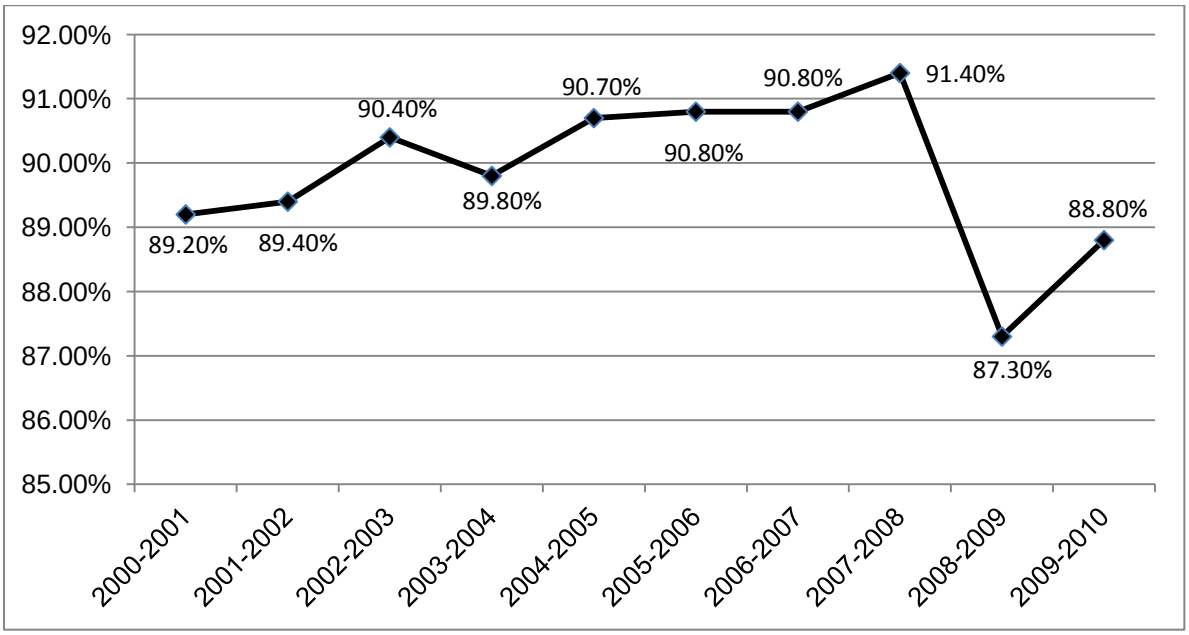
Note: Source: Iowa Department of Education, Bureau of Information and Analysis Services, Basic Educational Data Survey (BEDS), Address File and Merged 1112 file, 2012 and The University of Iowa, Department of Geography, 2012. [a]The public school enrollment projections are based upon trends observed in the number of students moving from grade to grade. The Grade Progression Rate Method was used to project enrollments for 2nd through 12th grade. This is a ratio of the students enrolled in each grade-level and year who then enroll in the successive grade-level and year. This ratio is then multiplied by the number of enrollees in previous grade level and year. The kindergarten and first grade enrollees are projected using historical ratios of past estimates of numbers of births in each school district in relation to past enrollments of kindergarten students five years later (and first grade students six years later).

As we look to the future of Iowa's community colleges, it would perhaps be a lofty dream to encourage graduation rates such as those achieved by Iowa's public high schools (see Figure 5.4). The 2010 cohort graduation rate for Iowa's public high schools was 88.80% while the highest 2010 cohort success rate for Iowa's community colleges was 73.10%. One community college (Area IV) is within 14.70% of reaching the cohort graduation rate for

Iowa's public high schools—evidence that more research on this institution and others with high success rates in Iowa could pinpoint the factors leading to these results.

Figure 5.4

Iowa Public High School Cohort Graduation Rates by Graduating Class



Note: Source: Iowa Department of Education, "2011 State Report Card" by the Iowa Department of Education, 2011, p.42-43; "2009 State Report Card" by the Iowa Department of Education, 2009, p. 39-40, Iowa Department of Education, and "2008 Condition of Education Report (revised)" by the Iowa Department of Education, 2008, p. 183, 226.

Considering the high cohort student loan default rates, low student success rates and 46% of Iowa's community colleges scoring at less than 3.00 on the CFI over the past ten years, the status quo of business as usual is no longer suitable for Iowa's community colleges. However, maintaining a balance between achieving more completers and the quality of instructional services being delivered may cause some dissension. Recently faculty at CUNY had filed a lawsuit against administrators for putting graduation rates ahead of academic rigor. Relationships between faculty and administrators are thorny at best (Fain, 2011). Perhaps focusing on the near-completers should be a start. The Institute for Higher

Education Policy's Project Win-Win is assisting institutions with locating students who only had nine or fewer credits to earn their degrees. The Non-Traditional No More program, sponsored by the Western Interstate Commission for Higher Education, uses a strategy called the concierge model in which one staff member is designated for working with these students exclusively (Murphy, 2011).

Focusing on the working adults may require more financial resources on the onset but may prove to reduce the student loan default rates, increase student success rates and ultimately have a positive impact upon the CFI also. "If we capture the lowest-hanging fruit (referring to the near-completers), we begin this process that is important not just to those men and women, to your institution, to your cities and your metro regions, but literally to the planet," (Fisher in Murphy 2011, p. 2).

Iowa's community colleges are not without some outstanding accomplishments. Enrollment has doubled since the 1990-1991 school year. In addition, the Aspen Institute recently announced the eligible community colleges for the 2013 Aspen Prize for Community College Excellence. Of the 120 community colleges listed, five are from the state of Iowa—Indian Hills Community College, Kirkwood Community College, North Iowa Area Community College, Northeast Iowa Community College and Northwest Iowa Community College (Aspen Institute, 2012). This number has increased since 2011 when only three of the five mentioned above were included. The mere fact that three were determined eligible for both 2011 and 2013 indicates some effective practices at those institutions (Indian Hills Community College, Northeast Iowa Community College, and Northwest Iowa Community College) regarding graduation rates, retention rates, and percentage of degrees/certificates awarded including both full-time and part-time students.

The state of Iowa also has a few outstanding accomplishments. One such accomplishment is in the area of new business attraction. Forbes publishes an annual list called, "The Best States for Business and Careers". This list included separate rankings for business costs, labor supply, regulatory environment, economic climate, growth prospects, quality of life, population and gross state product (Badenhausen, 2010). Iowa's community colleges, policymakers, and their constituents should be celebrating their ranking on this list. In 2010, Iowa ranked 13th in the nation—up from 14th for 2009 (2010). For 2011 Iowa ranked 10th (Badenhausen, 2011). Touting the results of these reports and others may aid in attracting new ventures to the state of Iowa. However, as Andrew Cannon, research associate for the Iowa Policy Project (2012, p. 4) states, "while Iowa's community colleges will undoubtedly continue to play a role in the state's ongoing economic recovery, their effort is hobbled by insufficient state funding."

APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Resear
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 8/11/2011

To: Dawn Ann Humburg
One Triton Circle
Fort Dodge, IA 50501

CC: Dr. Soko Starobin
N221A Lagomarcino

From: Office for Responsible Research

Title: Strategic Financial Analysis: Community College Style; Financial Health and Student Success Rates

The Co-Chair of the ISU Institutional Review Board (IRB) has reviewed the project noted above and determined that the project:

☐ Does not meet the definition of research according to federal regulations.

☒ Is research that does not involve human subjects according to federal regulations.

Accordingly, this project does not need IRB approval and you may proceed at any time. We do, however, urge you to protect the rights of your participants in the same ways you would if IRB approval were required. For example, best practices include informing participants that involvement in the project is voluntary and maintaining confidentiality as appropriate.

Please also know that **any change** to this project must be communicated to the IRB to determine if the project has become research with human subjects requiring IRB approval.

APPENDIX B
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Dawn Humburg <dawnahumburg@gmail.com>

Fred Prager <fred.prager@prager.com> **Sun, Mar 4, 2012 at 2:04 PM**
To: Dawn Humburg <dawnahumburg@gmail.com>
Cc: Fred Prager <fred@prager.com>, lmezzina@kpmg.com, resalluzzo@attain.com, ptaheycpa@aol.com, Jim McGee <jim.mcgee@prager.com>

Future Dr. Humburg,

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acannon@iowapolicyproject.org <acannon@iowapolicyproject.org> Thu, Jul 5, 2012 at 10:57 PM
To: Dawn Humburg <dawnahumburg@gmail.com>

Hi Dawn -

You have my permission to include the tables so long as they are clearly cited, and to cite any other of my work.

I apologize for not getting back to you earlier - I left on Saturday for vacation.

Best of luck with your dissertation!

Cheers,
Andrew
[Quoted text hidden]

APPENDIX C
EXPANDED STATISTICAL RESULTS

Table C.1

Expanded Financial Health Scores for Iowa's Community Colleges (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CFI	-.42	-.75	.29	.02	-.30	.88	-1.23	-.61	.20	.44
	-.77	-.17	.62	.26	1.25	.99	.72	1.44	.30	1.78
	1.17	.95	1.39	.45	1.50	1.29	1.46	1.49	1.20	2.00
	1.46	1.33	1.68	1.56	1.58	1.56	2.04	1.70	1.56	2.37
	2.05	1.63	1.87	2.18	1.96	1.93	2.47	2.22	1.59	2.51
	2.92	1.65	2.13	2.85	1.98	2.52	3.00	2.26	1.97	2.72
	2.98	1.89	3.08	2.87	3.63	3.10	3.65	2.67	2.18	2.75
	3.12	1.90	3.41	3.30	3.73	3.79	3.69	2.84	2.24	4.39
	3.25	3.72	3.99	3.32	3.77	3.91	4.42	3.85	2.82	4.79
	3.86	3.99	4.03	4.00	4.58	5.73	6.50	4.26	3.44	4.87
	3.91	4.21	4.41	5.69	5.40	6.39	8.84	5.65	3.80	5.06
	3.93	7.78	9.39	5.99	7.45	7.73	8.89	6.11	6.18	5.10
	4.05	10.00	10.00	10.00	10.00	10.00	9.10	7.16	6.75	5.36
	4.08	10.00	10.00	10.00	10.00	10.00	9.53	8.27	6.85	7.89
	5.17	10.00	10.00	10.00	10.00	10.00	10.00	8.83	7.48	9.75

Note: CFI = composite financial index. Indices are presented in ascending order by fiscal year. Target index of 3.00. Adapted from "Calculating the Composite Financial Index (CFI)," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 132. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

Table C.2

Expanded Primary Reserve Ratio Scores for Iowa's Community Colleges (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Primary reserve ratio	.05	.01	.08	.07	.06	.08	.07	.06	.01	-.11
	.07	.04	.10	.12	.08	.09	.10	.08	.07	.1
	.07	.09	.10	.14	.10	.12	.14	.11	.08	.15
	.07	.09	.12	.14	.11	.13	.14	.12	.16	.16
	.12	.13	.13	.16	.13	.15	.15	.17	.16	.16
	.14	.16	.16	.23	.21	.17	.20	.17	.19	.20
	.16	.18	.19	.25	.21	.23	.22	.19	.22	.27
	.17	.19	.22	.28	.30	.23	.24	.23	.23	.27
	.19	.19	.26	.28	.32	.26	.26	.23	.28	.28
	.21	.20	.27	.29	.32	.26	.30	.32	.30	.39
	.22	.30	.29	.31	.32	.36	.37	.32	.30	.43
	.26	.33	.39	.32	.39	.39	.43	.37	.38	.46
	.26	.37	.39	.36	.39	.44	.53	.50	.41	.54
	.35	.39	.49	.53	.58	.58	.74	.68	.63	.67
	.39	.45	.53	.69	.59	.59	.85	.90	.77	.71

Note: Ratios are presented in ascending order by fiscal year. Target ratio of .40. Adapted from "Calculating the Composite Financial Index (CFI)," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 113.

Table C.3

Expanded Viability Ratio Scores for Iowa's Community Colleges (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Viability ratio	[a]n/a	.31	.34	.36	[a]n/a	[a]n/a	[a]n/a	[a]n/a	[a]n/a	[a]n/a
	[a]n/a	.33	.38	.41	.28	.36	.17	.12	.05	-.23
	.19	.53	.42	.44	.37	.39	.24	.25	.15	.08
	.48	.56	.46	.54	.38	.41	.24	.30	.27	.16
	.52	.81	.55	.78	.56	.46	.69	.50	.27	.25
	.61	.98	.93	.85	.62	.60	.70	.53	.47	.33
	.72	1.45	1.08	1.09	.66	.70	.73	.65	.53	1.04
	1.08	1.65	1.26	2.01	.91	1.06	1.45	1.00	.95	1.10
	1.54	2.48	2.90	2.94	2.55	2.23	2.08	1.11	1.69	1.19
	1.75	2.63	2.95	3.83	2.95	4.39	3.15	3.46	1.73	1.33
	2.08	3.25	3.40	3.90	4.38	5.18	5.19	3.54	1.94	2.90
	2.13	3.55	6.99	5.21	5.07	5.73	5.38	3.61	3.24	3.47
	2.21	6.19	11.29	13.01	13.37	10.94	5.80	4.79	3.48	3.58
	2.99	14.38	13.56	14.30	20.01	18.98	7.01	6.19	4.09	5.40
	3.63	17.45	15.59	18.83	24.99	30.76	40.57	7.54	7.31	9.29

Note: n/a = not applicable. Ratios are presented in ascending order by fiscal year. Target ratio of 1.0. Adapted from "Calculating the Composite Financial Index (CFI)," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 115. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.
[a]Viability ratio not applicable due to no plant-related debt for institution.

Table C.4

Expanded Return on Net Assets Ratio Scores for Iowa's Community Colleges (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Return on net assets ratio	-.11	-.12	-.02	-.04	-.05	-.01	.02	.03	-.03	.03
	-.08	-.10	.00	-.03	.03	.03	.04	.03	-.01	.04
	.00	-.05	.02	-.02	.03	.03	.05	.04	.00	.05
	.02	-.02	.03	.03	.03	.04	.06	.04	.01	.06
	.04	-.02	.03	.04	.04	.05	.07	.05	.01	.07
	.04	.02	.03	.04	.05	.05	.08	.05	.01	.08
	.05	.04	.03	.04	.06	.06	.09	.05	.03	.08
	.06	.05	.05	.05	.07	.06	.09	.07	.03	.09
	.06	.06	.06	.05	.07	.07	.11	.09	.03	.09
	.08	.06	.06	.08	.09	.08	.11	.10	.06	.09
	.09	.08	.09	.12	.10	.09	.13	.10	.07	.12
	.09	.08	.10	.13	.10	.12	.14	.11	.08	.14
	.10	.08	.11	.15	.11	.15	.17	.14	.09	.15
	.13	.09	.22	.15	.11	.16	.23	.17	.13	.17
	.17	.61	.23	.15	.17	.25	.56	.30	.35	.35

Note: Ratios are presented in ascending order by fiscal year. Target ratio of .03. Adapted from "Calculating the Composite Financial Index (CFI)," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 122. Copyright 2010 by Prager, Sealy, & Co., LLC; KPMG LLP; and Attain LLC.

Table C.5

Expanded Net Operating Revenues Ratio Scores for Iowa's Community Colleges (N = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Net operating revenues ratio	-.08	-.12	-.01	-.33	-.04	-.01	-.32	-.35	.00	.02
	-.05	-.10	.00	-.03	.00	.01	.00	.02	.01	.04
	.02	-.01	.02	-.02	.01	.02	.02	.03	.01	.04
	.03	.00	.02	-.01	.02	.02	.02	.03	.01	.04
	.03	.01	.02	.00	.02	.03	.03	.04	.02	.05
	.04	.01	.03	.01	.04	.03	.04	.04	.03	.05
	.06	.02	.03	.01	.04	.03	.04	.05	.03	.06
	.06	.04	.04	.03	.04	.05	.05	.05	.05	.06
	.08	.06	.04	.03	.05	.05	.05	.05	.06	.06
	.08	.08	.05	.04	.05	.05	.05	.06	.07	.07
	.09	.08	.06	.05	.05	.06	.06	.07	.07	.09
	.09	.09	.08	.05	.06	.07	.07	.08	.08	.09
	.14	.10	.08	.07	.07	.08	.09	.10	.08	.09
	.17	.11	.09	.08	.08	.11	.12	.11	.14	.10
	.23	.11	.10	.12	.09	.14	.13	.12	.17	.14

Note: Ratios are presented in ascending order by fiscal year. Target ratio of .00. Adapted from "Calculating the Composite Financial Index (CFI)," by P. Tahey, R. Salluzzo, F. Prager, L. Mezzina, C. Cowen, 2010, *Strategic Financial Analysis for Higher Education*, p. 128.

Table C.6

Expanded Enrollment by Program Type for Iowa's Community Colleges by Merged Area (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Program Type										
Area I										
Arts & Science	3277	3348	4065	2693	2774	2784	2882	4382	4313	4576
Career Option	0	0	0	35	36	31	9	11	4	0
Career & Technical Education	2274	2385	2515	2115	2001	1948	1913	2434	2730	2968
Combined	0	0	0	13	0	0	0	0	0	197
Area II										
Arts & Science	3306	3279	3190	1879	1976	1920	1606	2719	2365	3123
Career Option	0	0	0	462	415	383	338	442	443	725
Career & Technical Education	930	903	975	663	737	908	1328	1714	1939	922
Combined	0	0	0	0	8	11	0	212	211	431
Area III										
Arts & Science	3743	3771	3476	1494	1606	1870	1873	2749	6678	2211
Career Option	0	0	0	562	519	461	431	483	447	885
Career & Technical Education	656	783	1041	1102	960	882	866	1517	4669	1413
Combined	0	0	0	0	0	0	0	0	211	265
Area IV										
Arts & Science	1006	1141	1126	577	560	682	732	1141	1501	1707
Career Option	0	0	0	46	39	47	51	61	47	61
Career & Technical Education	469	473	487	456	483	495	505	590	560	658
Combined	0	0	0	2	0	0	0	0	0	60

Table C.6 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area V Arts & Science	3801	4775	5109	3467	3631	3635	3894	4755	5424	5577
Career Option	0	0	0	437	437	429	321	639	714	800
Career & Technical Education	1321	1690	1633	1408	1277	1402	1515	1696	1790	1984
Combined	0	0	0	0	7	25	1	241	233	296
Area VI Arts & Science	2758	2898	2977	1838	1946	2224	2251	3043	3389	3571
Career Option	0	0	0	284	231	216	176	226	217	231
Career & Technical Education	698	630	639	479	423	389	373	504	570	658
Combined	0	0	0	0	0	0	0	0	0	0
[a]Area VII Arts & Science	3617	3794	4239	2690	2784	3167	3332	4445	5168	5617
Career Option	0	0	0	2	0	0	0	0	0	0
Career & Technical Education	2671	2957	3347	2681	2576	2636	2471	3244	3405	3559
Combined	0	0	0	1	0	0	0	0	118	288
Area IX Arts & Science	6548	7133	7482	4088	4287	4327	4582	7101	7522	8573
Career Option	0	0	0	6	58	4	5	4	1	5
Career & Technical Education	3283	3462	3839	3181	2898	2861	2742	3823	3788	4470
Combined	0	0	0	0	0	0	0	0	298	404
Area X Arts & Science	12379	12435	12831	7494	7284	7340	7244	10595	10813	16275
Career Option	0	0	0	1317	1446	1402	1389	1662	1605	550
Career & Technical Education	5372	6842	7918	6592	6379	6313	6442	8129	9133	7996
Combined	0	0	0	77	0	0	0	793	1055	837

Table C.6 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area XI										
Arts & Science	16143	17913	19029	10231	10842	10593	10839	17732	19722	26868
Career Option	0	0	0	1879	1687	1747	2140	2672	2390	2791
Career & Technical Education	3077	3279	3289	3146	3082	3906	4870	7332	7102	4063
Combined	0	0	0	0	435	608	471	1510	1735	1761
Area XII										
Arts & Science	3130	3231	3396	2237	2462	2834	3057	3724	4498	4559
Career Option	0	0	0	0	0	6	5	5	9	46
Career & Technical Education	3236	3882	4169	3133	2881	2444	2129	3185	3123	3591
Combined	0	0	0	0	0	0	0	0	0	0
Area XIII										
Arts & Science	4103	3982	3996	3295	3096	3302	3659	4208	4713	5656
Career Option	0	0	0	54	24	22	24	25	12	4
Career & Technical Education	2133	1959	1776	1495	1698	1698	1380	1599	1758	2222
Combined	0	0	0	0	274	353	237	674	816	215
Area XIV										
Arts & Science	1379	1308	1325	653	742	849	864	1161	1299	1561
Career Option	0	0	0	108	98	122	116	133	126	148
Career & Technical Education	283	411	485	474	469	377	456	526	491	403
Combined	0	0	0	18	16	35	28	74	121	99
Area XV										
Arts & Science	2873	3268	3441	1900	1763	1897	2046	2688	3009	3394
Career Option	0	0	0	58	40	28	33	36	23	12
Career & Technical Education	3380	3186	3687	1851	1869	2028	2095	2974	3298	4088
Combined	0	0	0	3	5	0	0	609	678	571

Table C.6 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area XVI Arts & Sciences	2310	2503	2583	1322	1447	1486	1783	2111	3685	3792
Career Option	0	0	0	257	300	360	246	237	192	261
Career & Technical Education	1442	1766	1913	1527	1488	1444	1322	1233	909	1177
Combined	0	0	0	21	3	30	0	0	0	0

Note: Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.
[a]There is no merged Area VIII in Iowa.

Table C.7

Expanded Enrollment by Age Groups for Iowa's Community Colleges by Merged Area (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Age Groups										
Area I										
17 & U	233	356	561	691	776	966	985	1017	1050	1067
18-22	2894	2974	3448	3582	3737	3819	3706	3808	3836	4052
23-26	568	652	721	764	761	722	662	680	676	832
27-30	384	350	373	419	414	392	369	392	503	513
31-39	591	589	640	641	600	522	460	475	475	607
40-55	639	613	619	670	612	566	513	409	515	614
Over 55	52	42	36	42	34	42	43	45	46	52
No Response	22	27	14	7	17	4	1	1	5	4
Area II										
17 & U	248	241	222	317	404	382	451	567	566	641
18-22	2385	2408	2335	2390	2528	2438	2494	2593	2837	2759
23-26	372	385	402	410	447	437	426	397	394	448
27-30	215	217	212	249	222	228	232	271	395	316
31-39	361	360	379	326	335	300	310	349	349	496
40-55	409	349	342	356	309	428	423	428	418	458
Over 55	37	31	26	25	21	128	89	78	54	77
No Response	0	0	12	0	1	25	50	35	18	6
Area III										
17 & Under	623	657	619	669	637	709	861	793	753	711
18-22	2259	2338	2365	2360	2364	2343	2351	2258	2194	2435
23-26	353	380	365	413	420	398	423	395	388	418
27-30	195	203	210	219	231	268	271	252	386	320
31-39	305	299	297	286	340	323	322	350	350	434
40-55	428	421	397	394	384	375	282	265	267	364
Over 55	81	79	73	75	75	85	25	20	30	51
No Response	19	27	55	12	65	57	46	69	34	41

Table C.7 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area IV										
17 & Under	89	111	82	120	132	188	266	313	280	386
18-22	1006	1110	1039	1129	1083	1150	1215	1259	1224	1412
23-26	103	101	132	149	159	158	155	165	190	211
27-30	59	53	63	61	62	65	88	92	129	138
31-39	82	86	117	110	96	86	103	120	120	152
40-55	105	106	123	111	95	90	105	109	106	129
Over 55	1	6	10	6	9	4	10	15	21	20
No Response	2	12	9	13	25	25	62	43	50	38
Area V										
17 & Under	391	779	855	926	1144	1191	1319	1351	1281	1240
18-22	2918	3510	3674	3747	3965	4033	4150	4447	4571	4588
23-26	473	549	558	540	626	623	647	751	743	783
27-30	241	300	305	274	306	270	344	379	567	537
31-39	366	405	442	416	430	383	442	491	491	760
40-55	339	411	404	378	367	321	396	405	454	636
Over 55	24	36	33	33	36	39	30	30	45	76
No Response	209	193	160	214	58	59	128	62	50	37
Area VI										
17 & Under	209	232	225	276	317	374	453	448	539	509
18-22	1839	1911	1911	1988	2207	2074	2182	2155	2198	2415
23-26	289	318	333	336	419	401	359	346	359	375
27-30	138	161	189	190	223	219	222	253	339	272
31-39	277	283	297	297	348	304	292	297	297	363
40-55	319	302	334	311	361	331	297	298	321	401
Over 55	30	85	78	89	147	143	188	158	166	106
No Response	125	18	31	20	46	23	30	22	19	19

Table C.7 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area VII										
17 & U	220	219	376	343	317	374	453	843	1009	1081
18-22	3768	3937	4286	4471	2207	2074	2182	4864	5039	5252
23-26	851	955	1135	1308	419	401	359	1091	1046	1170
27-30	369	408	496	190	223	219	222	550	587	655
31-39	460	530	555	297	348	304	292	563	563	696
40-55	397	422	477	311	361	331	297	429	442	560
Over 55	18	31	30	89	147	143	188	33	43	50
No Response	42	34	16	20	46	23	0	1	0	0
[a]Area IX										
17 & U	202	250	267	431	365	438	703	1010	1260	1680
18-22	4634	4776	4903	4934	4318	4426	4788	5431	5425	5979
23-26	1358	1484	1616	1640	1340	1232	1174	1414	1417	1666
27-30	822	875	950	535	578	590	601	960	1336	1177
31-39	1317	1311	1387	596	605	649	618	1323	1323	1548
40-55	1177	1185	1226	524	502	456	457	1033	1032	1261
Over 55	87	90	94	42	37	41	35	98	114	135
No Response	35	19	70	2	5	5	29	9	6	6
Area X										
17 & Under	378	594	694	866	660	704	881	1254	1899	2222
18-22	9501	10357	10834	11493	5153	5276	5241	11771	12007	12774
23-26	2528	2636	3035	3095	1670	1625	1491	3211	3204	3643
27-30	1214	1313	1396	989	1064	1023	966	1728	2015	2174
31-39	1706	1794	2011	1391	1369	1409	1363	1911	1911	2610
40-55	1406	1541	1669	1192	1160	1097	1055	1441	1494	1968
Over 55	113	106	117	96	91	95	88	121	177	249
No Response	259	239	190	48	56	126	55	24	35	18

Table C.7 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area XI										
17 & Under	1121	1596	1873	2401	840	896	1181	4704	4859	5825
18-22	9456	10504	11051	11836	12532	13248	13726	14451	15085	16412
23-26	2565	2838	3046	3174	3239	3346	3372	3616	3777	4204
27-30	1496	1513	1565	1621	1631	1731	1858	1929	2615	2616
31-39	2002	2069	2091	2188	2157	2217	2281	2460	2460	3230
40-55	1849	1841	1856	1839	1894	1906	1978	2054	2177	2751
Over 55	230	195	221	223	229	236	257	289	261	412
No Response	125	180	210	183	122	419	95	70	31	33
Area XII										
17 & Under	570	785	932	988	1110	1091	1087	1099	1037	987
18-22	3038	3371	3550	3772	3669	3564	3435	3471	3470	3766
23-26	802	859	931	969	985	948	969	895	906	996
27-30	474	512	547	640	651	560	546	548	739	653
31-39	656	738	789	768	789	813	804	740	740	890
40-55	734	757	738	742	714	674	670	662	579	639
Over 55	67	58	54	60	76	75	77	55	89	82
No Response	25	33	24	40	32	77	77	100	256	183
Area XIII										
17 & Under	566	525	505	563	548	706	825	702	755	767
18-22	3178	3206	3192	3403	3571	3763	3868	3957	4266	4609
23-26	595	600	582	675	725	736	728	731	772	941
27-30	427	354	372	366	388	403	441	427	585	535
31-39	603	528	473	531	536	559	549	568	568	710
40-55	640	510	438	447	409	410	443	431	404	493
Over 55	59	54	33	21	31	26	32	39	42	42
No Response	47	40	29	26	35	7	2	0	1	0

Table C.7 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area XIV										
17 & U	92	98	121	127	152	186	178	245	296	330
18-22	938	950	986	1052	1017	1032	1083	1091	1065	1100
23-26	139	135	160	167	149	159	183	187	165	189
27-30	101	122	100	100	89	102	101	116	195	155
31-39	189	191	182	151	145	166	165	176	176	213
40-55	184	211	227	186	161	145	144	158	164	190
Over 55	19	12	34	17	14	20	14	19	22	34
No Response	0	0	0	0	0	0	0	0	0	0
Area XV										
17 & U	151	227	230	234	285	344	381	507	534	716
18-22	2745	2767	2854	2844	2780	2735	2945	3078	3106	3379
23-26	569	578	665	727	740	740	727	719	792	930
27-30	373	412	458	450	460	459	485	461	819	729
31-39	668	739	826	761	709	702	775	739	739	953
40-55	751	872	968	844	747	707	760	704	813	1013
Over 55	117	104	154	125	122	103	137	137	186	201
No Response	437	354	446	270	289	278	254	199	185	144
Area XVI										
17 & U	137	146	188	210	247	349	374	364	398	445
18-22	1943	2053	2072	2149	2136	2185	2188	2130	2279	2339
23-26	426	497	544	537	528	545	574	563	592	635
27-30	283	335	293	348	349	335	353	372	544	494
31-39	435	497	558	563	545	521	535	544	544	630
40-55	375	498	552	563	544	504	490	483	493	615
Over 55	24	42	42	64	58	63	62	48	42	60
No Response	12	31	26	35	66	39	33	39	25	12

Note. Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database, 2011.
[a]There is no merged area VIII.

Table C.8

Expanded Enrollment by Gender for Iowa's Community Colleges by Merged Area (N = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Gender										
Area I										
Male	2020	2168	2435	2594	2628	2686	2716	2732	2801	3101
Female	3363	3435	3977	4222	4323	4347	4023	4095	4246	4640
Area II										
Male	1800	1762	1680	1764	1862	1871	1965	2085	2257	2336
Female	2227	2229	2250	2309	2405	2495	2509	2633	2701	2865
Area III										
Male	1710	1815	1798	1866	1866	1855	1957	1822	1853	2080
Female	2553	2589	2583	2562	2650	2703	2624	2554	2437	2646
Area IV										
Male	701	730	669	727	726	787	887	923	957	1112
Female	746	855	906	972	935	979	1114	1186	1150	1374
Area V										
Male	2288	2863	2938	3084	3433	3448	3736	3862	3911	4216
Female	2672	3320	3493	3444	3499	3471	3720	4054	4245	4441
Area VI										
Male	1391	1376	1453	1490	1668	1572	1690	1660	1757	1963
Female	1820	1926	1945	2017	2400	2297	2333	2307	2419	2496
Area VII										
Male	2788	2921	3163	3271	3208	3302	3576	3709	3892	4294
Female	3337	3615	4208	4550	4542	4535	4800	4665	4798	5170
[a]Area IX										
Male	3848	4004	4137	4213	4443	4440	4429	4524	4857	5776
Female	5784	5986	6376	6508	6870	6825	6685	6754	6752	7676
Area X										
Male	7489	8196	8777	9286	9467	9200	9832	9770	10521	12047
Female	9616	10384	11169	11560	12001	11218	11768	11691	12060	13523
Area XI										
Male	8129	8884	9439	10046	10707	11766	12362	13040	13642	16009
Female	10715	11852	12474	13419	14073	15035	15692	16533	17307	19474
Area XII										
Male	2703	3117	3364	3456	3383	3346	3206	3124	3153	3368
Female	3663	3996	4201	4523	4642	4456	4459	4445	4418	4700
Area XIII										
Male	2802	2512	2354	2458	2614	2742	2963	2916	3118	3546
Female	6610	3302	3268	3573	3629	3868	3925	3939	4181	4551

Table C.8 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area XIV										
Male	667	659	714	734	705	792	744	787	754	793
Female	995	1060	1096	1066	1022	1018	1124	1205	1283	1418
Area XV										
Male	2546	2466	2645	2482	2421	2327	2465	2445	2703	3284
Female	3253	3483	3803	3696	3617	3607	3829	3970	4025	4375
Area XVI										
Male	1359	1537	1647	1689	1631	1637	1661	1607	1715	2010
Female	2276	2562	2628	2780	2842	2894	2948	2934	3070	3220

Note: Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database.
[a]There is no merged area VIII.

Table C.9

Expanded Enrollment by Ethnicity/Race for Iowa's Community Colleges by Merged Area (*N* = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Ethnicity/ Race										
Area I										
American Indian	38	34	30	24	23	16	18	7	13	20
Asian	35	31	40	36	32	42	35	40	61	15
Black	49	71	84	86	86	90	93	112	124	191
Hispanic	43	34	48	42	46	55	58	75	69	111
White	4805	4795	5529	5085	4859	6205	6116	6219	6437	6964
No Response	413	638	681	1543	1905	625	419	374	343	440
Area II										
American Indian	9	9	9	7	11	11	9	11	10	12
Asian	39	43	40	46	61	58	53	57	62	66
Black	97	89	98	135	124	128	155	161	168	145
Hispanic	65	78	85	94	113	100	105	114	119	146
White	3817	3771	3691	3786	3956	4010	4035	4261	4326	4608
No Response	0	1	7	5	2	59	119	114	273	224
Area III										
American Indian	10	10	10	14	10	17	8	11	11	16
Asian	25	25	25	21	31	36	33	36	41	59
Black	16	19	22	26	36	42	40	45	105	112
Hispanic	38	30	35	39	39	49	51	58	66	109
White	4145	4287	4238	4304	4361	4343	4349	4150	3982	4313
No Response	29	33	51	24	39	71	100	102	117	165
Area IV										
American Indian	1	3	2	3	1	3	5	6	3	9
Asian	12	22	15	21	13	5	5	16	22	10
Black	5	4	2	6	3	3	8	9	9	4
Hispanic	5	4	5	14	16	16	23	32	31	42
White	1378	1493	1501	1595	1562	1625	1821	1922	1912	2322
No Response	46	59	50	60	66	114	142	131	131	99

Table C.9 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area V										
American Indian	6	7	11	18	25	15	19	13	14	28
Asian	38	30	58	98	110	140	172	173	116	157
Black	54	36	146	166	245	252	351	426	435	594
Hispanic	50	53	76	138	242	306	373	398	363	406
White	4514	5759	5577	5551	5947	5848	5914	6557	6828	7137
No Response	299	298	563	557	363	358	627	349	405	335
Area VI										
American Indian	63	54	61	57	72	79	72	68	70	58
Asian	38	36	37	45	48	66	62	63	66	49
Black	111	136	120	134	149	163	155	180	222	240
Hispanic	76	82	108	113	145	168	175	245	295	291
White	2702	2843	2930	3004	3401	3229	3341	3193	3120	3038
No Response	236	159	142	154	253	164	218	228	403	784
Area VII										
American Indian	30	36	35	35	26	28	33	32	38	33
Asian	77	88	104	90	108	96	110	114	98	134
Black	407	473	603	677	648	652	661	606	647	903
Hispanic	55	66	84	116	113	123	137	127	139	174
White	5432	576	6380	6799	6730	6792	7297	7408	7666	8174
No Response	124	107	165	104	125	146	138	87	103	46
[a]Area IX										
American Indian	70	75	61	63	79	89	98	111	107	95
Asian	157	181	180	169	166	197	192	176	197	277
Black	407	468	540	554	624	669	663	690	709	943
Hispanic	373	404	410	435	491	512	616	605	683	798
White	7610	7833	7987	8349	8736	9071	8878	9012	9095	10453
No Response	1015	1029	1335	1151	1127	817	667	684	818	886

Table C.9 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area X										
American Indian	180	225	259	236	219	173	183	150	157	143
Asian	296	301	328	329	328	350	445	456	528	581
Black	531	571	651	704	771	834	1015	1049	1233	1374
Hispanic	290	356	362	436	448	413	461	437	440	492
White	13932	14977	16133	16938	17277	16776	17708	17277	17460	15970
No Response	1876	2150	2213	2203	2425	1872	1862	2092	2788	7098
Area XI										
American Indian	48	74	63	85	140	110	112	114	168	193
Asian	919	945	873	866	933	899	990	1103	1182	1221
Black	786	952	1017	1277	1299	1394	1516	1758	1888	2695
Hispanic	349	421	421	469	603	751	918	1021	1044	1500
White	15731	17516	18025	19265	20179	20822	22167	23914	23863	27392
No Response	1011	828	1514	1503	1625	2825	2351	1663	2804	2482
Area XII										
American Indian	98	95	139	144	136	128	112	112	110	163
Asian	154	166	184	203	191	182	153	138	124	139
Black	110	120	144	155	167	167	161	142	149	200
Hispanic	222	284	341	394	409	417	438	402	462	575
White	5224	5966	6287	6560	6407	6028	5675	5072	4555	6152
No Response	558	482	470	523	716	880	1126	1704	2230	967
Area XIII										
American Indian	16	28	21	27	25	30	26	25	27	59
Asian	110	88	58	81	77	85	93	97	105	70
Black	115	115	108	148	188	225	243	250	359	532
Hispanic	91	75	72	108	138	145	148	150	166	234
White	5376	5114	4967	5036	5124	5329	5661	5682	6070	6675
No Response	407	397	398	632	691	796	717	651	572	527

Table C.9 (Continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area XIV										
American Indian	3	5	6	2	3	5	8	8	13	12
Asian	7	8	12	7	8	14	9	24	24	21
Black	12	14	16	26	22	27	24	32	46	34
Hispanic	34	16	15	19	19	26	27	50	43	53
White	1605	1675	1761	1746	1672	1738	1800	1878	1899	2046
No Response	1	1	0	0	3	0	0	0	12	45
Area XV										
American Indian	3	5	6	2	3	5	8	8	13	12
Asian	7	8	12	7	8	14	9	24	24	21
Black	12	14	16	26	22	27	24	32	46	34
Hispanic	34	16	15	19	19	26	27	50	43	53
White	1605	1675	1761	1746	1672	1738	1800	1878	1899	2046
No Response	1	1	0	0	3	0	0	0	12	45
Area XV										
American Indian	35	48	35	40	37	32	36	61	74	66
Asian	114	70	84	80	72	61	49	62	50	68
Black	54	58	77	83	80	73	80	83	93	132
Hispanic	51	68	78	96	107	106	130	125	176	190
White	5249	5426	5789	5668	5524	5440	5799	5844	5951	6846
No Response	308	383	538	288	312	356	370	369	664	763
Area XVI										
American Indian	16	16	10	18	17	15	16	20	24	28
Asian	51	50	44	51	49	59	61	61	67	48
Black	112	108	122	139	141	155	156	161	185	169
Hispanic	65	75	95	116	115	121	140	135	139	102
White	3317	3772	3862	3998	3940	4000	4054	3953	4166	2409
No Response	74	78	142	147	211	191	182	213	238	2474

Note: Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation MIS database, 2011.

Table C.10

Expanded Enrollment by Residency for Iowa's Community Colleges by Merged Area (N = 15)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Residency										
Area I										
Iowa	5112	5295	6126	6294	6402	6414	6176	6210	6443	7000
Non-Iowa	257	287	387	493	529	592	552	600	590	726
Foreign	38	44	29	58	46	27	11	17	14	15
Area II										
Iowa	3891	3831	3751	3884	4055	4125	4195	4424	4621	4939
Non-Iowa	134	150	161	169	206	199	247	257	303	225
Foreign	19	21	26	27	22	42	33	37	34	37
Area III										
Iowa	4021	4147	4041	4068	4375	4183	4143	3991	4322	4164
Non-Iowa	260	271	312	337	293	369	4428	400	0	586
Foreign	0	0	28	23	2	13	10	11	0	24
Area IV										
Iowa	1412	1521	1508	1623	1587	1678	1913	1960	1955	2323
Non-Iowa	54	80	83	96	87	88	93	141	153	163
Foreign	0	0	0	0	0	0	0	0	0	0
Area V										
Iowa	4817	5971	6204	6304	6718	6642	6905	7164	7301	7615
Non-Iowa	76	123	90	162	182	236	495	676	786	959
Foreign	111	134	156	62	40	55	59	79	90	106
Area VI										
Iowa	3174	3230	3280	3341	3845	3620	3758	3697	3850	4048
Non-Iowa	53	80	118	166	223	161	173	184	205	266
Foreign	0	0	0	0	0	88	92	96	112	145
Area VII										
Iowa	6036	6461	7277	7737	7663	7769	8292	8277	8576	9305
Non-Iowa	43	34	52	46	39	41	57	66	72	87
Foreign	59	50	57	49	56	27	27	31	43	72
[a]Area IX										
Iowa	8889	9325	9739	9980	10450	10234	9939	10037	10341	12027
Non-Iowa	795	660	749	714	766	1083	1103	1154	1168	1345
Foreign	107	107	122	106	103	67	71	80	93	80
Area X										
Iowa	16251	17696	18998	19748	20334	19779	20854	20826	21621	24109
Non-Iowa	261	317	340	515	509	431	536	454	644	1190

Table C.10 (continued)

Variable	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Foreign	652	648	688	691	722	247	282	184	337	358
Area XI										
Iowa	18116	20027	21237	22863	24165	26205	27475	28901	30209	34687
Non-Iowa	209	237	244	297	334	397	367	441	482	482
Foreign	575	545	487	369	327	266	278	279	316	360
Area XII										
Iowa	5699	6392	6694	6940	6975	6835	6732	6672	6696	7122
Non-Iowa	667	721	871	1039	1051	967	933	898	934	1074
Foreign	0	0	0	0	0	0	0	0	0	0
Area XIII										
Iowa	5949	5658	5501	5869	5059	5305	5528	5444	5751	6193
Non-Iowa	76	70	71	86	1112	1225	1274	1305	1401	1764
Foreign	90	89	52	80	75	80	86	113	151	144
Area XIV										
Iowa	1558	1639	1728	1710	1631	1711	1771	1879	1897	2092
Non-Iowa	97	67	75	82	82	87	88	96	122	111
Foreign	7	13	7	8	14	12	9	17	18	8
Area XV										
Iowa	5383	5664	6201	5915	5785	5761	6125	6170	6596	7642
Non-Iowa	393	356	371	284	312	276	316	346	381	382
Foreign	35	33	29	56	35	31	23	28	31	41
Area XVI										
Iowa	2903	3457	3622	3795	3753	3828	3855	3841	4004	4394
Non-Iowa	569	648	651	674	722	694	722	670	746	803
Foreign	180	12	18	23	23	20	32	29	36	33

Note: Source: Iowa Department of Education, Division of Community Colleges and Workforce Preparation, MIS Database.
[a]There is no merged area VIII.

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