

DISSERTATION

STATE FUNDING AND ENROLLMENT ANALYSIS OF THE COLORADO
COMMUNITY COLLEGE SYSTEM:
PRIOR TO AND AFTER THE IMPLEMENTATION OF THE COLORADO
COLLEGE OPPORTUNITY FUND (COF)

Submitted by

Kyoung (Kay) Ash

School of Education

In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Spring 2011

Doctoral Committee:

Advisor: Linda Kuk

Gene Gloeckner
James A. McCambridge
Donald G. Quick

Copyright by Kyoung (Kay) H. Ash 2011

All Rights Reserved

ABSTRACT

STATE FUNDING AND ENROLLMENT ANALYSIS OF THE COLORADO COMMUNITY COLLEGE SYSTEM: PRIOR TO AND AFTER THE IMPLEMENTATION OF THE COLORADO COLLEGE OPPORTUNITY FUND (COF)

In fiscal year 2005-2006, the state of Colorado implemented the Colorado College Opportunity Fund (COF) that was initiated in Senate Bill 04 -189. The COF is a unique post-secondary education state funding mechanism that provides direct funding-to-students (stipends). This new funding approach was implemented to give community colleges more flexibility with state funding under TABOR (1992), to enhance more educational opportunities for low-income and other under-represented students, and to increase the operational efficiency in postsecondary education.

The purpose of this study was to explore the question; “Did the Colorado Opportunity Fund (COF) achieve the desired outcomes of policy makers for community colleges in the state of Colorado?” The study analyzed the Colorado Community College System’s enrollment data and compared enrollment trends before and after the COF was implemented to determine if there were any significant changes in enrollment trends and to evaluate the efficacy of the COF’s underlying policy, accessibility with affordability.

The study used Cross-Tabulation (crosstabs) and Chi-Square analyses to determine whether or not the COF had a significant impact on enrollment trends at community colleges. The enrollment data from fiscal years 1998 to 2010 was randomly selected from 13 community colleges. The changes in community college enrollment trends since the inception of the COF were: (a) no change in overall male and female trends); (b) increased enrollment of traditional age students, especially within the age group 19-24; (c) increased enrollment of underrepresented student groups, specifically Black and Hispanic males; (d) increased male enrollment representing an underrepresented student group within community colleges; and (e) increased enrollment trends of new and first time students.

DEDICATED TO

My husband, Lawrence W. Ash (2003)

who, with unconditional love and support, always helped and taught me to be a better
person, and always will.

ACKNOWLEDGEMENTS

Thank you to my daughters, Laurentia and Christine, for their unfailing support since I began this journey, and for believing in and encouraging me when I simply could not see the light the end of the tunnel.

My heartfelt thanks to Dr. Linda Kuk for all her support and guidance, for reading endless drafts and providing constant encouragement throughout this study. Special thanks to Dr. Gene Gloeckner for his guidance and support, and to Dr. Don Quick and Dr. James McCambridge for providing their time and suggestions to this study.

TABLE OF CONTENTS

ABSTRACT.....	ii
CHAPTER ONE: INTRODUCTION.....	1
Community Colleges in Colorado	2
Statement of Problem.....	3
Purpose of Study.....	4
Overview of Key Policy Goals of the College Opportunity Fund Act.....	5
Community Colleges and Accessibility.....	7
Implementation of the Colorado College Opportunity Fund (COF)	8
Research Questions.....	13
Definitions of Terms.....	15
Delimitations of the Study	18
Limitations of the Study.....	18
Summary.....	18
CHAPTER TWO: LITERATURE REVIEW.....	20
State Community Colleges’ Revenue Sources	20
State Funding Allocation Models	22
Accessibilities and Student Population.....	28

New Enrollment Trend of Community Colleges	30
Historical Development of State Governance of Community Colleges	31
Development of State Governance and Colorado Community Colleges.....	36
Governing Board and State Funding Allocation in Colorado.....	38
Colorado College Opportunity Fund (COF) and Performance Contract	39
Accessibilities in Colorado Community Colleges	41
Summary	42
CHAPTER THREE: RESEARCH METHODOLOGY	45
Research Design.....	45
Data Collection	48
Data Analysis	50
CHAPTER FOUR: FINDINGS AND RESULTS	60
Research Question 1	60
Overall Enrollment Trend of Gender	62
Overall Enrollment Trend of Ethnicity	62
Overall Enrollment Trend Between Urban/Suburban and Rural College	63
Overall Enrollment Trends of Traditional and Non-Traditional Students.....	64
Overall Enrollment Trend of Age Group.....	65
Overall Enrollment Trend of Age Group 19-24, 35-44, and 45-54	66
Academic Year and Enrollment Trend of Age Group 19-24, 35-44, and 45-54	67

Overall Enrollment Trend in Academic Programs and Age Group 19-24, 35-44, and 45-54	68
Overall Enrollment Trend of Age Group 19 -24	70
Overall Enrollment Trend of Age Group 35-44	72
Overall Enrollment Trend of Age Group 45-54	73
Research Question 2	74
Overall Enrollment Trend of Black and Hispanic Students.....	76
Overall Gender Enrollment Trend of Black and Hispanic Students.....	77
Enrollment Trends of Hispanic Students	79
Enrollment Trend of Black Students.....	83
Age Group 19-24: Enrollment Trend of Black Students	86
Age Group 19-24: Enrollment Trend of Hispanic Student.....	87
Age Group 35-44: Enrollment Trend of Ethnic Groups Prior to and After COF.....	89
Age Group 35-44: Enrollment Trend of Black Students	90
Age Group 35-44: Enrollment Trend of Hispanic Student.....	92
Age Group 45-54: Enrollment Trends of Ethnic Groups Prior to and After COF ...	93
Age Group 45-54: Enrollment Trend of Black Student.....	94
Age Group 45-54: Enrollment Trend of Hispanic Student.....	96
Research Question 3	97
Research Question 4	101

CHAPTER 5: DISCUSSION.....	107
College Opportunity Fund and Accessibility.....	107
College Opportunity Fund and Affordability	116
Conclusion	121
Recommendations for Further Study	124
REFERENCES	126

CHAPTER ONE: INTRODUCTION

Community colleges were primarily shaped by three national events: the Morrill Acts of 1862 and 1890, and the “Higher Education for Democracy” report from the Presidential Commission on Higher Education (1947) (Cohen, 1993). The Morrill Acts distributed land and cash grants to establish and fund localized public higher education institutions. Under the Morrill Acts, access to higher education that had previously been limited to affluent students became more accessible due to the lower cost provided by publicly funded higher education (Hill, 2004).

In 1947, President Truman’s Commission on Higher Education advocated for community colleges as a means to provide accessible education to the public regardless of race, economic standing, or age (Bragg, 2001). According to Bragg (2001), the Commission’s report formulated community colleges’ core mission—open access. Open access included both accessible and affordable higher education opportunities. The Truman Commission Report (as cited in Bragg, 2001) identified the importance of expanding educational access beyond high schools.

If the ladder of educational opportunity rises high at the doors of some youth and scarcely rises at all at the doors of others, while at the same time formal education is made a prerequisite to occupational and social advance, then education may become the means, not of eliminating race and class distinctions, but of deepening and solidifying them. *It is obvious, then, that free and universal access to education, in terms of the interest, ability, and need of the student, must be a major goal of American education.* (U.S. President’s Commission on Higher Education, 1948, p. 36)

Throughout their history, community colleges have played a pivotal role in providing higher education. In the early twentieth century, community colleges were

created to accommodate the increasing demand for higher education. As interest in developing a well-educated workforce grew, and as state appropriations became a larger portion of community colleges' total revenues, community colleges became deeply involved in training the workforce for local industries. Through open access, community colleges continue to open doors for students who otherwise may not have been able to attend postsecondary education, spurring economic development by preparing underrepresented students to enter or re-enter the workforce.

Community Colleges in Colorado

Community colleges in the state of Colorado have experienced several transformations since the 31st Colorado General Assembly passed the Junior College Reorganization Act in 1937, which provided local district funding for junior colleges (C.R.S.23-71-101, May 6, 1937). Between 1937 and 1967, community colleges in Colorado received funding from local districts through mil levies on property. In 1967, under the Community College and Occupational Act, the 46th General Assembly removed the schools' governance from their local boards and created the new State Board for Community Colleges and Occupational Education (SBCCOE). Since 1967, the SBCCOE has governed the Colorado Community College System (CCCS), which oversees 13 community colleges and all vocational education in the State of Colorado.

The state General Fund and revenues from tuition and fees constitute the bulk of operating funds for community colleges in the CCCS. This state appropriation to community colleges changed in FY2005-2006 when a unique postsecondary state funding mechanism, the Colorado College Opportunity Fund (COF), was implemented according to the State of Colorado Senate Bill 04-189. The COF, a direct-funding-to-

student voucher program, was intended to provide further postsecondary opportunities for students in Colorado, especially those from underrepresented groups. It was also intended to encourage higher education institutions to provide quality programs in the form of market-based competition among themselves.

The implementation of the COF granted enterprise status to community colleges in order to circumvent the Tax Payers Bill of Rights (TABOR). The direct funding to students through the COF provided community colleges with the flexibility to generate revenues to offset increasing operating costs. To qualify as an enterprise under TABOR, the enterprise must be a government-owned business that engages in activities that generate revenue outside of the government. For community colleges, the total amount of direct state General Fund grants, local grants, and capital development allocation to the CCCS must be less than 10% of their total revenues.

The purpose of this study was to examine the Colorado College Opportunity Fund, (COF) which was initiated in SB04 -189 and implemented in FY 2005-2006, to determine whether or not the COF has enhanced community colleges' statutory mission, accessibility. This study also explored the question of whether the direct funding-to-student method has helped community colleges improve revenue flexibility such that community colleges can absorb increasing operational costs while enhancing educational opportunities for low-income and other under-represented students.

Statement of Problem

The Colorado Opportunity Fund (COF) is a unique voucher program that the state of Colorado uses to support higher education institutions and students. Proponents of this voucher program believed that the COF would increase college access for low-income,

underrepresented minorities, and male students (Fisher, 2005). Many community colleges supported the COF as a way to be granted enterprise status, which allowed more flexibility for increasing cash funds than under TABOR.

There are, however, discrepancies in the program. According to Fisher (2005), Colorado adopted a voucher program for higher education because policy makers were seeking new funding strategies to cover increasing operating expenses. Opponents of the COF program contested that the vouchers were merely a different way of packaging and distributing the same amount of money through an elaborate process, and that there have been no real improvements (Thomson, 2007). With the budget constraints and poor economic conditions, critics of the COF also questioned whether the financial flexibility reduced pressure on the state's higher education institutions' operating expenses (Protopsaltis, 2006). Others were concerned that a direct-funding-to-student program increased the burden of paying for college on students, which in the case of community college demographics could hinder access to post secondary education for students (Protopsaltis, 2006).

At present, no study has examined whether or not the implementation of the COF has made community colleges more accessible to students in Colorado. The COF should be analyzed to determine if it has effectively increased access as SB 04-189 intended.

Purpose of Study

The purpose of this study is to examine whether the implementation of the COF under SB 04-189 is in fact achieving the intended purpose and goals of the Colorado Community College System, which is to increase postsecondary educational opportunities for Coloradans. This study evaluated the impact of the COF's particular

funding method, which was designed to provide community colleges more flexibility with state funding and enhance access to postsecondary educational opportunities for low-income and other underrepresented students. The study also addresses the question of whether students' abilities to finance and attend higher education programs have been impacted by variables other than the COF, including average income and wages, consumer price index (CPI) (Denver/Boulder/Greeley), and unemployment rates in the state of Colorado. In addition, the study examined the impact on community college tuition and fees of granting CCCS enterprise status under SB 04-189.

Overview of Key Policy Goals of the College Opportunity Fund Act

Until FY2004-2005, the CCCS received state General Funds through direct appropriations from the General Assembly. To address the limits of this funding method, in 2004 SB 04-189 established the COF (C.R.S. 23-18-102), a voucher program to fund higher education. This legislation enabled eligible in-state undergraduate students to designate payment of a tuition stipend to a higher education institution of their choice within Colorado. The bill also authorized fee-for-service contracts between the state, higher education institutions, and system governing boards. This unique funding approach was the first in the country to replace direct appropriations to postsecondary institutions with tuition stipends.

There were three main reasons for shifting to this new funding mechanism: (a) to ensure that institutions of higher education would increase operational efficiency by competing for students in a new-market based approach; (b) to solve the funding problem for higher education created by TABOR (Colorado Constitution X, Section 20, 1992); and (c) to increase post secondary educational opportunities to underrepresented groups

of Coloradans (Harbour, Davies, & Lewis, 2006). To be eligible for funding, the COF required each higher education governing board in the state to sign a performance contract that outlined specific accountability requirements in enrollment, retention, and completion. Policy makers believed that this new funding approach would further promote efficiency in operating costs and attract students to increase enrollment. Because the stipend funds would be student directed, higher education institutions would reallocate their resources more effectively to provide quality programs to meet the needs of students.

The COF was initially sold to higher education within the state as a means of circumventing TABOR (Newman, Couturier, & Scurry, 2004). The law granted enterprise status to higher education institutions and allowed these institutions to raise additional tuition revenues that were limited under TABOR's constitutional provisions. TABOR limited the ability of the state to collect revenues by capping them at 6% annual growth. Also, if state tax revenues exceeded 6% of the previous year, the state had to refund the excess revenue to taxpayers.

Before the implementation of SB 04-189, TABOR limited state revenues and the annual growth of state spending, including tuition and other revenues that supported higher education at the level of the annual CPI. According to the Bell Policy Center (2003), state funding for higher education per capita in the state declined and continued to stay low compared to other states under TABOR (Harbour et al., 2006).

Policy makers were concerned with the dichotomy known as the "Colorado Paradox." (Blue Ribbon Panel, 2003) Although the state of Colorado ranked as one of the highest in the nation to have a population over age 25 holding a bachelor's degree, it

was ranked below the national average in the number of high school graduates enrolled in post secondary education. This disparity was highlighted by the Blue Ribbon Panel (2003), created by Governor Owens, which used data from the U.S. Census Bureau report “Measuring Up 2000,” the State-by-State Report Card for Higher Education (National Center for Public Policy and Higher Education, 2002). The issue the panel identified was that students’ enrollment from the lowest income group to post secondary education needed to increase. In order to solve the Colorado Paradox, the panel, policy makers, and legislators planned to increase the level of participation by underrepresented groups in post secondary education, which gave impetus to creating the COF (Harbour et al., 2006). In fact, SB 04-189 stated that the COF would provide greater resource flexibility for institutions to enhance educational opportunities for students from low-income and underrepresented groups and increase the overall enrollment of male students.

Community Colleges and Accessibility

From the time of the Morrill Acts of 1862 and 1890 to the early twentieth century, the accessibility of higher education has been deeply embedded in the foundation of community colleges. Presently, more women typically enroll in community colleges than men. Although historically the number of students from low-income families and older adults did not make up a large proportion of students enrolled in community colleges, these underrepresented groups have also gradually increased their enrollment in post secondary education.

Community colleges offer highly diversified curriculums that serve the needs of the community; they provide access to postsecondary education not only to ethnically and racially diverse citizens, but to non-traditional students as well. Compared to four year

colleges and universities, community colleges have a significantly higher proportion of students who come from non-English speaking homes, are recent immigrants, or are from lower income families (Bragg, 2001). The open admission policy of community colleges is the underlying reason for the high enrollment of diverse student groups (Bragg, 2001). The commitment of community colleges to provide comprehensive programs and services for any and all individuals, regardless of race, ethnicity, socio-economic status, or academic preparedness, is also an important factor in the jump in enrollment (Bragg, 2001). Since the majority of new students attending community colleges are non-traditional and from underrepresented student groups, state funded support is essential; therefore, state governing boards need to ensure tuition and fees are consistent with community colleges' mission of providing low-cost quality programs.

Implementation of the Colorado College Opportunity Fund (COF)

In fiscal year 2005-2006, Colorado implemented the provisions of Senate Bill 04-189, the College Opportunity Fund (COF). The major components of the COF were (a) stipends for students (b) fee-for-service contracts (c) performance contracts between the state and institutions; and (d) enterprise status for higher education institutions (Legislative Council Publication 05-03, 2005).

Stipends for students and fee-for-service (FFS) were two new funding mechanisms replacing the state's direct general fund appropriations to public institutions (Harbour et al., 2006). The amount of the stipend was set on a per credit hour basis, decided annually during the state's budget planning process. The General Assembly defined an eligible undergraduate student as (a) a student enrolled in a public higher institution and classified as an in-state status for tuition purposes, (b) a student enrolled in

a participating private institution and classified as an in-state status for tuition purposes. (c) a student having graduated from a Colorado high school or having completed a non-public home-based schooling (C.R.S.22-33-104.5). (d) a student eligible for Federal Pell Grants. and (e) a student who meets any other requirements set by the Colorado Commission of Higher Education (CCHE).

The fee-for-service (FFS) contracts are renewed each fiscal year between community colleges and the Colorado Commission on Higher Education (CCHE). FFS contracts are intended to pay for operating expenses outside the typical undergraduate expenses that the stipend was intended to cover. For community colleges these include high-cost programs, rural educational services, and Postsecondary Educational Opportunity programs (PSEO) including basic skills, vestibule courses, high school fast track programs, and reciprocal agreements that are not eligible for the COF. In 2006, PSEOs, fast tracks and basic skills courses removed from under the FFS contract provisions to be eligible for the COF stipend programs; the General Assembly modified the College Opportunity Fund Act (C.R.S. 23-18-102 (5) and (11)). Colorado Senate Bill 05-132 became effective on July 1, 2006.

Before SB04-189 implementation, direct state appropriation to the Colorado Community College System (CCCS) was based on the previous allocations, projected enrollment growth, and an inflation rate. Prior to the COF, the CCCS state appropriation was included in the Long Appropriation Bill as a General Fund line item. The CCCS provided estimated enrollment projections, tuition rates, and fees approved by the governing board of 13 community colleges to the State Board for Community Colleges and Occupational Education (SBCCOE), the Joint Budget Committee (JBC), and the

governor for appropriation preparation during the legislative session. The JBC appropriated funds, based on projected enrollment numbers given initially by the CCCS to the Colorado Commission of Higher Education (CCHE) and the JBC staff, to the CCCS and subject to the approval of the General Assembly and the signature of the Governor.

The procedure for budget development and allocation did not change significantly after the implementation of the COF program. The total amount of a stipend was established based on projected enrollment using the estimated enrollment for the current and subsequent fiscal year. The amount of the COF stipend per credit hour was set by the Legislature during the annual budgeting process based on the amount of available funds, with the statutory goal of the stipend amount increasing each year by a minimum of the rate of inflation. The General Assembly allocated a lump sum amount for FFS contracts to governing boards based on the availability of funds. The General Assembly also appropriated the spending authority to both the Department of Higher Education (DHE) and the SBCCOE. The General Fund amount is appropriated to DHE, while the SBCCOE's spending authority is reflected as an interdepartmental transfer in the Long Bill, the final budget appropriation figures approved by the governor.

The spending authority is calculated by multiplying the amount of a per-credit-hour stipend by the estimated eligible number of enrollment plus the lump sum amount dedicated to be used in its FFS contract. The General Fund appropriation is deposited in a trust for students and administered by the DHE's Colorado Student Loan Program (CSLP). Even though, in 2003, the Governor's Blue Ribbon Panel recommended the amount of a stipend be set at \$4,000 per year, \$133 per credit hour based on 30 credit

hours, the actual appropriated stipends in the first year (FY2005-2006) were set at \$2,400, \$80 per credit hour. The amount \$2,400 was equivalent to the lowest amount of the State funded per student full time equivalents (SFTE) at public higher education institutions (JBC Staff Fiscal Report, 2004). Any remaining funds were allocated in the governing board's FFS contracts.

According to the Joint Budget Committee (JBC) Staff Report of SB04-189 (2004), the legislative declaration specifically stated that funding for postsecondary education was not an entitlement. Indeed, SB04-189 allowed a variety of mechanisms to balance the State's budgets including decreasing the stipend amount and/or reducing fee-for-service (FFS) contracts. The amount of COF per credit may increase or decrease based on the fluctuation of State revenues. In FY 2009, with decreases in State revenue, the General Assembly made adjustments. Mid-year, the stipend per credit was reduced from \$92 to \$68; it was further reduced to \$44 in FY2009-10. The gaps between \$92 and \$68 in FY 2009 and \$92 and \$44 in FY 2010 were backfilled with the American Recovery and Reinvestment Act (ARRA 2009) fund. For FY 2010-2011, the stipend per credit was set at \$62. The COF does not reflect enrollment growths within the same fiscal year.

Within the same fiscal year, if the CCCS' enrollment is higher than forecast, there are no provisions in SB04-189 to allow additional appropriations (JBC Staff Report, 2004). Instead, the General Assembly has reduced the amount of the CCCS' fee-for-service contract by an equal amount to fund the additional stipends needed. The state maintains the same level of overall funding to the governing board, but does not provide

any additional funds to accommodate resident student full time equivalent (SFTE) growth.

In order to be eligible for COF stipends and FFS contract funds, the CCCS and the Colorado Department of Higher Education (CDHE) negotiate a performance contract annually. The performance contract requires performance goals in areas of access, retention, and graduation rates. Furthermore, the performance contract must show how the CCCS is increasing the enrollment of underserved groups of students, specifically low-income individuals, males, and minorities according to the Senate Bill 04-189 section 1 (c).

The implementation of the COF gave community colleges an enterprise status. To qualify as an enterprise under TABOR, the enterprise must be a government-owned business engaged in an activity that will generate revenue outside of the government. In addition, to qualify for enterprise status, the total amount of direct state General Fund grants, local grants, and capital development allocation for the CCCS must be less than 10% of their total revenues.

In the SB04-189, the General Assembly stated that higher educational services are a government-owned business since they receive tuition and fees for the educational services they provide. Because the stipend (COF) is student directed and the FFS contract funds are appropriated to the CDHE for them to negotiate service contracts with the governing boards, these funds are not considered a direct state appropriation for the purposes of TABOR. Without direct state funding, most of the higher educational institutions' total revenues from State appropriations would be less than 10%. Since community colleges receive the majority of their state funding from stipends and FFS

contracts, these funds are no longer considered state grants under TABOR. The CCCS was granted enterprise status based on the 10% rule. Enterprise status was supposed to provide greater flexibility for higher education institutions generating cash fund revenues, mainly through tuition and fees.

Research Questions

According to Rhodes and Valadez (1996) community colleges could successfully provide social and economic mobility to their students with affordable costs for higher education through a public funding process. Hence, this study examined the following specific research questions:

1. What are the trends related to overall enrollments from FY1998 to FY2010, prior to and after the implementation of the COF (FY 2005-2006) for the Colorado Community College System (CCCS)? What are the trends related to enrollment at urban, suburban, and rural colleges within the CCCS?
2. Are there associations or differences in the enrollment numbers and percentage of enrollment between gender (male or female), non-traditional (25 years old or older) and traditional age groups, and traditional age groups of underrepresented students before and after the implementation of the COF?
3. Are there associations or differences in overall enrollment trend changes in the ratios between the COF stipend per credit rate and tuition rates in the past ten years with an emphasis on differences between pre-COF and post-COF rates?
4. Are there any associations among a series of variables including wages and income, unemployment rates, and Consumer Price Index that would affect the

trend of overall enrollments? What are the enrollment trends during the economic down turns, FY2003 and FY2009 in the state of Colorado?

Definitions of Terms

(Colorado Community College System, 2006; Colorado Commission on Higher Education, October 20, 2010)

A.A./A.S.: Associate Degree; Associate of Applied Science or Associate of General Studies; Typically requiring two years or 60 college credits to complete;

ARRA: The American Recovery and Reinvestment Act of 2009.

Associate's Degree: Normally requires at least two but less than four years of full-time equivalent college work. AGS and AA/AS degrees are transfer-oriented awards, while AAS degrees are considered professionally oriented, terminal awards

Black, non-Hispanic: A person having origins in any of the black racial groups of Africa (except those of Hispanic origin).

Certificate (at least one but less than two academic years work): Requires completion of a program that would be completed in at least one but less than two full-time equivalent academic years, or designed for completion at least 30 but less than 60 credit hours, or in at least 900 but less than 1,800 contact hours.

Certificates (less than one year): Requires completion of a program that would be completed in less than one academic year or less than 900 contact hours by a student enrolled full time.

COF (College Opportunity Fund): The College Opportunity Trust Fund was created by the Colorado Legislature and provides a stipend to eligible undergraduate students. The stipend pays a portion of total in-state tuition when a student attends a Colorado public institution or a participating private institution. Eligible undergraduate students must apply, be admitted, and enroll at a participating institution. Both new and continuing

students are eligible for the stipend. Qualifying students may use the stipend for eligible undergraduate classes. The stipend is paid on a per credit hour basis to the institution at which the student is enrolled. The credit-hour amount will be set annually by the General Assembly. The statutory authority is found in C.R.S. Title 23 Article 18.

Continuing: A student who was enrolled previously at the institution at the current level, including readmitted students, but excluding students considered new transfers, HS concurrent, summer only, or study abroad only.

Degree Level: The level of degree/diploma/certificate conferred by the institution upon the student for the successful completion of a program.

Degree-seeking Students: Students enrolled in courses who are recognized by the institution as pursuing: 1) a degree, certificate, or other formal award conferred by a public institution and approved by CCHE, or 2) a degree, certificate, or other formal award conferred by a private institution.

Dually Enrolled: A student enrolled at two institutions at the same time. This may affect enrollment reports when both institutions count that student as enrolled.

First-time: A student attending postsecondary education for the first time after high school at the level enrolled, where level means undergraduate or graduate.

FTE: Full-time Equivalent; a way to measure a student's academic enrollment activity at an educational institution. An FTE of 1.0 indicates that the student is enrolled full-time.

Hispanic: A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

IPEDS(Integrated Postsecondary Education Data System): Run by National Center for Education Statistics (NCES), this system collects statistical data and information on

postsecondary institutions. The Colorado Department of Higher Education submits aggregated data on public institutions to IPEDS.

Non-degree Seeking: Enrolled in courses but does not have intentions of pursuing a formal degree or award.

PSEO: Post Secondary Enrollment Option; A program that offers concurrent enrollment in college courses while in high school.

Race/Ethnicity: The group to which an individual appears to belong, identifies with, or is regarded in the community as belonging.

Registration Status: The student's status at the reporting institution.

Student Level: The level at which a student is classified during the term which is being reported, based upon the total credits obtained toward completion of a degree/certificate program.

SURDS: Student Unit Record Data System

Transfer: A student for whom this term is the student's first term at the institution at the current level, where level is undergraduate or graduate, and the student is known to have previously attended a postsecondary institution at the same level after high school.

Two-year Program: Enrollment is in a non-vocational, sub-baccalaureate program.

White, non-Hispanic: A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).

Delimitations of the Study

This study is delimited to one community college system; the conclusion may not be generalized or used as an indicator of whether the COF is a better funding method compared to a direct state appropriation. Few studies have been conducted on the implementation of the COF program. This may be due to the fact that it is a new and very unique funding method.

Limitations of the Study

Thus, limitations in the studies are: (a) a sufficient/long term history of the program has not been recorded since the COF was implemented and few previous studies have been conducted related to this new funding method; and (b) there are no similar funding methods to compare within this study.

Summary

In the last 30 years, Colorado community colleges, as well as many other public higher educational institutions, have experienced substantial declines in state funding. Two pressing policy questions community colleges are facing, and will continue to face, are how community colleges can maintain high-quality educational programs and how community colleges can ensure greater access to higher education in spite of declining state support (Western Interstate Commission for Higher Education [WICHE], 2006).

Under Senate Bill 04-189, community colleges receive stipend funding based on student credit hours. This is earned revenue for community colleges. Prior to the implementation of the COF, tuition revenue was included as general fund revenue.

TABOR limited the state revenue growth to the growth in population plus inflation. As a result, when public higher educational institutions raised tuition more than was allowable under TABOR, the excess revenue would have to be refunded the following year.

Without reforming TABOR, higher education could not have been properly funded between fiscal years 2001 and 2004 when the state of Colorado experienced a large economic downturn that caused state general fund cuts to higher education.

The original intention of the General Assembly in creating the COF was to allow higher educational institutions to become exempt from TABOR, to become more efficient in their operations, and to promote access to higher education for students from underrepresented groups (WICHE, 2009). According to SB04-189, changing funding from direct state appropriations to stipends would help higher education by removing it from TABOR restrictions, higher education institutions would be able to increase their revenues by creating higher enrollment and therefore increasing cash funds, tuitions and fees. Also, the COF program would further promote access to postsecondary education for targeted groups such as low- income families, underrepresented groups, and males, thus solving the “Colorado Paradox.”

CHAPTER TWO: LITERATURE REVIEW

This chapter reviews the literature relevant to the state governance, state funding allocation, and revenue sources of community colleges as it relates to Colorado's funding allocation method, the Colorado College Opportunity Fund (COF) program.

State Community Colleges' Revenue Sources

According to Askin (2007), the Higher Education Act (1965) changed community colleges funding sources from local districts to states. In 1918, community college funding derived from local sources was approximately 94%; by 2000, state supports for community colleges was more than 50% of community colleges' total revenues. Revenue from tuition has tripled since 1918 (Askin, 2007). However, according to Cohen (1993), public community college funding changed after the Truman Commission report of 1947. In the 1960s, 64% of public community colleges total revenue was from local taxing districts and the states; tuition was about 9% of community colleges' total revenue. By 1989 the total revenue from tuition had increased to 19%, indicating that funding from the state had decreased. The changing of funding sources for community colleges forced them to rely on substantial amounts of state appropriations.

As Ruppert (1996) contended, because higher education provides social and economic benefits for states and localities, the government should bear most of the cost to keep tuition and fees low at community colleges and the states should contribute a major portion of the educational costs. In other words, providing open access to

education is the optimal way of spending public funds to benefit society. However, it is difficult to show or provide a return ratio on a state's investment in community colleges. Community colleges are currently complex operations funded through a delicate balance of revenue sources. Paulsen and Smart (2001, p. 35) have identified the following community college revenue categories:

1. Tuition and Fees: Revenue from student payment for educational activities, not including room and board.
2. Federal Appropriation: Federal funds appropriated directly to institutions.
3. State Appropriation: Revenues appropriated directly to institutions by state legislature.
4. Local Appropriation: Revenues from local governments.

Thirty-eight states have some form of state funding policy for postsecondary enrollment (Boswell, 2001). However, community colleges revenue sources vary from state to state, since most states use different funding allocation formulas to allocate state appropriation to institutions of higher education. For example, community colleges in Texas receive more than 50% of their total revenue from the state, while Illinois community colleges receive about one-third. Arizona community colleges count about one-fourth of their total revenue, while community colleges in Delaware, Utah, and Washington receive more than 80% of their revenue, from the state (Cohen, 1993). Colorado community colleges' state funding prior to the Colorado College Opportunity Fund (COF) was around 50% of their total revenue (CCCS report, 2006).

State Funding Allocation Models

According to McKeown (1996), despite the long history of using a state funding formula and guidelines, there is no perfect formula to provide equity and equality. Developing an optimal formula can be very complicated because college's missions are not reflected in the building of the formula. In addition, states further reduced funding to higher education when the federal government began to block grants without indicating how much of the grant should be spent on education. With diminishing federal and state support and increased competition among Medicare, transportation, prisons, and K-12 for the same "pot" of public funds, community colleges are struggling to survive (Katsinas, 2005). In addition, community colleges are asked to provide evidence of productivity and efficient use of public dollars.

Garms (2005) categorized three state financing methods (a) planned economy, (b) free market, and (c) mixed model. He applied nine criteria to each funding model: access to higher education, specific programs provided, meet the needs of the community, preserve the private sector, ability of program expansion, intra- institutional efficiency, equity to students, and equity to taxpayers. According to Garms (2005), this planned economy model provided equity and equality for public funding.

Garms (2005) also contended that this planned economy model prevented wasteful duplication among educational institutions in the states, providing the most efficient and equitable funding distribution for students and for taxpayers regarding the financial burden of contributing to community college systems. Nevertheless, there were also disadvantages to the planned economy model due to the reduction of funding by the federal and state governments. Another disadvantage was that most revenue distributions

were initiated by a central administration; therefore, colleges under the centralized system become passive recipients. There were no local contributions or local boards. With this approach, colleges were given particular specialization and program types based on the decisions of the state and its community college board. The states that adopted a similar centralized funding model included: Alaska, Colorado, Georgia, Iowa, Kentucky, Massachusetts, Montana, Oklahoma, Utah, Virginia, and Rhode Island. Puerto Rico also uses this model (Garms, 1977). Based on a study by the Education Commission of the States (E.S.C.) in 2000, the state of Colorado used the pre-appropriated funding formula, allocating the total appropriate amount to the centralized system (Tollefson, 2009)

According to Garms (1977), the purest form of a planned model is centralized control and the statewide community college system. With centralized funding, the budget is a item line for the state budgeting process and funding is appropriated by the state. This budget becomes a part of the overall state budget. Appropriations are determined by the governor's office based on the total of the system's claims on the state treasury. With a centrally controlled model, there should be no differences in quality among colleges in the centralized system since appropriations are distributed fairly. In addition, this model is also equitable to taxpayers, because it does not place a heavier financial burden on one community over another in the state. Overall, the centralized funding model provides more equity than many other funding models. It is equitable to students and taxpayers because monetary demands for community colleges are left up to the state. It is also equitable because it often prevents wasteful duplication. In the planned economy model, colleges do not receive contributions from local districts and state money is allocated based on a formula used for distribution.

The base factors used in most formulas have five components: head count, number of positions, square footage or acreage, FTE students, and credit hours. Moreover, the National Association of College and University Business Officers (NACUBO) functional areas are also used for building formulas for public instruction. These areas include research, service, academic support, institutional support, and plant operations. If formulas are to be used, in part, to distribute public funds, McKeown (2005) believed that a number of criteria should be met to include: “flexibility in formula development, formula use for budget development not budget control, formulas should be related to quantifiable factors, consistency in data from institution to institution, use of normative data that reflects local and national trends, and usefulness of the formula to institutions, boards, state agencies and the legislature” (p 56). It is also very important to recognize differences in colleges’ size, location, and missions.

According to Texas Public Universities Formula Funding Cost Study Report from FY2002-FY2004 (2006), the cost-based methodology provides an objective starting point for distributing “Instruction & Operations” formula funds. There are five additional elements of cost included to support these activities: academic, institutional, student services, operating expenses, and research. The study states that the relative weight for science or engineering should be greater than the relative weight for liberal arts because faculty salaries are higher in sciences.

The report states that Texas has 50 state-supported community college districts, each governed by locally elected boards of trustees with taxing authority. Each district is authorized to offer both academic and technical programs. The legislature generally uses the same funding formula for both community and technical colleges in appropriating

funds for instructional and administrative expenditures. The formula consists of rates weighted for 26 programs. Texas public community college revenues by sources for FY 2003 included: state appropriations, tuition and fees, other revenues, and local taxes.

A study done by MGT of America, Inc. (1997), a management research and consulting group for the North Carolina Community College System (NCCCS), regarding several aspects of the system office's funding model addressed two areas: Sliding Scale for Curriculum Instruction (SSCI) and Base staffing/Base funding for instructional and administrative support (BSBF). Assuming the concept of "economy of scale" in business terms, the unit cost of producing a good or service decreases as the number of units produced increases. Applying this concept to higher education implies that the per-student cost would be expected to be lower at a large college than a smaller college. According to the MGT of America report phase 2 (as cited in Brinkman and Leslie, 1986), "the largest portion of any size-related economies of Education and General (E & G) expenditures at two-year colleges are typically realized by the time institutional enrollment is in the range of 1,000 to 1,500 FTE students" (p.1-2). This presented a special challenge to the North Carolina Community College System. The system has 17 colleges with fewer than 1,000 SFTE each and another 14 colleges under 1,500 SFTE in the total 58.

MGT of America (1997), evaluated five areas for the issues related to the difficulties of achieving an economy of scale approach at the North Carolina Community College System (NCCCS) and the findings were: (a) many colleges experienced difficulties in achieving economies of scale at their enrollment levels; (b) the state's long-standing policy to provide convenient geographic access for its citizens to community

college programs; (c) the economy of scale existed in both the instructional and support areas and had a larger impact on the support area; (d) if economy of scale was recognized, the basis for supplemental funding may be needed for smaller colleges; (e) NCCCS needed to have an alternative funding formula to provide for lack of economy of scale.

The study (MGT of America, 1997) indicated that the same approach was used for community colleges in Mississippi, where a base amount was provided along with a per student rate. Instructional and administrative support workloads were generated by headcount enrollment as well as FTE enrollment. Yet a part-time student can place the same requirements on the registrar as a full-time student.

Other formulas suggested by MGT of America (1997) were that NCCCS needed to consider : (a) recognize differences of delivering different types of curriculum instruction programs; (b) alternative approaches for changes in FTE enrollment due to the semester conversion and demographic trends; (c) using headcounts as well as SFTE; (d) unique cost allocations for programs offered on different sites; (e) alternative approaches of allocating resources for equipment replacement; (f) incorporate additional performance or incentive funding formula.

According to Michigan House Fiscal Agency (1998), the Gast-Mathieu Fairness in Funding Formula, which has been used in the appropriation process for community colleges in Michigan, was to evaluate if the formula was properly reflecting operational funding requirements of community colleges. The Gast-Mathieu Fairness in Funding Formula calculates “a dollar amount of need for each college based on instructional and non-instructional costs, tax equalization grants, local and student funding responsibility,

and other sources of revenue available to each college – Gross Need” (p.10). Both instruction and non-instruction included five categories according to the funding formula (a) instructional support, (b) student services, (c) administrative support, (d) physical plant, and (e) energy and equipment replacement. The Gast-Mathieu formula recognized the differing costs of operation faced by each of the institutions. As the colleges vary in size, costs in every area of instruction and non-instruction show considerable variation across the state. The formula, using average costs, recognized and incorporated these variations.

According to Bridges (1999), one of the funding formulas used by states is cost-analysis. The cost-analysis formula is primarily used as a simple objective approach that relies on historical data; it measures the programs and costs relationship by measuring all the expenditures incurred to provide programs. The down side of this approach is that the cost analysis method does not recognize enrollment growths or declines. Bridges (1999) contested that higher education institutions need to receive funding based on their size, not just their programs, to be sufficiently compensated by the state. Adequate funding from the state will enable community colleges to offer more quality programs needed by their communities.

The reason states prefer using the cost-analysis funding formula is for budgeting purposes (Bridges, 1999). Even though the cost-analysis formula may not completely meet higher educational institutions’ missions, this objective approach provides a more systemic and orderly budgeting process for policy makers and higher educational leaders (Bridges, 1999). On the other hand, there is a disadvantage to using a funding formula,

since institutions may allocate their internal funding based on the funding allocation formula instead of providing programs that will meet students and community needs.

Bridges (1999) further listed the reasons why Fischer's (1990) method of direct funding to institutions is attractive to the state: (a) higher education is a public good and should be accessible to everyone who qualifies without financial difficulties; (b) higher education should be an entitlement not a privilege; (c) to encourage or fund more to keep tuition lower so students do not migrate to other states to attend higher education; (d) lower tuition promotes equal opportunities for students; (e) direct funding to institutions will make it easier for states to maintain control over the institutions; and (f) direct funding eliminates red-tape for the state, institutions, and students. Bridges (1999) stated that Fischer (1990) also suggested a direct funding-to-student method instead of direct funding to institutions. Under this direct funding-to-student method, institutions would charge full tuition to all students. This method would eliminate inefficiency in public higher education, increase market competition, provides more choices for students, and lower the gap between public and private institutions.

Accessibilities and Student Population

Because community colleges are more accessible than other higher educational institutions, community college student populations are more diverse than four year colleges. Students are older, more likely to be women, attend part-time, work, take care of family, and be the first person in their family to attend college. More than 50% of the nation's students who enrolled in higher education were enrolled in community colleges as a result of two major factors; affordability and access (Boone, 1997). According to Bragg (2001), community colleges comprise more than one quarter of all higher

education in the United States, enrolling 5.3 million student full-time equivalents (SFTE). Bragg (2001) also indicates that non-traditional and minority students are major enrollees in community colleges, with about 30% of the student body consisting of ethnic/racial minorities. With regard to age, only 35% of today's community college students are the traditional age (18 through 21) of higher education attendees.

However, a 2009 report by the American Association of Community Colleges (AACC) shows the changes of traditional student enrollment, ages 21 or younger increased to 47% and the combined total of non-traditional student enrollment, ages 22 and older, was 53% (American Association of Community Colleges [AACC], 2009). The report also showed that about 44% of all U.S. undergraduate students and 36% of minorities were enrolled in community colleges (AACC, 2009).

According to Saenz (2002), increased Hispanic student enrollment was a trend in community colleges. The United States Census Bureau (2000) showed that Hispanics are the largest ethnic group in the U.S., accounting for about 13% of the population and 15.8 % in 2009 (US Census Bureau QuickFacts, 2010). Both male and female Hispanic students tend to contribute to household expenses; therefore, most Hispanic students who choose to attend community colleges do so on the basis of affordability

As Boone (1997) contested and as the Truman Commission report (1947) claimed: (a) community colleges should be within reach of all people; (b) charge little or no tuition; (c) serve as cultural centers for the community; (d) offer continuing education for adults as well as technical and general education, if feasible, be locally controlled; and (e) be a part of the nation's public higher education network (Boone, 1997; Vaughan, 1995, p. 32).

In contrast to the enrollment growth of students from underrepresented groups, states have been reducing community colleges and other higher education funding in recent years with tuition and fee increases up to or exceeding 10% per year (Tollefson, 2009). Should this trend continue the National Center for Education Statistics (2005) and many educational leaders are concerned that community colleges serving ethnically and socioeconomically diverse students may have a slightly diminishing enrollment trend over the next decade, probably for the first time in over 100 years (Tollefson, 2009). Hence, because the majority of students attending community colleges are non-traditional and from underrepresented student groups, state governing boards need to ensure tuition and fees are consistent with community colleges' mission of providing low-cost quality programs.

New Enrollment Trend of Community Colleges

It is a nationwide trend that more high school students from low-income families are enrolling in community colleges, especially with the increasing tuition of four-year institutions (California Postsecondary Education, 2008). Attending a community college near home allows a student to keep his/her part-time job, stay home, finish two years of education at a low tuition rate, and to transfer to a four-year university (Cavanagh, 2004). Due to the high cost of four-year institutions, weak economies, and increasing uncertainty of the labor market, many workers are seeking training for new occupations (California Postsecondary Education, 2008). Based on a U.S. Department of Education Study (1999), 26% of students transfer from community colleges to four-year higher education institutions and 70% completed their degrees; that is higher than 60% of students who start at four-year colleges (Cavanagh, 2004). Some states, California and Maine, for

example, are redirecting and encouraging high school graduating students to enroll in community colleges.

Historical Development of State Governance of Community Colleges

Community colleges are considered the most democratic institutions in higher education. In 1901, when the first community college in Joliet, Illinois, was established, community colleges were transfer institutions for college-bound students. As time passed, economic and political influences broadened community colleges' roles to meet the demands of their communities (Bragg, 2001). Community colleges have assumed the roles of training the workforce using their core mission, open access, in occupational fields, and as well as adult education. Both open access and adult education have become essential to a successful economy since the report by the President's Commission on Higher Education for Democracy (1947). As a result, when community colleges changed to meet community's and states' demands, governance and coordination patterns changed as well (Amey, Jessup-Anger, & Jessup-Anger, 2008a). Prior to this movement community colleges were funded mainly by their local school districts, but because postsecondary education was not constitutionally mandated, states began to develop their own funding methods (Palmer, 1996). The methods of funding for community colleges were left to state policies and budgeting processes (Mullin & Honeyman, 2007). Over the years, this complex relationship between states and community colleges has evolved into statewide governance, complicated funding formulas, and increases in accountability.

The structure of statewide governance of higher education has many impacts on community colleges and their students. The state governance of community colleges is influenced by funding programs that are provided to the community and impact each

community college's comprehensive mission. According to Bowen, et al. (1997), state governance has been structured differently based on the historical political policies of various states, in terms of providing access, equity, quality, efficiency, and choice of their public higher education institutions. Therefore, the contextual framework for higher educational state governance is mainly influenced by the history of state policy, state government, political culture, the economy, geography, and population demographics (Bowen et al., 1997). Bowen et al. (1997) contended that the character and history of a state government have a clear impact on the choice of state governance of higher education and, as well as the constitutional strength of the governor, the constitutional status of institutions, voters initiatives, and the political influences also affect system design and governance structures.

The governing boards of higher education are structured and designed in a way to meet the strategies of state policy makers (Callan & Bowen, 1997). Higher education boards are expected to provide not only meaningful accountability measures to institutions, but also to provide efficiency to a variety of constituent groups (Barak & Kniker, 2002). In particular, the state governing boards for Community colleges need to focus on core principles such as accessibility, affordability, flexibility, and educational priorities to meet students' needs and at the same time responding to the community (Bragg, 2001).

Bowen et al.'s (1997) study also evaluated how states' existing higher educational structures accomplished public policy objectives. The study included seven states categorized into four state governance structures: federal systems, unified systems, confederated systems, and confederated institutions. Federal systems consisted of a multi-

campus system governing board of which the state of Illinois and Texas are good examples. The state of Colorado governance structure is similar to federal systems. With a unified system, such as the State of Georgia's, a single governing board oversees all public higher education. A confederate system is set up as a combination of a coordinating agency and multi-campus system governing boards. California, Florida and New York are good examples of confederate systems. Finally, confederated institutions are similar to Confederated systems but lack a coordinating agency. Michigan is good example of this category.

In addition, Bowen et al. (1997) defined how state governance of higher education was affected by four key elements: information management, budgeting, program planning, and articulation. Information management was essential for assessing system performance. Budgeting was to negotiate finance between a state and a governing board. Program planning was to determine availability, quality and location of the program and service. Finally, articulation was for institutions to work together regarding transfers from one institution to another state public institutions (Bowen et al., 1997).

In contrast to Bowen et al. (1997), Amey, Jessup-Anger, and Jessup-Anger (2008) defined governance as the structure and decision making processes colleges use to address internal and external issues. Governance has many different forms and involves different stakeholders such as government, business, and community. The structure could be in a single college, multiple campus colleges, community college districts, or a state entity (Amey et al., 2008). Effective governance should provide institutional purpose, strategic direction, and the priorities of the institutions. Also, it should facilitate an institution's growth and change (Amey et al., 2008). Amey et al. (2008) also indicated

that public community colleges governance was especially affected by the changes in federal and state mandates and legislation because community colleges require different kinds of articulation and tuition agreements regarding the transfer of diverse student groups (Amey et al., 2008). In addition, Amey stated that effective governance was also needed to regularly assess new programs and innovative ways of offering programs to the diverse student groups that community colleges serve.

Six models of state governance structures for community colleges existed in 45 states as defined by Garrett (1992, 1993): highly decentralized, decentralized, moderately decentralized, moderately centralized, centralized, and highly centralized. These models were used to identify the degree of centralization of each state's community college system compared to its governance structure and funding resources. Garrett (1993) concluded, "State systems funded by more than 50 percent of state funds tend to have centralized governance structures. In contrast, state systems with more than 25 percent of contribution from local governments "tend to have decentralized governance structures" (p.12-13). The studies done by Fonte (1993) and Askin (2007) concluded that the state governance model of community colleges, based on a funding style, indicated that community colleges receiving dual-funding (local and state) compared to state-funding showed significant differences in programs, expenditures, and outcomes. The relationships between state funding and states' control level also indicated that there was a relationship between institutional autonomy and institutions' fiscal dependence on the state.

Tollefson (1997) classified five models of state-level governance representing a wide level of state control for community colleges. Tollefson's five models are presented in Table 2.1.

Table 2.1

Governing Board Model

Governing Board	Authority	State
State Board of Education	Provides coordination	Alabama, Idaho, Iowa, Kansas, Michigan, Oregon and Pennsylvania
State Higher Education Board of Commission	May approve programs and have budget recommendation authority	Arkansas, Maryland, Massachusetts, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York (SUNY), Ohio, Pennsylvania and Texas.
Statewide Community College Coordinating Board	Controls budgets and programs	California, Colorado (local district colleges), Florida, Michigan, Mississippi, New Hampshire, North Carolina, Oregon, South Carolina, Washington, Wisconsin, and Wyoming.
State Community College Governing Board	Authority to establish all policies	Colorado (state system colleges), Delaware, Kentucky, Maine, and Minnesota.
State Board of Regents	Oversees both universities and community colleges	Alaska, Georgia, Hawaii, Louisiana, Montana, Nevada, North Dakota, Rhode Island, Tennessee, Vermont, West Virginia and Puerto Rico.

Source: Tollefson, Garrett, Ingram & Associates, 1999, p.25-26

According to Tollefson (1997), the state of Colorado's governance is placed in both a statewide community college coordinating board (to control the budget and programs) and a state community college governing board (to establish all policies).

Development of State Governance and Colorado Community Colleges

In 1967, with the recommendation of the Colorado Commission of Higher Education (CCHE), the State Board for Community Colleges and Occupational Education (SBCCOE) was established as the governing board for the Colorado Community College System. The State gave the Board the authority to approve programs and policies. When the SBCCOE was created it was organized into two divisions, Occupational Education and Community Colleges. The division of Community Colleges was the new State Community College System for local district junior colleges. The statutory mission of the Community College System was to provide access to post secondary education for the citizens of Colorado.

In 1965, the state of Colorado established the Colorado Commission of Higher Education (CCHE). The CCHE was an agency that would help the Governor and Legislature strengthen higher education by establishing new institutions, developing new programs, and eliminating unnecessary programs (CCHE Report, 1969).

The Governor appointed seven bi-partisan CCHE committee members with the consent of the Senate. CCHE's responsibilities were to plan for post high school educational opportunities, and to coordinate institutions and their programs. The Act provided for an Advisory committee to be a designated representative of both the House of General Assembly and of several higher educational governing boards. The core responsibilities of CCHE were:

1. Reviewing operating budgets, including capital construction/maintenance requested by higher educational governing boards, and making recommendations to the Governor.

2. Reviewing programs, and approving or denying new degree programs proposed by institutions funded by the State.
3. Serving as a state agency and administering the Federal Higher Education Facilities Act and other federal programs assigned by the Governor.

With the Reorganization Act of 1968, the Department of Higher Education (DHE) was created and CCHE was brought in as a department. However, the CCHE followed their original function as a designated advisory committee for higher education institutions to the General Assembly. CCHE's approach to coordinating higher education in Colorado was (a) development of new programs, (b) formulation of budget requests, and (c) faculty and student personnel policies for all five state colleges. Since CCHE was established, there have been significant changes with the governing boards of higher education in the State of Colorado. In 1968, CCHE's report stated that the Commission proposed governing boards for each of the three major sectors of higher education—community junior colleges, state colleges and universities—and that each board be comprised of nine members. The community college board should govern two-year institutions in the state system and local district colleges. These structural realignments in its governance system were proposed to increase effectiveness and responsiveness of higher educational institutions to increase community and regional needs.

Prior to 1965, there were four governing boards in the state of Colorado. Beginning in 1965, the Trustees of the State Colleges in Colorado acted as a fifth board. Each board served as an individual board for five state colleges. In 1984, the State Board of Agriculture created the Colorado State University System that consisted of Colorado State University, Fort Lewis College, and University of Southern Colorado. In 2002,

under House Bill 02-1419, Fort Lewis College was approved to have a stand-alone Board of Trustees. In 2003, House Bill 03-1093 approved state colleges, Adams State College, Mesa State College, and Western State College of Colorado to establish separate governing boards. There are currently 10 governing boards in the state of Colorado; each governing board work in accord with its statutory role.

1. Regents of University of Colorado
2. State Board of Agriculture (Colorado State University System)
3. Trustees of Colorado School of Mines
4. Trustees for the Northern Colorado University
5. State Board of Community Colleges and Occupational Education (SBCCOE)
6. Adams State College
7. For Lewis College
8. Metropolitan State College of Denver
9. Mesa State College
10. Western State College

Governing Board and State Funding Allocation in Colorado

The State of Colorado appropriates a lump sum of state funding to the Commission of Colorado Higher Education (CCHE), who makes the state-wide higher education funding recommendation to the Governor and the legislature based on forecasted SFTE from governing boards. Then CCHE allocates state funds to higher education governing boards based on the formula developed by CCHE and the governing boards.

The governing boards manage expenditures. There are two constraints for the legislatures: Under the statute approved in 1977, the overall general appropriation is limited to 4% of reserve fund and 6% from the previous year regardless of inflation rate or population growth. In 1992, approval of the Tax Payers Bill of Rights (TABOR) created new limits on the state's revenue and expenditures that including cash funds such as tuition and fees for higher education. Prior to TABOR, tuition and fees were limited by the legislature and determined by CCHE's policy, but under TABOR, they were limited further. As Bridges (1999) stated, the Colorado General Assembly used the Denver-Boulder Consumer Price Index (CPI) to set the level of state appropriation for higher education. The legislature usually limited tuition increases to the CPI. However, during two recessions, between FY 1998 and FY2010, the state allowed community colleges to raise the tuition more than the CPI to offset diminishing state funding.

Colorado College Opportunity Fund (COF) and Performance Contract

Colorado Senate Bill 04-189 stated that direct state appropriations to higher educational institutions were not benefiting Coloradans who were participating in higher education, and that a new direct funding mechanism for students, the College Opportunity Fund (COF), referred to as a stipend, would benefit students by enabling them to enroll in a post secondary educational institution. The new law required the governing board of community colleges to sign this performance contract with the state in order to receive stipends, or state funds. The state's 13 community colleges operated under a single contract between CCHE and CCCS (Manzo, 2004).

The Colorado Commission on Higher Education, which oversees and coordinates the state's 28 public colleges and universities and sets policies for the new College

Opportunity Fund Stipends, provided contracts with new performance and accountability standards (CCHE, Oct. 2004). Under Senate Bill 04-189, the major reforms in the performance contracts were (a) limited tuition increases to inflation, (b) implement a rigorous core curriculum, (c) establish a faculty pay-for-performance plan, and (d) increase student access and retention rates. However, once the governing board of community colleges signed the contract, community colleges would (a) qualify for enterprise status and be released from the restrictions of TABOR, (b) allow community colleges to create, modify, and eliminate academic programs without CCHE's regulatory process, and (c) provide a unique quality indicator system of accountability instead of the current one-size-fits all.

The Bell Policy Center based in Denver, Colorado, criticized the performance contract in that it did not provide strict guidelines for higher educational institutions to meet the needs of minority and underrepresented students (Manzo, 2004). Instead higher education institutions would direct available resources to programs to increase enrollment, retention, and graduation of underserved students. Some of community college officials were optimistic and hoped this approach would relieve them from financial constraints and the new funding method would provide a mechanism to improve how community colleges were governed (Manzo, 2004). As many other public community colleges, the Colorado Community College System has been challenged with scarce state funding especially since implementation of TABOR limited flexibility for tuition increases. As a result, the state's higher education funding has been reduced to about 10% from 19% (Manzo, 2004).

Some states also use performance contracts to provide flexibility, which frees institutions to increase tuition rates to continue adequate progress toward statewide public educational goals. According to the WICHE report (2006), since the 1970s, states have turned to performance measures to gauge accountability. Maryland was the first state to do this. In 1992, St. Mary's College became the first public higher educational institution to become a charter college. The agreement to become a charter college was to accept an annual block grant and gain complete authority to set its own tuition rates. The advantages of this arrangement were to maintain consistent funding levels without experiencing increases or staggering decreases in state funding throughout the years. In 2003, the state of Texas passed legislation allowing higher educational institutions to set their own tuition and a portion of an increase in the tuition rate was allocated to need-based financial aid. In 2005, the state of Virginia adopted and established three levels of fiscal autonomy depending on institutions' financial strength. Based on the level of autonomy, institutions were given more flexibility on capital-building projects, procurement requirements, and personnel.

The state of Colorado's performance contract went one step further compared to these prevailing performance contracts between states and public higher educational institutions. The State of Colorado's contract allowed community colleges to obtain enterprise status, removing them from TABOR restrictions on revenue and expenses, while they continued to receive state funding.

Accessibilities in Colorado Community Colleges

Like other community colleges in the United States, Colorado community colleges continue to face two primary policy questions and challenges: (a) how can

community colleges provide high-quality educational programs, and (b) how can community colleges continue to ensure greater access to post secondary education opportunity in spite of declining state support (WICHE, 2006)? Just like other public higher education institutions, Colorado community colleges have had their share of state funding decline in the last 30 years. The state of Colorado's higher education funding per \$1,000 of personal income has been lower than the national level since 1992 (WICHE, 2006). Even though the Higher Education Act of 1965 improved the rate of grants at the federal level to ensure student access to community colleges, in comparison to the average of four-year public institutions, these grants only covered 23% to 35% (1980 – 1981) (WICHE, 2006). According to the National Center for Higher Education Management System's (NCHEMS) Colorado Higher Education Funding Study (2006), the proportion of state funding for higher education in Colorado declined and tuition and fee revenue increased (Colorado Commission on Higher Education, 2006). Colorado community colleges' tuition rates have been increasing faster than the College Opportunity Fund (COF) stipend the last five years.

Summary

Since the Truman Commission report (1947), public community colleges' financing has changed. Prior to 1950, tuition accounted for 9% of community colleges' total revenue; in 1989 it accounted for 19% of their revenue (Cohen, 1993). Over the years, federal and state funding sources for community colleges have diminished. As many states had to reduce their budgets, they also reduced their spending on higher education (Hendrick, Hightower, & Gregory, 2006).

According to Hendrick, Hightower, and Gregory (2006), (as cited in *The Fiscal Survey of States Report, 2002*) states were spending roughly one-third of their funds on education. Only when general fund spending was considered did the allocation to education reach 48% of overall states' budgets; 35% for elementary and secondary education, and 13% for higher education (Hendrick et al., 2006). With budget shortfalls, many states have reduced their spending on higher education. The state of Tennessee reduced 9% in 2003 while Massachusetts faced an 18.5% cut in its higher education in 2004. In FY2003-2004, the state of Colorado reduced 9% of state appropriation to community colleges.

While state funding is reducing, college tuition and fees are rising. During FY 2003-2004, the American Association of Community Colleges (AACC) estimated that average annual tuition and fees for a full-time community college student had increased 11.5% per semester over the previous year (Hendrick et al., 2006).

A large number of students enrolled into community colleges are from low-income families; therefore a slight increase in tuition would deter a large number of students from attending postsecondary education (Dougherty et al., 2006). The lower tuition in community colleges makes postsecondary education an option for community members from diverse backgrounds.

According to the WICHE report (2006), there were changes in the Blue Ribbon Panel to SB04-189 College Opportunity Fund Bill from the original 2003 recommendations; the alterations affected the stipends and tuition. The recommended stipend was changed from allocating \$4,000 for undergraduate students enrolled in up to 140 credits to a stipend of \$2,400 for those enrolled in up to 145 credits. And although

the recommended tuition was to reduce community colleges' tuition to 25 percent, when the bill was introduced there was no recommendation requiring community colleges to set aside 20 percent of increased resident tuition for financial aid.

Of all higher educational institutions community colleges have been the most responsive to social changes. They have well developed partnerships with local industry and government promoting regional economic development (Amey et al., 2008). Community colleges will continue to offer a wide range of programs for individuals, employers and local organizations, providing customized training and other workforce development programs (Bragg, 2001). This in turn generates a new beneficial relationship between public higher institutions and the state.

CHAPTER THREE: RESEARCH METHODOLOGY

Research Design

This study examined Senate Bill 04-189 in implementing one of its key policy goals, access, and the associated impacts of the bill on enrollment at community colleges in the Colorado Community College System (CCCS). The SB 04-189 indicated that a new direct funding method, the Colorado Opportunity Fund (COF), was to enhance access to underrepresented student groups. The purpose of this study was to determine if the COF affected overall enrollment trends, in particular for underrepresented student groups mentioned in the Bill.

The COF funding model is unique. Colorado is the only state that uses this funding method in the United States. There are no specific statistical instruments that assess the COF's program effectiveness. This new direct funding-to- student method, a stipend, is to meet policy maker's intended goals of achieving access to post secondary education for underrepresented groups of Coloradans and at the same time removing higher education institutions from revenue constraints under the Taxpayer's Bill of Rights (TABOR).

This study included several variables to analyze how the Colorado Opportunity Fund (COF) may have had impacted on enrollment trends at community colleges. The variables included, but were not limited to: gender, ethnicity, tuition rate, COF stipend rate, student status, degree or non-degree, age group, Consumer Price Index (CPI) (Denver/Boulder/Greeley), and unemployment rates in the state of Colorado.

The rationale for analyzing the overall enrollment trend of the CCCS for the past 13 years was to capture enrollment trends during economic downturns before and after the implementation of the COF. The first economic downturn occurred from FY 2003 through FY 2004 in the state of Colorado. The COF was implemented one year later, in FY 2005. The second and most recent economic downturn began in FY2009. These two economic downturns may be having more impact on community college enrollments than the Colorado Opportunity Fund (COF) may have had. Furthermore, the COF may not have provided access to post secondary educational opportunities to specific student groups as SB04-190 intended.

The research questions for this study are to determine if there are any significant relationships between prior to and after the implementation of the COF with regard to community colleges' enrollment trends. The questions this study will investigate are:

1. What are the trends related to overall enrollments within the Colorado Community College System from FY1998 to FY2010, prior to and after the implementation of COF (FY 2005-2006)? What are the trends related to enrollment at urban/suburban and rural colleges within the CCCS?
2. Are there associations or differences in the enrollment numbers and percentage of enrollment between gender (male or female), non-traditional (25 years old or older) and traditional age groups of underrepresented students before and after the implementation of COF within the CCCS system?
3. Are there associations or differences in overall enrollment trend changes in the ratios between the COF stipend per credit rate and tuition rates in the past ten years with an emphasis on differences between pre-COF and post-COF rates?

4. Are there any associations among a series of variables including wage and income, unemployment rate, and Consumer Price index that would affect the trend of overall enrollments? What are the enrollment trends during the economic down turns, FY2003 and FY2009 in the state of Colorado?

Table 3.1 summarizes the data sources, research questions stated above, the variables for each question and the statistics used for analysis.

Table 3.1

Research Questions, Data, Variables, and Statistics

Data Source	Research Question	Variables	Measurement	Statistics
CCCS	1 & 2	CCCS Overall Enrollment Trend (FY 1998-2010) Sex: Male, Female Ethnicity: Asian, Black, non-Hispanic, Hispanic, Asian, Native American Age group Up 24 (traditional) 25 and older (non-traditional)	Unduplicated head count	Crosstabs, chi-square, ANOVA, and/or time series graphs
CCHE Website:	3	CCCS tuition rate/percentage changes (FY1998-2010) pre and post COF	Per Credit hour	Crosstabs, ANOVA and time series graphs
JBC Reports	3	COF stipend rate/percentage changes (FY2006-2010)	Per Credit hour : approved by General Assembly	Crosstabs, ANOVA and/or time series graphs
US Bureau of Labor Statistics Website	4	CCCS enrollment (FY1998-2010) State of Colorado monthly unemployment rate (FY1998-2010)	Changes in % by Monthly and Annually	Time series graphs, chi-square
Colorado Department of Labor and Employment	4	CCCS enrollment (FY1998-2010) Wage and income of industry sector and counties in the state of Colorado Consumer Price Index (CPI) (Denver/Boulder/Greeley)	Average weekly wage and employment number, CPI-U all items 1982-84=100, not seasonally adjusted	Time series graphs, chi-square

Using Cross-Tabulation (crosstabs) (Morgan, Leech, Gloeckner, and Barrett, 2007), this examined the overall enrollment trends of 13 community colleges in the Colorado Community College System (CCCS) prior to and after the implementation of the COF. Crosstabs are a statistical tool used to determine if there is a statistically significant relationship between two variables. A Chi-Square test was used to measure the strength of this relationship. The Chi-Square test was an appropriate test since the data sample used for this study was large. The enrollment trends (FY1998 – FY2010) of these thirteen community colleges were further broken down to the enrollment of traditional and non-traditional students, student gender, and ethnic groups using Crosstabs, chi-square, ANOVA, or time series graphs.

Data Collection

The population for this study consisted of Coloradans who had enrolled in one of the 13 community colleges within the Colorado Community College System (CCCS) during academic years 1998 to 2010. The thirteen community colleges all used the same uniform registration format (Appendix 1.1). CCCS submits registration data to the Student Unit Record Data System (SURDS), which was compiled by the Department of Higher Education (DHE). For this study, a sample of registration data was randomly selected from the system office's student data warehouse. Each student was required to complete a registration form either on-line or by submitting a paper form. Until recent years, the majority of forms have been filled out manually by students and keyed in by the colleges' staff.

Assumptions were made regarding the quality of each case in the data set: (a) students may have not filled out the form correctly as it was intended by a college; (b)

even though the form is in a uniform format, misinterpretation may have occurred; and (c) information from the form may have been mis-keyed in by staff. The registration data used in this study included students enrolled in courses awarding credit toward a community college degree and non-credit programs to determine if there were any changes within trends of overall enrollments of particular student groups as defined in the SB04-189.

Other variables such as the Consumer Price Index (CPI), unemployment rate, and average wage and income, were collected from the Colorado Legislative Council Staff's reports based on the Colorado Department of Labor and Employment data from 1997 to 2010. The Commission of Colorado Higher Education (CCHE) and the Joint Budget Committee (JBC) reports from FY1998 to FY2010 provide data including overall Student Full Time Equivalent (SFTE) enrollment, gender, age group, ethnicity, tuition, and stipend rates. This information was collected from their websites and from publications that include a series of measurements that can be used for assessments. These variables are defined with their unit measurements in Table 3.2.

Table 3.2

Definition of Variables and Measurements

Data Source	Variable	Definition	Units of Measure
CCHE Website	SFTE	Student Full-time Equivalent (SFTE)	30 credit hour per academic year
CCHE Website	Head Counts	Number of students registered classes	Per Registration
JBC Website (Staff Reports)	Stipend rate	COF amount approved by General Assembly	Per Credit hour
JBS Website (Staff Reports)	Appropriation	State appropriation to CCCS	Total Estimated SFTE
CCCS Budget Data Book	Tuition Revenue	The total in-state tuition less stipend	Per Credit hour

Data Analysis

Even though college sizes varied, 1,000 students per college for each academic year were randomly selected. The initial unduplicated random sample was 168,994. During the coding process, any samples with a missing variable were eliminated and the sample was reduced to 128,000. Samples that appeared to be incorrect were also eliminated, even if they had all the elements for the analysis. For example, after sorting by academic years (ACYR), samples with a birth year of 1907 or earlier were eliminated because in academic year 1998, a student born in 1908 would be 90 years old. Since the academic year 1998 included Summer 1997, Fall 1997, and Spring 1998, the date June 30, 1997, was artificially selected (the ending date of each fiscal year), to comply with the beginning of each fiscal year and as a cut-off date for each age group. For example, if a student was born on June 26, 1979, they would be in the age group 3 (age 19-24). Table 3.3 shows academic year 1998's age groups.

Table 3.3

<i>ACYR 98 Date of Birth and Age Groups</i>		
Age Group	Date of Birth (DOB)	Coding
Up to 14	7/1/1982	1
15-18	1979/7/1 – 1982/6/30	2
19-24	1972/7/1 – 1979/6/30	3
25 -34	1962/7/1 – 1972/6/30	4
35 -44	1952/ 7/1 – 1962/6/30	5
45 - 54	1942/7/1 – 1952/6/30	6
55 -64	1932/7/1 – 1942/6/30	7
65 plus	1932/6/30	8

Each sample was recoded with numeric codes based on ethnic group and student types defined by CCHE. Samples with an ethnic code of “Unknown” or “Others” were eliminated as were samples with a student type of “Unknown,” “Undeclared,” “High school student,” “CCD Consortium,” or “Continuing Education.” The Colorado Opportunity Fund (COF) only applies to students with resident status; therefore any non-resident status (15,640), no data (26), and need residency status (919) (a total of 16,585 samples) were also eliminated. Finally, a random checking process was done to sort students’ date of birth and rechecked their age against their enrollment term, academic year, college code, student type, ethnicity, and gender.

Each sample was coded into the categories used in the CCHE’s report, such as ethnic groups and age groups. Academic years were coded as before and after the COF were implemented.

Variables in this study included not only age group, gender, and minority group as defined from data collected by the Commission of Colorado Higher Education (CCHE), but also grouped colleges based on their service areas, student status, and student type. Coding for each variable is summarized in the table 3.4.

Table 3.4

Coding for Variables Used in Overall Enrollment Trend Analysis

Variable	Category	Coding
Sex	Gender of Student	Female = 0, Male = 1
Ethnic	Race of Student	1 = White Non-Hispanic 2 = Black Non-Hispanic 3 = Hispanic Other 4 = Asian or Pacific Islander 5 = American Indian/Alaskan
Age Group	Age at each Academic Year	1 = up to 14 2 = 15-18 3 = 19-24 4 = 25-34 5 = 35-44 6 = 45-54 7 = 55-64 8 = 65 plus
COF	Pre-COF 1998- 2005 Post-COF 2006-2010	0 = Pre-COF 1 = Post-COF
College	Urban/Sub and Rural	0 = Urban/Sub-Urban 1 = Rural
Student	Traditional (up to 24) Non- Traditional (25 plus)	0 = Traditional 1 = Non-traditional
Degree	Degree Code	NDS = Non Degree Seeking AAS = Associate of Applied Science AGS = Associate of General Studies AA = Associate of Arts AS = Associate of Science CER = Certificate
Student	Student Type	C = Continuing N = New First time anywhere R = Re-admit O = Transfer w/o Credit T = Transfer w/ Credit I = Internal Transfer

Dividing the 13 community colleges into urban/suburban, and rural was based on geographical service area locations. A report of the Colorado Higher Education Financing study done by The National Center for Higher Education Management Systems (NCHEMS, 2006) grouped community colleges under the CCCS based on their

mission, funding, program, and geographical location against its own peer groups (Tables 3.5 and 3.6).

Table 3.5

NCHEMS Grouping of Colorado Community Colleges (Colorado Commission on Higher Education, 2006)

Peer Group	College
Group A	Front Range Community College
	Pikes Peak Community College
Group B	Colorado Northwestern Community College
	Lamar Community College
	Northeastern Junior College
	Otero Junior College
Group C	Arapahoe Community College
	Community College of Aurora
	Community College of Denver
	Pueblo Community College
	Red Rocks Community College
Group D	Morgan Community College
	Trinidad State Junior College

Table 3.6

Based on Community Colleges' Service Areas

Location	College	Coding
Urban/Sub-Urban	Arapahoe Community College (ACC)	0 = Urban/Sub
	Community College of Aurora (CCA)	
	Community College of Denver (CCD)	
	Front Range Community College (FRCC)	
	Pikes Peak Community College (PPCC)	
	Pueblo Community College (PCC)	
	Red Rocks Community College (RRCC)	
Rural	Lamar Community College (LCC)	1 = Rural
	Northeastern Junior College (NJC)	
	Morgan Community College (MCC)	
	Otero Junior College (OJC)	
	Trinidad State Junior College (TSJC)	
	Colorado Northwestern Community College (CNCC)	

In this study, however, the colleges are grouped based on their service areas as shown in Figure 3.1.

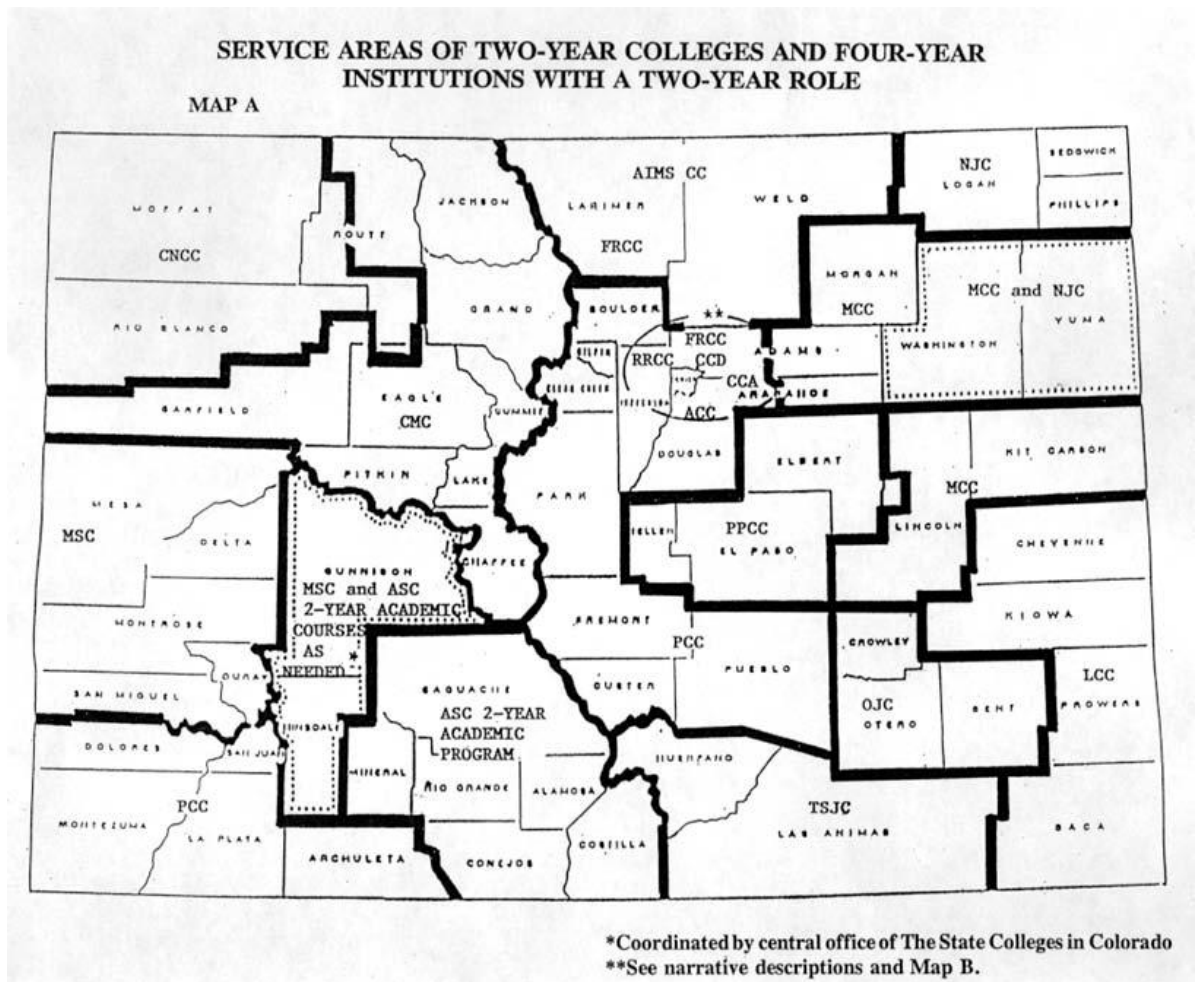


Figure 3.1. Colorado Community College System Geographic Service Areas (SBCCOE SP 9-20b, page 9)

Even though the study examines the overall enrollment trend using the student head counts, the study specifically analyzed the enrollments of age groups, gender, and ethnic groups; the SFTE was used for the enrollment forecasting and state appropriations. A head count for each student in each term provided enrollment trend data regardless of how many credits a student was taking. State appropriations were based on dividing the total credit hours of the SFTE by 30, therefore, it was consistent to use this data for the

enrollment forecasting with other variables and to compare state appropriations over the years.

Cross-Tabulation and Chi-Square tests were used to compare overall enrollment trends by gender, age group, ethnic group, geographical location of colleges, and academic programs before and after the implementation of COF. The same statistical methods were used to compare the overall enrollment trends of minority students by determining the differences among enrollments of each ethnic group, as assigned by the Colorado Department of Education (CDE), within the community colleges prior to and after new funding mechanism (COF) was implemented. Furthermore, whether there were differences in the enrollment numbers of males and females in each ethnic group since the inception of the COF was analyzed primarily using Crosstabs.

Variables such as the Consumer Price Index (CPI) or unemployment rates may have impacted overall enrollment. For example, during economic down turns, if community colleges' enrollment numbers were higher there may have been associations between unemployment rates and enrollments. Also, tuition rates are likely to be associated with the outcome of enrollments. Variables also included the state of Colorado's economic indicators such as CPI (Denver/Boulder/Greeley), unemployment rates, average income and wage (Table 3.8). These variables were used in the regression analysis to determine if they had an affect on enrollment trends. The monthly unemployment rates of the state of Colorado is summarized in Table 3.9 and was also used to verify/determine/assess if the higher unemployment rates had an impact on enrollment.

Table 3.8

Colorado Economic Indicators (1997-2013 Calendar Years)

Colorado Legislative Council Staff Report <http://www.colorado.gov/cs/Satellite/CGA-LegislativeCouncil/CLS/1251573164950>

Colorado LMI Gateway-Consumer Price Index <http://lmigateway.coworkforce.com/lmigateway/gsipub/index.asp?docid=363>

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Forecast 2010	Forecast 2011	Forecast 2012	Forecast 2013
Population (1,000s), July 1	3,891.3	3,969.0	4,056.1	4,326.9	4,427.0	4,498.4	4,548.1	4,601.8	4,665.2	4,808.1	4,895.7	4,987.7	5,074.5	5,160.8	5,243.4	5,332.5	5,439.2
percent change	2.1	2	2.2	2.4	2.3	1.6	1.1	1.2	1.4	2	1.8	1.9	1.7	1.7	1.6	1.7	2.0
Nonagricultural Employment (thousands)	1,979.5	2,057.0	2,133.5	2,212.4	2,226.8	2,184.1	2,152.8	2,179.6	2,226.0	2,279.0	2,331.1	2,350.3	2,244.2	2,210.5	2,230.4	2,277.3	2,331.9
percent change	4.2	3.9	3.7	3.8	0.6	-1.9	-1.4	1.2	2.1	2.4	2.3	0.8	-4.5	-1.5	0.9	2.1	2.4
Unemployment Rate	3.3	3.8	2.9	2.7	3.8	5.7	6.1	5.6	5.1	4.4	3.9	4.9	7.7	8.0	8.4	8.2	7.7
Personal Income (millions)	\$ 108,763	\$ 118,514	\$ 127,955	\$ 144,394	\$ 152,700	\$ 153,066	\$ 154,887	\$ 164,587	\$ 174,754	\$ 194,393	\$ 205,548	\$ 212,320	\$ 207,742	\$ 215,064	\$ 221,731	\$ 229,270	\$ 239,816
Percent change	8.7	9	8	12.1	5.8	0.2	1.2	6.3	6.2	8.2	5.7	3.3	-2.1	2.3	3.1	3.4	4.6
Wage and Salary Income (millions)	\$ 62,524	\$ 69,604	\$ 76,347	\$ 85,909	\$ 88,297	\$ 86,938	\$ 88,008	\$ 92,059	\$ 97,263	\$ 105,833	\$ 112,604	\$ 116,645	\$ 112,561	\$ 113,666	\$ 115,257	\$ 119,176	\$ 125,612
percent change	9.3	11.3	9.7	12.6	2.8	-1.5	1.2	4.6	5.7	7	6.4	3.7	-3.7	0.8	1.4	3.4	5.4
Retail Trade Sales (millions)	\$ 45,146	\$ 48,131	\$ 52,209	\$ 57,955	\$ 59,014	\$ 58,850	\$ 58,689	\$ 62,288	\$ 65,447	\$ 70,437	\$ 75,329	\$ 74,760	\$ 66,345	\$ 69,596	\$ 71,754	\$ 75,054	\$ 238,761
percent change	5.9	6.6	8.5	10.2	1.8	-0.3	-0.3	6.1	5.1	7.5	6.9	-0.8	-11.3	4.9	3.1	4.6	4.3
Home Permits (thousands)	42.5	49.5	49.3	53.7	55	47.9	39.6	46.5	46.3	38.3	29.5	19	9.4	11.2	17.2	22.7	27.2
percent change	3.3	16.5	-0.4	8.6	0.8	-13	-17.3	17.5	-0.2	-16.4	-23.2	-35.5	-50.8	19.6	53.4	31.9	19.8
Nonresidential Building (millions)	2,986	2,617	3,400	3,339	3,500	2,787	2,713	3,291	4,221	4,415	5,251	4,191	3,049	2,475	2,543	2,848	3,247
percent change	26.2	-12.4	29.9	-5.8	0.7	-20.4	-2.7	21.3	28.3	4.6	18.9	-20.2	-25.2	-21.7	3.5	12	14
CPI	158.1	161.9	166.6	173.2	181.3	184.8	186.8	187	190.9	197.7	202	209.9	197.3	199.9	203.7	208.4	213.8
Denver-Boulder Inflation Rate	3.3	2.4	2.9	4	4.7	1.9	1.1	0.1	2.1	3.6	2.2	3.9	-0.6	1.2	1.9	2.9	3.1

Tale 3.9

Colorado Areas Labor Force Data (not seasonally adjusted: Annual Average/Monthly Estimated): 1997 to 2010

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1997	4.0	3.4	3.3	3.0	3.1	3.7	3.1	3.1	3.0	3.1	3.2	3.2	3.3
1998	3.9	3.8	4.0	3.8	3.8	4.8	4.1	3.9	3.8	3.6	3.5	3.0	3.8
1999	3.6	3.1	3.1	2.8	2.7	3.4	2.9	2.8	2.7	2.6	2.7	2.5	2.9
2000	3.1	3.0	2.9	2.5	2.4	3.0	2.9	2.9	2.7	2.5	2.6	2.4	2.7
2001	3.0	3.0	3.2	3.0	3.0	3.6	3.6	3.9	4.0	4.7	5.3	5.6	3.8
2002	6.6	6.1	6.2	5.7	5.2	5.9	5.6	5.3	5.2	5.2	5.5	5.6	5.7
2003	6.3	6.3	6.6	6.2	6.0	6.7	6.3	6.1	5.9	5.7	5.9	5.7	6.1
2004	6.4	6.1	6.2	5.5	5.4	5.9	5.5	5.3	5.2	5.2	5.3	5.4	5.6
2005	5.6	5.7	5.6	5.2	5.1	5.3	5.1	4.8	4.8	4.6	4.9	4.8	5.1
2006	5.0	4.7	4.6	4.4	4.3	4.7	4.6	4.4	4.0	3.8	4.0	3.9	4.4
2007	4.4	4.1	3.8	3.4	3.4	3.9	3.9	3.8	3.8	3.7	4.1	4.3	3.9
2008	4.7	4.6	4.7	4.2	4.4	4.9	4.9	4.8	4.7	5.0	5.3	5.9	4.9
2009	7.3	7.8	8.2	7.9	8.2	8.6	8.2	7.7	7.3	7.1	7.0	7.3	7.7
2010	8.3	8.3	8.4	7.8	7.7	8.2	8.1	8.0	8.0	8.1	8.7		

Colorado Depart of Labor and Employment

<http://lmigateway.coworkforce.com/lmigateway/gsipub/index.asp?docid=363>

Between the summer of 2002 and the spring of 2003, Colorado experienced an economic recession. In January 2002, Colorado had an unemployment rate of 6.6%. By the end of the year, the unemployment rate had dropped to 5.7%. However in January 2003, the unemployment rate increased slightly to 6.3% and the year ended with an unemployment rate of 6.1%. Overall, the unemployment rate declined 2.2% from 2003 to 2007. In January 2009, Colorado had an unemployment rate of 7.3%, and ended the year with an unemployment rate of 7.7% in December (see Table 3.9).

When Frentzos (2005) conducted his analysis on enrollment trends when the economy is strong, he found that noncredit enrollment increased while enrollment in credit classes decreased because workers were employed and had no need to seek a college degree. Frentzos (2005) concluded that the result showed that there was a strong negative correlation between Michigan's unemployment rate and the enrollment in non-credit classes, and that there was no statistically significant correlation found between the rate of unemployment and credit classes.

The study also compared increases in tuition rates and the COF to determine if the stipend funding eased existing financial constraints under TABOR for community colleges. The total state appropriations for FY1998 through FY2010 was compared prior to and after the implementation of the COF. In addition, whether or not the implementation of the COF caused increases in tuition and fees due to changes in stipend rates were investigated. In addition, the study used regression analysis to show the relationships among various variables to determine if one of those variables, apart from the COF, impacted enrollment trends. The regression analysis was done using Excel's statistical functions.

Finally, measurement errors may have a large impact on the credibility of data collected (Morgan et al., 2008). However, this study considered that collected data and data sources provide higher measurability. This study does not include survey or experimental research; instead it used a large data sample from the enrollment registration data of thirteen community colleges. As a result, it is accurate to say that this study's results are not biased and therefore can be generalized.

CHAPTER FOUR: FINDINGS AND RESULTS

This chapter presents the results of the study. The results were obtained from analyzing a random sample of data pulled from the Colorado Community College System's (CCCS) student registration data warehouse. The purpose of this study was to evaluate whether or not the Colorado College Opportunity Fund (COF) has enhanced community colleges' statutory mission, accessibility, and to determine if the direct funding-to-student method has helped community colleges improve revenue flexibility as bill SB04-189 has intended. Research questions one through four are presented. The results of the cross-tabulation analysis are also discussed.

Research Question 1

What are the overall enrollment trends in the CCCS's FY1998 and FY2010, prior to and after the implementation of the COF (FY2005-2006)? The first analysis focused on: 1) changes in overall enrollment trends between genders; 2) changes in overall enrollment trends among ethnic groups; 3) changes in overall enrollment trends between urban and rural area; 4) changes in overall enrollment trends between traditional and non-traditional students; 5) changes in overall enrollment trends of age group, and; 6) changes in overall trends of academic degrees among selected age groups, Pre-COF (FY1998 – FY2005) and post-COF (FY2006 – FY2010). The findings were:

1. The overall gender enrollment trends showed no statistically significant change. The overall enrollment ratio between Female and Male stayed approximately the same (60% Female and 40% Male).
2. The overall enrollment trends of ethnic groups showed that two groups, Black and Hispanic, had slight increases in overall enrollment after the COF.
3. The overall enrollment trends between urban and rural colleges showed that the COF did not impact rural colleges' overall enrollment.
4. The overall enrollment trends between traditional and non-traditional students showed that the COF significantly increased enrollment by traditional students.
5. The overall enrollment trends of the 19-24 year old age group showed increases while the 25-34 year old and 45-54 year old age groups decreased after the COF.
6. The overall enrollment trends of academic degrees showed that the Associate of Applied Science (AAS) and Non-degree seeking students had the most changes after the COF.

Table 4.1

Summary of Pre-COF and Post-COF Overall Enrollment Trend (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	39.7	39.4
Female	60.3	60.6
Ethnicity		
White	72.4	69.9
Others	27.6	30.1
College Location		
Urban/Sub	53.0	47.0

Rural Student Type	47.0	47.8
Traditional	46.9	51.9
Non-traditional	53.1	48.1

Overall Enrollment Trend of Gender

It is a national trend that more females are enrolled in community colleges. The ratio of female to male enrollment in the CCCS mirrors the national trend. A 2 x 2 crosstabs table was used to determine if there was a significant relationship between enrollment trends pre and post COF and by gender (male and female), and if the COF funding method had any impact on overall gender enrollment trends. The crosstabs results showed that there were no significant changes in the overall gender enrollment trend after the COF was implemented. The male and female enrollment ratio in the Colorado Community College System remained approximately 60% female and 40% male (see Table 4.1).

Overall Enrollment Trend of Ethnicity

Although there was no change in gender enrollment trends pre- and post-COF, there was a change in overall enrollment trends among ethnic groups. These results are shown in Table 4.2. Two groups, Black and Hispanic, had slight increases in overall enrollment post-COF while other groups stayed the same or showed slight decreases.

Table 4.2

Overall Enrollment Trend of Ethnic Groups Prior to and After COF Implementation (%)

COFYR	White Non-Hispanic	Black Non-Hispanic	Hispanic Other	Asian or Pacific Islander	American Indian/Alaskan Native
Pre-COF	72.4	5.0	18.6	2.5	1.5

Post -COF	69.9	6.2	20.1	2.5	1.3
-----------	------	-----	------	-----	-----

To be more concise regarding the enrollment changes among ethnicities, the overall enrollment of ethnic groups to White/Non-Hispanic was evaluated (see Table 4.1). All ethnicities were re-coded into two categories, “White” and “Other”, to run 2 x 2 crosstabs. Table 4.3 shows that there is a statistically significant ($p < .001$) increase in overall enrollment of all other ethnic groups compared to “White,” but the effect size (0.026) is too small for a recommendation related to policy changes.

Table 4.3

Chi-Square Analysis of pre-COF and post-COF Overall Enrollment Trend by Ethnicity

Variable	n	Ethnicity		χ^2	p	phi
		White	Other			
COFYR						
Pre-COF	84,209	60,970	23,239	86.11	<0.001	.026
Post-COF	43,791	30,626	13,165			
Totals	128,000	91,596	36,404			

Overall Enrollment Trend Between Urban/Suburban and Rural College

This test evaluated whether overall enrollment changes, if any, occurred more with colleges in urban/sub-urban or rural areas. Six of the 13 community colleges in the Colorado Community College System were categorized as rural colleges based on their geographical locations and service areas. Community colleges in rural areas of Colorado are not only closely tied to their community’s cultural activities, but also with the economic conditions of their service areas. Therefore, evaluating if there were any differences in their enrollment trends since the inception of the COF was of interest.

Table 4.1 shows enrollment trend changes between urban/suburban colleges compared to rural colleges prior to and after the implementation of the COF. As the trends show in both Tables 4.1 and 4.4, even though the results are statistically significant ($p \leq .05$), the impact is very small. Moreover, the small effect size (.008) shows that there is a little difference or association that the COF had a large impact on increasing rural colleges' overall enrollment.

Table 4.4

Chi-square Analysis of pre-COF and post COF and Overall Enrollment Trend of Urban/Suburban and Rural Colleges

Variable	n	Colleges		χ^2	p	phi
		Urban/Sub	Rural			
COFYR						
Pre-COF	84,209	44,622	39,587	8.10	0.004	.008
Post-COF	43,791	22,838	20,953			
Totals	128,000	67,460	60,540			

Overall Enrollment Trends of Traditional and Non-Traditional Students

To evaluate traditional and non-traditional student enrollment trends, each student's date of birth in an academic year a student attended was calculated. Instead of analyzing each age group, the age variable was recoded as two groups; traditional and non-traditional. Traditional students were defined as 24 and younger and non-traditional students were defined as 25 and older. More non-traditional students, ages 25 and older, enroll in community colleges than any other higher educational institutions (American Association of Community, 2009). Table 4.1 indicates that prior to the COF; community colleges had a higher number of non-traditional students. After the inception of COF, the overall enrollment of traditional students has been increasing. The result is statistically

significant ($p < .001$) that the enrollment trend of traditional students increased; however, the effect size (.047) is very small.

Table 4.5

Chi-square Analysis of pre-COF and post COF and Overall Enrollment Trend of Traditional and Non-Traditional Students

Variable	<i>n</i>	Age Group		χ^2	<i>p</i>	<i>phi</i>
		Traditional	Non-traditional			
COFYR						
Pre-COF	84,209	39,459	44,750	288.25	<.001	.047
Post-COF	43,791	22,709	21,082			
Totals	128,000	62,168	65,832			

Overall Enrollment Trend of Age Group

In order to determine the overall enrollment trend of traditional and non-traditional students pre-COF and post-COF (Table 4.1), the age groups that had the most significant changes were identified. Table 4.6 shows the overall enrollment changes for each age group. Since the implementation of the COF, the age group 19-24 has shown the most gains in terms of enrollment, while the age group 35-44 has shown the greatest loss. The implementation of the COF did not affect the enrollment of students in age group up to 14. With the exception of age group 25-34, the overall enrollment of other age groups decreased post-COF. The three age groups with the most noticeable changes in enrollment, 19-24, 35-44, and 45 to 54, were selected for further analysis.

Table 4.6

Overall Enrollment of Age Groups within Pre-COF and Post –COF (%)

COFYR	≤ 14	15–18	19–24	25–34	35–44	45–54	55–64	65+
Pre-COF	0.2	10.2	36.4	21.7	16.8	10.6	3.0	1.0
Post-COF	0.2	11.1	40.6	22.7	13.1	8.6	2.9	0.8

The increase in the enrollment of age group 19-24 after the implementation of the COF further raises the question; is the COF more effective for traditional students (age up to 24) than non-traditional students?

Overall Enrollment Trend of Age Group 19-24, 35-44, and 45-54

The three age groups from Table 4.6 that showed the most overall enrollment changes were selected for further study. The results showed that the overall enrollment of students in age group 19-24 increased while the overall enrollment of students in age groups 35-44 and 45-54 showed a declining trend, with an overall enrollment decrease since the inception of COF. The first analysis of the three age groups was the overall gender enrollment trend. Table 4.7 demonstrates the slight increase in overall male enrollment of these three age groups after the implementation of COF.

Table 4.7

Gender Enrollment of Age group 19-24, 35-44, and 45-54 within Pre-COF and Post COF(%)

	Male	Female
Pre-COF	39.7	60.3
Post –COF	40.1	59.9

As Table 4.7 indicated, there is a very slight increase in the enrollment of males from the three age groups. Even though the change in male enrollment is minimal, a chi-square test was performed to determine if the change was statistically significant. The Chi-square analysis indicated that these results were not significant ($p = .291$) and the effect size (0.004) was very small. There were no statistically significant differences or associations that may have practical importance.

Academic Year and Enrollment Trend of Age Group 19-24, 35-44, and 45-54

The purpose of this analysis was to determine if there was a trend between enrollment and academic years in low economic cycles. Occurring before and after the COF was implemented (FY2006), two periods, FY2003 and FY2009, were identified as economic down-time periods by the state of Colorado. Table 4.8 shows the enrollment trends for the three age groups between academic years 1998 and 2010. The overall enrollment trend of age groups 35-44 and 45-54 shows enrollment was higher pre-COF, while the overall enrollment trend of age group 19-24 shows enrollment is higher post-COF (ACYR 2006-2010). The results in Table 4.8 does not show any increases in enrollment during the academic years FY 2003 and FY 2009. Despite two state defined economic down-time periods, there was not a significant effect on the enrollment trend. According to Table 4.8 the state of the economy did not have a relevant impact on student enrollment.

Table 4.8

Enrollment (%) Trend of Academic Year and Age Groups 19-24, 35-44, and 45-54

ACYR	98	99	00	01	02	03	04	05	06	07	08	09	10
19-24	6.9	7.3	7.4	7.6	8.3	8.4	8.7	8.9	8.9	7.5	6.8	6.9	6.7
35-44	9.5	9.8	9.5	9.0	8.6	8.5	8.4	8.0	8.0	6.1	4.9	5.0	4.9
45-54	8.3	8.6	8.7	9.1	9.0	9.1	8.9	8.6	8.1	6.4	5.2	5.3	4.8

Table 4.9 summarizes each age group’s enrollment trend before and after the COF was implemented. Enrollment of students in age group 35-44 declined 5.3 percent, while enrollment of students in age group 45-54 declined 2.8 percent. The change in enrollment for each age group was statistically significant ($p < .001$) but the effect size, Cramer’s V (0.078) is too small to support practical importance.

Table 4.9

Pre-COF and Post - COF Enrollment Trend and Three Age Groups (19-24, 35-44, and 45-54) (%)

	Age 19-24	Age 35-44	Age 45-54
Pre-COF	57.1	26.3	16.6
Post – COF	65.1	21.0	13.8

Overall Enrollment Trend in Academic Programs and Age Group 19-24, 35-44, and 45-54

The cross-tabulation run for academic programs was to evaluate any significant relationships between variables such as academic programs offered by community colleges and the direct funding method to students. CCHE has defined Associate Degrees

such as Associate of Arts (AA), Associate of Science (AS), Associate of Applied Science (AAS) and Associate of General Studies (AGS), as degrees that typically require two years or 60 college credits to complete. According to the CCCS's Fact Report (2009), AGS and AA/AS degrees are transfer-oriented awards, while AAS degrees are considered professionally oriented, terminal awards. In this study, the academic programs awarding a certificate are combined regardless of the required credit hours for completion. The overall trend of enrollment of academic programs shows AAS and Certificate programs had the greatest increases.

Table 4.10

Overall Trend of Academic Degree and Prior to and After COF (%)

	Associate of Arts	Associate of Applied Science	Associate of General Studies	Associate of Science	Certificate	Non-degree Seeking
Pre-COF	18.6	17.6	13.4	7.1	11.8	31.5
Post-COF	19.8	21.5	12.9	8.7	15.5	21.7

The trend in Table 4.10 shows that Associate of Applied Science (AAS) and Non-degree seeking categories have the most enrollment changes with the new funding method; enrollment in AAS increased while enrollment in Non-degree seeking decreased. These changes were again analyzed within three selected age groups, 19-24, 35-44, and 45-54. The six different academic programs and the age groups' enrollment trends are shown in Table 4.11. There are small differences in the AAS, which is considered a terminal degree. AA, AS, and AGS degrees, which are transferable to four-year colleges,

had the highest enrollment from age group 19-24. As the Table 4.11 indicates, older age groups are highly concentrated on two categories, Certification and Non-Degree seeking.

Table 4.11

Three Age Groups and Students Academic Degree (%)

	Associate of Arts	Associate of Applied Science	Associate of General Studies	Associate of Science	Certificate	Non-Degree Seeking
Age 19-24	27.7	20.2	16.8	10.7	10.8	13.9
Age 35-44	14.0	21.8	11.7	5.7	16.6	30.2
Age 45-54	11.4	17.9	8.6	2.9	16.2	43.0

Three age groups, 19-24, 35-44, and 45-54 were separated further to continue analyzing for overall enrollment changes with regard to gender and community college location within each age group. The primary purpose of this analysis was to determine relevant changes in gender and college location as overall enrollments of age group 19-24 increased after the inception of the COF (see Table 4.6). Even though the age groups 35-44 and 45-54 showed decreases in overall enrollment post-COF, they were also tested to see if decreases in enrollments were from male or female students.

Overall Enrollment Trend of Age Group 19 -24

One of the key policy goals specified by SB04-189 is to increase male students' enrollment in community colleges. The overall enrollment of age group 19-24 increased post-COF, therefore the age group was used to identify if there was a statistically

significant increase in male enrollment as a result of the COF. Table 4.12 shows the changes in overall enrollment of students within age group 19-24. The male enrollment of this age group increased by 1.1 percent after the implementation of the COF.

Table 4.12

Summary of Pre-COF and Post-COF Overall Enrollment Trend of Age Group 19-24 (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	43.2	44.3
Female	56.8	55.7
College Location		
Urban/Sub	59.4	55.2
Rural	40.6	44.8

Table 4.12 shows this age group also had a change in overall enrollment trends at urban/suburban and rural community colleges. Table 4.13 indicates that for age group 19-24, there was an increase in overall enrollment at rural community colleges. The table also shows that the enrollment changes are statistically significant ($p < .001$), however the effect size (0.041) is small. Although the result can be confident, there is little practical difference.

Table 4.13

Chi-Square Analysis of Pre-COF and Post-COF Overall Enrollment Trend in Urban/Suburban and Rural Colleges of Age Group 19-24

Variable	<i>n</i>	Colleges		χ^2	<i>p</i>	<i>phi</i>
		Urban/Sub	Rural			
COFYR						
Pre-COF	30,674	18,222	12,452	82.46	<0.001	.041
Post-COF	17,768	9,804	7,964			
Totals	48,442	28,026	20,416			

Overall Enrollment Trend of Age Group 35-44

The decrease in the overall enrollment of students in age group 35-44 is a result of fewer male students. While age group 19-24 had a slight gain in the number of enrolled males, the number of males in age group 35-44 decreased after the COF was implemented.

Table 4.14

Summary of Pre-COF and Post-COF Overall Enrollment Trend of Age Group 35-44 (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	34.4	32.4
Female	65.6	67.6
College Location		
Urban/Sub	51.8	55.5
Rural	48.2	44.5

Opposite the overall enrollment trend of age group 19-24, age group 35-44 showed a decrease in enrollment at community colleges in rural areas. The result was statistically significant ($p < .001$) but the effect size (-0.034) is small and of little practical importance. Also opposite to the age group 19-24, the age group 35-44 experienced an increase in enrollment at urban/suburban community colleges.

Table 4.15

Chi-Square Analysis of Pre-COF and Post-COF Overall Enrollment Trend in Urban/Suburban and Rural Colleges of Age Group 35-44

Variable	<i>n</i>	Colleges		χ^2	<i>p</i>	<i>phi</i>
		Urban/Sub	Rural			
COFYR						
Pre-COF	14,157	7,327	6,830	22.77	<0.001	-.034
Post-COF	5,735	3,182	2,553			
Totals	19,892	10,509	9,383			

Overall Enrollment Trend of Age Group 45-54

The enrollment of male students in age group 45-54 has decreased nearly 4.5 percent since the inception of the COF.

Table 4.16

Summary of Pre-COF and Post-COF Overall Enrollment Trend of Age Group 45-54 (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	36.4	31.9
Female	63.6	68.1
College Location		
Urban/Sub	44.3	48.9
Rural	55.7	51.1

Age group 45-54 showed the same enrollment trend as age group 35-44. The enrollment at urban/suburban community colleges increased while enrollment in rural community colleges decreased. Table 4.17 shows the decrease in rural community colleges was statistically significant ($p < .001$) and the effect size (-0.042) was very small. This implies that even though the result is significant there is a little practical importance.

Table 4.17

Chi-Square Analysis of Pre-COF and Post-COF Overall Enrollment Trend in Urban/Suburban and Rural Colleges of Age Group 45-54

Variable	n	Colleges		χ^2	p	phi
		Urban/Sub	Rural			
COFYR						
Pre-COF	8,912	3,947	4,965	22.89	<0.001	-.042
Post-COF	3,778	1,848	1,930			
Totals	19,892	10,509	9,383			

Research Question 2

What are the overall enrollment trends in the CCCS's FY1998 and FY2010, prior to and after the implementation of the COF (FY2005-2006)? The second analysis focused on; 1) changes in overall enrollment of two ethnic groups' differences in the enrollment numbers and percentage of enrollment between gender (male or female); 2) changes in ethnic groups' non-traditional (25 years old or older) and traditional age groups, and; 3) changes in ethnic groups' traditional age groups of underrepresented students before and after the implementation of COF.

According to Bragg (2001) Community colleges attract students from underrepresented groups because of their affordable tuition rates and open access policy. The two largest minority student groups represented in community colleges are Black and Hispanic (Bragg, 2001). By implementing a new funding method, the COF, SB04-189 intended to increase access to postsecondary educational opportunities and encourage enrollment for students from underrepresented groups. Table 4.3 demonstrated there were overall enrollment changes in two ethnic groups, Black and Hispanic. Black student enrollment increased approximately 1.2 percent post-COF, while Hispanic student enrollment increased approximately 1.5 percent post-COF. Even though the increases are minimal in both groups, it is important to recognize that the changes were in the intended direction.

The analyses were focused on the two largest ethnic groups, Black and Hispanic, and their enrollment trends collectively and separately. The enrollment numbers and the percentage of enrollment between sex (male and female), location of colleges, academic degrees and non-traditional (25 years old or older) and traditional age groups of targeted

ethnic student groups change after the COF was implemented. The enrollment trends of three age groups, 19-24, 35-44, and 45-54, were further analyzed across ethnicity, academic degree, and student type. The findings were:

1. The overall enrollment of Black students increased after the COF while Hispanic student decreased. The result was statistically significant.
2. The overall enrollment trend of males showed increases after the COF. The result was statistically significant.
3. Since the inception of COF, the overall enrollment trend of traditional students has been increasing and the result is significant. Hispanic students are a higher percentage of the traditional student population than Black students.
4. The overall enrollment trend within the same sex between Black and Hispanic groups shows that Hispanic males have a lower ratio (36%) compared to Black males. The enrollment trend of Hispanic male students shows a very small increase after the COF and is not statistically significant.
5. The overall enrollment trend of traditional Hispanic students (age group 19-24) increased after the COF. More Hispanic males are in the traditional student group than non-traditional. Also the overall trend of student type showed a significant increase in the category “New First Time Anywhere”. There are no significant enrollment changes with the Hispanic student group and the location of colleges (Urban and Rural).
6. The enrollment trend of Black male showed an increase after the COF and it is statistically significant. The traditional student group 19-24 showed increases. Additionally, the enrollment of male students in the traditional student group

increased compared to non-traditional after the COF. The overall Black student age group 19-24 enrollment trend of rural colleges increased after the COF. The same age group’s enrollment trend of academic degree showed decreases in ‘Non-degree seeking’ while all other categories show increases. The same result as the Hispanic student group, student type “New First Time Anywhere” category showed significant enrollment increases with the age group 19-24 Black student.

7. The overall enrollment of age groups 19-24, 35-44, and 45-54 showed increases in two ethnic groups (Black and Hispanic).

Each of these results are further explained in the following section.

Overall Enrollment Trend of Black and Hispanic Students

The two ethnic groups, Black students and Hispanic students, were selected for a comparison of changes in overall enrollment prior to and after the COF. A total of 31,712 cases were extracted from the entire dataset and analyzed using crosstabs. Table 4.18 shows that the overall enrollment of Black students increased 2.4 percent post-COF, while the overall enrollment of Hispanic students decreased 2.4 percent post-COF.

Table 4.18

Overall Enrollment Trend of Black and Hispanic Students Prior to and After COF (%)

COFYR	Black Non- Hispanic	Hispanic Other
Pre-COF	21.1	78.9
Post -COF	23.5	76.5

Table 4.19 demonstrates the change in overall male and female enrollment of Black and Hispanic students' aggregated pre-COF and post-COF. Male student enrollment increased 1.3 percent post-COF. The increase is statistically significant to some extent ($p = .023$), the effect size (.013) is still small.

Table 4.19

Summary of Pre-COF and Post-COF Overall Enrollment Trend of Black and Hispanic Students (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	36.9	38.2
Female	63.1	61.8
Student Type		
Traditional	50.8	55.3
Non-traditional	49.2	44.7

The enrollment of traditional and non-traditional age groups among Black and Hispanic students' pre and post COF were compared next. For these two ethnic groups, the overall enrollment of non-traditional students decreased 4.5 percent after the implementation of COF, while traditional students increased 4.5 percent. The result is statistically significant ($p < .001$) and the effect size is small ($\phi = -.044$).

Overall Gender Enrollment Trend of Black and Hispanic Students

Black and Hispanic traditional students' enrollment trend was further analyzed to verify that the increase in enrollment came from male students as indicated in Table 4.6. Table 4.20 shows the male to female ratios of between Black and Hispanic students. The ratio of male to female Hispanic students is lower than the male to female ratio of Black students. It is statistically significant that male Hispanic students' enrollment is lower

compared to Black male students as shown in Table 4.21, though the effect size ($\phi=.041$) is small.

Table 4.20

Male and Female Enrollment of Black and Hispanic (%)

Ethnic	Female	Male
Black Non-Hispanic	58.8	41.2
Hispanic Other	63.7	36.3

Table 4.21

Chi-square Analysis of Gender Enrollment Trend of Black and Hispanic Students

Variable	n	Gender		χ^2	p	ϕ
		Male	Female			
COFYR						
Pre-COF	24,763	8,995	15,768	54.16	<0.001	.041
Post-COF	6,959	2,864	4,095			
Totals	31,722	11,859	19,863			

Table 4.22 shows the ratio of traditional to non-traditional students in the two ethnic groups. In general, community colleges tend to have more non-traditional students. However, in comparing the two groups, more traditional Hispanic students enrolled in community colleges while more non-traditional Black students enrolled. While the trend of Black students enrollment result reflects the general overall enrollment trend, the Hispanic students' enrollment trend does not. The result was statistically significant even though the effect size ($\phi = .065$) is small as shown in Table 4.23.

Table 4.22

Traditional and Non-Traditional Enrollment of Black and Hispanic Student Group (%)

Ethnic	Traditional	Non-Traditional
Hispanic	54.2	45.8
Black	46.3	53.7

Table 4.23

Chi-Square Analysis of Enrollment Trend of Black and Hispanic and Traditional and Non-Traditional Students

Variable	n	Age Group		χ^2	p	phi
		Traditional	Non-Traditional			
COFYR						
Pre-COF	24,763	13,417	11,346	134.8	<0.001	.065
Post-COF	6,959	3,223	3,736			
Totals	31,722	16,640	15,082			

An aggregated assessment of both Black and Hispanic groups yielded an overall increase in student enrollment after the COF. But a segregated comparison between Black and Hispanic students' data indicated that Hispanic students' post-COF enrollment trend was not as strong as Black's (see Table 4.18). To study the changes of each age group's enrollment trends, the data was again separated into Black and Hispanic.

Enrollment Trends of Hispanic Students

To focus on enrollment trends of Hispanic students, Cross-Tabulations were performed to study the effect of the COF on gender, traditional and non-traditional students, academic degree, college location (rural and urban/suburban), age groups, and changes in academic degrees. Regarding impacts to gender, although the results of Table 4.24 indicate that male enrollment in Hispanic groups increased by 0.4 percent after the

implementation of the COF, there was no statistical significance. Regarding the location of colleges, two groups were classified – Urban/suburban and rural. As shown in Table 4.24, the result was not statistically significant and the effect size (0.009) was small, indicating that there was no practical importance. This data does not reflect an induced increase in enrollment due to the implementation of the COF.

Table 4.24

Summary of Pre-COF and Post-COF Overall Enrollment Trend of Hispanic Students (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	36.2	36.6
Female	63.8	63.4
College Location		
Urban/Sub	48.4	47.4
Rural	51.6	52.6
Student Type		
Traditional	52.5	57.2
Non-traditional	47.5	42.8

Regarding traditional and non-traditional Hispanic students, Table 4.24 and Table 4.25 demonstrate enrollment changes, showing that traditional student enrollment in Hispanic student groups did increase after the implementation of COF with a significance ($p < 0.001$) but with a small effect size ($phi = -.046$).

Table 4.25

Chi-square Analysis of Pre and Post-COF and Traditional and Non-Traditional Enrollment Trend of Hispanic Students

Variable	n	Students		x^2	p	phi
		Traditional	Non-Traditional			
COFYR						
Pre-COF	15,909	8,349	7,560	51.92	<0.001	-.046
Post-COF	9,886	5,068	3,786			
Totals	24,763	13,417	11,346			

A 2 x 2 crosstabs analysis was created to further evaluate the enrollment of Hispanic males and females within traditional or non-traditional students group. Table 4.26 and 4.27 show more Hispanic male students are in the traditional age group. The result shows that it is statistically significant ($p < 0.001$) but the effect size (-.090) is small.

Table 4.26

Gender and Hispanic Traditional and Non-Traditional Students (%)

Gender	Traditional	Non-Traditional
Male	60.1	39.9
Female	50.8	49.2

Table 4.27

Chi-Square Analysis of Gender and Traditional and Non-Traditional Enrollment Trend of Hispanic Students

Variable	n	Students		χ^2	p	phi
		Traditional	Non-Traditional			
Gender						
Male	8,995	5,408	3,587	200.82	<0.001	-.090
Female	15,768	8,009	7,759			
Totals	24,763	14,504	12,117			

To understand any impact by the COF on academic degrees of Hispanic students, Table 4.28 was calculated. The greatest differences can be seen in an increased demand for Certificate degrees and a reduction in the Non-degree Seeking group.

Table 4.28

Hispanic Students and Trend of Academic Degree Prior to and After COF (%)

	Associate of Arts	Associate of Applied Science	Associate of General Studies	Associate of Science	Certificate	Non-degree Seeking
Pre-COF	20.2	20.1	16.2	6.5	14.2	22.8
Post-COF	20.4	20.7	14.5	8.0	19.0	17.5

As stated before, one of SB04-189’s key policies was to enhance access for students regardless of gender, race, and location variables. Table 4.29 shows that there was a significant increase among Hispanic students who were ‘New First Time Anywhere’ registered.

Table 4.29

Hispanic Students and Trend of Student Type and Prior to and After COF (%)

	Continuing	New First Time Anywhere	Transfer w/o Credit	Re-admit	Transfer w/Credit
Pre-COF	60.6	23.4	1.3	12.3	0.8
Post-COF	43.9	37.7	0.4	11.6	5.8

Finally, an analysis of different Hispanic age groups in Table 4.50 shows that the age groups 15-18 and 19-24 showed enrollment increases following the implementation of the COF. This enrollment trend mirrors the overall increase in enrollment trend of the same age group; the traditional age group.

Table 4.30

Age Group and Pre- and Post-COF Of Hispanic Students (%)

	Up to 14	15-18	19-24	25-34	35-44	45-54	55-64	65+
Pre-COF	0.1	9.7	42.7	24.4	14.7	6.6	1.5	0.4
Post-COF	0.1	12.4	44.6	23.8	11.7	5.6	1.4	0.4

Based on previous crosstabs, two traditional Hispanic student groups 15-18 and 19-24 showed increases in enrollment while other age groups stayed the same or decreased. Using the same approach, the next study analyzed the enrollment trends of Black students.

Enrollment Trend of Black Students

The Black student group provided the opportunity to study and analyze the changes within a large ethnic group prior to and after the COF. A total of 6,959 cases were extracted. Table 4.31 shows that overall Black male enrollment increased after the COF. The results were based upon review of gender, traditional vs. non-traditional students, age group, academic degree, student type and location of colleges (urban vs. rural). The following cases further demonstrate the significant increase in the male Black student population post-COF.

Table 4.31

Summary of Pre-COF and Post-COF Overall Enrollment Trend of Black Students (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	39.7	43.4
Female	60.3	56.6
Student Type		
Traditional	44.5	49.1
Non-traditional	55.5	50.9

Table 4.31 shows the resulting enrollment trends between Traditional and Non-Traditional Black students. Just as the overall enrollment trend for all Hispanics, there was a significant increase in the enrollment of Traditional Black students. The result was statistically significant as Table 4.32 shows but effect size ($\phi = -.045$) was very small. This indicated statistical significant but little predicted significance.

Table 4.32

Chi-square Analysis of Pre-COF and Post-COF and Traditional and Non-Traditional Enrollment Trend of Black Students

Variable	n	Students		χ^2	p	ϕ
		Traditional	Non-Traditional			
COFYR						
Pre-COF	4,242	1,888	2,354	14.27	<0.001	-.045
Post-COF	2,717	1,335	1,382			
Totals	6,959	3,223	3,736			

Table 4.33 show an increase in the overall enrollment trends in gender of Traditional and Non-Traditional black students. More black male students were enrolled in the Traditional group while more black female students were in the Non-Traditional group. The trend was statistically significant as Table 4.34 shows and effect size (-0.096) was small. This indicated statistical significant with little practical effect.

Table 4.33

Gender and Black Traditional and Non-Traditional Student

Gender	Traditional	Non- Traditional
Male	52.1%	47.9%
Female	42.3%	57.7%

Table 4.34

Chi-Square Analysis of Gender and Traditional and Non-Traditional Enrollment Trend of Black Students

Variable	<i>n</i>	Students		χ^2	<i>p</i>	<i>phi</i>
		Traditional	Non-Traditional			
Gender						
Male	2,864	1,491	1,373	64.63	<0.001	-.096
Female	4,095	1,732	2,363			
Totals	6,959	3,223	3,736			

Table 4.35

Black Student Age Groups Pre and Post COF (%)

	Up to 14	15-18	19-24	25-34	35-44	45-54	55-64	65+
Pre-COF	0.1	4.4	40.0	27.8	17.9	7.8	1.6	0.4
Post-COF	0.1	6.0	43.1	26.6	16.0	6.1	1.8	0.4

The crosstabs analysis for overall enrollment trend showed the age group 19-24 increased (Table 4.35). Table 4.36 identified which ethnic group(s) increased in enrollment after the COF- Black and Hispanic students. Thus the age group 19-24 of Black and Hispanic were selected for the further analysis (see Table 4.36).

Table 4.36

Age 19-24 Group for all Ethnicities (%)

	White	Black	Hispanic	Asian	American Ind
Pre-COF	68.3	5.5	21.8	3.1	1.4
Post -COF	67.3	6.6	22.0	2.8	1.3

Age Group 19-24: Enrollment Trend of Black Students

Age group 19-24 of the ethnic Black student group was selected and tested for changes in overall enrollment by gender. There were a total of 2,868 cases in this age group. The enrollment changes can be seen in Table 4.37: black female enrollment between the ages of 19-24 went down to 49.0 % from 56.3% after the COF; while black male students went up to 51.0% from 43.7%. Although the change is significant ($p = <0.001$), the effect size (.072) was still very small.

Table 4.37

Summary of Pre-and Post-COF Enrollment Trend of Black Student (Age Group 19-24) (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	43.7	51.0
Female	56.3	49.0
College Location		
Urban/Sub	81.1	69.2
Rural	18.9	30.8

The same age group 19-24 was also tested for any changes of overall enrollment based on location—Urban/Sub-Urban and Rural Colleges. There were a total of 2,868 cases in this age group. The enrollment changes can be seen in Table 4.37: black student enrollment for this age group increased by 11.9% in Rural Colleges, with a substantial decrease in enrollment from Urban/Suburban colleges locations. Although the change was significant the effect size ($\phi = .137$) was small.

Table 4.38 shows the enrollment changes in academic degree within the Black student group. Similar to the overall ethnic enrollment trends, the Associate of Applied Science (AAS) degree had the most increase and Non-degree seeking had the greatest

decrease. Table 4.39 also complied with the overall trend that “ New First Time Anywhere” increased while all other categories declined except “Transfer w/credit”.

Table 4.38

Black Student (Age 19-24) Degree Seeking Trend Prior to and After COF (%)

	Associate of Arts	Associate of Applied Science	Associate of General studies	Associate of Science	Certificate	Non-degree Seeking
Pre-COF	27.6	14.3	23.9	13.2	5.0	16
Post – COF	28.8	21.5	19.1	16.0	9.3	5.3

Table 4.39

Black Student (Age 19-24) Student Type and Pre-COF and Post-COF (%)

	Continuing	New first time anywhere	Trasfer w/o credit	Re-admit	Transfer w/credit
Pre-COF	62.9	24.0	2.3	7.5	2.4
Post-COF	42.1	41.5	0.7	6.4	8.9

Age Group 19-24: Enrollment Trend of Hispanic Student

As seen earlier in Table 4.30, the age group 19-24 within the Hispanic student group increased. This age group was selected and tested for any changes of overall enrollment in gender within this group. There were a total of 10,591 cases in this age group. The enrollment changes can be seen in Table 4.40: Hispanic female enrollment between the ages of 19-24 went down from 60.7 % to 59.5% after the COF was implemented; while Hispanic male students went up from 39.3% to 40.5%. The change in enrollment trend was not statistically significant and the effect size (.012) was also small.

The result was not statistically significant and the effect size was small, indicating that there is little practical importance based on the result.

Table 4.40

Summary of Pre-and Post-COF Enrollment Trend of Hispanic Student (Age Group 19-24) (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	39.3	40.5
Female	60.7	59.5
College Location		
Urban/Sub	51.3	48.4
Rural	48.7	51.6

The Hispanic age group 19-24 was also tested for any changes of overall enrollment due to location of colleges and the enrollment changes can be seen in Table 4.40. While urban college enrollment decreases from 51.3% to 48.4%, rural college enrollment increased from 48.7% to 51.6%. The results were significant and the effect size (0.028) was very small. Even though there was statistical significance, the small effect size indicated that there was little practical importance based on the result.

Table 4.41 shows the enrollment changes of academic degree in Hispanic student age group 19-24. Unlike the Black student age group 19-24, Associate of Applied Science (AAS) had the lowest increase, “Certificate” had the most increase and ‘Non-degree seeking’ had the most decrease. Table 4.42 also complied with the overall trend that “New First Time Anywhere” increased while all other categories showed decline except ‘Transfer w/credit’.

Table 4.41

Hispanic Students (Age 19-24) Degree Seeking Trend Prior to and After COF (%)

	Associate of Arts	Associate of Applied Science	Associate of General studies	Associate of Science	Certificate	Non- degree Seeking
Pre-COF	26.8	19.2	19.6	9.5	12.6	12.4
Post – COF	26.7	20.6	16.3	9.9	19.3	7.3

Table 4.42

Hispanic Student (Age 19-24) Student Type and Pre-COF and Post-COF (%)

	Continuing	New first time anywhere	Trasfer w/o credit	Re-admit	Transfer w/credit
Pre-COF	65.1	22.9	1.1	9.7	1.2
Post-COF	46.8	38.6	0.4	7.6	6.6

Tables 4.31 through Table 4.42 demonstrated enrollment trends within two ethnic groups within the age group 19-24. The age group 19-24 represented a traditional student group. Therefore the same approach and analysis was done within the age group 35-44 to determine the enrollment trends within a non-traditional student group. The following tables were the results of the investigation of how the COF affected this age group.

Age Group 35-44: Enrollment Trend of Ethnic Groups Prior to and After COF

As demonstrated previously in Table 4.6 the overall enrollment trend of ethnic students within age group 35-44 decreased since the inception of the COF. The same approach was taken as the age group 19-24 to investigate the overall enrollment trend of ethnicity, gender and location of colleges. Table 4.43 shows that the enrollment results

for the White age group 35-44 decreased while the ethnic student groups, Black and Hispanic, showed increased in enrollment after the COF.

Table 4.43

Overall Enrollment Trend of Age Group 35-44 and Ethnicity (%)

	White	Black	Hispanic	Asian	American Indian
Pre-COF	74.9	5.3	16.2	2.0	1.4
Post -COF	70.8	7.5	18	2.4	1.3

A further investigation into individual ethnic groups trends of those 35-44 has completed across gender, location, and degree. The two ethnic groups selected within this age range were Black and Hispanic groups.

Age Group 35-44: Enrollment Trend of Black Students

The enrollment changes in 1,189 cases can be seen in Table 4.44. Black female enrollment between the ages of 35-44 went down from 63.7 % to 61.6% after the COF while Male students went up from 38.4% to 36.3%. Table 4.73 shows the change was not statistically significant and the effect size ($\phi = .021$) was also small. This indicates that there was little practical importance based on the result.

Table 4.44

Summary of Pre-and Post-COF Enrollment Trend of Black Student (Age Group 35-44) (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	36.3	38.4
Female	63.7	61.6
College Location		
Urban/Sub	94.5	92.4
Rural	5.5	7.6

The Black student age group 35-44 was also tested for any changes in overall enrollment due to location of colleges. The enrollment changes can be seen in Table 4.44. While urban college enrollment decreased from 94.5% to 92.4%, rural college enrollment increased from 5.5% to 7.6%.

The enrollment changes of academic degree in the Black student age group 35-44 were analyzed in Table 4.45. The Associate of Science (AS) had the greatest increase and ‘Non-degree seeking’ had the greatest decrease. Table 4.46 also complied with the overall age group trend that “New First Time Anywhere” had an increase while all other categories shown decline except ‘Transfer w/credit’ and “Re-admit”.

Table 4.45

Black Student (Age 35-44) Degree Seeking Trend Prior to and After COF (%)

	Associate of Arts	Associate of Applied Science	Associate of General studies	Associate of Science	Certificate	Non-degree Seeking
Pre-COF	14.3	24.3	20.7	7.0	13.1	20.6
Post-COF	12.7	29.2	17.4	18.8	12.7	9.3

Table 4.46

Black Student Age Group (35-44) Pre-COF and Post-COF (%)

	Continuing	New first time anywhere	Trasfer w/o credit	Re-admit	Transfer w/credit
Pre-COF	66.1	17.0	1.8	12.9	2.1
Post-COF	48.8	28.5	1.2	13.9	7.6

The same analyses of an ethnic age group 35-44 were applied to the second selected ethnic group: Hispanic students.

Age Group 35-44: Enrollment Trend of Hispanic Student

The enrollment changes of 3,331 cases can be seen in this age group Table 4.47. Hispanic female enrollment between the ages of 35-44 increased from 70.0% to 72.2 % after the COF; while Hispanic male students decrease from 30.0% to 27.8%. The change was not statistically significant and the effect size (-.022) was very small.

Table 4.47

Summary of Pre-and Post-COF Enrollment Trend of Hispanic Student (Age Group 35-44) (%)

Variable	Enrollment	
	Pre-COF	Post-COF
Gender		
Male	30.0	27.8
Female	70.0	72.2
College Location		
Urban/Sub	46.4	52.7
Rural	53.6	47.3

The Hispanic age group 35-44 was also tested for any changes of overall enrollment in location of colleges. The enrollment changes can be seen in Table 4.47. While urban college enrollment increased from 46.4% to 52.7%, rural college enrollment

decreased from 53.6% to 47.3%. The results indicate that there was a statistical significance but the effect size (-.058) was very small.

The enrollment changes of academic degree in Hispanic student age group 35-44 are shown in Table 4.48. There were significant changes: ‘Certificate’ had the greatest increase; while ‘Non-degree seeking’ had the greatest decrease. Except for ‘Transfer w/ credit’, Table 4.49 also complied with the overall trend that “New First Time Anywhere” had the increase while all other categories declined.

Table 4.48

Hispanic Student (Age 35-44) Degree Seeking Trend Prior to and After COF (%)

	Associate of Arts	Associate of Applied Science	Associate of General studies	Associate of Science	Certificate	Non-degree Seeking
Pre-COF	16.0	25.0	11.8	4.0	17.8	25.4
Post-COF	17.3	25.9	13.3	5.6	23.0	14.9

Table 4.49

Hispanic Student Age 35-44 Student Type and Pre-COF and Post-COF (%)

	Continuing	New first time anywhere	Transfer w/o credit	Re-admit	Transfer w/credit
Pre-COF	61.7	18.7	1.3	18.0	0.4
Post-COF	48.4	26.4	0.8	17.7	6.8

In addition, age group 45-54 further analyzed to understand the effects of gender, location and degree within two ethnic groups, Black & Hispanic, prior to and after the COF implementation.

Age Group 45-54: Enrollment Trends of Ethnic Groups Prior to and After COF

Table 4.50 shows the overall enrollment trends for all ethnic groups between the ages of 45-55. As age groups 19-24 and 35-44 showed, both Black and Hispanic student groups showed increases in enrollment even though it was very small.

Table 4.50

Overall Enrollment Trend of Age Group 45-54 and Ethnicity

	White	Black	Hispanic	Asian	American Ind
Pre-COF	81.7	3.7	11.6	1.5	1.4
Post -COF	79.9	4.4	13.1	1.5	1.1

As done previously in age group 35-44, two ethnic groups, Black and Hispanics, were selected for further analyses due to implications of gender, location, and degree.

Age Group 45-54: Enrollment Trend of Black Student

The gender enrollment changes of Black students in the age group 45-54 (496 cases) can be seen in Table 4.51. Black female enrollment between the ages of 45-54 went up from 63.3% to 70.5 % after the COF; while Black male students went down from 36.7% to 29.5%. The change was not statistically significant and the very small effect size (-.071).

Table 4.51

Summary of Pre-and Post-COF Enrollment Trend of Black Student (Age Group 45-54)

Variable	Enrollment (%)	
	Pre-COF	Post-COF
Gender		
Male	36.7	29.5
Female	63.3	70.5
College Location		
Urban/Sub	96.1	97.6
Rural	3.9	2.4

The Black student age group 45-54 was also analyzed for any changes in overall enrollment by location of colleges. The enrollment changes can be seen in Table 4.51. While urban college enrollment increased from 96.1% to 97.6%, rural college enrollment decreased from 3.9% to 2.4%. The results indicated no statistical significance and a very small effect size (-.040).

Table 4.52 shows the enrollment changes in academic degrees of Black students (age 45-54). There were significant changes with the ‘Degree Seeking Trend’ after the COF. The ‘Associate of Applied Science’ had the greatest increase and ‘Non-degree seeking’ had the greatest decrease. Except for ‘Transfer w/ credit’, Table 4.53 also complies with the overall trend that “New First Time Anywhere” had the increase while all other categories showed a decline.

Table 4.52

Black Student (age 45-54) Degree Seeking Trend and Pre- and Post-COF (%)

	Associate of Arts	Associate of Applied Science	Associate of General studies	Associate of Science	Certificate	Non-degree Seeking
Pre-COF	13.0	23.6	17.3	2.7	17.0	26.4
Post-COF	12.7	31.9	18.7	11.4	12.7	12.7

Table 4.53

Black Student Age 45-54 Student Type and Pre-COF and Post-COF (%)

	Continuing	New first time anywhere	Trasfer w/o credit	Re-admit	Transfer w/credit
Pre-COF	64.5	14.8	2.1	16.7	1.8
Post-COF	50.6	21.7	1.2	13.9	12.7

Age Group 45-54: Enrollment Trend of Hispanic Student

The enrollment changes of 1,532 cases can be seen in Table 4.54. Hispanic female enrollment between the ages of 45-54 increased from 65.0% to 69.8 % following COF implementation while male student enrollment decreased from 35.1% to 30.2%. The change was not statistically significant and with a very small effect size (-.048) indicating that there was no practical importance of these results.

Table 4.54

Summary of Pre-and Post-COF Enrollment Trend of Hispanic Student (Age Group 45-54)

Variable	Enrollment (%)	
	Pre-COF	Post-COF
Gender		
Male	35.0	30.2
Female	65.0	69.8
College Location		
Urban/Sub	44.5	45.6
Rural	55.5	54.4

The Hispanic age group 45-54 was also tested for any changes of overall enrollment due to location of colleges. The enrollment changes can be seen in Table 4.54. While urban college enrollment increased from 44.5% to 45.6%, rural college enrollment decreased from 55.5% to 54.4%. The result indicates no statistical significance.

Table 4.55 shows the enrollment changes of academic degree in Hispanic student age group 45-54. There were significant changes with ‘Certificate’ that had the greatest increase while ‘Non-degree seeking’ had the greatest decrease. Table 4.56 also complies with the overall trend that “New First Time Anywhere” increased.

Table 4.55

Hispanic Student (age 45-54) Degree Seeking Trend and Prior to After COF (%)

	Associate of Arts	Associate of Applied Science	Associate of General studies	Associate of Science	Certificate	Non-degree Seeking
Pre-COF	15.0	25.1	12.7	2.1	14.9	30.2
Post-COF	15.3	21.0	11.9	3.2	22.0	26.6

Table 4.56

Hispanic Student Age 45-54 Student Type and Pre-COF and Post-COF (%)

	Continuing	New first time anywhere	Trasfer w/o credit	Re-admit	Transfer w/credit
Pre-COF	64.7	16.7	1.3	17.0	0.4
Post-COF	45.0	29.8	1.0	20.4	3.8

Research Question 3

Is there a difference in the ratios between the COF stipend per credit rate and tuition rates over the past ten years, with an emphasis on differences between pre-COF and post-COF rates? In this analysis, the state appropriations from FY1998 to FY2010, tuition rates, and COF were compared to evaluate, if indeed, community colleges' flexibility increased cash fund revenues, mostly tuition and fees, without TABOR's limitation as an enterprise status eased their financial constraints under this new direct funding method. Were state appropriations to community colleges increased following the implementation of COF? Have increases in the COF stipends been more than, equal to, or less than tuition increases? Under the State's direct appropriations, have the increases in tuition been more than, equal to, or less than tuition prior to the COF? The findings were:

1. The state appropriations under the COF for community colleges have decreased following implementation of the COF. As COF stipends continued to decrease, the total enrollment has increased.
2. The COF stipends have been less than tuition increases.
3. The increases in tuition have been more after the implementation of COF.

In order to determine whether the COF has been an effective tool in providing access to postsecondary education, a comparison of enrollment trends (SFTE), tuition per credit, and COF stipends were evaluated over the past thirteen years (Table 4.57). It can be seen that the overall SFTE has increased with the exception being FY2005-06 to FY2007-08 where enrollment declined from FY2005-06 to FY2007-2008 while both tuition rate and stipend increased. As SFTE continued to increase, along with student share of tuition rates increased, the COF stipends decreased. Table 4.57 shows that since the inception of COF, the student share of tuition per credit has increased at a higher rate than in the years before COF was implemented. Additionally, tuition has increased more than the inflation rate since the inception of COF (see Table 4.58).

Table 4.57

Colorado Community College Systems' SFTE and Tuition Rate

FY	Total SFTE	Tuition Per Credit/Student Share	COF
FY 97-98	33810	54.30	N/A
FY 98-99	34936	55.00	N/A
FY 99-00	35474	56.30	N/A
FY 00-01	35937	57.75	N/A
FY 01-02	37810	60.05	N/A
FY 02-03	41913	62.90	N/A
FY 03-04	44572	66.05	N/A
FY 04-05	44565	66.80	N/A
FY 05-06	42454	72.75	80
FY 06-07	40876	74.55	86
FY07 -08	41894	77.15	89
FY08 -09	45067	81.00	68
FY09 -10	53405	88.30	44
FY10-11 estimated	55359	96.25	62

Since the inception of COF in FY 2005-06, the overall resident enrollment in Colorado Community Colleges has decreased from 44,565 SFTE (FY 2004-2005) to 40,876 SFTE (FY 2006-2007) based on the Colorado Commission of Higher Education's (CCHE) historical enrollment data. Even though community colleges' FY 2007-2008 resident STFE showed 2.57 percent increases (41,928) from FY 2006-2007, the SFTE number was still lower than the enrollment for FY2004-2005 prior to COF. However, during FY2009-10 overall enrollment increased 18.5 percent from FY2008-09.

Table 4.58

FY1998–2010 STFE and Tuition per Credit Hour

FY	Resident SFTE ^a	Resident Enrollment % Changes	Resident Tuition per Credit hour ^b	Tuition per Credit hour % changes
FY97-98	33,810	1.43%	\$54.30	1.50%
FY98-99	34,936	3.33%	\$55.00	1.29%
FY99-00	35,474	1.54%	\$56.30	2.36%
FY00-01	35,937	1.31%	\$57.75	2.58%
FY01-02	37,810	5.21%	\$60.05	3.98%
FY02-03	41,913	10.85%	\$62.90	4.75%
FY03-04	44,572	6.34%	\$66.05	5.01%
FY04-05	44,565	-0.02%	\$66.80	1.14%
FY05-06	42,454	-4.74%	\$72.75	8.91%
FY06-07	40,876	-3.72%	\$74.55	2.47%
FY07-08	41,894	2.49%	\$77.15	3.49%
FY08-09	45,067	7.57%	\$81.00	4.99%
FY09-10	53,405	18.50%	\$88.30	9.01%
FY10-11 estimated	55,359	3.66%	\$96.25	9.00%

^a Estimated enrollment; ^b approved tuition rate

In the first year that COF was implemented, FY2005-2006, resident tuition per credit hour increased by 8.91% while the resident enrollment dropped by 4.74%. Even though in FY06-07, resident tuition per credit hour increase by 2.47% the enrollment dropped additional 3.72%. According to Table 4.97 from FY07-08 enrollment shows upward trend even though resident tuition per credit hour continued to increase.

Table 4.59

State Appropriation and Resident Tuition Revenue (FY1999 - FY2010)

	State Appropriation	State Approp. Changes	Resident Tuition Revenue	Tuition Rev. Changes	Tuition Increase	Inflation (CPI)
FY 97-98	\$101,275,474	11%	\$51,944,727	5%	1%	2.4%
FY 98-99	\$105,956,021	5%	\$54,834,502	6%	1%	2.9%
FY 99-00	\$120,091,018	13%	\$58,402,563	7%	2%	4.0%
FY 00-01	\$124,464,488	4%	\$62,258,961	7%	3%	4.7%
FY 01-02	\$125,719,635	1%	\$68,350,310	10%	4%	1.9%
FY 02-03	\$117,315,311	-7%	\$80,509,161	18%	5%	1.1%
FY 03-04	\$106,279,979	-9%	\$90,195,330	12%	5%	0.1%
FY 04-05	\$106,279,979	0%	\$95,109,053	5%	1%	2.1%
FY 05-06	\$116,851,363	10%	\$98,173,081	3%	9%	3.6%
FY 06-07	\$121,912,589	4%	\$104,240,635	6%	2%	2.2%
FY 07-08	\$132,308,866	9%	\$108,724,465	4%	3%	3.9%
FY 08-09*	\$142,320,783	8%	\$123,747,433	14%	5%	-0.6%
FY 09-10*	\$143,787,197	1%	\$162,377,008	31%	9%	1.3%

Table 4.98 shows changes of tuition increases from FY97-98 to FY09-10 compared to annual inflation rates. Since FY01-02, the increases in tuition rate exceed inflation rate except FY04-05. In FY06-07 and FY07-08 the tuition rate increases were much closer to inflation rates. It appears that resident student tuition rate have been increased at higher rates following the implementation of the COF. Table 4.98 shows changes of state appropriation and resident tuition revenue changes, From FY2001 to 2004, tuition revenue increased as the state appropriations went down and that indicates students are paying more for their education than before the implementation of COF.

Research Question 4

Can enrollment data be predicted from a series of variables including wage and income, unemployment rate, and Consumer Price index? The association of these series of variables affects the trend of overall enrollments. What are the enrollment trends during the economic down turns, FY2003 and FY2009, in the state of Colorado?

The enrollment at the Community Colleges in Colorado had not increased beyond the enrollment level of FY2004 since the implementation of COF in FY 2005-2006 until FY 2007-2008. Prior to the implementation of COF, the Colorado Community College System's Student FTE (SFTE) enrollment had increased more than other institutions in the state (see Table 4.60).

Table 4.60

Percentage Change in Resident Student FTE (%)

Governing Board/Institutions	FY97-98	FY98-99	FY99-00	FY00-01	FY01-02	FY02-03	FY03-04	FY04-05	FY05-06	FY06-07	FY07-08
Regents of the University of Colorado	3.7	1.5	3.2	1.1	2.8	7.4	4.2	3.1	1.3	0.4	1.06
Board of Governors of Colorado State University System	-0.1	1.7	1.4	-0.3	3.1	3.7	2.9	2.4	-1.3	-1.9	0.04
Trustees of Fort Lewis College	-2.4	-5.7	2.0	-3.0	4.8	-0.6	-2.0	0.2	-2.8	-0.5	-0.87
Trustee of Colorado School of Mine	2.0	5.3	3.4	0.1	5.3	1.5	6.8	7.2	7.6	1.1	-0.11
Board of Trustees University of Northern Colorado	1.2	4.7	4.8	1.5	0.9	2.7	3.6	3.1	0.5	-1.0	-2.29
Trustees of Adams State College	-4.0	-0.7	1.6	-10.5	11.5	-2.1	-1.7	-4.0	3.2	-4.2	-3.04
Trustees of Mesa State College	-0.3	3.0	-2.1	4.9	3.8	4.4	3.0	4.1	-6.1	3.6	0.45
Trustees of Metropolitan State College	1.5	-2.1	0.3	-0.8	7.7	7.5	3.3	3.2	0.4	0.4	2.65
Trustees of Western State College	-3.1	1.6	-0.1	-4.5	4.7	3.4	4.4	-4.5	-2.0	-4.1	-1.6
Community Colleges of Colorado	1.4	3.3	1.5	1.3	5.2	10.9	6.3	-2.4	-2.4	-3.7	2.57

Source: The Colorado Department of Higher Education Final FTE Student Enrollment Report

Table 4.60 shows community Colleges' total percentage of student enrollment increased 21.3 percent from FY2001 to FY 2005 while other institutions (four year colleges and universities) experienced a total increase of percentage from 11.5 percent to 20.9 percent during the same time period. The table also shows decreases of total percentage of enrollment of Fort Lewis College and Adams State College for the same period.

In general, community colleges have assumed that when there were economic downturns, the enrollment increases varied sharply for community colleges. Hence using the last thirteen years CPI, unemployment rates in the state of Colorado, using regression analysis, between forecasting and actual SFTE numbers were compared.

Table 4.61

Colorado Economic Indicators

Fiscal Year	Resident SFTE	Non- Agriculture (CY, Fall)	CPIU	Unemployment	Personal Income	Wage & Salary	Retail Trade Sales	Tuition Rate Increase
1997-98	33,810	4.2	3.3	3.3	8.7	9.3	5.9	1.50
1998-99	34,936	3.9	2.4	3.8	9	11.3	6.6	1.29
1999-00	35,474	3.7	2.9	2.9	8	9.7	8.5	2.36
2000-01	35,937	3.8	4	2.7	12.1	12.6	10.2	2.58
2001-02	37,810	0.6	4.7	3.8	5.8	2.8	1.8	3.98
2002-03	41,913	-1.9	1.9	5.7	0.2	-1.5	-0.3	4.75
2003-04	44,572	-1.4	1.1	6.1	1.2	1.2	-0.3	5.01
2004-05	44,565	1.2	0.1	5.6	6.3	4.6	6.1	1.14
2005-06	42,454	2.1	2.1	5.1	6.2	5.7	5.1	8.91
2006-07	40,876	2.4	3.6	4.4	8.2	7	7.5	2.47
2007-08	41,894	2.3	2.2	3.9	5.7	6.4	6.9	3.49
2008-09	45,067	0.8	3.9	4.9	3.3	3.7	-0.8	4.99
2009-10	53,405	-4.5	-0.6	7.7	-2.1	-3.7	-11.3	9.00

A regression analysis was conducted to determine whether economic variables such as non-agriculture, consumer price index (CPI), wage, unemployment, personal income and tuition rate would impact overall enrollment trends prior to and after the implementation of the COF. The results were significant, with $F(8, 4) = 48.63$ and $p = 0.001$. The adjusted R-squared equaled 0.9694, indicating that 96.94% of the variance in enrollment trends can be predicted from the independent variables. The analysis of coefficients (Figure 4.62) shows that all null hypotheses are rejected except Time ($p < 0.05$).

Table 4.62

Analysis of Coefficients

	Coefficients	<i>t</i> -Statistic	<i>p</i> -value
Time	741.41	7.07	0.002
Non-Ag	-647.30	-1.24	0.279
CPIU	-713.74	-1.78	0.148
Unemployment	739.86	0.92	0.409
Personal Income	224.89	0.73	0.500
Wage & Sal	88.04	0.28	0.791
Retail Trade Sales	-173.89	-1.17	0.304
Tuition Rate Increase	-7.83	0.048	0.963

CHAPTER 5: DISCUSSION

College Opportunity Fund and Accessibility

The Colorado Community College system is striving to meet all demands, old and new, while continuing to fulfill its main mission to provide access to quality postsecondary education to all state residents. It serves numerous constituencies, including high school students and displaced workers, and partners with the business sector to provide high quality technical hands-on trainings that students need to succeed in their careers. Senate Bill 04-189 stated that direct state appropriations to higher educational institutions (the direct funding-to-institution method) were not benefiting Coloradans who were participating in higher education. As a result, policy makers approved the Colorado Opportunity Fund (COF), a new direct-to-student funding method, believing it would be beneficial to students enrolling in post secondary educational institutions. In the first two years' after the inception of the COF, overall enrollment in FY05-06 (-4.74 percent) and FY06-07 (-3.72%) declined. Since FY07-08 however, the overall enrollment showed an upward trend despite increases in the student share of tuition per credit (see Figure 5.1).

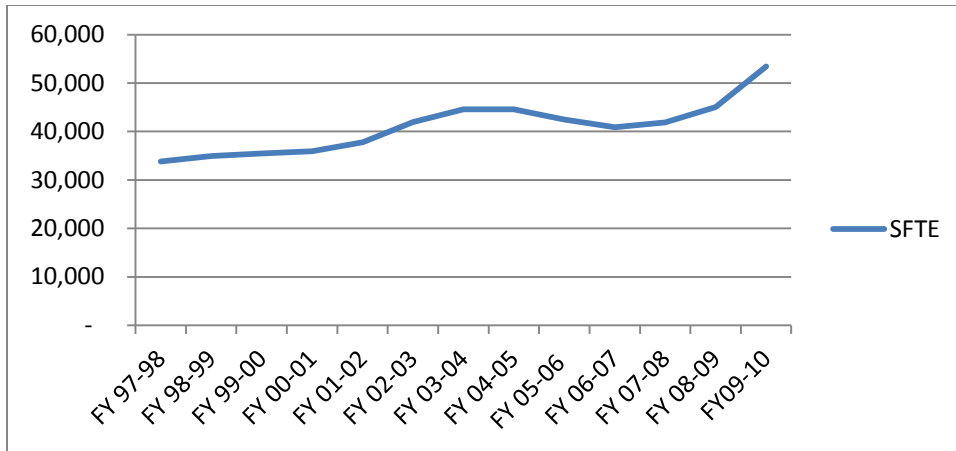


Figure 5.1. Enrollment Trend of Resident Student FTE (FY1998 – 2010)

Table 5.1 is the summary of chi-square analysis of the overall enrollment trends of gender, ethnic, location of colleges, and traditional and non-traditional students prior to and after the COF. Table 5.1 shows that the cross-tabulation of ethnic (White and Others) and student type (traditional and non-traditional) enrollment of pre and post-COF enrollment show statistical significances.

Table 5.1

Summary Chi-Square Analysis of Pre-COF and Post-COF Overall Enrollment Trend

Variable	Enrollment		χ^2	p
	Pre-COF	Post-COF		
Gender				
Male	33,415	17,245	1.09	.296
Female	50,794	26,546		
Ethnicity				
White	60,970	30,626	86.11	<.001
Others	23,239	13,165		
College Location				
Urban/Sub	44,622	22,838	8.10	0.004
Rural	39,587	20,953		
Student Type				
Traditional	39,459	22,709	288.25	<.001
Non-traditional	44,750	21,082		

One key policy of the College Opportunity Fund Act was to increase and promote post secondary educational opportunities to underrepresented groups of Coloradans.

Figure 5.2 shows the overall enrollment trend of ethnic groups.

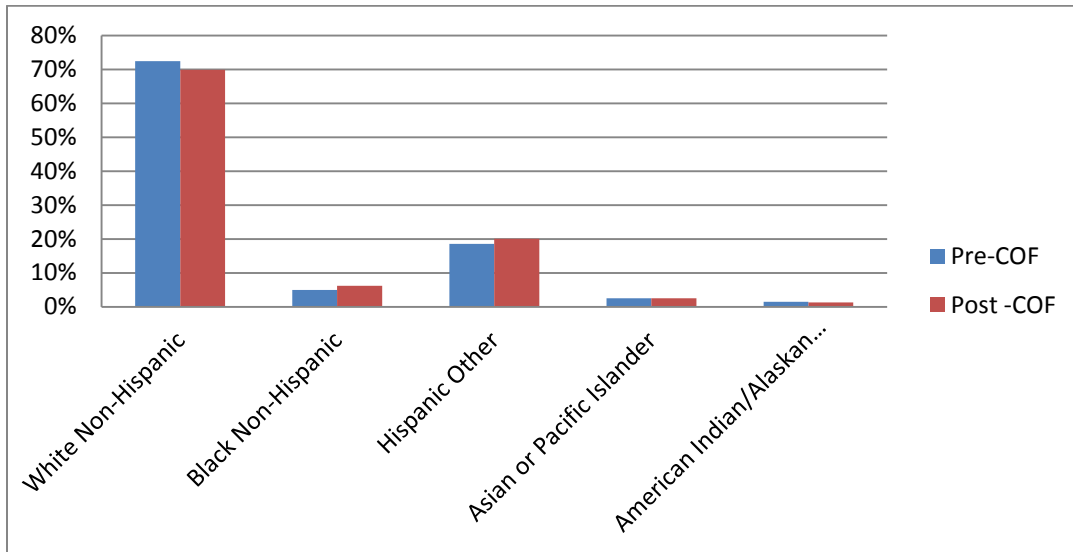


Figure 5.2. Overall Enrollment Trend of Ethnic Groups

While overall enrollment has been increasing, this study found that there were changes in enrollment trends in two large ethnic groups, Blacks and Hispanics, since the inception of COF. The trends are shown in Figure 5.2. The cross-tabulation of Black and Hispanic students’ enrollment trends indicate a statistical significance of the enrollment increases of Black student after the COF. Table 5.2 also shows that traditional students’ enrollment has increased in both Black and Hispanic.

Table 5.2

Summary Chi-Square Analysis of pre-COF and post-COF Overall Enrollment Trend of Black and Hispanic Students

Variable	Enrollment		χ^2	p
	Pre-COF	Post-COF		
Ethnic				
Black	4,242	2,727	25.35	<.001
Hispanic	15,909	8,854		

Gender				
Male	7,439	4,420	5.16	0.023
Female	12,712	7,151		
Student Type				
Traditional	10,237	6,403	60.62	<.001
Non-traditional	9,914	5,168		

Two additional trends that have occurred since the inception of the COF are the increase in overall enrollment of traditional students (age group 19-24) and the decrease in enrollment of non-traditional students (see Figure 5.3).

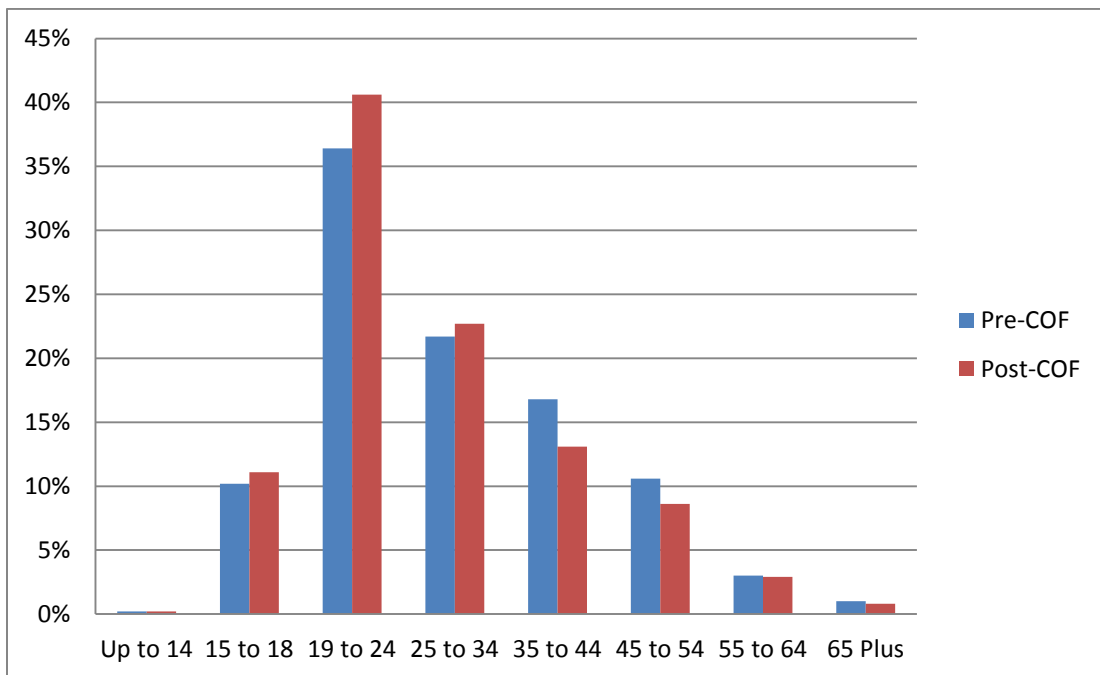


Figure 5.3. Overall Enrollment Trends of Age Groups

Table 5.3 shows the Hispanic students' overall enrollment trend of traditional students with a significant Pearson chi-square ($\chi^2 = 51.92$, $df = 1$, $N = 13417$, $p < .001$) and Table 5.4 for the Black students with ($\chi^2 = 14.27$, $df = 1$, $N = 3223$, $p < .001$). Even though the enrollment changes are minimal, if this trend continues, the COF may have an impact on overall enrollment of students from underrepresented groups.

Table 5.3

Summary Chi-square Analysis of Pre-COF and Post-COF Overall Enrollment Trend of Hispanic Students

Variable	Enrollment		x^2	p
	Pre-COF	Post-COF		
Gender				
Male	5,753	3,679	.508	0.476
Female	10,156	6,207		
Student Type				
Traditional	8,349	5,068	51.92	<.001
Non-traditional	7,560	3,786		

Table 5.4

Summary Chi-square Analysis of Pre-COF and Post-COF Overall Enrollment Trend of Black Students

Variable	Enrollment		x^2	p
	Pre-COF	Post-COF		
Gender				
Male	1,686	1,178	8.92	.003
Female	2,556	1,539		
Student Type				
Traditional	1,888	1,335	14.27	<.001
Non-traditional	2,354	1,382		

In the traditional student group, the overall enrollment trend showed a slight increase of male students. The increase in male enrollment, though minimal, is an interesting result since one of key policy goals of the COF has been to increase male enrollment to post secondary education and women are traditionally the majority of enrollees at community colleges (see Figure 5.5). As Table 5.5 indicates that male enrollment in this age group shows significance ($x^2=6.30$, $df=1$, $N=21121$, $p=.012$).

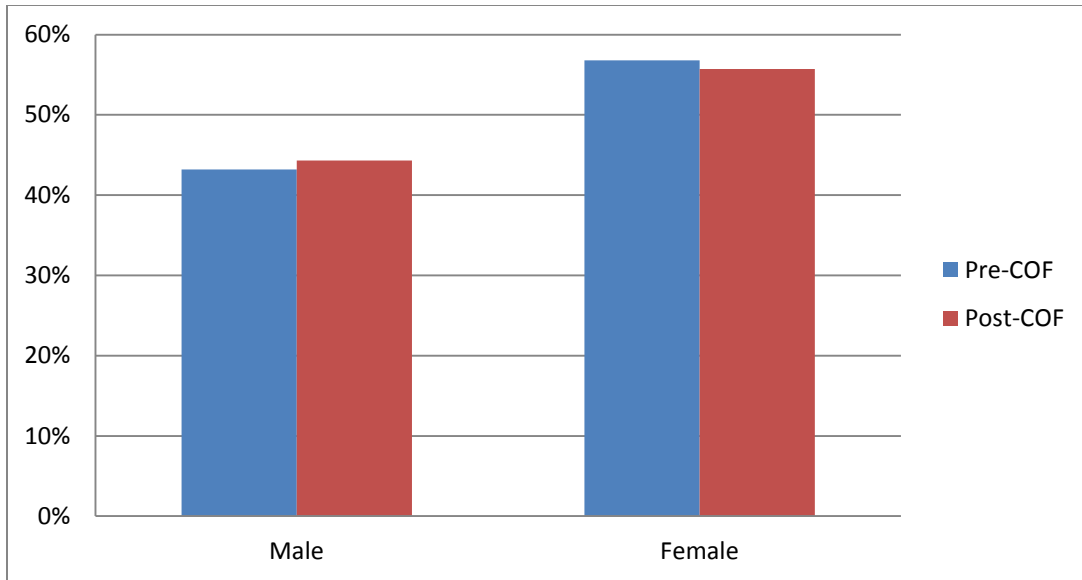


Figure 5.4. Enrollment Trends of Age Group 19-24 and Gender

Table 5.5

Summary Chi-Square Analysis of Pre-COF and Post-COF Overall Enrollment Trend of Age Group 19-24

Variable	Enrollment		χ^2	p
	Pre-COF	Post-COF		
Gender				
Male	13,242	7,879	6.30	0.012
Female	17,432	9,889		
College Location				
Urban/Sub	18,222	9,804	82.46	<.001
Rural	12,452	7,964		

The overall enrollment trends of age group 19-24 in two ethnic student groups, Black and Hispanic, showed similar trends. For Black students age group 19-24 the enrollment trends after the COF were increases in male enrollment and increases in enrollment in colleges located in rural areas (see Table 5.6).

Table 5.6

Summary Chi-Square Analysis of Pre-COF and Post-COF Overall Enrollment Trend of Black Student Age Group 19-24

Variable	Enrollment		χ^2	<i>p</i>
	Pre-COF	Post-COF		
Gender				
Male	742	597	14.94	<.001
Female	956	573		
College Location				
Urban/Sub	1,377	810	53.85	<.001
Rural	321	360		

For the Hispanic Student age group 19-24 results showed a slight increase in male student enrollment and increases in enrollment trends in colleges in rural areas (see Table 5.7). Based on findings, on the changes in overall enrollment of age group 19-24 indicate that one of the key policies of SB04-189 may be working as policy makers intended, thus beginning to address the Colorado Paradox.

Table 5.7

Summary Chi-Square Analysis of Pre-COF and Post-COF Overall Enrollment Trend of Hispanic Student Age Group 19-24

Variable	Enrollment		χ^2	<i>p</i>
	Pre-COF	Post-COF		
Gender				
Male	2,621	1,587	1.63	.201
Female	4,054	2,329		
College Location				
Urban/Sub	3,426	1,895	8.50	.004
Rural	3,249	2,021		

One other factor impacting the enrollment of students' age group 19-24, which was not included in this study, is the concurrent enrollment program offered by community colleges that allows students to take college level courses while they are still

in high school. The program is offered in suburban, urban, and rural areas of Colorado. This concurrent enrollment program may provide a direct benefit to enrolled high school students by making a seamless transition to post secondary education, as well as providing community colleges with indirect benefits by developing lasting relationships with high schools and their students, and increasing the college's visibility in the community.

Unlike other four-year institutions of higher education, students enrolled in community colleges are generally very diverse, with a large number of non-traditional student (ages 25 and older). However, according to this study, it appears that there is a growing trend of students enrolling directly from high school.

Overall enrollment of students aged 19-24 shows an upward trend; perhaps requiring further study. This increase in traditional student enrollment may suggest that students are looking to acquire transferable credits to four-year colleges at lower tuition rates. The reason for the increase in overall enrollment of traditional students was confirmed when Academic Degree and age groups were evaluated. According to the Colorado Community College System's Fact Report (2009), Associate of General Studies (AGS), Associate of Arts (AA), and Associate of Science (AS) degrees are transfer-oriented. As Figure 5.9 shows, more students age group 19-24 were enrolled in academic programs that were transferable to four-year colleges such as AA, AGS, and AS, compared to non-traditional age groups, age 35-44 and age 45-54. The trend for Hispanic students age group 19-24 is the same as overall trend that is increases in student type; New First time and a slight increase in transferable academic degree AS. For Black

students' age group also shows increase in student type; New First time and increases in transferable academic degrees AA and AS.

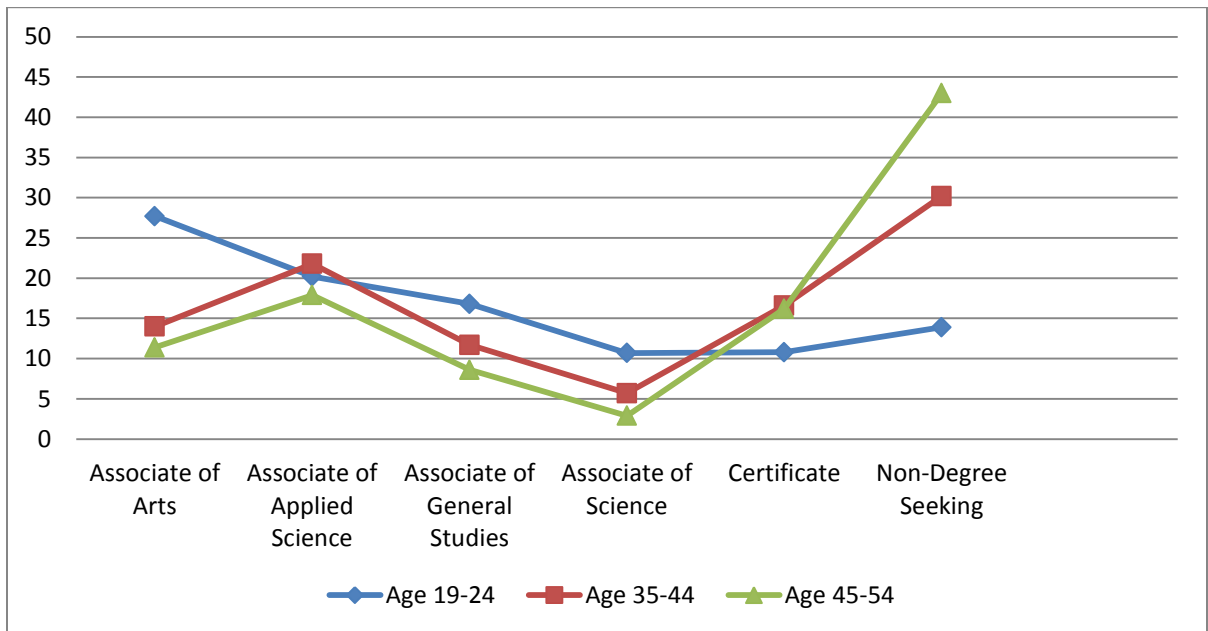


Figure 5.5. Age Group 19-24, 35-44, and 45-54 and Academic Degree

For academic programs where student types were analyzed post-COF, the overall trend indicated that “New first time anywhere” significantly increased while “Continuing” declined. CCHE report (2007) on the Colorado College Opportunity Fund’s (COF) progress indicated that the bill was not clear on how to handle continuing students under the new 145 COF credit hours requirement. The recommendation made by the Technical Advisory Committee created by CCHE was that continuing students as of July 1, 2005, should be assigned reasonable credit hours to complete their education based on the students’ completed credits. For example, if a student has 90 credits, 55 COF credits were allowed. If students exceed their COF limit, they can appeal to CCHE for additional credits. It is not clear whether or not this appeal process had had an effect on the “Continuing” category.

College Opportunity Fund and Affordability

One of the key policy goals of the College Opportunity Fund Act was to solve funding problems for higher education created by the Taxpayer's Bill of Rights (TABOR). In reality however, the state portion of the amount per credit did not cover the full cost of tuition and fees. According to National Center for the Study of Privatization in Education (2004), Colorado policy makers adopted the COF in an effort to find new funding strategies to cover increasing operating expenses. Direct funding to students could allow higher educational institutions to be exempt from TABOR restrictions and raise tuition levels to reflect escalating operating costs.

However, the results of this study indicate that colleges have not gained any flexibility under the COF other than increasing the students' share of tuition and fees. Although the underlying philosophy of providing state funds for community colleges is to increase access to postsecondary education for all individuals by improving affordability, the student share of tuition has in fact increased since the inception of the Colorado College Opportunity Fund.

As shown in Figure 5.6, tuition increased more during recessions (FY2003 and FY2009) than other periods, and after each recession ended, the increase in tuition slowed down. The reason for tuition increases during recession periods is clear: tuition was raised to close the gap between what the state could provide and the institutions' budgetary needs. When states have higher revenue there is more money to appropriate to community colleges, while during recessions, states reduce funding. To minimize tuition increases during recessions, states should set aside reserves during periods of economic growth.

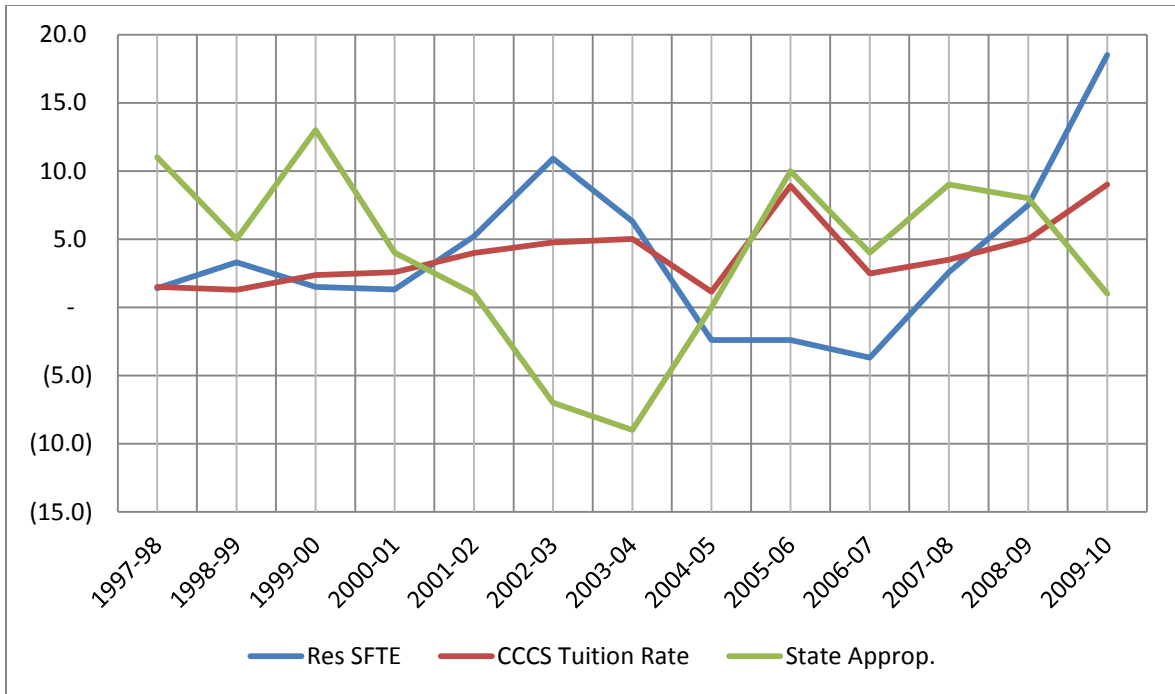


Figure 5.6. Overall Enrollment Trend and Tuition Rate Prior to and After COF (FY1998 – 2010)

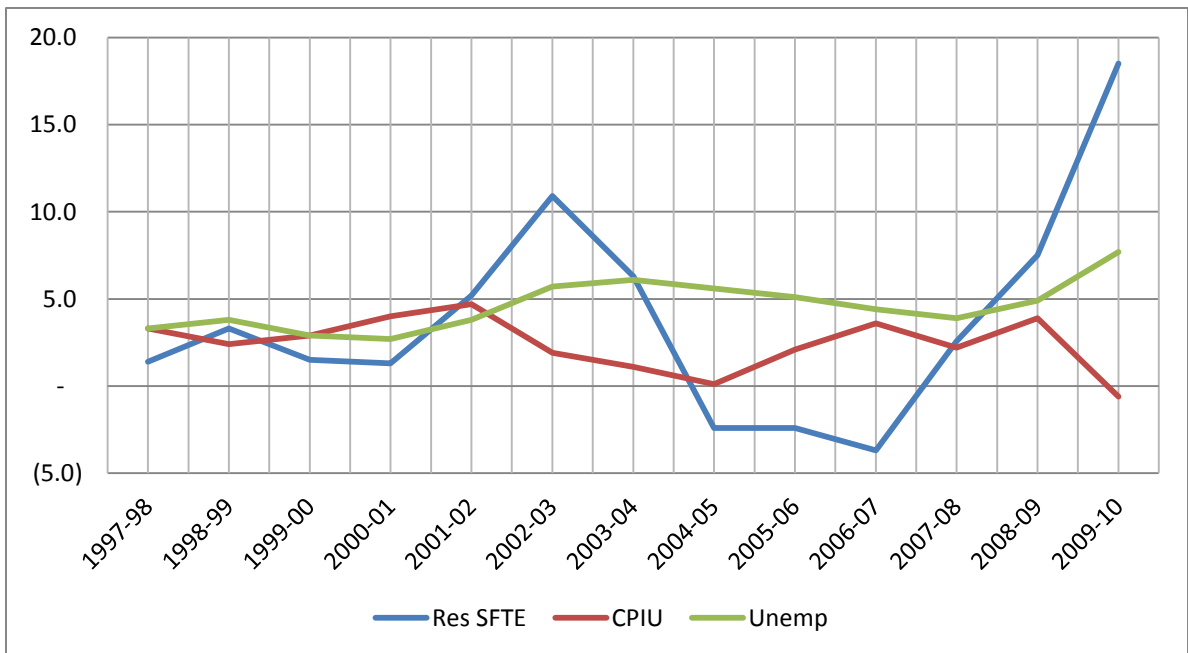


Figure 5.7. Economic Variables and Enrollment Trends Prior to and After COF (FY1998-2010)

Since state governments are the primary source of funding for community college education, the level of funding appropriated has a direct impact on students' tuition and fees. Typically, when states have an excess of general funds, they are more likely to be generous with funding higher education; however, when general funds are reduced and states need to close budget deficits, funding for higher education is usually among the first programs to be cut. The state of Colorado has been no exception. With overall state budget deficits increasing over the last few years, funding for higher education has continued on a downward trend, resulting in increasingly higher tuition and fees for students. Increases in the student share of tuition since the inception of the COF are shown in Figure 5.8.

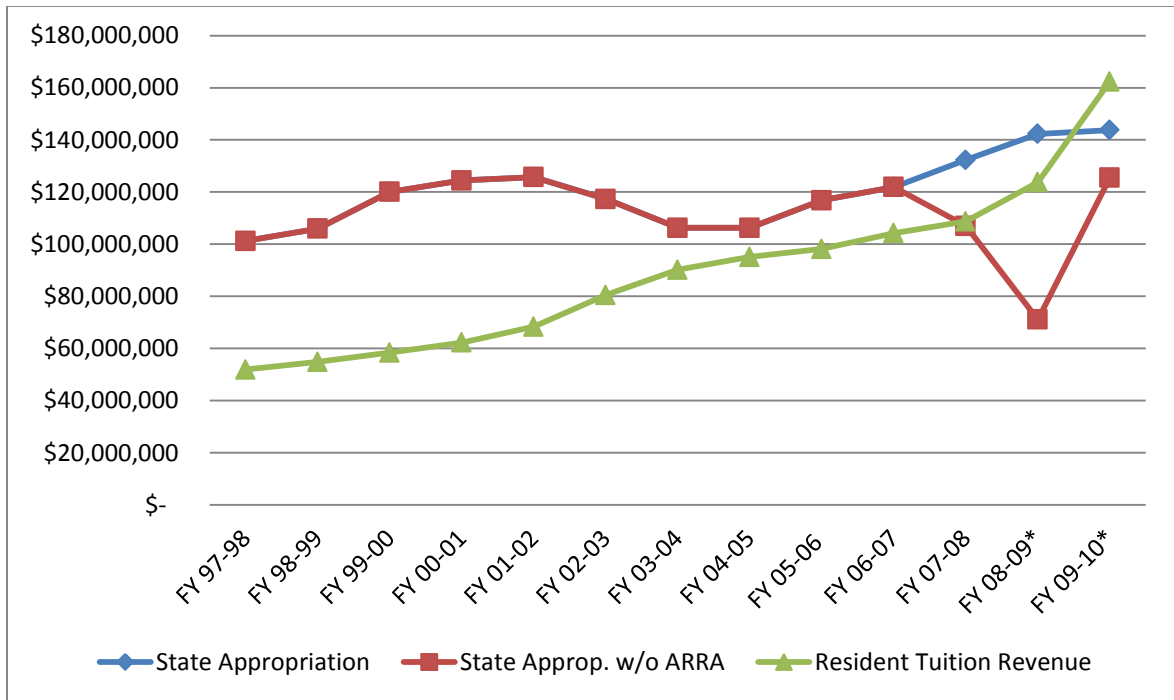


Figure 5.8. Changes in Tuition Revenue for Community Colleges

During FY2001-2002, the state of Colorado's general fund revenues fell \$981 million plus an additional \$94 million in FY 2002-03 (Legislative Council Staff Report,

September 2003). This drastic revenue reduction was caused by a severe economic downturn that began in early 2001. It was the first major economic downturn since TABOR had been adopted in 1992. During FY 2002-2003 and FY 2003-2004 even though the total enrollment grew more than 10%, community colleges received only partial funding. The General fund per resident student FTE was reduced to \$2,306 in FY04-05 from \$3,565 in FY01-02. This was a 35.3% decrease (Bell Policy Center, 2005). In FY2005-2006, with the implementation of COF, the General Assembly also approved an 8.9% tuition rate increase, from \$66.80 to \$72.75 per credit hour, for community colleges.

In FY06-07, the student share of tuition per credit hour increased 2.47%. Prior to the COF, the highest tuition increase of 5.1% occurred in FY03-04, a reflection perhaps of the economic downturn cycles the state of Colorado experienced. As shown in Figure 5.9, the student share of tuition per credit hour percentage continued to stay on an upward trend while the COF's per credit hour amount has declined. These trends indicate that as state funding declines, colleges must further rely on tuition revenues to close the gap in their increasing operational expenditures.

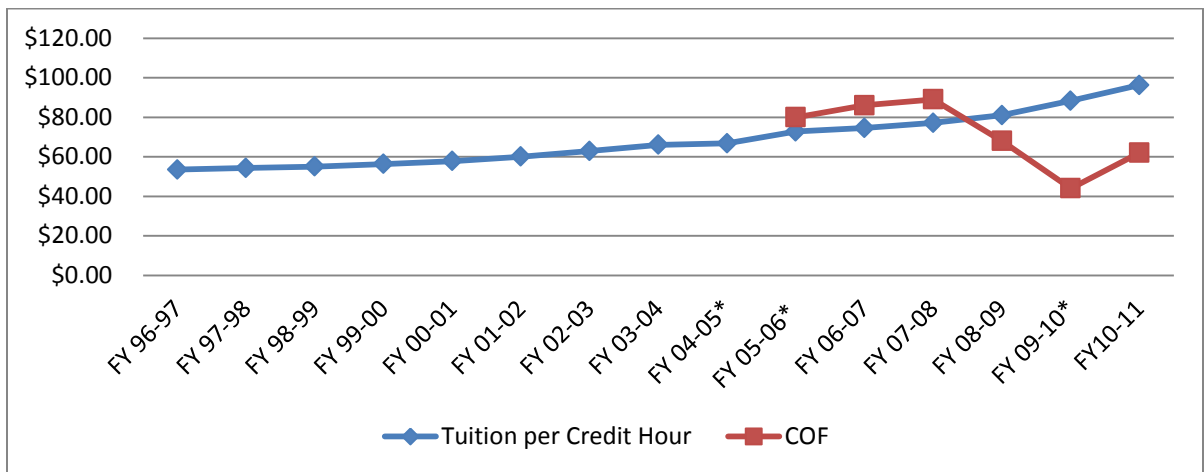


Figure 5.9. Trend of Tuition and COF per Credit Hour Revenue

Since the implementation of the COF in FY06, colleges have had to disclose the student share of tuition per credit hour, the state share of stipend per credit hour, and the total amount of tuition reflecting both the state and student share per credit hour. For example, in FY2009-2010, the in-state student share of tuition per credit hour was \$88.30 while the state share of stipend per credit hour was \$68; therefore, the total tuition per credit hour was \$156.30. However, in FY2008-2009 the total tuition per credit hour was \$173.00 while the student share of tuition was \$81 and the stipend was \$92 per credit hour. The bill students receive in FY2009-2010 appears as though the total tuition has decreased when in fact, the students' portion had increased. Figure 5.10 shows changes in the percentage of state appropriation and tuition revenue for colleges. In FY09-10, the trend of shifting the revenue from tuition is evident, especially when the total state appropriation in FY2009-2010 included the amount of \$71,186,390, the Education Stabilization Funds through the American Recovery and Reinvestment Act of 2009 (ARRA) fund.

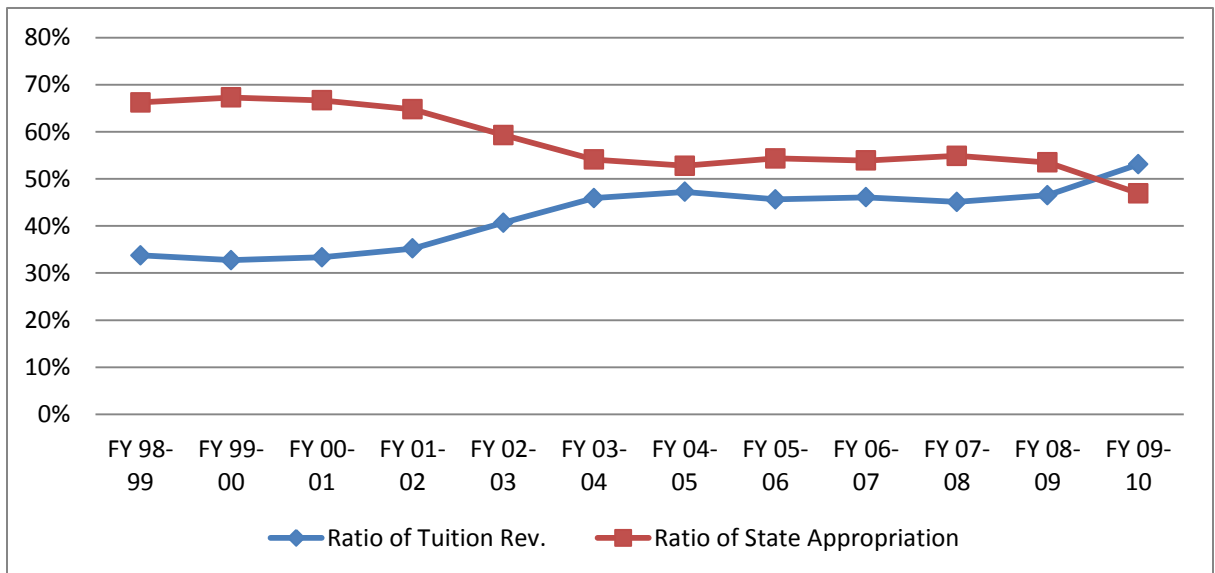


Figure 5.10. Changes in the Ratio of Tuition Revenue and State Appropriation

Since the Tax Payers Bill of Right (TABOR) was passed (1992), public education institutions in the state of Colorado have been unable to raise tuition because cash funds were subject to TABOR limitations. Under TABOR, higher education faced limited state appropriation and was only be able to increase tuition based on the Denver –Boulder area Consumer Price Index (CPI). As stated earlier, proponents of the COF supported this new funding method in order to reduce community colleges’ financial constraints.

Since the inception of the COF however, the portion of tuition revenue has been increasing steadily. In FY2009-2010, the total resident tuition revenue was \$162,583,001, or 53 percent of the total of state funding and resident tuition revenue. Decreasing the portion of the COF in community colleges total revenue did not reduce colleges’ financial constraints.

Conclusion

This study reviewed the Colorado Community College System’s (CCCS) overall enrollment trends after the Colorado College Opportunity Fund (COF), a direct funding-to-student method, was implemented to evaluate if there was any significant difference in enrollment compared to a direct funding-to-institution method. Based on random samples of registration data and fiscal reports attained from the CCCS, CCHE, and JBC staff report, the COF did affect overall enrollment trends: 1) Overall enrollment trend of Black and Hispanic students increased: 2) Overall enrollment in age group 19-24 increased post-COF: 3) Black male students’ enrollment also increased post-COF. Although the results appear to reflect the goals policy makers and legislators intended in establishing the COF, other components such as increases in the amount of financial aid

to students, increased population in the state of Colorado in general, and an increase in the number of students from low income families may also have impacted overall enrollment trends.

A limited financial analysis is provided in this study, primarily to show that student share tuition and state funding appears to be sensitive to the state's economic condition. However, given the complex nature of community college enrollments and the numerous variables that affect overall enrollment, the simple trend analysis undertaken for this study may fall short of explanations and conclusions. In general, community colleges believe that increasing tuition deters enrollment; however, this study shows that despite the fact that the student share of tuition has increased since the inception of the COF, overall enrollment trends have increased since FY 2008. A larger data sample spanning more years may show different overall enrollment trends. Therefore an in-depth study of each age group based on ethnicity is suggested before any changes are made to the COF.

State legislators and policy makers may believe that higher educational institutions act as business entities, where success is measured by productivity, efficiency, and performance. This misperception of community colleges makes it difficult for legislators and policy makers to address institutions' needs; instead, they exert their influence through state funding. This direct funding method, one of the only in the nation, cannot be compared to other methods in regard to efficiency. A performance funding approach is not new to higher educational institutions in the state of Colorado. House Bill 96-1219 required that the CCHE and higher educational institutions identify performance indicators that would serve as guidelines to improve and provide quality education to

students. As Bridge (1999) contested, state policy makers should consider subsidizing public institutions where the majority of students come from low-income families and/or minority groups. The cost to educate students from traditionally underrepresented groups is higher since they are typically not as well prepared for college as mainstream students.

State funding is still one of the largest sources of revenue for higher educational institutions. As Bridge (1999) suggested, state funding policies should focus on meeting students' needs instead of helping institutions. The COF, a new direct funding to student method could be reinforcing state financial policies and making them more student-oriented, as well as serving as a framework for higher education to be more accessible and affordable. Furthermore, this new funding method may help the higher education funding allocation formula be more non-political, objective, and equitable through an easily understandable process for both legislators and higher education administrators. Therefore achieving the state's higher education goals for citizens state-wide will result in a large well-educated labor force.

In conclusion, it is evident that there are several trends affecting community colleges' accessibility and affordability including competition for state funds, a fluctuating state economy, declining household disposable income, and an increase in demand for postsecondary education. Based on state appropriation to community colleges trends prior to and after the COF, the COF appears to be much more sensitive to the allocation of state funds than previously thought. Removing community colleges from TABOR did however allow them enough flexibility to generate additional revenues from tuition and fees. Per credit hour of the COF amount reduced, the student share of tuition was allowed to increase higher than the CPI. At the same time, increases in overall

enrollment helped community colleges to generate additional operating revenues. The results also indicate that the COF may have had an impact on enrollment trends within underrepresented student groups, Black and Hispanic students, male students and traditional student groups as policy makers hoped and as Senate Bill 04-189 intended.

Recommendations for Further Study

The overall purpose of this study was to provide data related to the possibility of proposing a reevaluation of the COF if it was providing postsecondary educational opportunities to Coloradans as Senate Bill 04-189 as intended. In addition, the study intended to examine the impact of granting enterprise status to CCCS under SB04-189 on tuition and fees charged to students compared to the direct state appropriations the CCCS received prior to SB04-189.

As the national economy slows and the price of four- year institutions increase, a large number of college-bound high school seniors, many of them from low-income families, choose to attend community colleges (Cavanagh, 2004). Community colleges emphasize their mission, open access, with affordable tuition rates to provide postsecondary education for low-income individuals and individuals from underrepresented groups. The lower tuition found in community colleges makes postsecondary education an option for community members from diverse backgrounds. Community colleges also offer vocational and adult education program that many students from low-income and minority groups (Dougherty et al., 2006).

Though the findings from this study showed that the COF had an impact on enrollment trends of targeted student groups in the Colorado Community College System, it is difficult to conclude that Colorado College Opportunity Fund (COF) is solely

responsible altering the Colorado Paradox. Therefore, an in-depth study of post secondary education in the State of Colorado should be undertaken. It should investigate changes related to accessibility and its interaction with affordability since the inception of COF to determine the impact on student enrollment and student costs, especially those related to Community Colleges.

REFERENCES

- Adam, M. (2007). Re-Claiming an Old Social Contract: "College for Low-Income Students". *Education Digest: Essential Readings Condensed for Quick Review*, 72(7), 60-66.
- (Adam, 2007; *Regents' Review. Volume 10, Issue 4, 2008*)
- American Association of Community, C. (2009). *American Association of Community Colleges 2009 Fact Sheet*: American Association of Community Colleges.
- Amey, M. J., Jessup-Anger, E., & Jessup-Anger, J. (Writer) (2008). Community college governance: What matters and why? [Article], *New Directions for Community Colleges*: John Wiley & Sons, Inc. / Education.
- Askin, J. A. (2007). Community College Mission: Re(s)ources Make a Difference. *Community College Journal of Research and Practice*, 31(12), 977-997.
- Askin, Jacalyn Ann (2005) Community college funding: Environmental and institutional influences. Ph.D. dissertation, The University of Arizona, United States -- Arizona. Retrieved April 4, 2008, from ProQuest Digital Dissertations database. (Publication No. AAT 3205459).
- Assessment of the funding formula used by the North Carolina Community College System: Economy of Scale Supplemental Report. (1997-04-18)
- Barak, R. J., & Kniker, C. R. (2002). Benchmarking by State Higher Education Boards. *New Directions for Higher Education*(118), 93-102.
- Bell Policy Center. (2003). *Ten years of TABOR: A study of Colorado's Taxpayer's Bill of Rights*. Denver, CO: Bell Policy Center.

Blue Ribbon Panel (2003). *Final report of the Governor's Blue Ribbon Panel on Higher Education for the 21st Century*. Denver: Colorado Commission on Higher Education.

Boone, E. J. (1997). National perspective of community colleges. *Community College Journal of Research & Practice*, 21(1), 1.

Boswell, K. (2001). State Policy and Postsecondary Enrollment Options: Creating Seamless Systems. *New Directions for Community Colleges*, 2001(113), 7.

Bowen, F. M., Bracco, K. R., Callan, P. M., Finney, J. E., Richardson, R. C., Jr., & Trombley, W. (1997). *State Structures for the Governance of Higher Education: A Comparative Study*: California Higher Education Policy Center, 160 West Santa Clara St., Suite 704, San Jose, CA 95113; phone: 408-271-2699; fax: 408-287-6709 (Report No. 97-11).

Bragg, D. D. (Writer) (2001). Community College Access, Mission, and Outcomes: Considering Intriguing Intersections and Challenges [Article], *PJE. Peabody Journal of Education*: Lawrence Erlbaum Associates.

Bridges, G. L. (1999). *Performance funding of higher education: A critical analysis of performance funding in the State of Colorado*. Unpublished 9928106, University of Colorado at Denver, United States -- Colorado.

California Postsecondary Education, C. (2008). *Community Colleges: Still an Affordable Route to a Degree? Commission Report 08-14*: California Postsecondary Education Commission.

Callan, P. M., & Bowen, F. M. (1997). *State Structures for the Governance of Higher Education: New York Case Study Summary*: California Higher Education Policy Center, 160 West Santa Clara St., Suite 704, San Jose, CA 95113; phone: 408-271-2699; fax: 408-287-6709 (Report No. 97-18).

Cavanagh, S. (2004). Amid Tight Budgets, Two-Year Colleges Play Growing Role. *Education Week*, 23(39), 1.

Cohen, A. M. (1993). Trends and issues in community college finance. *Community College Review*, 20(4), 70.

Colorado Community College System Budget Data Book (1998 -2010)

Colorado Community College System (2006). *Colorado Community College System Fact Report*.

Colorado Department of Higher Education Final FTE Student Enrollment Report.

Colorado Commission on Higher Education, retrieved on October 20, 2010 from <http://highered.colorado.gov/cche.html>

Colorado Commission on Higher Education, D. (2006). *Colorado Higher Education Financing Study. Executive Briefing*: Colorado Commission on Higher Education.

Colorado Higher Education Financing Study. Executive Briefing. (2006). Colorado Commission on Higher Education. 1380 Lawrence Street, Denver, CO 80204. Tel: 303-866-2723; Fax: 303-866-4266; Web site: <http://highered.colorado.gov/cche.html>.

Colorado Legislative Council Publication (2005). *The College Opportunity Fund: A New Approach to Higher Education Funding* (Report No. 05-03).

Colorado Revised Statutes, §23-71-101, 1937. Junior College Organization Act.

Colorado Revised Statutes, §23-18-102, 2004. College Opportunity Fund Act.

Colorado Revised Statutes, §23-33-104.5, 1963 .Home based education-legislative declaration-definitions-guideline.

Dougherty, K. J., Marshall, J., Soonachan, A., & Columbia Univ, N. Y. N. Y. C. C. R. C. (2006). *Achieving the Dream in Ohio: State Policies Affecting Access to, and Success in, Community Colleges for Students of Color and Low-Income Students*: Community College Research Center, Columbia University.

Education Commission of the States (2000). *State Notes: The Authority of State Boards of Postsecondary Education*, Denver.

- Fischer, K. (2005). Colorado's "Noble Experiment": The Jury Is Still out on a Plan that Gives Money to Students and More Autonomy to Colleges. *Chronicle of Higher Education*, 51(45).
- Fonte, R.W. (1993). The Impact of State Financing and Regulation on the Local Orientation of Community Colleges. *Community College Review*, 21(1), p. 4-15.
- Frentzos, D. (2005). Credit and Non-Credit Community College Enrollment and the Economy. *Community College Enterprise*, 11(1), 93-103.
- Garms, W. L. (1977) *Financing Community Colleges*. New York, NY: Teachers College Press
- Garms, W. L. (2005) *Financing Community Colleges*. New York, NY: Teachers College Press
- Garrett, R. L. (1992). Degree of Centralization of Governance of State Community College Systems in the United States, 1990. *Community College Review*, 20(1), 7-13.
- Garrett, R. L. (1993) A Profile of State Community College System Characteristics and Their Relationship to Degrees of Centralization. *Community College Review*, 20(5), p.6-15.
- Harbour, C. P., Davies, T. G., & Lewis, C. W. (2006). Colorado's Voucher Legislation and the Consequences for Community Colleges. *Community College Review*, 33, 1-18.
- Hendrick, R. Z., Hightower, W. H., & Gregory, D. E. (2006). State Funding Limitations and Community College Open Door Policy: Conflicting Priorities? *Community College Journal of Research & Practice*, 30(8), 627-640.
- Hill, Laura Davenport (2004). *The impact of accountability: An evaluation of performance-based budgeting in the North Carolina Community College System*. Available from ProQuest Digital Dissertations database. (Publication No. AAT 3128766).

- Joint Budget Committee. (2004). Staff Fiscal Report, FY 2004-05. Denver: Joint Budget Committee.
- Joint Budget Committee. (2006). Appropriation Report, FY 2005-06. Denver: Joint Budget Committee.
- Katsinas, S. G. (2005). Increased Competition for Scarce State Dollars. *New Directions for Community Colleges, 2005*(132), 19-32.
- Manzo, K. K. (2004). Colorado Colleges to Get New Funding System. *Community College Week, 17*(7), 2-10.
- McKeown, M.P.(1996) State Funding Formulas: Promise Fulfilled, A Struggle to Survive: Funding Higher Education in the Next Century, p.49-56, Corwin Press, Inc.
- Morgan, G.A., Gliner, J.A., Gloeckner, G.W.J., & Leech, N. (2008). *Research in Applied Settings: An Intergrated Approach to Design and Analysis*. Mahwah, New Jersey: Lawrence Erlbaum Associates
- Morgan, G., Leech, N., Gloeckner, G.W.J. & Barrett, K. (2007). *SPSS for Introductory Statistics: Use and Interpretation*. Mahwar, New jersey: lawrence Erlbaum Associates.
- Mullin, C. M., & Honeyman, D. S. (Writer) (2007). A Typology of State Funding Formulas [Article], *Community College Review*: Sage Publications Inc.
- National Center for Public Policy and Higher Education. (2002). *Measuring Up 2002: The state-by-state report card for higher education*. San Jose, CA: Author.

- Newman, F., Couturier, L. and Scurry, J. (2004) *The Future of Higher Education*. San Francisco, CA; Jossey-Bass
- MGT of America, Inc. (1997a). Phase I report: Funding formula study, North Carolina Community College System. Tallahassee, FL: Author.
- MGT of America, Inc. (1997b). Economy of scale supplemental report: Assessment of the funding formula used by the North Carolina Community College System. Tallahassee, FL: Author.
- Michigan State House Fiscal Agency (1998). *Fiscal Focus*, The Community College Funding Formula: A Look at its Components
- Paulsen, M. B. and Smart, J. C. (2001) *The Finance of Higher Education: Theory, Research, Policy & Practice*. New York: Agathon Press.
- Protopsaltis, S. (2006). The Colorado Voucher System: Implications for Higher Education. *College and University*, 81(2), 45-48.
- Regents' Review. Volume 10, Issue 4.* (2008). Nevada System of Higher Education.
- Rhoads, R. A., & Valadez, J. R. (1996). *Democracy, multiculturalism, and the community college a critical perspective*. New York: Garland Pub.
- Ruppert, S. (1996). *The Politics of Remedy: State Legislative Views on Higher Education*, Washington, DC: National Education Association
- Saenz, V. B. (2002). *Hispanic Students and Community Colleges: A Critical Point for Intervention. ERIC Digest*. Los Angeles, CA: ERIC Clearinghouse for Community Colleges.
- Senate Bill 04-189: An act concerning institutions of higher education, and making an appropriation in connection therewith. Colorado Session Laws, L. 2004, p. 701. (2004) (enacted).

Senate Bill 05-132: An act concerning higher education and, in connection therewith, making modifications to the "College Opportunity Fund Act." Colorado Session Laws, L. 2005, p. 701. (2005) (enacted).

Texas Higher Education Coordinating Board (2004). Formula Funding Recommendations for the 2006-2007 Biennium Report.

Thomson, S. C. (2007). Is it a Shell Game? Colorado's controversial new way of handing out its higher education money. *National Crosstalk*, 15(1).

Tollefson, T. A. (Writer) (2009). Community College Governance, Funding, and Accountability: A Century of Issues and Trends [Article], *Community College Journal of Research & Practice*.

Tollefson, T. A. , Garrett, R. L. Ingram, W. G. et al. (1999) *Fifty state systems of community colleges: Mission, governance, funding, and accountability* Overmountain Press , Johnson City, TN

U.S. President's Commission on Higher Education. (1948). *Higher education for democracy*. New York: Harper & Brothers.

U.S. Census Bureau (2000). <http://www.census.gov/prod/www/abs/ed-attn.html>

Western Interstate Commission for Higher Education, B. C. O. (2006). *Workforce Brief: Colorado*: Western Interstate Commission for Higher Education.

Western Interstate Commission for Higher, E. (2009). *An Evaluation of Colorado's College Opportunity Fund and Related Policies*: Western Interstate Commission for Higher Education.