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Measuring the success of Kentucky's community and technical college system in educational attainment and advancing workforce development

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MEASURING THE SUCCESS OF KENTUCKY'S COMMUNITY AND

TECHNICAL COLLEGE SYSTEM IN EDUCATIONAL ATTAINMENT AND

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In partial fulfillment of
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Doctor of Education
in
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by
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Approved by
Dr. Dennis M. Anderson, Chairperson
Dr. Steven Banks
Dr. Luke Eric Lassiter
Dr. Louis Watts

Marshall University
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DEDICATION

This dissertation is dedicated to my Alma Mater, Marshall University.

Throughout my life, I have been fortunate to always have a connection to Marshall University. As a high school student from nearby Barboursville, West Virginia, I attended conventions, speeches and sporting events at Marshall's Huntington Campus. I earned my undergraduate from Marshall and was able to meet people of different cultures and countries, as well as having the opportunity to study abroad for a semester and receive my Commission in the United States Army. While earning my Master's at Marshall, I was able to pursue a new career in journalism. And the doctoral degree in education that requires this study allowed me to gain greater knowledge of higher education and its many facets while serving as Marshall University's Chief of Staff / Senior Vice President of Communications. As I write this dedication, I remain a proud Alumnus of Marshall University and continue my connection to the institution through teaching online and serving my Alma Mater in several capacities.

Like any institution created and maintained by human beings, Marshall University has its flaws and shortcomings, but it deserves recognition for benefiting so many people, especially those first-generation students who call Appalachia home.

While I could write for many more pages, my appreciation for this institution is best reflected in the second verse of Marshall University's *Alma Mater*:

> *May the years be kind to Marshall;*
>
> *May she grow in fame;*
>
> *May her children fail her never*
>
> *True to her beacon flame*
>
> *May her spirit brave and strong*
>
> *Honor right and conquer wrong;*
>
> *This the burden of our song*
>
> *Ever her truth proclaim.*

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The board of the Kentucky Coal Association (KCA) and the staff of KCA also deserve my thanks. They were supportive of my efforts to complete my doctoral degree throughout the completion of my coursework and the dissertation process.

Dr. Stephen J. Kopp, President of Marshall University, might be my former boss, but he remains a solid supporter of my educational pursuits. I also thank him for the opportunity to serve as Chief of Staff / Senior Vice President of Communications of my Alma Mater, which coincided perfectly with this recent educational experience.

Thank you to Joe Craft and Alliance Coal for reimbursing me for my tuition in the final four years of this program. Your support of my educational efforts will not be forgotten.

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While this dissertation might still exist without her involvement, the assistance of Wendy VanDyk Evans was of great help in making this dissertation more accessible to the reader and is highly recommended to any person in need of a good editor.

Without the help of Dr. Kate Shirley Akers and Barrett M. Ross of the Kentucky Center for Education and Workforce Statistics, I would not have had access to the data I needed to complete this dissertation. Their kindness and quick action are a great reflection of public employees in the Commonwealth of Kentucky.

The numerous educators in my family demonstrated to me the importance of education and its importance to our society. Their service to students deserves more recognition than I can give here.

To my mother and father, Bill and Anna May Bissett, who are probably hoping this doctoral degree is my final bout with higher education. While I cannot make any promises, their love and support have made me who I am.

Lastly, I would be remiss not to recognize my wonderful wife, Lara, and our two blessings, Molly Kat and Maggie Jane. They are my motivation for so many things, and I remain grateful for their love and support.

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ABSTRACT

This study examined the educational attainment and income of nontraditional students in the Kentucky Community and Technical College System (KCTCS) and its connection to workforce development efforts in the Commonwealth of Kentucky. The population for this study included first time students between 25 and 64 years of age who attended KCTCS either full-time or part-time during the academic years of 2006-2007, 2007-2008, and 2008-2009. The Kentucky Center for Education and Workforce Statistics provided archival data that included information from this population regarding the type of educational credential earned. The data were analyzed to determine the relationship between the types of credentials and the median income of the students over four years. After analysis, it was determined that the median income of these nontraditional students increased significantly upon completion of an educational credential, with the academic year of 2007-2008 showing a slightly less significant increase than the other two academic years.

CHAPTER ONE: INTRODUCTION

An ever-expanding American Dream: this is the legacy – and the promise – of the community college system in America. It's a system based on the principle that we all have a stake in one another's success. Because when we invest in one another's dreams, our communities benefit, our states benefit, and ultimately our entire nation is lifted up. We are in a moment when folks are finding it harder and harder to get ahead. You need new skills to compete, and everything – especially education – costs more. That's why it's time to call upon our community college systems once again. To make sure that the 21st century is just as much the American Century as the 20th. To put a little wind at the backs of the American people, and to put more of them on the pathway to their dreams (Obama, 2008).

Elected officials at all levels in the United States have been strong advocates of community and technical colleges and their ability to improve the workforce. Community and technical colleges are recognized for offering a chance at higher education, and its associated stability and earning potential, to individuals who did not follow the traditional path to a college degree. Such political advocacy usually results in increased funding for the expansion of community college programs.

According to the *Kentucky Occupational Outlook to 2018*, which was published by the Kentucky Education and Workforce Development Cabinet, the job classifications that will see the most growth in Kentucky from 2008 to 2018 will be Healthcare Support (24.9%), Healthcare Practitioners (21.1%), and Computer and Mathematical (20.2%). Additionally, employment opportunities that require at least postsecondary vocational training are projected to increase by 13.1%, while those occupations requiring only work experience in a related occupation or on-the-job training will increase at a much slower rate of 5.3%. The authors of the *Outlook* concluded, "Obtaining a postsecondary degree offers more job opportunities, increased job security, and greater potential for financial gain" (Kentucky Education and Workforce Development Cabinet, 2010, p. 2).

An important benchmark of the success of community and technical colleges is measured by the education of individuals who did not follow a traditional track of high school to college or who failed to complete high school. Kentucky's high school graduation rate (69.11%) is slightly below the national average (70.06%). Given the *Outlook's* conclusions for future opportunities, it is important to explore whether Kentucky's community college system is successful in reaching these low-skilled adults aged 25 to 64 years old, who will find future employment increasingly difficult (Kentucky Education and Workforce Development Cabinet, 2010).

Background

While many of the academic resources related to nontraditional students and their educational attainment indicate a lack of research in this area, there are references available and are best compiled into four groups: Academic, Not-for-profit, Government, and Business sources.

Academic Sources. David Prince and Davis Jenkins' *Building Pathways to Success for Low-Skill Adult Students: Lessons for Community College Policy and Practice from a Statewide Longitudinal Tracking Study* (2005) focused on educational achievement by nontraditional students in the State of Washington. Prince and Jenkins sought to understand the success rates of students who had not matriculated as expected and who entered postsecondary education at 25 years or older. Additional research in their study included other possible academic challenges, identified by such markers as participation in English as a Second Language (ESL) programs. Research was conducted on every nontraditional student in Washington State's community and technical colleges

for two academic years, 1996-1997 and 1997-1998. The findings included completion percentages of educational credentials (Associate in Arts, Associate in Science, or certificate) with students separated by other categories, such as ESL. The results also suggested an increased income as the level of educational attainment increased.

The second academic source is *Creating Pathways for Low-Skill Adults: Lessons for Community and Technical Colleges from a Statewide Longitudinal Study* (Perry, 2012). Using similar methodology as the Prince and Jenkins study, but in the State of West Virginia, this study also compared United States Census results from 2010 and data from West Virginia's Community and Technical College System to identify relationships between nontraditional students, educational attainment, and annual earnings. Perry also differentiated between momentum point achievement (passing a critical course needed for academic completion) and milestone achievement (earning an academic credential). These two levels of achievement are connected, but are measured separately.

Not-for-profit Sources. Groups, such as the Ford Foundation, have conducted research into educating underprepared workers for occupations that are expected to be in great demand in the near future. *Bridges to Opportunity for Underprepared Adults: A State Policy Guide for Community College Leaders* (2008) identified six states, including Kentucky, that need improvement and suggests how state leaders can meet the specific needs of their potential students. The Ford Foundation's study combined successful case studies, suggested strategies, and a method of measurement to gauge results in creating a state community and technical college system that better serves the needs of both students and employers.

Davis Jenkins' *A Short Guide to "Tipping Point" Analyses of Community College Student Labor Market Outcomes* (2008) is a product of the not-for-profit Community College Research Center at Columbia University. This publication suggested methods to measure the employment outcomes of graduates from community and technical colleges. Beyond earning an educational credential, Jenkins suggested a "tipping point" where enough credit hours are earned to change the economic earning ability of the student. Other factors that are monitored include the grades that are earned and other challenges to the student, such as ESL, remedial education programs like Adult Basic Education (ABE), and socio-economic status. Jenkins concluded that institutional leaders need to be aware of potential challenges that may cause students to not continue their education.

In 2011, Patrick Kelly of the National Center for Higher Education Management Systems (NCHEMS) authored *Realizing Kentucky's Educational Attainment Goal: A Look in the Rear View Mirror and Down the Road Ahead*. NCHEMS, a not-for-profit organization, commissioned this report after the passage of House Bill 1 (HB1) by the Kentucky General Assembly in 2010. HB1 was legislation designed to build a statewide higher education system that was devoted to public good and not to the needs of individual institutions. Using the passage of HB1 as a starting point, Kelly measured where success has occurred with postsecondary education in Kentucky, using metrics such as degree completion with an emphasis on nontraditional students. He also examined earnings during this period and differentiated between careers in Science/Technology/Engineering/Math (STEM), Healthcare, and Other (unrelated to STEM or Healthcare) academic disciplines. Achievement by race and ethnicity is also

reported. Kelly found Kentucky to be one of the most improved postsecondary

educational systems in the nation, especially among nontraditional students.

Government Sources. Jennifer Cheeseman Day and Eric Newburger's *The Big

Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings* was

published by United States Census Bureau in 2002. This study created a method of

measurement for added value that a student achieves after completing an education

credential at the high school or college level. The study used synthetic estimates, which

are described as estimates of work-life earnings for a 40-year range of employment.

Using information from only the month of March with the 1998, 1999, and 2000 editions

of the Current Population Survey, the authors measured earnings as well as the

percentage of full-time employment by level of educational attainment and differences in

the results based on sex and age. From a national perspective, this study concluded that,

for the period of time studied, people in the United States are more educated when

compared to previous studies, that education results in higher earnings, and that education

is worth the investment of time and expense based on the return.

The second government source related to the topic is the *Kentucky Occupational

Outlook to 2018: A Statewide Analysis of Wages, Employment, Growth and Training*,

which was developed by Kentucky's Education and Workforce Development Cabinet in

2010. Written by Ron Crouch and Thomas Bowell, this report focused on employment

opportunities for 2008-2018. As in the sources previously mentioned, growth in STEM

and Healthcare occupations was expected.

Business Sources. The Kentucky Chamber of Commerce commissioned the *2011

Progress Report on Postsecondary Education*. While educational attainment in higher

education is included, the report also examined high school preparation for postsecondary education and found Kentucky's K-12 system lacking in comparison to the rest of the United States. A history of increases in tuition rates by postsecondary institutions was also detailed.

Lastly, the United States Chamber of Commerce's *Leaders & Laggards* report in 2012 raised concerns about the United States' declining higher education system as compared to other countries. In addition to looking at postsecondary education nationally, the report also contained a state-by-state outlook. The Kentucky section gives the Commonwealth a mixed letter grade based on the categories of *Student Access & Success*, *Efficiency & Cost-Effectiveness*, *Meeting Labor Market Demand*, *Transparency & Accountability*, *Policy Environment*, and *Innovation*. Four-year and two-year institutions are graded separately. In most cases, the two-year institutions outperformed the four-year institutions in these categories, based on the grades in this report.

Statement of the Problem

While some sources suggest that education in Kentucky is improving, the United States Chamber of Commerce continues to give Kentucky's post-K-12 education lower than average grades for categories such as *Meeting Labor Market Demand* and *Student Access and Success* (News release, 2012; United States Chamber of Commerce, 2012). It is important that most of these sources do differentiate between two- and four-year degree programs and explain that better results are being found within the two-year programs. These lower than average grades make for greater challenges for low-skill adults who have either a high school diploma or less education, as finding and keeping

employment for them will only become more difficult in the future. This study, a longitudinal data analysis of these students that includes information about their level of achievement educationally and their level of success with employment, will show whether or not the community and vocational institutions are correcting this educational shortfall. Given the importance that elected leaders and others place upon improving postsecondary education for nontraditional students, there are clear policy implications related to the level of success of these educational programs.

Research Questions

In comparing the data on the workforce of Kentucky and the low-skilled 25 to 64-year-old demographic in question, the following research questions guided the study:

1. Are there any significant differences between the type of educational credential program (diploma, certificate, associate degree) of nontraditional students and their median income?

2. Are there any significant differences over time between the educational attainment of nontraditional students and their median income?

Significance of the Study

With similar research conducted in Washington and West Virginia, this analysis in Kentucky gives a comparison to the previous work. With this comparison, future researchers may glean an understanding of whether these issues affecting workforce development are unique to individual states or are reflected on a national scale (Prince & Jenkins, 2005; Perry, 2012). Moreover, if state and federal governments are heavily

investing in community and vocational education, then there needs to be a demonstrated return on this investment of public funds for the student, the potential employer, and the taxpayer. By going beyond the achievement of an educational credential and understanding the connection to a better workforce in Kentucky, this study not only informs the individual that such educational pursuit is worthwhile, but also allows every Kentuckian to understand the benefits of an improved workforce that can maintain current employers as well as attract new employment opportunities to Kentucky.

Operational Definitions

Educational Attainment: An academic certificate, credential, or degree that is earned with the completion of an educational program.

KCTCS: The Kentucky Community and Technical College System (KCTCS), the statewide community college system that includes 16 individual colleges (KCTCS System, 2007).

Nontraditional Student: An individual who is pursuing education, but not immediately following his or her secondary school experience due to some interruption between finishing high school and matriculating to some form of higher education.

Methods

This study is quantitative in nature. Using a longitudinal study, data were analyzed from the Kentucky Center for Education and Workforce Statistics (KCEWS).

The timeframe of the data analyzed was from the academic years of 2006-2007, 2007-2008, and 2008-2009. Although no individual student information was used, KCEWS did provide detailed aggregate information on median student income after graduation by quarter and educational credential obtainment of students through KCTCS programs.

Limitations

The research and analysis of this study pertains only to Kentucky and the impact of KCTCS's programs on the Commonwealth's workforce of nontraditional students. It is not designed to identify why these nontraditional students failed to follow traditional educational paths. Additional limitations include:

- This study does not address economic factors that would increase or decrease the success rate in increasing the educational attainment of Kentucky's workforce.

- This study only reviewed data involving 25- to 64-year old students and did not review any data for traditional college students who are 18 to 24 years of age.

- If a nontraditional community college student lived in a state other than Kentucky after graduation, this student's information would not have been included in the study.

- Additional education beyond the KCTCS was not considered as a factor in possible earning or employment stability.

Summary

In order for postsecondary education to transform the lives of nontraditional students for their financial benefit and for the improvement of Kentucky's workforce, it is critical that these results be measured for effectiveness and compared to the results of other states with similar programs and challenges. There is an opportunity for future studies to compare Kentucky's system to the systems studied in Washington and West Virginia. Beyond these three states, this study can be of benefit to other state systems in reviewing their level of success by comparison, in addition to offering further opportunities for scholarship by conducting similar research and analysis in the remaining states.

CHAPTER TWO: REVIEW OF THE LITERATURE

Since 1901, Community and Technical Colleges (CTCs) have provided an education to their students that, in many cases, would not have been available from other types of institutions. As one author points out, it is a choice "not between the community college and a senior residential institution; it is between the community college and nothing" (Ayers, 2010, p.1). With 90% of Americans living within a 25-mile radius of one of the country's 1,269 community colleges, this type of postsecondary education reaches a larger and more diverse audience than any of its counterparts (Ayers, 2010). This nationwide scope also allows CTCs to serve as conduits to four-year degree programs, as nearly half of all undergraduates in the United States are also enrolled in CTCs (AACC Fast Facts, 2013).

Due to the proliferation of CTCs across the United States, the number of students educated by CTCs is equally significant (AACC past to present, 2013). Although the United States is now a more educated country than at any time in its history, this increase in education is best revealed within the classrooms of CTCs (Carnevale & Desrochers, 2003). In 2009, eight million students took classes for credit from CTCs, which is an increase of more than 17% from 2007. The American Association of Community Colleges (AACC) attributes this increase to several factors, including the weak economy during the same period. By serving students who tend to be nontraditional, low-income, members of a minority, or some combination of these factors, CTCs have positioned themselves to be more welcoming than other postsecondary institutions. Although the literature would suggest that CTCs have succeeded in bringing these high-risk students to their campuses, they have been less successful in graduating these same students or

having them earn educational credentials (Rutschow, Richburg-Hayes, Brock, Orr, Cerna, Cullinan, Kerrigan, Jenkins, Gooden & Martin, 2011).

Beyond their significant footprint in the United States and the broad audience they serve, CTCs also face a changing mission as it relates to their existence. Since 2004, direction regarding CTCs and their mission has come from the Department of Labor instead of their former directing agency, the Department of Education (LexisNexis, 2012). The rationale for this change by President Clinton's administration was to have a greater focus on the economic benefits provided by a CTC education. Beyond the obvious benefit to the student in earning an education that would hopefully provide a livelihood as well as an increase in income and stability, the benefit to workforce development was also considered to be an important aspect of CTCs. Although CTCs had always been considered job training institutions, especially in American popular culture, professor of higher education at the University of North Carolina at Greensboro David Ayers warns that too much control is being placed in corporate boardrooms and suggests that the local community be the arbiter of the educational priorities of CTCs. Ayers believes that CTCs should be less concerned about supplying employers with better employees and more connected to the needs and interests of their students. Beyond workforce development, Ayers believes that the history of CTC education connects to a public good because when "one American learned, all benefited" (Ayers, 2010, p. 2). He expands this belief in public good to include the development of future leaders within a community who can address local issues such as water quality and malnutrition, while also creating a more informed and engaged public that can think critically. Although his position is in contrast with multiple federal administrations and corporate supporters of CTCs, Ayers expresses

concern that the CTC student is seen as nothing more than a means to an end wherein the higher-risk student becomes part of an increasingly educated society, but also becomes a more educated workforce. To Ayers, CTCs cannot simply educate students "to take their place in a global society shaped by corporate interests" (Ayers, 2010, p.3).

Another potential conflict similar to the needs of the individual student versus the need for an educated workforce can be found in the history of CTCs. The rapid growth of CTCs during the past one hundred years started within local school districts or universities themselves. As shown in Figure 1, the number of CTCs in the United States has increased every year since 1901 (Phillippe & Patton, 2005).
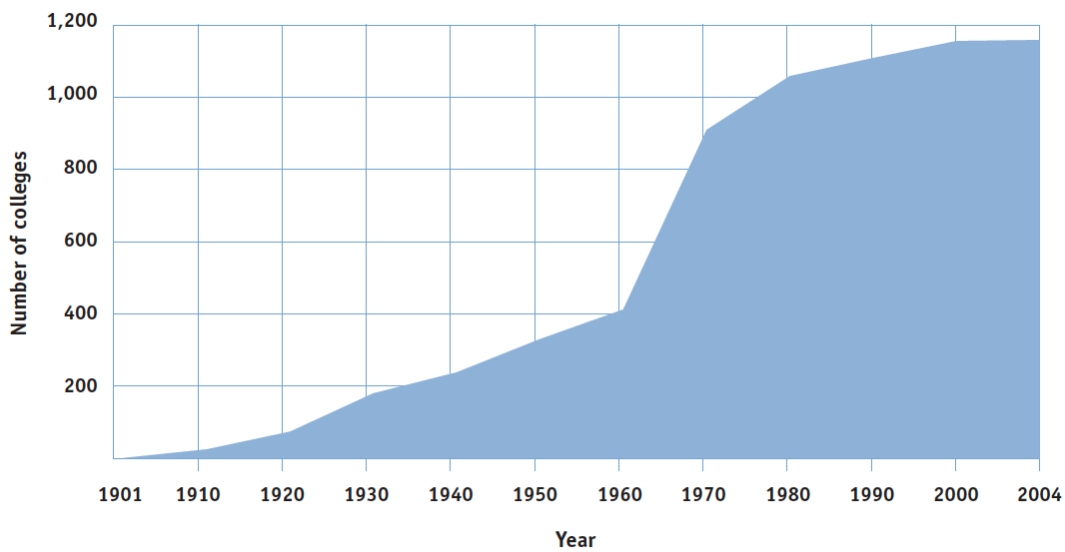
Figure 1. *Number of community colleges in the United States, 1901-2004.*

After the Morrill Act of 1862 granted that all United States citizens should have access to higher education, there eventually was a need to combine liberal education and vocational training for a number of reasons, such as a growing population, a lack of seats within traditional higher education institutions, and a lack of trained workers for an

increasingly technical industrial base (Phillipe & Patton, 2005). In 1901, Joliet Junior College was established and is considered to be the first American community college. Located on the south side of Chicago and constructed from an expanded high school, it was established to serve first-generation college students who could not afford to attend a traditional four-year institution (Wechsler, Goodchild & Eisenmann, 2008).

Throughout the twentieth century, many CTCs were established across the United States for the same reason as Joliet Junior College, in addition to other reasons. Although the high school-based version like Joliet was the most successful, other versions included teacher institutes, vocational education centers, and citizenship schools. In some cases, the precursor to the modern CTC was an independent private school like Vincennes University in Indiana that created a CTC similar to traditional four-year higher education, but with smaller classes and better student-faculty ratios (AACC Historical information, 2013).

Other socioeconomic changes in the United States also contributed to the need for more CTCs. Although the Depression of the 1930s made additional job training opportunities a way to ease widespread unemployment, the 1948 Truman Commission suggested that a network of CTCs could better serve local needs and give greater access to the G.I. Bill in the United States during the post-World War II era. The Truman Commission also suggested that an expanded system of higher education would serve to create a more democratic society and was clearly a public good (AACC past to present, 2013; Ayers, 2010).

As mentioned previously, the growth of CTCs was not without conflict that often related directly to the mission of CTCs. Pederson (Wechsler et al., 2008) suggests that

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there is a clear distinction between two different schools of thought related to the mission of CTCs. One group of CTC scholars, labeled by Pederson as "Critics," suggests that the true of mission of CTCs is "the diversion of socially and economically disadvantaged students away from the baccalaureate and into vocational programs, leading to careers of inferior status and limited opportunity" (Wechsler et al., 2008, p. 565).   In opposition to this damaging position is another group of scholars, whom Pederson labels as "Academics," who describe CTCs as "a democratizer of access and…the principal means by which higher education has been brought within the reach of virtually all Americans" (Wechsler et al., 2008, p. 566). Pederson attempts to make sense of this ongoing conflict by suggesting that each individual CTC is the product of its origins and leadership. Like Ayers, Pederson is concerned that without the traditional input of faculty and other contributors through shared governance, the direction of a local CTC will be decided by the administration, its board, and other community leaders who possess influence. To varying degrees, the control of a CTC is found in its connection to a high school or university, or to the community where it resides, or some combination of control. Pederson suggests that it is often by necessity and not by design that these relationships between CTCs and other organizations help to shape the mission of each CTC. Although accreditation and other academic forces attempt to standardize CTC education, there is an aspect of these institutions that is uniquely independent based on what Pederson calls "the social and economic interests of the sponsoring community" (Wechsler et al, 2008, p. 566).

Beyond these conflicts, CTCs also face other challenges that, to some degree, mirror those challenges faced by four-year institutions. In the Fourth Edition of the *National Profile of Community Colleges*, six national challenges are listed:

1. Limited funding in combination with substantial enrollment growth

2. Increasing demand for accountability

3. Growing diversity in student body

4. Renewed emphasis on workforce and teacher preparation

5. Constantly changing technology

6. Impending turnover in community college leadership (Phillippe & Patton, 2005, p. 3)

In addition to these six challenges, the *Profile* suggests that the main challenge will be funding a broad range of services to fit the needs of a changing student population when resources are limited, if not shrinking (Phillippe & Patton, 2005).

Several other studies address these challenges, but often from a different perspective. Davis Jenkins of the University of Illinois at Chicago identifies two reasons that CTCs are often unable to adequately create opportunity for disadvantaged students. First, Jenkins explains that there is a disconnect at some CTCs between the remedial and occupational programs when compared with the college credit and academic programs. As CTCs often provide English as a Second Language programs and Air Conditioning and Refrigeration training, they also are responsible for educating a portion of their students in the Fine Arts and preparing other students to pursue a four-year program after completing the CTC's two-year program. Second, some CTCs fail students not only

because they are serving a student population that is disadvantaged and thus more expensive to educate, but also because the CTCs are often poorly funded (Jenkins, 2003).

With these many challenges, how do policymakers and other interested people compare CTCs and their performance? This comparison can be difficult to make, especially when comparing CTCs located in different states. Different metrics for success have been commonplace, but attempts have been made to standardize this information nationally to allow better comparisons. In 2010, the National Governors Association published a study that stressed the need for such standardization of terminology and offered metrics to accomplish this task. CTCs featured prominently in this study, as interest in the benefits of CTC education was well established. The end goal of the study was that, in time, there would be a shared collection of data that could be used to improve all postsecondary education with an emphasis upon CTC education (Reyna, 2010).

Given the different expectations for CTCs that range from creating a more egalitarian society to workforce development, the metrics used to gauge the success of a CTC are varied based on the expectations of the institution. A review of the literature reveals that several different metrics exist, allowing public officials, educators, accreditors, donors, community members, current and prospective students, and others to measure the success of an individual CTC or state CTC system (Bailey, Calcagno, Jenkins, Kienzl & Leinbach, 2005). Some of those metrics and the information they provide are described below.

Graduation rates. This common metric can measure the percentage of students who complete an education credential, or the overall production of education credentials by the CTC, or both (Kentucky 2011, 2011).

Licensure and certification passage rate. This straightforward metric indicates how CTC students fare on federal and state tests that are necessary to work in specific fields. It provides data that compares a specific program at one CTC with the same program at another CTC (KCTCS, 2013).

Student, faculty and staff diversity ratios. As CTCs endeavor to serve underserved populations, they must develop a multicultural environment that it is often compared to the environment around the CTC. A CTC can compare its diversity in sex, race, origin, and other criteria to see how it compares to its location (Kentucky 2011, 2011).

Additional hours needed to complete certificates and associate's degrees. When a student must take more hours than necessary to graduate with his or her educational credential, the cost to the institution is far greater, the benefit of educational attainment for the student is delayed, and the cost of tuition for the student increases as well (Kentucky 2011, 2011).

Wage index. This metric identifies CTC students who have earned an educational credential and who increase their earning by a specified amount in the second quarter after graduation. In some cases, emphasis is made on high wage/high demand occupations where the student should find employment and additional income quickly (Kentucky 2011, 2011).

Degree completion by state. Although other secondary institutions would also contribute to this metric, CTCs are a critical component of this measurement as they are responsible for reaching student populations that may not be able to attend any other postsecondary education for a variety of reasons. In Kentucky, which is the focus of this study, 39% of residents have a college degree. This low number is a cause for concern, as

researchers suggest that state and national college degree attainment should be 60% by 2035 to meet the expected job market. Kentucky has made progress towards this goal, but it has a long way to go (Powell, 2013). The figure below shows the total population of Kentuckians who are 25 years or older along with their percentages of educational attainment as reported by the 2012 American Community Survey (United States Census, 2012).

Population 25 years and over	2,935,461
Less than 9th grade	7.0%
9th to 12th grade, no diploma	9.3%
High school graduate (includes equivalency)	34.1%
Some college, no degree	20.7%
Associate's degree	7.2%
Bachelor's degree	12.9%
Graduate or professional degree	8.9%

Figure 2. *Kentucky Education Attainment 25+ years of age, 2007-2011 estimates*.

Kentucky Community and Technical College System (KCTCS)

Two recent studies have used similar methods to examine the postsecondary education of nontraditional students 25-64 years of age in other states. David Prince of the Washington State Board for Community and Technical Colleges and Davis Jenkins of the Community College Research Center conducted this research in Washington State, and Carol Perry of Marshall University did a similar study in West Virginia (Prince & Jenkins, 2005; Perry, 2012). This study has been created to examine similar issues in the Commonwealth of Kentucky.

Although Kentucky's CTCs have performed well by several metrics and improvements have also been made to the state's workforce, Kentucky's higher education

attainment rate remains below the national average. In 2011, 31% of Kentucky's 2.3 million working-age adults (25-64 years old) had earned a two- or four-year college degree. By comparison, the national average is 39% (Powell, 2013). Since the establishment of the Kentucky Community and Technical College System (KCTCS) in 1997 and with the leadership of founding President and Chief Executive Officer Michael McCall, KCTCS has merged 28 CTCs into the existing 16 CTC system, grown enrollment to represent more than 50% of Kentucky's postsecondary education, and added more than 600 credit programs that result in certificates, diplomas, or associate degrees. Beyond the remaining 16 CTCs, KCTCS also manages 65 campuses across the state, as shown in Figure 3. (KCTCS, 2013, p. 39).
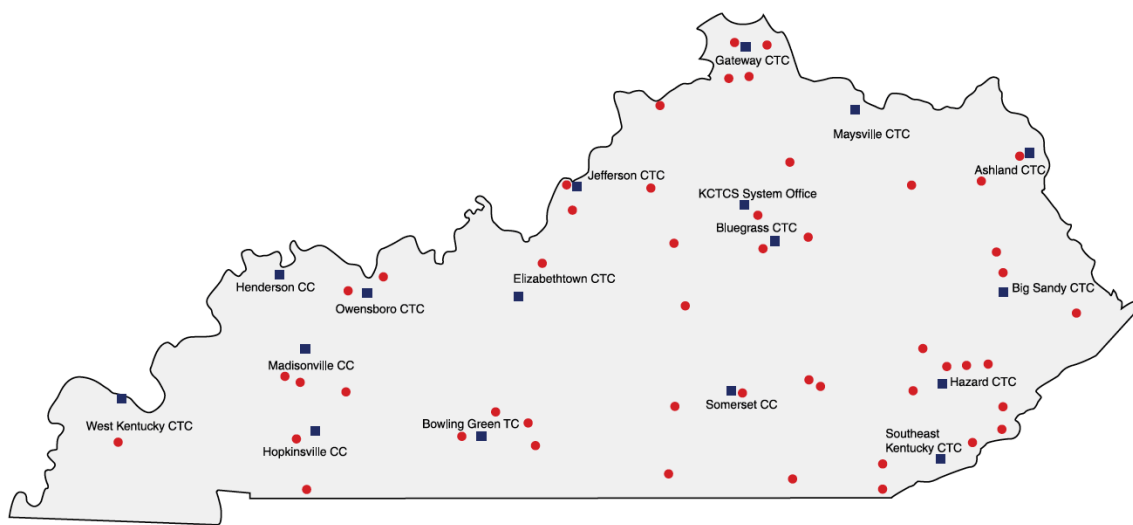
Figure 3. *KCTCS main and satellite campus locations*.

KCTCS has also been recognized as having a "seamless transition" between CTC attendance and pursuing a four-year degree in Kentucky, which is not common nationwide. KCTCS has explicit statewide policies so students will find this transition easy to accomplish. Aspects of these policies include clear guidelines for assessment, dual enrollment opportunities, and the sharing of data and technology (Chisman, 2004, p.

i).

Funding for KCTCS comes from several different categories. First, student tuition (25% of total funding), either paid by the student directly or from another source, is a revenue stream tied to enrollment and tuition rates. Closely connected to tuition is student financial aid (21%) that allows lower-income students to take advantage of CTC education. A decreasing revenue stream, in most cases, is state appropriation (34%), which has dwindled as state budgets have decreased. Last is revenue considered in a miscellaneous category (20%), which includes private donations, federal grants, and other revenue unrelated to the first three categories (KCTCS System Profile, 2007).

Scrutiny of KCTCS

One source of scrutiny of KCTCS originated with Kentucky's General Assembly. At the direction of the General Assembly's Program Review and Investigations Committee, the Legislative Research Commission (LRC) conducted a study of KCTCS' amount of spending for marketing, lobbying, and administration expenses. LRC not only made comparisons to similar state CTC systems in Colorado, Louisiana, and Indiana, but also to public four-year institutions in Kentucky. Recognizing that these comparisons were not direct comparisons, this study nevertheless gave legislators a sense of how KCTCS' spending compared to other states and their in-state counterparts (Upton, Littleton & Myatt, 2011). The chart below shows lobbying expenses of KCTCS from 2006-2010 and compares them to Kentucky's public four-year institutions and the other somewhat similar state CTC systems (Upton et al., 2011, p. 4).

Kentucky Institution	2006	2007	2008	2009	2010	Total
KCTCS	$160,000	$160,000	$160,000	$160,000	$160,000	$800,000
Eastern Kentucky University	—	—	—	—	—	—
Kentucky State University	—	—	—	—	—	—
Morehead State University	88,000	74,006	60,000	—	—	222,006
Murray State University	20,000	80,000	80,000	80,000	80,000	340,000
Northern Kentucky University	80,000	80,000	80,000	80,000	—	320,000
University of Kentucky	—	—	243,000	325,000	312,000	880,000
University of Louisville	160,000	160,000	160,000	160,000	170,000	810,000
Western Kentucky University	80,000	80,000	160,000	20,000	—	340,000
Community College System						
Colorado	10,400	10,000	10,000	25,000	—	55,400
Louisiana	—	—	—	—	—	—
Indiana	60,000	142,000	70,000	70,000	40,000	382,000

— means that no amount was reported for the entity.

Figure 4. *2006-2010 lobbying expenses for KCTCS, Kentucky's four-year public institutions, and other state CTC systems.*

Co-chair of the Program Review and Investigations Committee, Kentucky Representative Fitz Steele, explained that the cause of the study related to actions that occurred during the 2011 legislative session. "We received several comments from legislators who noticed a significant increase in attendance by KCTCS administrators, staff, faculty, and students during the 2011 legislative session," Steele said. "Rather than have one day during the session where KCTCS would be visible at the Capitol, it seemed each of the sixteen colleges were visiting independently and joined by both administrators and lobbyists representing KCTCS. A second concern was a large amount of what appeared to be costly gifts for legislators that ranged from expensive coffee cups to other giveaways. One state senator collected these items on a table in his office to demonstrate the amount of items being received by legislators. After this increase in both attendance and promotional materials by a public institution, we thought it was necessary to learn more information about the amount of money being spent on these actions as

well as what type of funds – public, private, or tuition dollars – were being used for these purposes" (F. Steele, personal communication, Nov. 10, 2013).

In their report, the LRC made two recommendations to the Program Review and Investigations Committee for their consideration. The first recommendation was to prohibit the practice of using state funds for lobbying, which would require KCTCS and other public institutions of higher learning to use private funds for these actions. The LRC's second recommendation was to have the Council of Postsecondary Education collect and report any cost information that would create a better understanding of how much was being spent by public institutions in marketing, lobbying, and administration expenses, as well as the type of funds being used (Upton et al., 2013). "While the LRC's report was reviewed by our committee, neither of these recommendations were acted upon," said Steele. "After LRC's report, the number of visits and the giveaways to legislators by KCTCS decreased greatly" (F. Steele, personal communication, Nov. 10, 2013).

Additional scrutiny of KCTCS in the LRC report to the Program Review and Investigations Committee focused upon the total compensation of KCTCS' President and Chief Executive Officer, Dr. Michael McCall. In addition to the LRC report, Kentucky media also scrutinized McCall's compensation after he was omitted from a statewide news article listing the salaries of Kentucky's leaders of institutions of higher learning. This omission was noticed after *The Chronicle of Higher Education* published that in 2006-2007, McCall received approximately $611,000 when his base salary was $286,000. It was also noted that his initial salary when hired in 1998 to be President and Chief Executive Officer of KCTCS was $180,000 (Stinnett, 2007).

Although the LRC report was critical of McCall's salary, it also contained

information about the success of KCTCS during McCall's leadership and explained the

level of success of KCTCS in increasing enrollment as compared to other Kentucky

postsecondary institutions, as shown in Figure 5 (Upton et al., 2011, p. 4).

Kentucky Institution	2006	2007	2008	2009	2010	% Change 2006-2010
KCTCS	86,475	92,828	89,942	100,348	106,664	23.3%
Eastern Kentucky University	13,623	13,659	13,839	13,991	14,396	5.7
Kentucky State University	2,341	2,510	2,497	2,638	2,606	11.3
Morehead State University	7,515	7,625	7,487	7,550	7,399	-1.5
Murray State University	8,607	8,361	8,179	8,249	8,429	-2.1
Northern Kentucky University	12,668	12,725	13,030	13,206	13,517	6.7
University of Kentucky	19,328	18,830	18,988	19,217	19,988	3.4
University of Louisville	15,103	15,125	15,495	15,619	15,818	4.7
Western Kentucky University	16,067	16,508	16,966	17,645	17,827	11.0

Figure 5. *Enrollment in Kentucky's public postsecondary institutions, 2006-2010.*

Also highlighted in the report was the fact that McCall has overseen the transition of the

former collection of individual CTCs into the combined KCTCS (Upton et al., 2011). As

explained in his official biography, McCall is responsible for "an annual operating budget

of $920 million, and touches the lives of more than 500,000 citizens" (KCTCS, 2013).

McCall is also credited with leading enrollment increases at all sixteen CTCs within the

KCTCS (Upton et al., 2011, p. 5).

College	2006	2007	2008	2009	2010	% Change 2006-2010
Ashland	4,140	4,758	4,078	4,493	4,762	15.0%
Big Sandy	4,637	4,866	4,711	5,048	5,360	15.6
Bluegrass	11,527	11,617	12,146	13,378	14,183	23.0
Bowling Green	3,568	5,025	3,971	4,899	5,186	45.3
Elizabethtown	4,983	5,515	5,762	6,915	7,890	58.3
Gateway	3,189	3,130	3,477	4,206	4,799	50.5
Hazard	3,970	4,458	4,071	4,714	4,796	20.8
Henderson	2,113	2,053	1,948	2,206	2,227	5.4
Hopkinsville	3,353	3,428	3,235	3,755	3,867	15.3
Jefferson	14,710	15,478	14,412	14,992	15,259	3.7
Madisonville	3,997	4,364	4,421	4,597	4,883	22.2
Maysville	3,358	3,635	3,479	4,128	4,518	34.5
Owensboro	5,188	5,439	5,585	6,328	7,061	36.1
Somerset	6,319	7,113	7,175	8,201	9,262	46.6
Southeast Kentucky	4,580	4,849	4,864	4,959	5,189	13.3
West Kentucky	6,843	7,100	6,607	7,529	7,422	8.5
Total	86,475	92,828	89,942	100,348	106,664	23.3%

Figure 6. *Enrollment by Kentucky CTC, 2006-2010.*

Although criticized for his compensation, McCall remains a popular leader with his superiors, as his November 15, 2013, retirement announcement, which will be effective January 15, 2015, included laudatory quotes from current and former Governors of Kentucky, past and present chairs of KCTCS' board, and the head of the American Association of Community Colleges, where McCall also serves as a board member (News release, 2013).

Besides expenditures in promoting KCTCS and presidential compensation, a third issue of scrutiny involving KCTCS related to eliminating the tenure system for future KCTCS faculty. The issue publicly surfaced at the December 4, 2008, KCTCS board of regents meeting, but had been discussed previously in private. A fifteen-page draft policy was shared with the board that, if adopted, would have all future faculty hired by KCTCS employed through a one- to four-year individual contract and serve as "at will" employees. The rationale by the administration was that this new policy would respond

better to the "rapid shifts in the job market, emerging new job markets, and state budget cuts which underscored the need for flexibility" (Alessi, 2008, p. 1).

Although KCTCS President McCall's statements about the draft policy suggested he was leaving this issue as a board decision, the faculty and their union representation responded negatively and expressed concerns regarding the quality of faculty combined with the inability to attract quality candidates, especially in rural areas (Alessi, 2008). As one faculty member wrote in *The Louisville Courier-Journal*, KCTCS is "an oppressive, expensive bureaucracy that treats faculty like bad children." The faculty member draws McCall into the issue by writing that if this policy was adopted, "The highest-paid community college system president in the nation will preside over some of the lowest-paid temporary or adjunct faculty in the nation. Is this good for our students or our state?" (Ballard, 2009).

After a mandatory three-month waiting period for such actions, the draft policy ending tenure for new faculty was adopted. The decision was criticized by Kentucky's Attorney General, members of the General Assembly, AFL-CIO, American Federation of Teachers, Kentucky Faculty and Staff Alliance, and numerous KCTCS faculty members, many of whom had already voiced their concerns during the three-month period prior to the vote (Lederman, 2009).

Competition Between Public Four-Year Institutions and KCTCS

A competitive aspect of the literature related to CTCs that became apparent was a constant comparison to four-year degree programs. These comparisons usually highlighted CTCs' service to populations that were underserved by four-year degree

programs, a more adaptive curriculum that better serves CTCs' students and potential

employers, and a more affordable education. One example would be the AACC's *2013*

Community College Fast Facts that compares the average annual tuition of $3,130 for a

CTC to $8,660 for a similar four-year college (AACC Fast Facts, 2013). Another

comparison in the same study involves CTCs often failing to create opportunities for

disadvantaged students. This study contains a chart that compares six-year completion

rates between two-year and four-year public colleges by race, reproduced here in Figure 7

(Jenkins, 2003).

| | Six-Year Completion Rate* | |
Race/Ethnicity	Students who began at Public two-year colleges	Students who began at Public four-year colleges
White, non-Hispanic	28.4%	60.5%
Black, non-Hispanic	10.8%	42.5%
Hispanic	21.4%	45.3%
Asian or Pacific Islander	29.7%	67.0%
All Students	26.0%	57.4%

* Completion rate is the percentage of first-time post-secondary students in 1995-96 who
earned an associate or bachelor's degree from any institution by June 2001.

Figure 7. *Six-year completion rate of two- and four-year colleges by race, 1995-1996.*

In Kentucky, as in most every state, CTCs are competing with other public

postsecondary institutions for new and returning students, except for those incoming

students whose educational backgrounds allow them to enter KCTCS, but would prevent

them by admission standards to enter other public postsecondary institutions. This

competition in Kentucky is seen throughout the LRC's report to the Program Review and

Investigations Committee. The comparisons made in the report between KCTCS and

other public postsecondary institutions included enrollment, marketing, presidential

compensation, and lobbying efforts. With regard to marketing, the need to create brand

awareness with potential students was highlighted, but also detailed in the report was KCTCS' purchasing of sponsorship opportunities at both University of Kentucky and University of Louisville athletic events, which are two of the public institutions that CTCs are competing against for student enrollment in some cases. While KCTCS would also be competing against private postsecondary institutions for student enrollment, private institutions are not listed in the LRC report, most likely because public funds would not have been used for similar actions by the private institutions (Upton et al., 2011).

Conclusion

Much like other educational institutions in the United States, CTCs face multiple challenges related to funding and a changing student population during a time of budget shortfalls and a struggling economy. CTCs are also charged to be a change agent in both the development of the United States' workforce and in creating access to better opportunities for their students.

CTCs remain a popular choice for postsecondary education, not only with students, but also with political leaders and the public. A 2004 poll of 600 adults showed that people believe that CTCs are institutions of higher education that create opportunities for their students (Liebowitz & Taylor, 2004). CTCs will be expected to meet numerous challenges and high expectations for improving not only the lives of students but also the workforce of the United States and to meet these challenges and expectations in a poor economy where both public and private sector funds may be decreasing. With this

support and scrutiny, the need for a clear understanding of their success needs to be

readily available.

CHAPTER THREE: RESEARCH METHODS

Chapter three presents the methods used to analyze existing data to measure the impact of postsecondary education on the income and educational attainment of nontraditional students in the Kentucky Community and Technical College System (KCTCS), specifically those who completed a degree program and earned an educational credential. Data for this study was collected from the Kentucky Center for Education and Workforce Statistics.

Research Design

This research design is causal comparative. This means that the research is *ex post facto* – it looks at what happens in the data after the fact. The current study does look at multiple years, but in essence, this research is archival. Causal comparative is non-experimental and the researcher does not manipulate the independent variables and there is no random assignment to groups (Johnson, 2001). Instead, the researcher analyzes and interprets existing, previously collected data (Gay & Airasian, 2000). This study uses pre-existing, archival Student Unit Record (SUR) data for all variables (Gay & Airasian, 2000; Jenkins, 2008). The SUR data created a cohort that was analyzed for a three-year period for educational attainment and annual income.

Population

Purposive sampling was used to obtain the participation data needed for this study. The participants for this study included adults 25 to 64 years of age who were first time KCTCS students who initially enrolled in either full-time or part-time coursework during

the academic years of 2006-2007, 2007-2008, and 2008-2009. Using these criteria, a population of students was selected. This population was analyzed and a cohort of students who earned an educational credential was identified for each academic year. The median income of the students within these three cohorts was tracked for a four-year period that was divided into quarters.

Data Collection

Data for the variables were secured from the Kentucky Center for Education and Workforce Statistics (KCEWS). KCEWS maintains student data, student earnings, and information related to Kentucky's workforce. This data was provided following a written request by the researcher to KCEWS. In addition to providing the data, the researcher was exempted from review by the Institutional Research Board at Marshall University and the Human Subjects Research Board of KCTCS, as no individual student data was shared by KCEWS.

The workforce data provided by KCEWS was not self-reported by students, but submitted by employers in Kentucky. All employers, other than independent contractors and sole proprietors, are required to submit quarterly contribution and wage reports to the Kentucky Labor Cabinet, which shares this information with KCEWS (K. Akers, personal communication, Jan. 27, 2014). The wage data shared with KCEWS was the source for the wage variables that were used in the economic impact aspect of this study.

KCEWS identified the student files that fit the researcher's criteria, which created three cohorts of adults 25 to 64 years of age, both full-time and part-time students who were attending KCTCS for the first time with a minimum high school diploma and

initially enrolled during the academic years of 2006-2007, 2007-2008, and 2008-2009.
The files were cross-matched with the workforce data that were also provided by
KCEWS.

KCEWS' files include data fields that identify the students' earnings by quarter,
year, match (employed) wages, Classification of Instructional Program (CIP) code, and
type of degree earned. From these files, KCEWS was able to construct a wage table for
the cohorts during the academic year of 2006-2007, 2007-2008, and 2008-2009 (K. Akers,
personal communication, Jan. 27, 2014). All individual student identifiers were deleted
from the requested data. Privacy was not an issue since no individuals were identified.

The data files were transferred to SPSS data fields for statistical analysis and
were analyzed only for the purposes of this research.

Data Analysis

This study used both descriptive statistics and inferential statistics to analyze the
data and address the research questions. Depending on the research questions and the data,
analysis of variance, and repeated measures analysis of variance were used. In this study,
educational attainment is the dependent variable. However, educational attainment also
will be an independent variable in predicting income and employment.

Research Questions

In comparing the data on the workforce of Kentucky and the low-skilled 25- to
64-year-old demographic in question, the following research questions guided the study:

1. Are there any significant differences between the type of educational credential program (diploma, certificate, associate degree) of nontraditional students and their median income?

2. Are there any significant differences over time between the educational attainment of nontraditional students and their median income?

The cohort of students used in this study represented all sixteen community and technical colleges in Kentucky. However, the diagnoses and development of strategies for improving student success should be left to the administrators, faculty, and staff of KCTCS (Jenkins, 2008; Leinbach & Jenkins, 2008).

Null Hypothesis

In studies of this type, it is common to include null hypotheses:

1. There are no significant differences between the type of educational credential program (diploma, certificate, associate degree) of nontraditional students and their median income.

2. There are no significant differences over time between the educational attainment of nontraditional students and their median income.

Summary

This study of educational attainment and its impact, if any, on the earnings of nontraditional students who have enrolled in Kentucky's community and technical colleges analyzed the data using a non-experimental, causal comparative design. Data were collected from KCEWS databases for all variables. Both descriptive statistics and

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regression analysis were utilized for analyzing the data using IBM SPSS Statistics 20.

In order for postsecondary education to transform the lives of nontraditional students for their financial benefit and for the improvement of Kentucky's workforce, it is critical that these results be measured for effectiveness and compared with the results of other states with similar programs and challenges. There is an opportunity for this study to not only measure Kentucky's success, but also to compare that success to the systems studied previously in Washington and West Virginia. Beyond these three states, this study can be of benefit to other state systems in reviewing their level of success by comparison, in addition to offering further opportunities for scholarship by conducting similar research and analysis in the remaining states.

CHAPTER FOUR: DATA ANALYSIS AND RESULTS

The purpose of this study was to examine the effects of the educational attainment of nontraditional students who attended the Kentucky Community and Technical College System (KCTCS) in a specific time period with either a full-time or part-time enrollment. The earning of an educational credential was compared to the students' average income and stability of employment. Similar to previously conducted surveys that examined the community and technical systems in Washington State and West Virginia, this study examines whether KCTCS is increasing the earning potential of its graduates and improving the workforce of the Commonwealth of Kentucky.

Data Collection

Data for this study were obtained from the Kentucky Center for Education and Workforce Statistics (KCEWS). Following a written request by the researcher, KCEWS provided the data after the study was exempted by review from the Institutional Review Boards of Marshall University and KCTCS, as well as the legal department of KCEWS. See Appendices A and B for a copy of the exemption letters.

The parameters of the requested data were shared in writing with KCEWS. The data was received in three Excel spreadsheets. Each spreadsheet contained information for one cohort in this study: Cohort 1 - 2006-2007, Cohort 2 - 2007-2008, and Cohort 3 - 2008-2009. Each cohort was separately tracked for four years with median income data reported on a quarterly basis. Therefore, Cohort 1 was followed for four academic years, as were the other two cohorts. This data tracking produced fourteen different quarterly measurements of median income for each of the above three cohorts.

The type of educational credential earned by the student – Associate Degree, Certificate, or Diploma – was also included for each of these cohorts. Within the educational credential, educational programs were also divided by their Classification of Instructional Program (CIP) code. This data was then analyzed with the quarterly earnings of these nontraditional students as they graduated from KCTCS. No information was requested except for information related to nontraditional KCTCS students of 25 to 64 years of age, so there was no need to cull unrelated student information.

Research Questions

1. Are there any significant differences between the type of educational credential program (diploma, certificate, associate degree) of nontraditional students and their median income?

2. Are there any significant differences over time between the educational attainment of nontraditional students and their median income?

Data Analysis

The data received from KCEWS was analyzed using IBM SPSS Statistics 20. There were two basic types of analyses conducted on this data. The first analysis was an analysis of variance of the three credential programs and their effect on median income. (The independent variable was the type of credential program while the dependent variable was median income.) The second analysis tracked median income for all three cohorts over time with three separate repeated measures analysis of variance. (In this

analysis, time serves as the independent variable and median income is the dependent variable.)

Descriptive statistics were also provided for the three student cohorts. The tables containing these descriptive statistics are provided in Appendix C.

Using Analysis of variance (ANOVA), tests were conducted on the three cohorts and their median income levels. In all three cohorts, the results showed no significant differences in median income between the three degree groups in any of the cohorts. The three tables that provide the analysis of variance of the three cohorts can be found in Appendix C.

The next three tables provide repeated measures analysis of variance for the three cohorts.

Table 1

Repeated measures analysis of variance of Cohort 1

	Mean	Std. Deviation	N
N2007q3median	5010.52	1764.106	25
N2007q4median	5655.5600	1724.69333	25
N2008q1median	5708.8800	1937.90033	25
N2008q2median	5916.2000	1693.16257	25
N2008q3median	6106.3600	2086.86383	25
N2008q4median	6357.4400	1941.32908	25
N2009q1median	6134.0800	1709.82016	25
N2009q2median	6445.5600	1682.41595	25
N2009q3median	6311.6800	1791.83971	25
N2009q4median	7000.6800	2014.89743	25
N2010q1median	6419.4400	1672.28195	25
N2010q2median	7004.6000	1877.11791	25
N2010q3median	7025.1600	2229.92081	25
N2010q4median	7445.36	2133.831	25
N2011q1median	6989.20	1904.874	25
n2011q2median	7310.96	2081.162	25

Table 2

Repeated measures analysis of variance of Cohort 2

Median Income	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	5495.708	344.929	4782.169	6209.248
2	6015.333	354.826	5281.319	6749.348
3	5876.500	352.390	5147.526	6605.474
4	5935.500	367.628	5175.004	6695.996
5	5918.625	330.744	5234.429	6602.821
6	6570.875	356.766	5832.848	7308.902
7	6140.500	324.936	5468.319	6812.681
8	6525.875	322.003	5859.761	7191.989
9	6760.083	403.813	5924.732	7595.435
10	7228.500	405.234	6390.209	8066.791
11	6607.250	346.641	5890.168	7324.332
12	7112.333	363.406	6360.571	7864.096
13	7255.292	451.186	6321.942	8188.641
14	7312.958	411.162	6462.406	8163.511
15	7419.292	366.505	6661.118	8177.465
16	7641.125	414.280	6784.122	8498.128

Table 3

Repeated measures analysis of variance of Cohort 3

Median Income	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	5495.708	344.929	4782.169	6209.248
2	6015.333	354.826	5281.319	6749.348
3	5876.500	352.390	5147.526	6605.474
4	5935.500	367.628	5175.004	6695.996
5	5918.625	330.744	5234.429	6602.821
6	6570.875	356.766	5832.848	7308.902
7	6140.500	324.936	5468.319	6812.681

8	6525.875	322.003	5859.761	7191.989
9	6760.083	403.813	5924.732	7595.435
10	7228.500	405.234	6390.209	8066.791
11	6607.250	346.641	5890.168	7324.332
12	7112.333	363.406	6360.571	7864.096
13	7255.292	451.186	6321.942	8188.641
14	7312.958	411.162	6462.406	8163.511
15	7419.292	366.505	6661.118	8177.465
16	7641.125	414.280	6784.122	8498.128

The next three tables use the main repeated analysis of the variance for the three cohorts. The first line of each table uses Pillai's Trace, which is the most common value for the measure of significance. As seen in Tables 7, 8, and 9, the level of significance is well below .05, which demonstrates highly significant increases in the students' income after earning one of the three educational credentials.

Table 4

Multivariate Tests of Cohort 1

Effect		Value	F	Hypothesis df	Error df	Sig.
medianincome	Pillai's Trace	.967	19.339[b]	15.000	10.000	.000
	Wilks' Lambda	.033	19.339[b]	15.000	10.000	.000
	Hotelling's Trace	29.009	19.339[b]	15.000	10.000	.000
	Roy's Largest Root	29.009	19.339[b]	15.000	10.000	.000

Table 5

Multivariate Tests of Cohort 2

Effect		Value	F	Hypothesis df	Error df	Sig.
medianincome	Pillai's Trace	.960	14.403[b]	15.000	9.000	.000
	Wilks' Lambda	.040	14.403[b]	15.000	9.000	.000
	Hotelling's Trace	24.005	14.403[b]	15.000	9.000	.000
	Roy's Largest Root	24.005	14.403[b]	15.000	9.000	.000

Table 6

Multivariate Tests of Cohort 3

Effect		Value	F	Hypothesis df	Error df	Sig.
factor1	Pillai's Trace	.902	5.519[b]	15.000	9.000	.007
	Wilks' Lambda	.098	5.519[b]	15.000	9.000	.007
	Hotelling's Trace	9.199	5.519[b]	15.000	9.000	.007
	Roy's Largest Root	9.199	5.519[b]	15.000	9.000	.007

a. Design: Intercept
 Within Subjects Design: factor1
b. Exact statistic

Research Findings

Research Question 1: Are there any significant differences between the type of educational credential program (diploma, certificate, associate degree) of nontraditional students and their median income?

Based on the repeated measures analysis of variance, there are significant increases over time in their median incomes. In all three cohorts, nontraditional students had significant increases in their incomes during the time that they were enrolled in school. While those increases appear slightly greater in Cohort 3, all three cohorts had a significantly increased median income. Additionally, these increases were common to all of the Classification of Instructional Program (CIP) codes that represent different academic areas of KCTCS.

Research Question 2: Are there any significant differences over time between the educational attainment of nontraditional students and their median income?

During the four years that were analyzed by quarters after the KCTCS student earned an educational credential, median income remained significantly increased during

this period of time. While consistent employment could be suggested by this continued median income, no data was available to demonstrate it.

Summary

With the data from KCEWS, this study was able to clearly identify an increase in median income for nontraditional KCTCS students who earned an educational credential during the defined time period. While establishing that this same credential allowed students to maintain employment was less identifiable, it is possible to suggest there is a relationship as well, but further data collection and examination are needed.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

Summary of Purpose

This study uses a longitudinal data analysis in an attempt to identify a relationship between educational attainment of nontraditional students within the Kentucky Community and Technical College System (KCTCS) and their success with employment as well as their income after earning these credentials. With the ongoing concern of ever-changing job markets and a lower-than-average quality workforce in Kentucky when compared to the rest of the nation, the potential benefits of educational programs by Community and Technical Colleges (CTCs) for both the student and the Commonwealth of Kentucky needs to be examined.

The following questions defined the nature of the research:

1. Are there any significant differences between the type of educational credential program (diploma, certificate, associate degree) of nontraditional students and their median income?

2. Are there any significant differences over time between the educational attainment of nontraditional students and their median income?

Summary of Procedures

Data for this study was collected from the Kentucky Center for Education and Workforce Statistics (KCEWS) in the form of an Excel file with spreadsheets dedicated to the academic years of 2006-2007, 2007-2008, and 2008-2009. This file separated the data in rows by both type of credential – Associate Degree, Certificate, and Diploma – and further separated these groups by Classification of Instructional Program (CIP) code,

which indicates the type of academic program pursued by the student. The columns of the Excel file contained information regarding average student earnings by quarter for the academic years. This information not only gives an indication of earnings as well as any increases in earnings, but it also provides the aspect of ongoing employment following graduation. All of the data obtained was from a cohort of nontraditional, first-time KCTCS students who were 25 to 64 years of age. No individual student information was requested or obtained.

In analyzing and testing the data, a series of tests was used, including descriptive statistics, analysis of variance (ANOVA), and multivariate tests.

Summary of the Findings

The population for the study was 12,590 first-time, nontraditional KCTCS students attending either full-time or part-time, who earned an Associate Degree, Certificate, or Diploma, and who contributed income data through KCEWS. Significant increases in median income were detected in all of the three types of education credential earned, and similar increases were found in every CIP code related to these credentials.

Due to the lack of data related directly to the students' ability to maintain employment after earning their educational credentials, no statistical analysis of this factor was possible, but the significant increases in median incomes do suggest that consistent employment was maintained.

An external factor that needs to be considered with this study is that a major economic downturn occurred during the time period when the data for this study was collected. In spite of this economic downturn, KCTCS students identified for this study

still had significant increases in median income. It would be reasonable to conclude that these increases could have been greater during less turbulent economic times. The results of the study also suggest that the CTC education may still be beneficial even during difficult economic times. These aspects not only leave room for further study, but also validate aspects of the KCTCS's mission.

Summary of Ancillary Findings

Table 7

Educational data for Kentucky, Washington, & West Virginia

	2009 Postsecondary Attainment by Credential	2009 High School Graduation Rate	U.S. Chamber's Grade for 2-Year Student Access & Success - 2012	Significant Increase in Income after achieving a CTC credential
Kentucky	32.3%	77.6%	B	Yes
Washington	40.9%	73.7%	B	Yes
West Virginia	29.5%	77%	C	Unknown

Table 10 is a comparison between the states of Kentucky, Washington, and West Virginia in regards to data relevant to this study as well as the studies for the other two states (United States Department of Education, 2012; National Center for Education Statistics, 2010; United States Chamber of Commerce, 2012). While the three states have similar positions as it relates to educational achievement at the high school and postsecondary levels, there is also a relatively similar position with the United States Chamber's grading for student access and success. As to the specific issue of nontraditional student income after earning an education credential, the three studies used different methods to determine any increases in income after graduation. Furthermore, the West Virginia study by Perry (2012) was unable to adequately determine increases

due to a lack of reported data. While the Prince and Jenkins study of Washington (2005) did identify a significant increase in annual income after nontraditional students earned an educational credential, this analysis was only completed for the years of 1996-1997 and 1997-1998.

With this comparison, the public policy implications for CTCs and their leadership are demonstrated in the need for student data, both during the educational process and after graduation. In order to support the position that CTCs are improving both student incomes and the workforce of their states, student data must be maintained to validate these improvements. In order to properly collect this data, CTC leaders need to provide the necessary resources for this data collection, but might also need to seek the passage of legislation in their state to require CTC graduates to relay this information and allow access to the information through state agencies that collect data about income.

With a better understanding of their service to nontraditional students and improving the workforce around them, CTCs would have more leverage politically at all levels to request more public funds in addition to soliciting more charitable donations from private entities that have a vested interest in the education of current and potential employees.

While the importance of earning an educational credential is one of the main aspects of these three studies, a recent development in CTC public policy that is unrelated to educational credentials is the growth of noncredit curriculum. These noncredit programs do not result in the student earning an educational credential, but provide education that either improves the workforces due to a direct connection to the needs of an employer or caters to the interests of students. Although these noncredit programs and

individual classes are a relatively new concept, they have been expanded in several states and, in some cases, are offered by CTCs in a greater number than for-credit programs and courses. If this trend continues, the earning of an educational credential would be a lesser indicator of student success and workforce development (Van Noy, Jacobs, Korey, Bailey & Hughes, 2008).

America Forward, a national non-partisan public policy initiative, suggests a six-point outline on improving CTC education that will also benefit nontraditional students and enhance existing workforce development activities. One of their six points – *Improve data access and utilization and emphasize accountability* – connects well with these three studies involving nontraditional students, improved income, and workforce development. Stressing the need for greater oversight by the federal government, America Forward suggests the creation of "data systems that connect across silos (such as workforce development, education, higher education, and employment) and increase access by providers, as well as state and local public agencies so data can be used to improve outcomes" (America Forward, 2014, para. 5). This point encapsulates the need for better data collection and access, which will increase the ability to measure the effectiveness of CTCs and, in doing so, allow CTC leaders and supporters to identify programs and strategies that maintain or increase their level of success. Other points within America Forward's outline include investing in proven programs; engaging employers as the primary drivers of workforce development; thinking holistically about K-12, higher education, and other constituencies; being flexible regarding goals and targets; and supporting social enterprise, internships, and national service into the educational experience (America Forward, 2014).

Limitations

There were factors that limited the conclusions to be drawn from this study.

First, it was not possible to verify that a nontraditional KCTCS student was employed in a field related to his or her Classification of Instructional Program (CIP) code. While it could be speculated that the increased median income found with students' earnings within the study would still demonstrate the benefits of a KCTCS education to both the students and the workforce of Kentucky, this study cannot verify it.

Second, no demographic data was collected. In obtaining the data from KCEWS, there was reticence to share demographic data with this researcher because of concerns about student confidentiality.

Third, while Kentucky was in the midst of a national economic downturn, it was not possible to calculate the effects of this external factor on the results of this study. It could be suggested that the overall increase in median income by the nontraditional KCTCS students within the study suggests the benefit of a CTC education regardless of statewide and even national economic factors, but such a suggestion would have to be clarified within the timeline when the data was collected.

Recommendations for Further Research

While CTC education in Kentucky and the educational attainment of nontraditional students was the focus of this study, further research related to this topic would produce greater understanding.

This study, in conjunction with the Washington and West Virginia studies, leaves 47 other states that could be examined using similar methods. While these studies are

dissimilar in geography and method, the ongoing expansion of CTC education across the United States creates a need for independent evaluation and discovery of whether other states' CTC programs are meeting the needs of their nontraditional students.

In Kentucky and other states where similar research is conducted, it would be relevant to compare the median income of all residents who meet the same age requirement but may or may not have attended postsecondary education during the same time period. This comparison would verify the benefit of CTC attendance when compared to individual earnings of all residents.

Future research could identify fluctuations in median student earnings if external factors could be compared more directly, such as the possible connection between the economic downturn of 2008 and the less significant increase in median income found in Cohort 2.

Using different methods than this study, an analysis of KCTCS curriculum would be helpful to determine if specific classes or class delivery methods better serve nontraditional students in pursuing their educational attainment. While CTCs promote their effectiveness at educating nontraditional students, a better understanding of how CTCs succeed in that goal would benefit all postsecondary programs.

Conclusion

Since 1997, KCTCS has participated in a comprehensive statewide reorganization, nearly doubled its student population, increased significantly its academic offerings to better serve students and employers, and become the largest provider of postsecondary education in the Commonwealth of Kentucky (KCTCS, 2009). While success and growth

in these areas is well chronicled in Kentucky, is KCTCS still meeting the needs of its students, especially those students who are at high risk of failing to earn an educational credential?

Based on the findings of this study, KCTCS is accomplishing its mission of assisting nontraditional students in increasing their economic standing and improving the workforce of the Commonwealth of Kentucky. Given Kentucky's less-than-average position in high school graduation rate, workforce development, and educational attainment when compared to the rest of the nation, KCTCS can be seen as an important agent for change.

If KCTCS is to follow the words of Horace Mann and be the "great equalizer" for Kentuckians, including those students who did not travel the traditional route to postsecondary education, there needs to continue to be a focus on service to this population of students, especially in a state that already faces so many educational challenges. Students should be given the opportunity to better themselves and, in so doing, improve the educational attainment of their community. KCTCS, as a public institution, should do everything in its ability to never lose sight of that important role.

> Education then, beyond all other devices of human origin, is a great equalizer of the conditions of men,—the balance wheel of the social machinery (Mann, 1848).

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APPENDIX A

LETTER OF EXEMPTION FROM MARSHALL UNIVERSITY'S

INSTITUTIONAL RESEARCH BOARD

Office of Research Integrity

DEC 20 2013

December 16, 2013

Bill Bissett
2800 Palumbo Drive, Suite 200
Lexington, KY 40509

Dear Mr. Bissett:

This letter is in response to the submitted dissertation abstract that will utilize publicly available information from the Kentucky Community and Technical College System (KCTCS) and Workforce Kentucky. After assessing the abstract it has been deemed not to be human subject research and therefore exempt from oversight of the Marshall University Institutional Review Board (IRB). The Code of Federal Regulations (45CFR46) has set forth the criteria utilized in making this determination. Since the study does not involve human subjects as defined in DHHS regulation 45 CFR §46.102(f) it is not considered human subject research. If there are any changes to the abstract you provided then you would need to resubmit that information to the Office of Research Integrity for review and determination.

I appreciate your willingness to submit the abstract for determination. Please feel free to contact the Office of Research Integrity if you have any questions regarding future protocols that may require IRB review.

Sincerely,

Bruce F. Day, ThD, CIP
Director

APPENDIX B

LETTER OF EXEMPTION FROM

KENTUCKY COMMUNITY AND TECHNICAL COLLEGE SYSTEM'S

HUMAN SUBJECTS RESEARCH BOARD

February 13, 2014

William D. Bissett
3773 Ridge View Way
Lexington, KY 40509
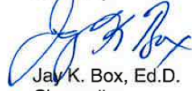
RE: *Measuring the Success of Kentucky's Community and Technical College System in Educational Attainment and Advancing Workforce Development*

Dear Mr. Bissett:

After careful consideration of your application to the KCTCS Human Subjects Review Board, I have determined that you are eligible for exemption from federal regulations regarding the protection of human subjects based on your research using a procedure that meets the exempt review criteria section 7 (2).

Thank you for your cooperation in meeting the federal requirements for conducting research that utilizes human subjects. We appreciate your notification to this board and we will keep your information on file.

Sincerely,

Jay K. Box, Ed.D.
Chancellor
Chair, KCTCS Human Subjects Review Board

cc: Christina Whitfield, Ph.D.
System Director of Research and Policy Analysis

Dr. Dennis Anderson
Marshall University – College of Education and Professional Development

KCTCS
HIGHER EDUCATION BEGINS HERE

APPENDIX C

ANALYSIS OF VARIANCE OF COHORTS 1-3

ANOVA of Cohort 1

		Sum of Squares	df	Mean Square	F	Sig.
N2007q3median	Between Groups	14395182.688	2	7197591.344	1.022	.375
	Within Groups	168963067.831	24	7040127.826		
	Total	183358250.519	26			
N2007q4median	Between Groups	3312233.299	2	1656116.649	.507	.609
	Within Groups	75079517.317	23	3264326.840		
	Total	78391750.615	25			
N2008q1median	Between Groups	7677267.615	2	3838633.808	.992	.386
	Within Groups	88973131.500	23	3868397.022		
	Total	96650399.115	25			
N2008q2median	Between Groups	5015807.195	2	2507903.597	.849	.441
	Within Groups	67912255.267	23	2952706.751		
	Total	72928062.462	25			
N2008q3median	Between Groups	3871803.779	2	1935901.890	.433	.654
	Within Groups	102781090.067	23	4468743.046		
	Total	106652893.846	25			
N2008q4median	Between Groups	12004979.231	2	6002489.615	1.471	.250
	Within Groups	97919942.769	24	4079997.615		

	Total	109924922.000	26			
N2009q1median	Between Groups	9959722.087	2	4979861.044	1.850	.180
	Within Groups	61907546.567	23	2691632.459		
	Total	71867268.654	25			
N2009q2median	Between Groups	4894803.246	2	2447401.623	.871	.432
	Within Groups	64639244.600	23	2810401.939		
	Total	69534047.846	25			
N2009q3median	Between Groups	12990401.763	2	6495200.882	2.111	.143
	Within Groups	73852843.644	24	3077201.818		
	Total	86843245.407	26			
N2009q4median	Between Groups	5259699.945	2	2629849.972	.619	.547
	Within Groups	97763643.017	23	4250593.175		
	Total	103023342.962	25			
N2010q1median	Between Groups	6439351.645	2	3219675.822	1.182	.325
	Within Groups	62636510.817	23	2723326.557		
	Total	69075862.462	25			
N2010q2median	Between Groups	6231957.418	2	3115978.709	.827	.450
	Within Groups	90458424.212	24	3769101.009		
	Total	96690381.630	26			
N2010q3median	Between Groups	6474974.087	2	3237487.044	.640	.537

		Sum of Squares	df	Mean Square	F	Sig.
	Within Groups	116381876.067	23	5060081.568		
	Total	122856850.154	25			
N2010q4median	Between Groups	10676653.193	2	5338326.597	1.191	.323
	Within Groups	98600978.567	22	4481862.662		
	Total	109277631.760	24			
N2011q1median	Between Groups	6870225.483	2	3435112.742	.942	.405
	Within Groups	80214814.517	22	3646127.933		
	Total	87085040.000	24			
n2011q2median	Between Groups	9161265.393	2	4580632.697	1.063	.362
	Within Groups	94788417.567	22	4308564.435		
	Total	103949682.960	24			

Table 2

ANOVA of Cohort 2

		Sum of Squares	df	Mean Square	F	Sig.
N2008q3median	Between Groups	8471226.883	2	4235613.441	1.555	.235
	Within Groups	57203402.076	21	2723971.527		

	Total	65674628.958	23			
N2008q4median	Between Groups	11366040.021	2	5683020.011	2.053	.153
	Within Groups	58131757.312	21	2768178.920		
	Total	69497797.333	23			
N2009q1median	Between Groups	7913340.252	2	3956670.126	1.370	.276
	Within Groups	60633245.748	21	2887297.417		
	Total	68546586.000	23			
N2009q2median	Between Groups	5515505.706	2	2757752.853	.838	.446
	Within Groups	69087458.294	21	3289878.966		
	Total	74602964.000	23			
N2009q3median	Between Groups	5404506.958	2	2702253.479	1.032	.374
	Within Groups	54979640.667	21	2618078.127		
	Total	60384147.625	23			
N2009q4median	Between Groups	9806721.058	2	4903360.529	1.703	.206
	Within Groups	60453053.567	21	2878716.837		
	Total	70259774.625	23			
N2010q1median	Between Groups	8657604.764	2	4328802.382	1.832	.185
	Within Groups	49624309.236	21	2363062.345		
	Total	58281914.000	23			
N2010q2median	Between Groups	12171434.222	2	6085717.111	2.836	.081

	Within Groups	45063190.403	21	2145866.210		
	Total	57234624.625	23			
N2010q3median	Between Groups	12085746.885	2	6042873.442	1.628	.220
	Within Groups	77926178.948	21	3710770.426		
	Total	90011925.833	23			
N2010q4median	Between Groups	11419313.455	2	5709656.727	1.513	.243
	Within Groups	79227192.545	21	3772723.455		
	Total	90646506.000	23			
N2011q1median	Between Groups	13398707.733	2	6699353.867	2.658	.094
	Within Groups	52929616.767	21	2520457.941		
	Total	66328324.500	23			
N2011q2median	Between Groups	13112117.839	2	6556058.920	2.303	.125
	Within Groups	59787089.494	21	2847004.262		
	Total	72899207.333	23			
N2011q3median	Between Groups	15760829.949	2	7880414.975	1.713	.205
	Within Groups	96609195.009	21	4600437.858		
	Total	112370024.958	23			
N2011q4median	Between Groups	12063957.964	2	6031978.982	1.559	.234
	Within Groups	81253814.994	21	3869229.285		
	Total	93317772.958	23			

		Sum of Squares	df	Mean Square	F	Sig.
N2012q1median	Between Groups	13078171.464	2	6539085.732	2.249	.130
	Within Groups	61069801.494	21	2908085.785		
	Total	74147972.958	23			
n2012q2median	Between Groups	18258695.313	2	9129347.656	2.507	.106
	Within Groups	76479853.312	21	3641897.777		
	Total	94738548.625	23			

Table 3

ANOVA of Cohort 3

		Sum of Squares	df	Mean Square	F	Sig.
N2009q3median	Between Groups	6076864.337	2	3038432.168	1.327	.286
	Within Groups	50360823.023	22	2289128.319		
	Total	56437687.360	24			
N2009q4median	Between Groups	9579173.631	2	4789586.815	1.647	.215
	Within Groups	63972550.369	22	2907843.199		
	Total	73551724.000	24			
N2010q1median	Between Groups	9814454.571	2	4907227.285	1.627	.219
	Within Groups	66370959.669	22	3016861.803		
	Total	76185414.240	24			

N2010q2median	Between Groups	7475434.948	2	3737717.474	1.297	.294
	Within Groups	63424029.292	22	2882910.422		
	Total	70899464.240	24			
N2010q3median	Between Groups	13146314.483	2	6573157.242	1.779	.192
	Within Groups	81298356.477	22	3695379.840		
	Total	94444670.960	24			
N2010q4median	Between Groups	12140396.183	2	6070198.092	1.817	.186
	Within Groups	73508447.577	22	3341293.072		
	Total	85648843.760	24			
N2011q1median	Between Groups	9091558.971	2	4545779.485	1.702	.205
	Within Groups	58753935.669	22	2670633.440		
	Total	67845494.640	24			
N2011q2median	Between Groups	8339459.809	2	4169729.905	1.506	.244
	Within Groups	60919533.631	22	2769069.710		
	Total	69258993.440	24			
N2011q3median	Between Groups	10551303.209	2	5275651.605	1.282	.297
	Within Groups	90523898.231	22	4114722.647		
	Total	101075201.440	24			
N2011q4median	Between Groups	17920616.983	2	8960308.492	2.333	.122
	Within Groups	80663008.350	21	3841095.636		

	Total	98583625.333	23			
N2012q1median	Between Groups	14249624.775	2	7124812.387	1.861	.180
	Within Groups	80413277.850	21	3829203.707		
	Total	94662902.625	23			
N2012q2median	Between Groups	6320883.267	2	3160441.633	.776	.473
	Within Groups	85521210.067	21	4072438.575		
	Total	91842093.333	23			
N2012q3median	Between Groups	16751820.284	2	8375910.142	2.178	.137
	Within Groups	84587537.076	22	3844888.049		
	Total	101339357.360	24			
N2012q4median	Between Groups	10874362.288	2	5437181.144	1.455	.255
	Within Groups	82231977.712	22	3737817.169		
	Total	93106340.000	24			
N2013q1median	Between Groups	9625387.757	2	4812693.878	1.244	.308
	Within Groups	85096950.803	22	3868043.218		
	Total	94722338.560	24			
n2013q2median	Between Groups	5036093.549	2	2518046.774	.562	.578
	Within Groups	103052334.951	23	4480536.302		
	Total	108088428.500	25			

APPENDIX D

DESCRIPTIVES OF COHORTS 1-3

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
N2007q3median	1.00	13	6034.54	3468.258	961.922	3938.69	8130.39	1409	15550
	2.00	10	4442.80	1543.666	488.150	3338.53	5547.07	2167	7591
	3.00	4	5490.50	1028.138	514.069	3854.50	7126.50	4026	6429
	Total	27	5364.41	2655.605	511.072	4313.88	6414.93	1409	15550
N2007q4median	1.00	12	5847.1667	2021.46436	583.54650	4562.7895	7131.5438	3358.00	9113.00
	2.00	10	5100.9000	1458.09361	461.08969	4057.8427	6143.9573	2441.00	7897.00
	3.00	4	5792.7500	1914.47858	957.23929	2746.3874	8839.1126	2957.00	7081.00
	Total	26	5551.7692	1770.78232	347.27898	4836.5348	6267.0037	2441.00	9113.00
N2008q1median	1.00	12	5915.5000	2114.75421	610.47696	4571.8493	7259.1507	2662.00	9523.00
	2.00	10	4946.5000	1615.86793	510.98231	3790.5777	6102.4223	2891.00	8363.00
	3.00	4	6344.0000	2329.50853	1164.75427	2637.2321	10050.7679	3105.00	8192.00
	Total	26	5608.7308	1966.21870	385.60721	4814.5579	6402.9037	2662.00	9523.00
N2008q2median	1.00	12	6174.1667	2083.90284	601.57093	4850.1180	7498.2154	2694.00	9834.00
	2.00	10	5281.2000	1167.41308	369.16843	4446.0830	6116.3170	3788.00	7469.00
	3.00	4	6212.0000	1620.43348	810.21674	3633.5287	8790.4713	3845.00	7262.00
	Total	26	5836.5385	1707.95858	334.95823	5146.6791	6526.3979	2694.00	9834.00
N2008q3median	1.00	12	6213.3333	2532.34610	731.02535	4604.3574	7822.3093	1546.00	9714.00
	2.00	10	5602.6000	1700.17281	537.64185	4386.3696	6818.8304	3392.00	9323.00
	3.00	4	6672.5000	1440.51576	720.25788	4380.3180	8964.6820	4617.00	7826.00
	Total	26	6049.0769	2065.45776	405.06959	5214.8205	6883.3334	1546.00	9714.00
N2008q4median	1.00	13	7054.3077	2487.03583	689.77963	5551.4070	8557.2084	3414.00	10602.00
	2.00	10	5611.0000	1489.19971	470.92630	4545.6907	6676.3093	3576.00	8680.00
	3.00	4	6687.0000	1115.99492	557.99746	4911.2030	8462.7970	5026.00	7365.00
	Total	27	6465.3333	2056.18132	395.71228	5651.9351	7278.7316	3414.00	10602.00
N2009q1median	1.00	12	6447.9167	1935.71018	558.79140	5218.0251	7677.8082	3890.00	9617.00
	2.00	10	5323.1000	1261.08969	398.79158	4420.9708	6225.2292	3437.00	6926.00
	3.00	4	6887.2500	1458.04764	729.02382	4567.1708	9207.3292	4803.00	7985.00
	Total	26	6082.8846	1695.49130	332.51320	5398.0609	6767.7084	3437.00	9617.00
N2009q2median	1.00	12	6694.2500	1931.82750	557.67056	5466.8254	7921.6746	4312.00	10220.00
	2.00	10	5851.8000	1474.60954	466.31248	4796.9279	6906.6721	3814.00	8928.00
	3.00	4	6861.2500	1157.21688	578.60844	5019.8597	8702.6403	5155.00	7692.00
	Total	26	6395.9231	1667.74156	327.07103	5722.3077	7069.5385	3814.00	10220.00
N2009q3median	1.00	12	6658.0833	2054.89590	593.19735	5352.4648	7963.7019	3336.00	9952.00
	2.00	11	5324.4545	1492.13219	449.89478	4322.0265	6326.8826	3345.00	7312.00
	3.00	4	6924.0000	1308.90412	654.45206	4841.2415	9006.7585	5025.00	7951.00
	Total	27	6154.1481	1827.60084	351.72195	5431.1733	6877.1230	3336.00	9952.00
N2009q4median	1.00	12	7271.3333	2311.52104	667.27865	5802.6629	8740.0037	3935.00	10802.00
	2.00	10	6339.2000	1802.12552	569.88213	5050.0371	7628.3629	3492.00	9826.00
	3.00	4	7239.7500	1803.72862	901.86431	4369.6153	10109.8847	4590.00	8637.00
	Total	26	6907.9615	2030.00831	398.11738	6088.0234	7727.8996	3492.00	10802.00
N2010q1median	1.00	12	6727.0833	1837.95541	530.57202	5559.3022	7894.8645	4052.00	9399.00
	2.00	10	5737.1000	1474.30507	466.21620	4682.4457	6791.7543	3730.00	7846.00
	3.00	4	6845.5000	1404.21402	702.10701	4611.0821	9079.9179	4992.00	8400.00
	Total	26	6364.5385	1662.23780	325.99165	5693.1461	7035.9308	3730.00	9399.00
N2010q2median	1.00	12	7233.5833	2077.05567	599.59433	5913.8851	8553.2815	4686.00	10456.00
	2.00	11	6238.6364	1882.55976	567.61312	4973.9155	7503.3572	4099.00	10470.00
	3.00	4	7159.7500	1587.69736	793.84868	4633.3692	9686.1308	4853.00	8244.00
	Total	27	6817.2963	1928.43481	371.12745	6054.4329	7580.1597	4099.00	10470.00
N2010q3median	1.00	12	7270.9167	2502.67778	722.46085	5680.7911	8861.0423	3691.00	11029.00
	2.00	10	6331.4000	2043.13638	646.09645	4869.8283	7792.9717	3353.00	9905.00
	3.00	4	7544.2500	1817.95331	908.97666	4651.4806	10437.0194	5113.00	9450.00
	Total	26	6951.6154	2216.81619	434.75342	6056.2239	7847.0068	3353.00	11029.00
N2010q4median	1.00	12	7653.17	2554.091	737.302	6030.37	9275.96	3355	11815
	2.00	10	6780.90	1686.777	533.406	5574.25	7987.55	4713	9142
	3.00	3	8829.00	786.407	454.032	6875.46	10782.54	7949	9463
	Total	25	7445.36	2133.831	426.766	6564.56	8326.16	3355	11815
N2011q1median	1.00	12	7172.75	2039.830	588.848	5876.70	8468.80	4302	10781
	2.00	10	6444.80	1908.975	603.671	5079.20	7810.40	3768	9830
	3.00	3	8069.67	907.513	523.953	5815.28	10324.05	7096	8892
	Total	25	6989.20	1904.874	380.975	6202.91	7775.49	3768	10781
n2011q2median	1.00	12	7462.33	2044.819	590.288	6163.12	8761.55	5210	10565
	2.00	10	6724.90	2275.654	719.625	5097.00	8352.80	4195	11634
	3.00	3	8659.00	1045.684	603.726	6061.38	11256.62	7459	9375
	Total	25	7310.96	2081.162	416.232	6451.90	8170.02	4195	11634

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		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
N2008q3median	1.00	11	5654.91	1965.669	592.671	4334.36	6975.46	3063	8349
	2.00	10	4932.50	1306.986	413.305	3997.54	5867.46	2890	7141
	3.00	3	6789.33	1263.126	729.266	3651.56	9927.11	5933	8240
	Total	24	5495.71	1689.798	344.929	4782.17	6209.25	2890	8349
N2008q4median	1.00	11	6357.6364	1947.01552	587.04727	5049.6135	7665.6592	3784.00	9422.00
	2.00	10	5270.3000	1462.62922	462.52397	4223.9981	6316.6019	3309.00	8174.00
	3.00	3	7243.6667	696.24158	401.97526	5514.1067	8973.2266	6475.00	7832.00
	Total	24	6015.3333	1738.28748	354.82645	5281.3189	6749.3478	3309.00	9422.00
N2009q1median	1.00	11	6288.2727	1861.62908	561.30229	5037.6133	7538.9322	4150.00	9453.00
	2.00	10	5206.9000	1675.65194	529.88767	4008.2108	6405.5892	3203.00	8122.00
	3.00	3	6598.6667	594.27799	343.10656	5122.3983	8074.9350	5921.00	7031.00
	Total	24	5876.5000	1726.35059	352.38984	5147.5261	6605.4739	3203.00	9453.00
N2009q2median	1.00	11	6442.5455	1752.41436	528.37281	5265.2575	7619.8334	4305.00	9701.00
	2.00	10	5588.9000	1471.92893	465.46480	4535.9455	6641.8545	3618.00	8283.00
	3.00	3	5231.6667	3072.35453	1773.82471	-2400.4851	12863.8184	1737.00	7508.00
	Total	24	5935.5000	1801.00170	367.62793	5175.0037	6695.9963	1737.00	9701.00
N2009q3median	1.00	11	6337.0000	1881.91642	567.41915	5072.7113	7601.2887	3770.00	9498.00
	2.00	10	5358.0000	1266.46165	400.49034	4452.0279	6263.9721	3246.00	7464.00
	3.00	3	6253.3333	1601.28396	924.50173	2275.5235	10231.1432	4451.00	7512.00
	Total	24	5918.6250	1620.30791	330.74397	5234.4290	6602.8210	3246.00	9498.00
N2009q4median	1.00	11	6999.0000	1967.89964	593.34407	5676.9470	8321.0530	4415.00	10459.00
	2.00	10	5833.9000	1530.72949	484.05917	4738.8821	6928.9179	3258.00	7785.00
	3.00	3	7457.6667	565.05250	326.23322	6053.9984	8861.3349	7070.00	8106.00
	Total	24	6570.8750	1747.79084	356.76631	5832.8477	7308.9023	3258.00	10459.00
N2010q1median	1.00	11	6621.8182	1746.44976	526.57442	5448.5373	7795.0991	3990.00	9212.00
	2.00	10	5431.2000	1427.81883	451.51596	4409.7999	6452.6001	3290.00	8023.00
	3.00	3	6740.0000	622.67247	359.50012	5193.1958	8286.8042	6021.00	7100.00
	Total	24	6140.5000	1591.85309	324.93565	5468.3194	6812.6806	3290.00	9212.00
N2010q2median	1.00	11	6907.8182	1680.10630	506.57111	5779.1074	8036.5289	4723.00	9896.00
	2.00	10	5741.7000	1365.98618	431.96276	4764.5324	6718.8676	3494.00	7648.00
	3.00	3	7739.3333	145.52434	84.01852	7377.8308	8100.8358	7628.00	7904.00
	Total	24	6525.8750	1577.48596	322.00297	5859.7611	7191.9889	3494.00	9896.00
N2010q3median	1.00	11	7156.2727	2096.92366	632.24627	5747.5402	8565.0052	2856.00	9684.00
	2.00	10	5971.7000	1906.35726	602.84310	4607.9742	7335.4258	3192.00	9055.00
	3.00	3	7935.3333	789.78119	455.98038	5973.4081	9897.2586	7158.00	8737.00
	Total	24	6760.0833	1978.27246	403.81318	5924.7321	7595.4345	2856.00	9684.00
N2010q4median	1.00	11	7653.3636	2151.46793	648.69199	6207.9878	9098.7395	4356.00	10848.00
	2.00	10	6446.0000	1900.41949	600.96541	5086.5218	7805.4782	3988.00	9851.00
	3.00	3	8279.0000	466.20918	269.16600	7120.8722	9437.1278	7865.00	8784.00
	Total	24	7228.5000	1985.23360	405.23411	6390.2094	8066.7906	3988.00	10848.00
N2011q1median	1.00	11	7230.0000	1812.25705	546.41606	6012.5092	8447.4908	4595.00	9785.00
	2.00	10	5723.3000	1487.97939	470.54040	4658.8637	6787.7363	3961.00	8100.00
	3.00	3	7270.3333	282.94581	163.35884	6567.4570	7973.2097	7102.00	7597.00
	Total	24	6607.2500	1698.18733	346.64104	5890.1684	7324.3316	3961.00	9785.00
N2011q2median	1.00	11	7597.5455	1873.49333	564.87949	6338.9155	8856.1754	4723.00	10401.00
	2.00	10	6263.3000	1539.75879	486.91448	5161.8229	7364.7771	3970.00	8145.00
	3.00	3	8163.3333	1294.14116	747.17275	4948.5085	11378.1582	7056.00	9586.00
	Total	24	7112.3333	1780.31760	363.40581	6360.5711	7864.0955	3970.00	10401.00
N2011q3median	1.00	11	7797.0909	2457.53049	740.97332	6146.0995	9448.0824	3656.00	11097.00
	2.00	10	6321.3000	1823.53710	576.65306	5016.8201	7625.7799	3656.00	9091.00
	3.00	3	8382.0000	1772.99831	1023.64105	3977.6280	12786.3720	6721.00	10249.00
	Total	24	7255.2917	2210.35139	451.18609	6321.9421	8188.6412	3656.00	11097.00
N2011q4median	1.00	11	7726.45	2209.979	666.334	6241.77	9211.14	4140	10812
	2.00	10	6517.80	1767.547	558.947	5253.37	7782.23	4291	9053
	3.00	3	8447.33	1465.563	846.143	4806.67	12087.99	7343	10110
	Total	24	7312.96	2014.273	411.162	6462.41	8163.51	4140	10812
N2012q1median	1.00	11	7874.45	1917.687	578.204	6586.13	9162.77	4641	10696
	2.00	10	6581.70	1608.451	508.637	5431.08	7732.32	4067	8774
	3.00	3	8542.33	710.818	410.391	6776.56	10308.10	8082	9361
	Total	24	7419.29	1795.501	366.505	6661.12	8177.47	4067	10696
n2012q2median	1.00	11	8297.36	2197.816	662.666	6820.85	9773.88	5533	11544
	2.00	10	6617.30	1741.410	550.682	5371.57	7863.03	3937	8617
	3.00	3	8647.67	664.578	383.694	6996.76	10298.57	7882	9075
	Total	24	7641.13	2029.549	414.280	6784.12	8498.13	3937	11544

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Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
N2009q3median	1.00	13	5153.08	1433.377	397.547	4286.90	6019.26	2947	8287
	2.00	10	4915.20	1551.307	490.566	3805.46	6024.94	2352	8105
	3.00	2	6818.50	2011.719	1422.500	-11256.08	24893.08	5396	8241
	Total	25	5191.16	1533.483	306.697	4558.17	5824.15	2352	8287
N2009q4median	1.00	13	5886.3077	1737.69303	481.94933	4836.2303	6936.3851	3877.00	10158.00
	2.00	10	5532.2000	1627.73106	514.73376	4367.7913	6696.6087	2520.00	8139.00
	3.00	2	7928.0000	1972.82792	1395.00000	-9797.1556	25653.1556	6533.00	9323.00
	Total	25	5908.0000	1750.61565	350.12313	5185.3814	6630.6186	2520.00	10158.00
N2010q1median	1.00	13	5485.3077	1526.37743	423.34093	4562.9270	6407.6883	3658.00	9153.00
	2.00	10	4741.6000	2037.11895	644.19357	3284.3329	6198.8671	2588.00	9313.00
	3.00	2	7068.5000	1031.66879	729.50000	-2200.6764	16337.6764	6339.00	7798.00
	Total	25	5314.4800	1781.68242	356.33648	4579.0376	6049.9224	2588.00	9313.00
	1.00	13	6050.8462	1664.16325	461.55584	5045.2024	7056.4899	3924.00	9724.00
	2.00	10	5365.8000	1800.87107	569.48544	4077.5344	6654.0656	3405.00	9760.00
	3.00	2	7372.0000	1001.26320	708.00000	-1623.9930	16367.9930	6664.00	8080.00
	Total	25	5882.5200	1718.76245	343.75249	5173.0497	6591.9903	3405.00	9760.00
N2010q3median	1.00	13	6134.3846	1817.09647	503.97188	5036.3242	7232.4450	3232.00	9958.00
	2.00	10	5466.1000	2086.54784	659.82436	3973.4736	6958.7264	3108.00	9865.00
	3.00	2	8246.5000	1578.96944	1116.50000	-5939.9776	22432.9776	7130.00	9363.00
	Total	25	6036.0400	1983.73250	396.74650	5217.1955	6854.8845	3108.00	9958.00
N2010q4median	1.00	13	6863.6154	1841.04810	510.61487	5751.0812	7976.1496	4515.00	10568.00
	2.00	10	6174.5000	1819.77497	575.46337	4872.7114	7476.2886	3703.00	9723.00
	3.00	2	8831.0000	1740.89690	1231.00000	-6810.3380	24472.3380	7600.00	10062.00
	Total	25	6745.3600	1889.10080	377.82016	5965.5775	7525.1425	3703.00	10568.00
N2011q1median	1.00	13	6153.3077	1637.84464	454.25637	5163.5681	7143.0473	3922.00	9786.00
	2.00	10	5475.9000	1687.37353	533.59436	4268.8257	6682.9743	3469.00	9437.00
	3.00	2	7738.0000	968.73629	685.00000	-965.7502	16441.7502	7053.00	8423.00
	Total	25	6009.1200	1681.33745	336.26749	5315.0980	6703.1420	3469.00	9786.00
N2011q2median	1.00	13	6589.4615	1738.36689	482.13623	5538.9769	7639.9461	4455.00	10431.00
	2.00	10	6028.6000	1571.07360	496.81710	4904.7216	7152.4784	4339.00	9446.00
	3.00	2	8234.0000	1562.70599	1105.00000	-5806.3562	22274.3562	7129.00	9339.00
	Total	25	6496.6800	1698.76172	339.75234	5795.4656	7197.8944	4339.00	10431.00
N2011q3median	1.00	13	7276.4615	2116.80847	587.09704	5997.2870	8555.6361	4382.00	10967.00
	2.00	10	6334.5000	1951.70855	617.18444	4938.3318	7730.6682	4077.00	10660.00
	3.00	2	8601.5000	1571.89837	1111.50000	-5521.4466	22724.4466	7490.00	9713.00
	Total	25	7005.6800	2052.18584	410.43717	6158.5793	7852.7807	4077.00	10967.00
N2011q4median	1.00	12	7590.7500	2124.56636	613.30948	6240.8649	8940.6351	4774.00	10560.00
	2.00	10	5994.8000	1781.33195	563.30662	4720.5119	7269.0881	2437.00	8530.00
	3.00	2	8347.5000	1566.24152	1107.50000	-5724.6217	22419.6217	7240.00	9455.00
	Total	24	6988.8333	2070.32475	422.60327	6114.6119	7863.0548	2437.00	10560.00
N2012q1median	1.00	12	7329.7500	1990.64070	574.64847	6064.9572	8594.5428	4388.00	10772.00
	2.00	10	6062.8000	1979.17299	625.86945	4646.9849	7478.6151	3270.00	10628.00
	3.00	2	8485.0000	1252.99322	886.00000	-2772.6974	19742.6974	7599.00	9371.00
	Total	24	6898.1250	2028.73812	414.11444	6041.4640	7754.7860	3270.00	10772.00
N2012q2median	1.00	12	7576.3333	1909.47153	551.21695	6363.1130	8789.5537	5072.00	10236.00
	2.00	10	6749.1000	2209.75436	698.78568	5168.3370	8329.8630	2366.00	10405.00
	3.00	2	8388.5000	1211.27392	856.50000	-2494.3644	19271.3644	7532.00	9245.00
	Total	24	7299.3333	1998.28289	407.89779	6455.5325	8143.1342	2366.00	10405.00
N2012q3median	1.00	12	7756.8333	2187.10115	631.36172	6367.2156	9146.4511	3906.00	11438.00
	2.00	11	6272.0909	1714.91769	517.06714	5119.9935	7424.1883	3918.00	9229.00
	3.00	2	8539.5000	1600.18265	1131.50000	-5837.5707	22916.5707	7408.00	9671.00
	Total	25	7166.1600	2054.86574	410.97315	6317.9531	8014.3669	3906.00	11438.00
N2012q4median	1.00	12	7645.33	1831.480	528.703	6481.67	8809.00	5036	11087
	2.00	11	6687.64	2068.294	623.614	5298.14	8077.14	4156	10804
	3.00	2	8933.50	1598.768	1130.500	-5430.86	23297.86	7803	10064
	Total	25	7327.00	1969.627	393.925	6513.98	8140.02	4156	11087
N2013q1median	1.00	12	7750.67	2087.793	602.694	6424.15	9077.19	5036	11407
	2.00	11	6777.18	1841.073	555.104	5540.33	8014.03	3940	10097
	3.00	2	8793.50	1803.829	1275.500	-7413.26	25000.26	7518	10069
	Total	25	7405.76	1986.646	397.329	6585.71	8225.81	3940	11407
n2013q2median	1.00	13	7728.69	2348.087	651.242	6309.76	9147.63	4637	12949
	2.00	11	7119.27	1880.117	566.877	5856.19	8382.35	3723	9904
	3.00	2	8686.00	1241.680	878.000	-2470.05	19842.05	7808	9564
	Total	26	7544.50	2079.312	407.787	6704.65	8384.35	3723	12949

CURRICULUM VITAE

WILLIAM DANIEL BISSETT

EDUCATION

Marshall University, Doctor of Education, Leadership Studies, 2014

University of Kentucky, Nine Hours of Coursework, College of Education, 2010-2011

Marshall University, Masters of Journalism, 1997

Marshall University, Bachelor of Arts, 1992

Military Police Officers Basic Course, U.S. Army, Fort McClellan, AL, 1989

Nuclear, Biological and Chemical Course, U.S. Army Reserve, Morgantown, WV, 1988

Brunel University, Fifteen Hours of Coursework, British Law, 1986

PROFESSIONAL EXPERIENCE

2010-Present	President, Kentucky Coal Association
2012-Present	Member, National Coal Council
2010-Present	Member, University of Kentucky Mining Engineering Foundation Board
2006-Present	Adjunct Faculty, Marshall University College of Arts and Media
2007-2010	Chief of Staff / Senior VP for Communications, Marshall University
2005-2007	Director of Public Relations, Marshall University
2005-2007	Public Relations Consultant, Self-Employed
2003-2005	Weekly Talk Radio Guest, WVTS-AM 950
2003-2005	Vice President of Public Relations, Charles Ryan Associates
2002-2003	Director of Communications, West Virginia Department of Transportation
2000-2002	Director of Communications, West Virginia Department of Agriculture
1998-2002	Communications Officer, West Virginia Department of Agriculture
1995-1998	Creative Services Producer, WOWK-TV 13
1992-1995	Columnist, *The Charleston Gazette*
1993-1995	Owner / Investigator, Accurate Investigations, Inc.
1991-1994	Investigator, Foutty Investigations, Inc.
1987-1990	Platoon Leader, 363rd Military Police Company, Grafton, WV

PRESENTATIONS

2011	Co-authored *Circulation Patterns of Appalachian Newspapers*, Appalachian Studies Association, Eastern Kentucky University, Richmond, KY

2011   Co-presented *Circulation Patterns of Appalachian Newspapers*, National
            Newspaper Association, Albuquerque, NM
2009   Co-presented *What to Expect as a Doctoral Student*, Marshall University
            Doctoral Seminar, South Charleston, WV
2008   Co-presented *Is the Nature of Presidential Leadership Changing?*,
            Southern Regional Council on Educational Administration, Charleston,
            WV

MEMBERSHIPS

Marshall University's School of Journalism & Mass Communications Advisory Council
United States Department of Energy's National Coal Council
University of Kentucky's Mining Engineering Foundation Board