UNIVERSITY OF CALIFORNIA,

IRVINE

Career and Technical Education Across Three Decades: 1982-2004

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Education

by

Mary Ellen Cashen

Dissertation Committee:

Professor George Farkas, Chair
Associate Professor. Thurston Domina
Associate Director for Research and Data Management, Anne McDaniel

2014

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AKNOWLEDGEMENTS

I would like to thank my family and friends who have become family. Dad, thank you for working countless hours selling cars to support me and teaching me the importance of working hard even when it was difficult. Mom, thank you for modeling the importance of literacy and education and motivating me to achieve in school. To my dear husband, who coordinated travel, alleviated the stress of medical bills and constantly encouraged me. Without your unwavering support the dream of completing a Ph.D. would be merely that, a dream.

I am incredibly grateful to my advisors at UC Irvine who nurtured my academic development and never waned in their support. George Farkas, thank you for taking me in as a late addition to your advisees. Your guidance and encouragement through all the milestones of the program is very much appreciated. Thad Domina, thank you for your willingness to always keep your door open and answer the infinite questions I posed. I learned a great deal from those unscheduled meetings that helped me keep momentum to keep moving forward. Anne McDaniel, although your time in Irvine was brief, your support did not go unnoticed. Thank you for persisting as a member of my committee from afar.

My dear friends, thank you for proofreading countless papers and consoling me when I doubted my abilities. To my C3 cohort members, who grew together both in friendship and knowledge during our five years in Irvine. A special thanks is necessary for my colleagues who kept writing and swimming dates with, they were both essential in the dissertation writing process. Thank you to the faculty and students at the UC Davis Center for Poverty Research, my visiting position there inspired me to continue researching policy areas to improve the lives of low-income young adults and formed meaningful friendships.

ABSTRACT OF THE DISSERTATION

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Mary Ellen Cashen

Doctor of Philosophy in Education

University of California, Irvine, 2014

Professor George Farkas, Chair

In this study, trends in career and technical education (CTE) course completion and their effects on post-secondary degree attainment, employment and earnings are analyzed using high school transcript data from HS&B: 1982, NELS: 1992 and ELS: 2002. Findings show a decrease in overall career and technical education units completed that is largely driven by a decrease in such coursework by females in the 2002 cohort. Changes in the mean units of CTE coursework by type are discussed. I hypothesize that CTE will decrease the likelihood of a young adult enrolling in college, but increase employability and earnings. My analyses find a negative effect on later education; little effect on employability and mixed effects on earnings, with results based somewhat on the type of CTE completed. These findings cast doubt on whether CTE as presently implemented is worth its cost.

Keywords: Career and Technical Education, high school, sex differences, post-secondary education and earnings

Chapter 1: Introduction

In the early 1900s, the United States economy required a large pool of skilled workers, which resulted in the growth of career and technical education (CTE) programs (Goldin & Katz, 2000). Over time, economic pressure to increase educational attainment has resulted in increased numbers of high school students completing college preparatory coursework and attending college, a movement termed "College for All" (Rosenbaum, 2001). Concurrently, the federal government became increasingly involved in K-12 education and their policies influenced the "College for All" movement: *A Nation at Risk* in 1983, Goals 2000 in 1994, No Child Left Behind in 2001 and currently the Common Core State Standards (Domina & Saldaña, 2012). No Child Left Behind imposed increased academic accountability in 2001 and the current adoption of the Common Core Standards has raised academic rigor consistently across states. These standards are a set of academically focused benchmarks in mathematics and English language arts developed by the National Governors Association and the Council of Chief State School Officers, currently being implemented in 43 states and the District of Columbia[1].

Raised expectations for American high schools in the latter part of the century impacted curricular intensity (i.e. increased rigor in college-preparatory academic coursework), which has permeated every aspect of schools. American schools were tasked with educating all students to rigorous standards while combating mediocre scores on national and international exams (Ravitch, 2000). This forced the majority of students into academic tracks to prepare for college. However, one criticism of these initiatives is that business and industry had limited input, and as such, the standards reflect a narrow definition of academic proficiency with little attention paid

[1] corestandards.org

to specific skills and knowledge valued in the workplace (National Association of State Directors of Career Technical Education Consortium, 2010).

This notion of "College for All" in high schools has become increasingly apparent in the U.S. Department of Education's policy. This shift towards a rigorous academic curriculum reflects the 1983 National Commission on Excellence in Education recommendation that all high school students complete at least three full-year credits in mathematics, science and social studies and four full-year credits in English. As a result, the total number of academic courses taken by a typical high school graduate during four years of high school increased by 31%: from 12.9 credits in 1982 to 16.9 credits in 2000 (Bishop & Mane, 2004). Analysis of nationally representative transcripts shows that high school students complete more rigorous academic course loads than ever before (Adelman, 2006). This resulted in a diminished focus on the other goals of high school.

Despite the curricular intensification, academic tracks are not the only high school curricular options; alternative pathways to high school graduation remain available to those students who pursue career training. Career and technical education (CTE) in U.S. high schools remains a large and complex enterprise. In 2002, high school students spent more than 1.5 billion hours in vocational courses of varying types. Courses in general labor market preparation, which include principles of technology, industrial arts, typing, keyboarding, etc., and family and consumer sciences are offered in almost every high school. High school graduates in 2000 took 1.2 full-year introductory CTE courses during high school (National Center for Education Statistics, 2003). In the same year, nearly 91% of graduates completed at least one occupation specific course, and 44% completed three or more courses (Levesque, 2003).

Common Core's substantial academic emphasis, alongside the curricular integration focus of Perkins IV poses a challenge for states, districts and schools to design CTE courses that effectively support core competencies in math and in English (Bozick & Dalton, 2013). While increased academic requirements might have resulted in some students having less time to take CTE courses, students' predominant method for accruing additional academic credits seems to have been to increase the total number of credits they earned rather than to decrease CTE course completion. The average student completed 0.5 fewer units in CTE in 2000 than the average high school student in 1982, while completing 4 more units of overall high school coursework (National Center for Education Statistics, 2000).

Simultaneous to federal development in academic curriculum in high schools, CTE policy has also evolved since 1917, when the Smith-Hughes Act was passed. This legislation was based on Charles Prosser's *Report of the National Commission to Aid on Vocational Education*, which promoted vocational agriculture to train people and provided federal funds for this purpose (Stone & Aliaga, 2007). This 1917 legislation is the basis both for the promotion of CTE, and for its isolation from academic curriculum in U.S. schools. The Vocational Education Act of 1963 was amended and reauthorized in the 1980s and 1990s; the federal government enacted several key pieces of legislation that impacted vocational education.

In 1984 the Carl D. Perkins Vocational and Technical Education Act was first authorized and subsequently reauthorized in 1988. In 1990 (Perkins II), 1994 (School-to-Work Opportunities Act) and in 1998 (Perkins III) career preparation in schools was supported through an integration of academic and vocational training (DeLuca, Plank & Estacion, 2006). This legislation was initially implemented to strengthen and expand the economic base of the country, develop human resources, reduce structural unemployment, increase productivity, and strengthen

the Nation's defense capabilities by assisting the States to expand, improve, and update high-quality programs of vocational-technical education. In the mid 1990s concerns arose with the school-to-work transitions in the U.S., stemming from the lack of connections between high school and work for the largest group of students who were completing comprehensive high school curricula. In 1994 the School to Work Opportunities Act (STWOA) was passed by Congress to address the following: the lack of connection between school and work that produced unmotivated young-adults with limited opportunities to move out of low-wage jobs; high school graduates who completed their education with insufficient skills for the labor market; and increased labor market demands for higher level thinking, teamwork and continued on the job learning (Neumark, 2007).

In addition to STWOA, the Perkins Act provided funding for vocational education, targeting specific populations of students: individuals with disabilities, individuals from economically disadvantaged backgrounds, individuals with limited English language proficiency and single parents. Essential to the most recent iterations of the Perkins legislation in 1998 and 2006 is the directive that occupational courses incorporate skills and concepts taught in core academic courses to increase the likelihood that CTE supports academic achievement (Bozick & Dalton, 2013). In 2006, the reauthorized passage of the Perkins Act, commonly referred to as Perkins IV, reflected the most recent national commitment to prepare youth for the evolving challenges of the workplace through occupationally focused coursework. These goals have been updated, providing both a framework and funding to states and school districts to implement and maintain successful CTE. Notably, Perkins IV also renamed vocational education as career and technical education (CTE).

However, the goals of raising academic standards and improving workplace competencies are more competing than complementary. Academic and occupational programs frequently have different goals, students, faculty and separate areas of the school, making them unlikely to join forces. As Castellano et al. (2003) found, vocational and academic staff often do not know each other well, and are therefore less likely to collaborate with one another. Additionally, prior research suggests that vocational education has both positive and negative effects. On the positive side, CTE should enhance students' chances of finding employment as skilled workers and reduces their chances of slipping to the bottom of the occupational ladder. On the negative side, CTE has been reported to reduce the attainment of education beyond high school (Shavit & Müller, 2000). Effects of these competing interests have been reported and discussed since at least the 1980s (National Commission on Excellence in Education, 1983; Secretary's Commission on Achieving Necessary Skills, 1991). The competing interests of U.S. high schools have recently been combined into an integrated model of college and career readiness for all high school graduates (Bozick & Dalton, 2013; Smerdon & Borman, 2012). Federal regulations impose increasingly rigorous academic course requirements and assessments intended to set high academic standards for all students (Adelman, 2006; Domina & Saldaña, 2011; Ravitch, 2000; Rosenbaum, 2001). Despite efforts to prepare all students for college, American teens continue to pursue CTE coursework in high schools and community colleges, or forgo college altogether.

This concurrent course completion of both CTE and academic units occurred at a time when U.S. high schools were shifting away from prior methods of course assignment. During the mid-20th century, the majority of U.S. high schools were split into academic tracks that assigned students to college preparatory, honors, general and basic tracks (Lucas, 1999). This

tracking sorted students into homogeneous groups based on student's abilities and career goals (Rosenbaum, 1996). During this era, vocational tracks offered specialized courses to students with similar skills. These skills were honed and developed for particular career aspirations. Despite the potentially positive implications of CTE, the tracking of economically disadvantaged students into CTE and non-college preparatory coursework provides less access preparation for careers in science and mathematics and AP and honors-level courses (Blossfield, 1992; Geiser & Santelices, 2006; Oakes, 1990). Consequently, beginning in the 1960s and 1970s the system of tracking was gradually dismantled nationwide (Moore & Davenport, 1988). Schools continued to stratify coursework in each subject, but vocational students were no longer isolated with other work-bound students from their college-bound peers as they were in previous decades (Lucas, 1999; Rosenbaum, 1996).

Despite development in both academic and vocational curriculum in U.S. high schools in the 20th Century, a mismatch between the skills developed by American high school students and the skills required by high-wage employers emerged. Without more advanced skills, middle class jobs were inaccessible to low-skill workers (Murnane & Levy, 1996). The wage gap between college graduates and both high school graduates and high school dropouts widened (Autor, Katz & Kearney, 2005). Regardless of the concerns regarding post-secondary enrollment, proponents of high school CTE training argued the effect of CTE on the opportunities of the academically weak should not be judged against the odds of obtaining a college education (Arum & Shavit, 1995).

Chapter 2: Conceptual Framework and Literature Review

In this dissertation I build on Human Capital theory, which suggests high school coursework should result in real skills having measurable impacts on earnings and employability. Human Capital theory is based on the work of Becker (1975) and Mincer (1974); this theory explains both individuals' decisions to invest in human capital activities such as education and training, and the resulting pattern of individuals' lifetime earnings. Individuals' different levels of investment in education and training are explained in terms of their expected returns from an investment (Cellini, McKernan & Ratcliffe, 2008). Human Capital theory implies school curricula have value because they impart skills that improve graduates productivity and wages in the labor market (Rose & Betts, 2004). Investments in education and training such as CTE, entail costs in the form of both direct expenses and opportunity costs. Human capital theory can also explain the pattern of individuals' lifetime earnings. Early investment in human capital facilitates increasing financial benefits with age (Becker, 1975). Younger people have a longer remaining work life to benefit from their investment and their foregone wages are lower, so costs of investing are lower.

Based on the foundation that high school curricula impart skills that affect graduates productivity and wages in the labor market I analyze the changes and consequences of CTE course taking from high school graduates in 1982, 1992 and 2004. My work focuses not only on how types of CTE courses have changed over time, but how the completion of CTE coursework impacts college preparatory course completion. Furthermore, I investigate how enrollment in CTE courses changes over this time period by sex, family income and race/ethnicity. Finally, I build upon this to investigate the consequences of varying levels of CTE, as well as different types of CTE on labor market outcomes. The proposed study builds on Mane's 1999 study which

used NLS:72, HS&B and NELS:88 to analyze trends in the payoffs to academic and vocational high school courses for non-college bound students. My research incorporates a new generation of survey data from ELS:2002. I use this new wave of data to analyze differences in CTE coursework for males and females and how over time different types of CTE coursework impact labor market outcomes.

Literature Review

Patterns in CTE Course Taking

Prior research suggests that students tend to be positioned on high school curriculum tracks that either put them on a path to post-secondary education or to immediate employment. For most students, the choice appears to be either/or, since work force preparation and college readiness are difficult to complete simultaneously (Kemple & Willner, 2008). For decades, vocational education was distinguished by its isolation from both comprehensive and academic high school curricula (Hayward & Benson, 1993). Thus, Stone and Aliaga (2007) found that only 5.9% of youth in the National Longitudinal Survey of Youth 1997 identified as both academic and CTE concentrators. However, the isolation of students completing vocational coursework was not without concern. In the 1980s and 90s perceptions arose over the academic skills of the American workforce, and that high school vocational education had become an "educational backwater" for disadvantaged and disabled students (U.S. Department of Education, 1994). Consequently, vocational education began to shift towards efforts to integrate academic and vocational skills in high school (Neumark, 2007). As a result of this integration, far fewer students are now tracked into any one program of study (Lucas, 1999).

Despite an overall reduction in high school students who focus on vocational training, over time, more high school students engaged in CTE coursework, while fewer had distinct CTE concentrations. Over 95 percent of high school students took at least one CTE course in 2000 (U. S. Department of Education, 2004), and nationally in the class of 2005 only 3% of students took no vocational classes or CTE units (Hudson & Laird, 2009); however, from 1982-1998, the percentage of students who completed vocational concentrations of three or more courses in the same labor-market preparation domain decreased from 34% to 25% (National Center for Education Statistics, 2000). From 1982-2000, CTE course completion decreased slightly from 4.7 to 4.2 units (U. S. Department of Education, 2004). The decrease in vocational concentrators and frequency in which high school graduates took small amounts of vocational coursework is a logical consequence of the dismantling of school-wide systems of tracking (Moore & Davenport, 1988). With the continued stratification of coursework by subject, vocational students were no longer isolated by track from their college-bound peers as they were in previous decades (Lucas, 1999; Rosenbaum, 1996).

Changes in the completion of vocational concentrations by U.S. high school students varied across the domains of CTE. The overall decline in the percentage of students completing a CTE concentration reflects the decline in the two largest vocational work forces: *trade and industry,* and *business*. The percentages of students concentrating in *health care*; *technology and communications*; *food service and hospitality*; and *child care and education* increased (National Center for Education Statistics, 2000). By 2003, changes had occurred differentially by CTE concentrations: course credit declines in *business services*, *materials production*, and *mechanics and repair* were offset by credit increases in *health care*, *communication technology* and *computer technology* (Levesque, 2003).

Historically, CTE has targeted mainly low-income and disadvantaged high school students (Lynch, 2000). There is an inverse relationship between family income and the number of CTE credits completed; students with the highest SES completed small amounts of CTE significantly more frequently than their lower SES peers, while low SES students predominated in completing high levels of CTE (Aliaga, Kotamraju & Stone, 2014). Although students in the lowest quartile of SES completed three or more units of SES with much higher frequency than their peers in the highest quartile of SES, 49% and 33% respectively, CTE can no longer be said to serve exclusively low-income students, underperforming students or students from special populations (Aliaga, Kotamraju & Stone, 2014).

Effects of CTE

Some have argued that high school career and technical education is obsolete in our very technologically based, global economy. They argue that schools should concentrate on cultivating academic skills (Jacobs & Grubb, 2003). Earlier work examined the impact of high school vocational education, finding little long-term economic benefit (Gustman & Steinmeier, 1983; Meyer & Wise, 1979; Neuman & Ziderman, 1999). However, short-term benefits to CTE have been well documented. Vocational programs may also contribute to dropout prevention; students who complete CTE coursework typically have weaker academic backgrounds, and lower educational expectations than those on the academic track (Kelly & Price, 2009). Evidence shows that vocational programs help keep these students in high school. Without vocational programs, more at-risk students would drop out of school each year than currently do (Kulik, 1998). In the 1980s, students with more than 20% of their coursework in CTE were more likely to graduate from high school (Arum, 1998). In the 1990s, increasing the number of CTE units a

student completed by 10th grade increased the likelihood of dropping out of high school (Ainsworth & Roscigno, 2005). However, Plank (2001) found a contradictory result in which high school CTE positively impacted high school completion in 2000.

Despite positive impacts on dropout prevention, several researchers identify large negative effects of high school CTE on all types of post-secondary enrollment (Arum, 1998). In the 1990s, increasing the number of units of CTE that a student completed by 10th grade decreased the likelihood of attending a four-year college (Ainsworth & Roscigno, 2005). With the continued growth in overall college attendance, the number of 18- to 24-year-olds increased from 28.0 million to 31.1 million between 2001 and 2011, an increase of 11%. The percentage of 18- to 24-year-olds enrolled in college rose from 36% in 2001 to 42% in 2011 (National Center for Education Statistics, 2013). This study seeks to determine if this finding continues to hold true in light of shifting federal policy to prepare high school students for colleges and careers. I also investigate the role CTE coursework serves in predicting educational attainment eight years after high school graduation.

Mane (1999) compares the short- and medium- run returns to vocational course taking for students who graduated high school in 1972, 1980, and 1992, and finds that these returns grew much higher after the 1970s. Bishop and Mane (2004) examine literature on the effects of secondary vocational education and also find evidence this return has been growing, possibly because the skill needs of business were growing and shifting very rapidly during the 1980s and 1990s, and because this type of education has become more effective.

Arum and Shavit (1995) argue while vocational education may inhibit future educational and occupational plans for some students, vocational education teaches students marketable skills and attitudes that can help them find skilled jobs and reduce their risk of unemployment or

employment as low paid, un-skilled workers. Bishop and Mane's analysis of NELS:92 data on high school graduates from 1992 and 1993 (including those who graduated in five years) indicates those who trained for specific occupations in high school were more successful in the labor market. These graduates spent more time employed (both immediately after high school and eight years later), worked better jobs and earned significantly more than students who did not take advanced CTE courses (Bishop & Mane, 2004).

Both high school graduates who do not pursue further education and college dropouts are at an earnings disadvantage in their initial years in the labor market compared with those who obtained post-secondary CTE credentials. Studies show the average college graduate's earnings increase over their lifetimes, while adults who attain little more than a high school degree (or perhaps some college) have been experiencing stagnating wages (adjusted for inflation) across their lifetimes (United States Bureau of Labor Statistics, 2007). Some scholars argue it might be more advantageous to pursue other educational routes such as a two-year technical degree to develop skills that are readily applied to the higher-skilled labor force than completing some academic coursework at a post-secondary institution without completing a bachelor's degree (Kerckhoff, 2003; Rosenbaum, 2001).

Bozick and Dalton (2013), utilizing ELS: 2002 determined that most of the achievement differences between students who take a large number of occupational courses and students who take few or no occupational courses are due to preexisting differences between students before they enter high school, not the actual courses completed. Those who are high achievers gravitate to and/or are placed in academic courses, while low achievers gravitate to or are placed in CTE courses. With these selection processes operating long before students reach the end of high school, only a small effect can be attributed to courses completed (Bozick & Dalton, 2013).

Differential Effects of CTE for Female and Male High School Graduates

Experiences in early adulthood vary greatly by gender and highest level of education completed (Settersten & Ray, 2010). Gender significantly predicts career choices across all career clusters, which partially explains the wide disparities in earnings and stratification of career choices based on gender (Nauta & Epperson, 2003). There are distinct gender differences in occupational training, college majors and career choices that contribute to differential earnings potential (Fletcher & Zirkle, 2009).

Historically, participation in the CTE track had varying effects on men and women. Forty years ago, women were routinely directed into traditionally female occupations like nursing, secretarial work, teaching and homemaker. While "male only" or "female only" labels are gone, gender roles remain (Sadker & Zittleman, 2009). In 1977, girls made up 14% of students in trade and industrial courses (National Women's Law Center, 2005). In 1990, girls outnumbered boys in home economics, health and secretarial courses while boys outnumbered girls in agriculture, trade, industry and technical fields (National Center for Education Statistics, 1991). In 2004, girls represented 15% of students taking classes in traditionally male, higher-paying fields such as carpentry, automotive, masonry and welding. More than 85% of females were clustered in traditionally female courses such as cosmetology, childcare, medical assistant, health aid and nursing (National Women's Law Center, 2005). Male and female high school students also completed disparate amounts of CTE coursework; 40% of males completed three or more CTE courses in comparison to 33% of females, while 24% of males completed one or fewer units in comparison to 29% of females (Aliaga, Kotamraju & Stone, 2014). Additionally, CTE fields, which are nontraditional for their gender, have remained virtually unchanged since the 1970s

(United States Department of Education, 2004). The differences in high school CTE training by gender result in distinctly different employment opportunities with male dominated CTE fields paying an average wage of $20, while female fields pay $15 per hour (National Women's Law Center, 2005).

Arum and Shavit (1995) found that, regardless of gender, CTE had negative effects on post-secondary enrollment. Post-secondary enrollment overall also reflects differences by gender, however these gender differences have changed over time: from 1900 to 1930 male to female undergraduate enrollment in the U.S. was at about parity, however male enrollment increased in the 1930s and soared after World War II (Goldin, Katz, & Kuziemko, 2006). The highpoint of gender imbalance occurred in 1947 when only 29% of the undergraduate population nation-wide was female (NCES, 2013). From 1947 on, female enrollment increased, especially in the 1970s (Goldin, Katz, & Kuziemko, 2006). Gender equality occurred again in 1979 when 51% of the undergraduate population was female (NCES, 2013). Subsequently, women overtook men in undergraduate enrollment and graduation, with 57% of the undergraduate population being female in 2012 (NCES, 2013).

Differences in college enrollment rates reflect pre-existing gender differences from high school. Girls achieved considerably higher grades in high school than boys in the NLS:1972 and in NELS:1988 (Goldin, Katz, & Kuziemko, 2006). Female high school seniors were more likely to have developed college plans, and reported some of the following perspectives: education is a vital investment, and knowledge that occupations they sought to pursue required a college education (Kleinfeld, 2009). In particular, women of color and low-SES participated in higher education at higher rates than their male counterparts. During the 1990s twice as many African American women as men earned college degrees (Lopez, 2003). Concurrently, there was a

substantial female lead in college graduation at all SES levels, but this gender gap was largest in the bottom of the SES distribution (Jacob, 2002). Kleinfeld's research revealed two concerning mindsets of high school boys: those from families with parents who graduated from college perceived higher education as expected and were rarely excited about college; while those boys from working class families had little knowledge of the job market, the likelihood of obtaining their "dream job" and the income necessary to live comfortable adult lives (2009). These findings provide evidence that something more is needed to engage young men in pathways to meaningful employment. Findings in the school-to-work literature show evidence that program participation is particularly advantageous for men in the forgotten-half with respect to both schooling and work-related outcomes. There are substantial benefits from such programs with targeted efforts towards male high school students whose characteristics and backgrounds make them less likely to attend college (Neumark, 2007). These programs can mediate the higher frequency of young men disliking school and lacking plans beyond high school that Kleinfeld identified (2009).

Over the past quarter-century, the earnings of women, unlike the earnings of men, have risen. Women’s earnings have grown faster than those of men—although men have continued to out earn women. This is partially a result of women’s wages were much lower to start; however, their average earnings have remained well below those of men. Nationally, women are concentrated in the jobs that cluster at the bottom of the income distribution (Blank, 1997). In 1975, a female high school graduate earned about 46% as much during the year as a male; by 2002, she earned 62% as much. As with men, the most educated women saw the largest earnings gains. In 1969, only about 10% of men in their early thirties had wages that were below poverty level. By 2004, the share had more than doubled. Women fared a little better over the same time

span, but nearly half were still earning poverty-level wages by their mid-thirties (Danzinger, 2004).

The Economy and Effects of the Recession of the Early 2000s

During the later part of the first decade of the 21st Century, the United States experienced a tremendous economic downturn. This recession produced a spike in unemployment, poverty and failed businesses; many people lost their jobs, homes and savings (Iceland, 2012). From December 2007 to October 2009, unemployment doubled from 5% to 10% (Sahin, Song & Hobijn, 2010). Household income inequality rose throughout this decade; there was a striking gap between those at the very top of the income distribution and the rest of society. For the first time since the 1960s the median household income decreased (Iceland, 2012). The effects of the recession varied by gender; in August of 2009 the unemployment rate for men was 11% while it was 8% for females. Job losses were concentrated in goods-producing industries of manufacturing and construction, which employ a higher proportion of male workers (71% and 88% male dominated respectively), while the health care and education sectors which employ a higher proportion of women increased during this time (23% male) (Sahin, Song & Hobijn, 2010). The faltering economy had dramatic consequences on wages and rates of employment that differentially affected men and women in the labor force during this time.

Research Questions and Hypotheses

In order to understand the impacts of CTE for both males and females from these three graduating classes, I will conduct this study, which is based on the following questions:

1. Did U.S. high school graduates in 1982, 1992 and 2004 take different quantities and types of career and technical education? Did female and male U.S. high school graduates in 1982, 1992 and 2004 take different quantities and types of career and technical education?
2. What effect does high school career and technical education for graduates in 1982, 1992 and 2004 have on post-secondary educational attainment? Have these effects changed over time? What effect does high school career and technical education for graduates in 1982, 1992 and 2004 have on employment and earnings? Do these effects vary for different types of CTE coursework completed?
3. Are there differential effects of high school career and technical education for female and male high school graduates in 1982, 1992 and 2004 on post-secondary education? Are there differential effects of high school career and technical education for female and male high school graduates in 1982, 1992 and 2004 on employment and earnings?

In my research I expect to find that high school vocational education has negative impacts across cohorts on earnings. This hypothesis is based on previous research showing that high school vocational education has little long-term economic benefit (Gustman & Steinmeier, 1983; Meyer & Wise, 1979; Neuman & Ziderman, 1999). Additionally, I expect to find that all types of high school CTE would have negative effects on post-secondary degree attainment across cohorts. This is based on previous work identifying large negative effects of high school

CTE on post-secondary enrollment (Ainsworth & Roscigno, 2005; Arum, 1998; Arum & Shavit, 1995). My final hypothesis is that males who complete CTE coursework in high school will earn more than their female counterparts because they are completing preparation for higher wage occupations. This is based on the findings about gender differences in labor market preparation and its effect on earnings from the National Center for Education Statistics, 1991; National Women's Law Center, 2005; and Sadker & Zittleman, 2009. I believe CTE training will mediate some of the negative effects of a downturn in the economy for young men.

Chapter 3: Data and Methods

In this study examining vocational course taking trends and post-secondary education and employment outcomes, I use three nationally representative surveys collected by the National Center for Educational Statistics (NCES), High School and Beyond (HS&B), the National Educational Longitudinal Survey (NELS), and the Educational Longitudinal Survey (ELS). All three datasets include student surveys and transcript data that span high school cohorts from 1982-2004. HS&B originally sampled approximately 30,000 high school sophomores in 1980, NELS began with 24,000 eighth graders in 1988 and ELS began with 18,000 high school sophomores in 2002. These data include student self-reports of family background, educational aspirations, school and work experiences, parent reports of educational attainment, as well as student high school transcripts. These samples include data from the 10th and 12th grade as well as ten years after high school graduation for HS&B and eight years later for NELS and ELS.

In my analyses, I include variables that have been traditionally used for measuring participation in CTE, such as background characteristics, prior academic achievement, and academic performance in high school. Outcome variables include a categorical variable of highest level of education completed as ten years after high school graduation for HS&B and eight years later for NELS and ELS. A continuous variable of annual earnings was collected ten and eight years after high school graduation respectively. This survey question asks participants to self-report their total earnings from the previous calendar year. Survey participants without data on their highest level of education or earnings were excluded from these analyses.

Using the Classification Scheme of Secondary School Courses (CSSC) based on the 2000 High School Transcript Study, the categories of CTE course completion are compared with transcript level data from all three datasets. Descriptive analyses are conducted to determine if

there are differences in the number of units in the following categories of CTE: technology and communication, health care, personal and other service, marketing and distribution, agriculture and renewable resources, business, trade and industry. All high school course work across data sets is measured in Carnegie units. A Carnegie unit is equivalent to a one-year academic course taken one period a day, five days a week (Ingels et al., 2007). I compare differences between cohorts in the total number of CTE units completed as well as differences in the number of units taken in each specific CTE category.

Students from the classes of 1982, 1992 and 2004 are identified as vocational and occupational concentrators based on the specifications from the 1998 revision of the Secondary School Taxonomy. Participants are identified as academic concentrators if they completed at least four Carnegie units of English, three of mathematics with at least one credit higher than algebra II, three credits of science with at least one credit in U.S. or world history and two credits in a single foreign language. The identification of academic concentrators across cohorts is particularly challenging because the curricular expectations of American high schools has changed dramatically in the decades since *A Nation at Risk.* The average class of 2004 high school graduate earned approximately 5 more academic credits than the average class of 1982 graduate, and the proportion of students completing the "New Basics" curriculum prescribed in *A Nation at* Risk, increased from 2.32% in 1982, to 16.32% in 1992, and 31.92% in 2004 (Domina & Saldaña, 2011). Occupational concentrators are identified across cohorts if they completed at least three credits in CTE.

Methods

In this study, I first document the changes in the number of CTE courses completed by high school graduates in 1982, 1992 and 2004. Subsequently, I investigate the transformation in the types of CTE courses taken as the demands of employers change with technological advances. In this study I assess the effect of such coursework in high school on post-secondary education, employment and earnings. Later, the study focuses on the interaction between CTE course completion for male and female high school graduates. Variation in CTE course taking and its effects are evaluated based on the sex, class and race/ethnicity of the student.

I recoded high school coursework across datasets according to the CSSC, based on the 2000 High School Transcript Study. The National Center for Education Statistics (NCES) provides complete high school transcripts (as part of the High School Transcript study series) with standardized course credits, grades, and codes using the Classification of Secondary School Courses (CSSC)[2]. This recoding provides a coherent mechanism to compare course completion across the three decades documented in HS&B, NELS: 88 and ELS: 2002. To maximize the comparability of the three graduating classes in my analyses, I use data only from on-time high school graduates from the HS&B, NELS, or ELS 12th grade cohort for whom full transcript data were available, following the procedures outlined in Dalton et al. (2007). All analyses are weighted using the National Center for Education Statistics transcript data weights. All statistical analyses utilize the Stata "cluster" function to correct standard errors for the clustering of HSB, NELS and ELS respondents in high schools. This also controls for some of the differences in local course taking requirements.

[2] Using the CSSC course level coding, I applied the year 2000 definitions of vocational courses to all three cohorts in order to use a single set of definitions of vocational specializations (Badby & Hudson, 2007). In the 2000 CSSC there were 22 vocational concentrations including: engineering technologies, computer science, marketing, business, construction and agriculture.

My subsample for analysis includes only high school graduates with complete high school transcripts available in their respective dataset, since I relied heavily on the transcript data (rather than self-reports) to identify vocational concentration. It is important to note that by including only high school graduates in this analysis, it is possible that the findings reflect the course-taking histories of higher achieving students, since dropouts are more likely to be less academically proficient. In table 5 survey participants from each of the three datasets with transcript data are compared to survey participants who have transcript data and graduated from high school on time. On time graduates in my sub-sample for analysis included 80% of HS&B, 82% of NELS and 78% of ELS survey participants. The subsample for analysis was slightly more White, Asian and female, and less Black, Hispanic and male than the complete samples of HS&B, NELS and ELS. For NELS and ELS the sub-sample for analysis was slightly more female than male.

I categorize course taking patterns into three possible concentrations: college prep, vocational, and a general track for neither vocational nor college prep. Students who take three or more courses in CTE are considered vocational concentrators, and students who complete greater than zero and less than three Carnegie units of CTE are considered vocational samplers. For the longitudinal analysis, a college preparatory concentration is defined as taking: four credits of English, three credits of math, science, and social studies, as well as two years of foreign language[3]. Across the three cohorts there was a statistically significant increase in the percent of students whom completed college preparatory coursework over time; with 55% of students completing college preparatory concentrations, high school graduates in 2004 were more likely to take some vocational coursework in high school while simultaneously completing

[3] This is also one definition of a "New Basics" curriculum.

college preparatory coursework. Vocational and Academic tracks are no longer mutually exclusive routes to high school graduation. Student credit ratios measures the proportion of vocational to total credits to represent the proportion of vocational courses students take.

The highest level of education outcome variable was recoded to create fewer categories. Participants are identified as one of the following four categories: high school graduates with no additional education; high school graduates who completed some college or an associate's degree; bachelor's degree recipients and post-bachelor's certificate recipients; or participants who completed a master's or doctoral degree. Earnings data from all cohorts was recalculated using calculations from the Bureau of Labor Statistics[4] (BLS) to account for inflation. All earnings are recalculated to reflect the equivalent of 2013 dollars, the most recent year that complete BLS data is available for.

Interaction variables were constructed to measure the interaction between sex and CTE behaviors. These interactions include: the interaction between the number of high school units completed and sex, the interaction between the percent of high school coursetime spent in CTE courses, and sex as well as interactions between sex and each category of CTE coursework.

[4] http://www.bls.gov/data/inflation_calculator.htm

Chapter 4: Results

Changes in Career and Technical Education Course Taking

Table 1 provides descriptive statistics of on-time graduates from each of the three cohorts. This sample is slightly more White, Asian and female, and less Black, Hispanic and male than the complete samples of HS&B, NELS and ELS. Over the three decades the sub-sample became more ethnically diverse, with more Black, Asian and Hispanic high school graduates surveyed. Both female and male high school graduates completed more total high school units in 2004 than in previous cohorts. The average high school graduate completed nearly four more Carnegie units in that year than in 1982. Concurrently, the total number of vocational or CTE units completed decreased by just over half a Carnegie unit. As a result of increased total high school course taking and decreased CTE course taking, the percent of vocational units completed by high school graduates in the three cohorts gradually decreased. Across the three decades, overall educational attainment increased, which is consistent with previous research (NCES, 2013). During that same time-period annual earnings decreased; this is likely a reflection of the overall decrease in full-time employment and increase in the completion of higher levels of education that keep young-adults out of the labor market until later in their twenties. This is particularly true for women, who across the three cohorts have surpassed their male counterparts in bachelor's and master's degrees. Seven years after graduation, 73% of female and 86% of male high school graduates from the class of 1992 had full-time jobs, while 64% of female and 77% of male high school graduates from the class of 2004 had full-time jobs. This may be a reflection of poor economic opportunities for young adults in 2011 when the 2004 graduates were seven years removed from high school, or it may be a reflection of their increasing commitment to education later in their twenties. With 26% of

females and 23% of males the class of 2004 enrolled in some form of education in 2011, this shows a 5% increase for females and 1% increase for males in post-secondary enrollment from the 1992 cohort in 1999.

Table 1
Descriptive Statistics of On-time High School Graduates from the Three Cohorts, by Sex

	H&SB: Class of 1982				NELS: Class of 1992				ELS: Class of 2004			
	Female		Male		Female		Male		Female		Male	
	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*
Black	11%	600	9%	470	11%	670	11%	650	12%	700	12%	620
Asian	2%	80	2%	90	4%	250	4%	230	4%	230	4%	230
Hispanic	10%	520	13%	660	9%	540	9%	530	14%	800	13%	680
Other	2%	100	2%	120	1%	50	1%	50	5%	270	5%	260
White	76%	4,060	74%	3,770	76%	4830	76%	4660	65%	3660	66%	3540
Total HS Units	21.82	5,370	21.31	5,110	24.14	6380	23.90	6170	25.96	5680	25.80	5330
Total Voc Units	4.56	5,150	4.44	4,850	4.69	6060	4.57	5880	3.61	5250	4.29	5070
% Vocational	21%	5,370	20%	5,110	19%	6380	19%	6170	13%	5680	16%	5330
HS Grad	48%	2,310	54%	2,390	12%	520	17%	660	7%	340	11%	490
Some College	22%	1,070	16%	710	47%	2050	50%	1930	49%	2470	50%	2150
BA	25%	1,220	25%	1,100	35%	1530	30%	1180	34%	1680	32%	1360
MA+	4%	210	5%	240	5%	220	3%	120	10%	500	6%	280
Any Employment	81%	3,860	93%	4,130	87%	3750	93%	3610	82%	4090	88%	3750
Full-time Job					73%	3180	86%	3330	64%	3210	77%	3270
Part-time job					20%	880	15%	600	25%	1270	19%	800
Current Student					21%	900	22%	860	26%	1290	23%	1000
Earnings>0	$34,020	3,950	$44,500	4,080	$36,270	4090	$48,070	3670	$27,850	4250	$35,600	3750
Earnings>0 w/ FT Job					$39,480	3040	$51,490	3100	$32,820	3050	$39,530	3000

Note. Weighted with NCES weights

Figure 1 illustrates the proportion of high school coursework focused on Career in Technical Education in the early 1980s, 1990s, and 2000s. This figure demonstrates that the course-taking patterns of American high school students changed over these decades. Graduates in 2004 were more likely to complete zero or less than three units of CTE than their predecessors. The 2004 cohort also completed less CTE coursework in proportion to their overall course completion.

Figure 1
Mean Number of CTE Units Completed by Cohort

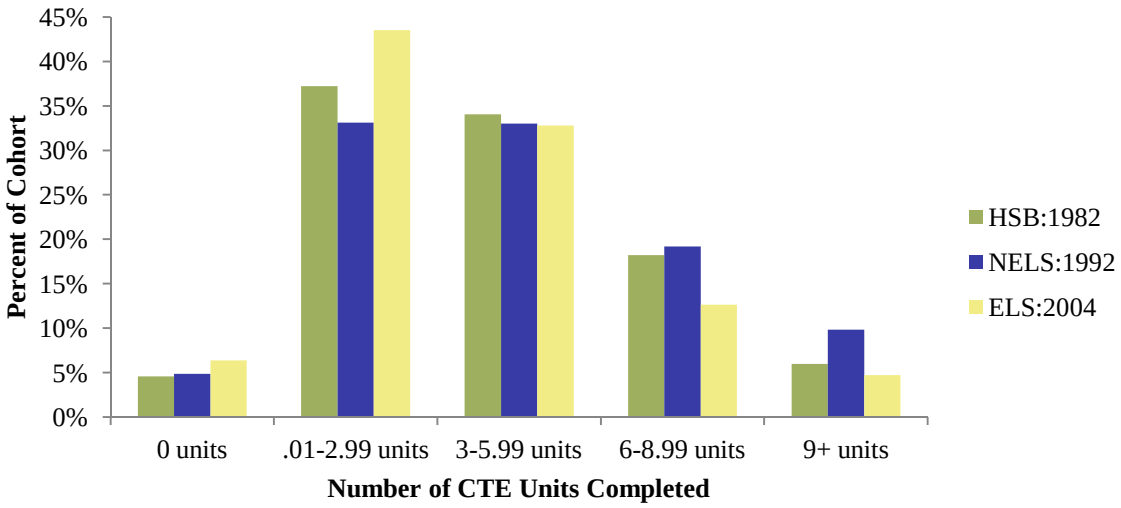


Table 2 provides the mean number of total high school course units completed as well as the mean units in each CTE specialization for students who completed more than zero units in each particular course type. Additionally, the total number of students in each cohort who completed some of a particular course type is provided to demonstrate the likelihood that a student in each cohort might have been exposed to a specific CTE specialization. Notably, there was a 20% increase in total units completed across the three decades, and 15% decrease in CTE units completed. 1982 graduates completed a mean of 21.57 units, while in 1992 graduates completed 23.92 units and 2004 graduates completed 25.79 total high school units.

For students who completed any agriculture classes across the three cohorts, the mean number of agriculture units completed decreased steadily from 1982 to 2004. The number of survey participants who completed health courses increased from just over 400 in 1982 to over 1,000 in 2004, which was accompanied by an increase in the mean number of health units completed. For students who completed any trade classes across the three cohorts, the mean number of trade units completed decreased by over half a unit from 1982 to 2004. During this time the percent of survey participants who completed any trade courses remained stable;

however those students were exposed to less classroom hours of trade instruction. The mean number of technology units completed increased from 0.88 to 1.09 from 1982 to 2004. During this time, there was a large increase in the number of high school graduates who completed technology coursework, with just over 1,000 completing technology classes in 1982 to over 7,000 in 1992 and nearly 6,000 in 2004. While only 2% of survey respondents in 1982 and 1992 and 5% in 2004 completed military coursework, military course takers completed a mean of 1.41, 2.09 and 2.44 for each cohort respectively. In 2004, military units were higher proportionately than any other CTE specialization. Home economics/consumer home economics saw a decline in the mean number of courses completed across the three decades, however the number of high school graduates who completed such courses was high across cohorts, with a minimum of at least 4,800 in each of the three cohorts. In 1982, 54% of survey completing students completed some business and marketing coursework. These students averaged 2.08 units of business and marketing in their high school career. By 2004, 56% of students completed some business and marketing, however they completed an average of 1.41 units, while completing more overall high school units.

Table 2
Mean Number of Courses Completed by CTE Specialization[5]

	HS&B: 1982			NELS: 1992			ELS: 2004		
	M	*N*	*%*	*M*	*N*	*%*	*M*	*N*	*%*
Total HS Units	21.57	10,480	100%	23.92	13,740	100%	25.79	11,550	100%
Total CTE	4.50	10,000	95%	4.69	13,070	95%	3.90	10,810	94%
General CTE	1.31	7,960	76%	1.24	2,910	21%	1.33	4,300	37%
Agriculture	2.06	800	8%	1.93	1,160	8%	1.81	1,050	9%
Health	1.09	440	4%	1.32	660	5%	1.28	1,000	9%
Trade	2.57	3,630	35%	2.46	4,710	34%	1.97	3,920	34%
Technology	0.88	1,380	13%	1.02	7,560	55%	1.09	5,940	51%
Military	1.41	190	2%	2.09	250	2%	2.44	530	5%
Home Ec & Consumer	1.56	4,890	47%	1.43	6,060	44%	1.34	4,860	42%
Business & Marketing	2.08	5,680	54%	1.76	10,100	73%	1.41	6,480	56%

Note. Mean number of units for students who completed >0 units in a specific course with NCES weights, *N* of survey participants and the % of participants who completed each specific course type.

Figure 2 illustrates the percent of all surveyed students in each cohort who completed some coursework in each specialization. Across the three decades there is a dramatic decrease in the percentage of students who completed general CTE coursework. In 1982, 76% of students completed some general CTE; this fell sharply in 1992 to 21% and remained relatively low in 2004 with 37% of students completing some general CTE. Additionally, from the 1982 cohort to the 1992 cohort there was a 42% increase in the percent of students completing technology coursework. This increase persisted in the 2004 cohort, with over half of all students completing some technology coursework. Although students completing health courses represent less than 10% of the population, there is a notable increase in the percentage of students completing health courses. In 1982 and 1992 only 4% of students completed health courses, which doubled in 2004 to 9%.

[5] CTE specializations and the courses from CSSC that fulfill each specialization are found in table 4 in the appendix.

Figure 2
Percent of Students Participating in CTE by Type

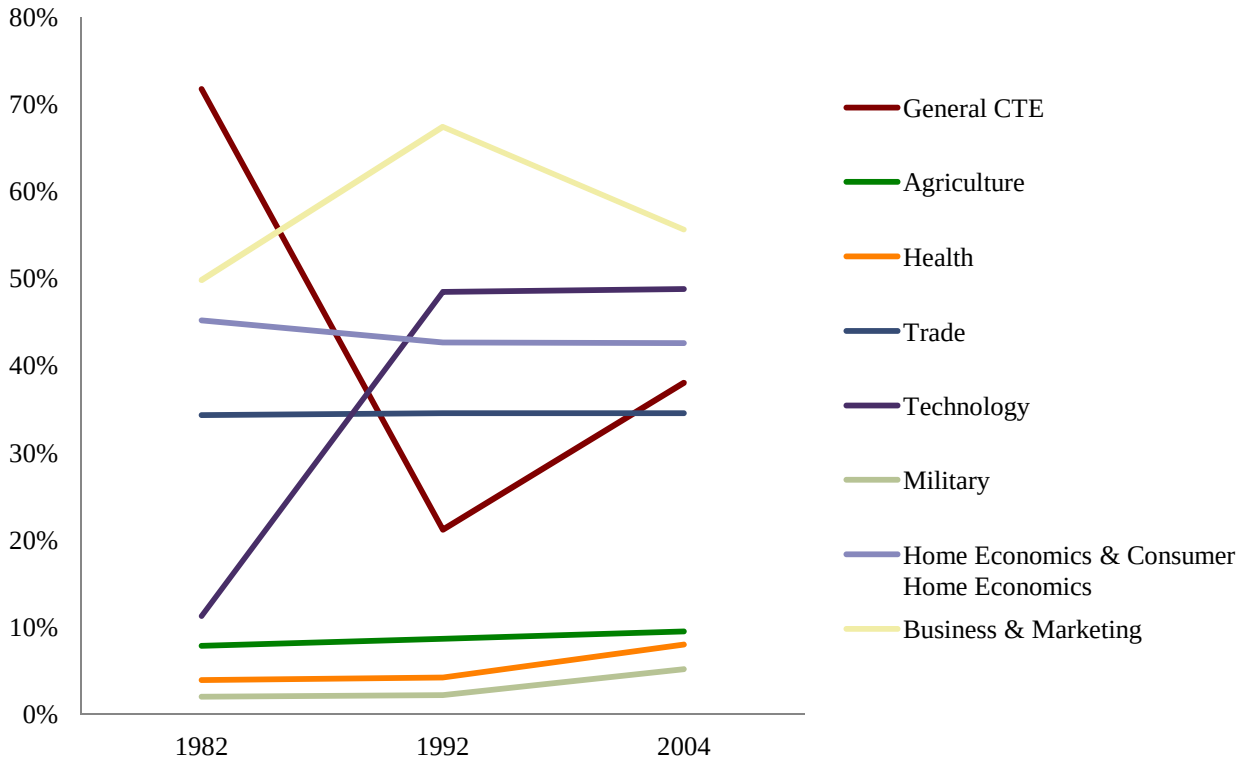


Table 3 shows the mean units completed for participants who completed any amount of coursework in a particular concentration. Graduates who did not complete any coursework in a concentration were omitted from the mean to calculate the average for those who participated. There was an overall increase in high school units completed for both female and male students. The total number of CTE courses completed by high school graduates decreased over time, particularly for females in the 2004 cohort. Males completed more trade units than females across all three cohorts. Military unit completion increased steadily over time, but as illustrated in table 2, served a relatively small population. Female students completed home economics and consumer home economics courses more frequently across the three cohorts. Females dominated business and marketing courses in 1982, but the completion of these courses by male graduates increased in 1992 and 2004 and was nearly even with females in the 2004 cohort.

Table 3
Mean Number of Units Completed by CTE Specialization for Female and Male participants who completed some coursework in a particular concentration

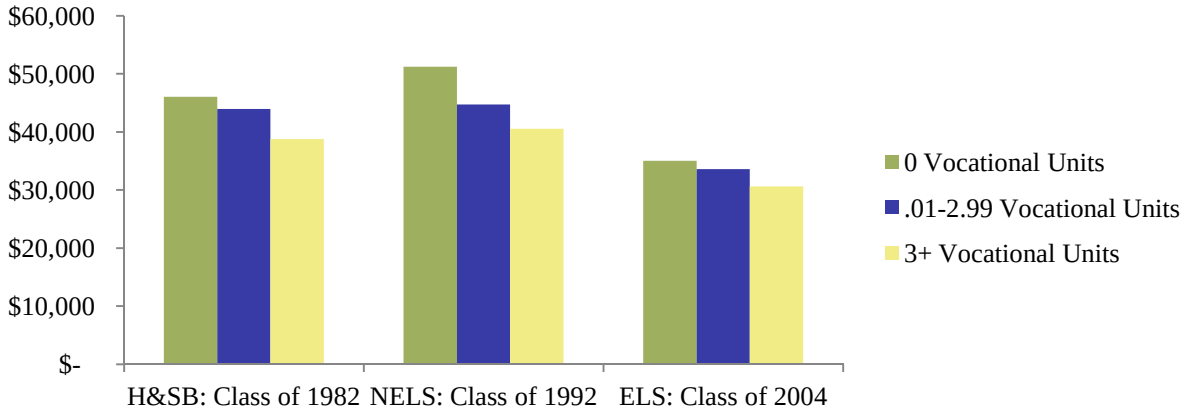
	HS&B: 1982		NELS: 1992		ELS: 2004	
	Female	Male	Female	Male	Female	Male
Total High School Units	21.82	21.31	24.14	23.90	25.96	25.80
Total CTE	4.56	4.44	4.69	4.57	3.61	4.29
General CTE	1.27	1.37	1.13	1.27	1.31	1.34
Agriculture	1.35	2.33	1.47	2.16	1.55	2.00
Health	1.29	0.68	1.54	0.83	1.43	1.01
Trade	1.20	2.94	1.50	2.69	1.25	2.31
Technology	0.77	0.96	1.04	0.98	0.99	1.18
Military	1.31	1.46	1.83	2.36	2.46	2.44
Home Economics & Consumer Home Economics	1.86	0.96	1.59	1.12	1.53	1.06
Business & Marketing	2.49	1.41	1.98	1.48	1.48	1.38

Note. Average number of units for on-time high school graduates who completed >0 units in a specific course with NCES weights

Effects of Career and Technical Education on Earnings

Figure 3 shows the distribution of inflation-adjusted earnings by number of vocational courses completed for each cohort of high school graduates. Across all three cohorts, graduates who completed fewer CTE courses earned more ten (HS&B) and eight years (NELS & ELS) after high school graduation. The 2004 cohort earned less than their predecessors in the 1992 cohort; much of this is likely attributable to the higher number of workers employed full-time and a smaller portion of the sample enrolled in post-secondary education eight years after high school graduation for the 1992 cohort as well as stagnating wages, which is particularly detrimental for the least educated.

Figure 3
Earnings of On-time High School Graduates by CTE Course Completion



Effects of Career and Technical Course Completion on Post-Secondary Education

Table 6 presents odds ratio coefficients from multinomial logistic models measuring the effect of varying amounts and types of CTE on post-secondary educational attainment. The first equation uses background characteristics, total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed to predict educational attainment. The second model includes specific types of CTE courses to predict earnings to predict post-secondary attainment. Table 6 shows that increasing the percent of vocational coursework completed as a part of total high school coursework decreases the likelihood of completing all types of post-secondary education. This is significant and consistent across the three cohorts, and was found despite very extensive control variables, including math test scores. The completion of the majority of CTE course types decreased the likelihood of completing future education. This was true for all but health and technology coursework, which did not have adverse implications for completing further education beyond high school. This could be a result of high school graduates who are interested in health, pursuing further career training in entry level medical fields including nursing, phlebotomy, x-ray technicians or dental

assistants. Those students interested in technology have opportunities to pursue entry-level computer repair certificates or bachelor's level computer science degrees. Trade courses had smaller negative effects on completing some college, but these effects grew steadily larger for bachelor's, master's and doctoral degree attainment.

Effects of Career and Technical Course Completion on Employment

Table 7 presents odds ratio coefficients from logistic regressions estimating the impact of varying amounts and types of CTE completion on the likelihood of having any type of employment nine (HS&B) and seven (ELS & NELS) years after high school graduation. The first equation uses background characteristics to predict employment. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model includes specific types of CTE courses to predict employment. SES is a stronger predictor of employment for the class of 2004 than the classes of 1992 or 1982. This may demonstrate the power of family SES on employment when the economy is struggling as it was in 2011. Technology coursework had significant positive effects on employment for the class of 1982. For the class of 2004, the percent of vocational coursework completed in high school, general CTE and home economics/consumer home economics had significant negative consequences on employment.

Table 8 measures the impact of varying amounts and types of CTE completion on employment for one of the most vulnerable populations in the economy, high school graduates with no post-secondary coursework completed. The first equation uses background characteristics to predict employment. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school

units completed. The third model includes specific types of CTE courses to predict employment. For the class of 1982 there was no significant effect of any type of CTE. For the class of 1992, technology coursework had a significant positive effect on the likelihood of being employed, while trade coursework had a significant negative effect. For the class of 2004, health coursework had a significant negative effect on employment for high school graduates who pursued no further education. There are notable differences between the effects of CTE coursework on employment for all high school graduates in table 7 and those high school graduates who pursued no further education in table 8. For the class of 1982, technology had significant positive effects for the complete cohort, but these effects were smaller and no longer significant for those who did not pursue post-secondary education. For the 1992 cohort, trade coursework had more negative effects on employment for the less educated, and technology had much more positive effects for those with only a high school diploma. For graduates from the class of 2004, the coefficients increased in the areas of general CTE and home economics for high school graduates who pursued no further education, but became insignificant because of the much smaller *N* for the sub-sample in table 8.

Table 9 measures the impact of varying amounts and types of CTE completion on employment for high school graduates with some post-secondary experience or an associate's degree completed. The first equation uses background characteristics to predict employment. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model includes specific types of CTE courses to predict employment. This table shows few effects for participants who completed some college on employment. However, for the class of 2004, agriculture coursework had a significant positive effect on employment.

Table 10 measures the impact of varying amounts and types of CTE completion on employment for participants who completed a bachelor's degree or higher. The first equation uses background characteristics to predict employment. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model includes specific types of CTE courses to predict employment. For the class of 1982, health had significant positive effects on employment for the more educated members of the cohort, interestingly; health coursework did not have significant positive effects on employment for less educated members of this cohort. For the class of 1992, technology, and business and marketing coursework had significant positive effects on the likelihood of being employed. For the class of 2004, there was no significant effect of any type of CTE. Across tables 6 through 10 the negative effects on educational attainment after high school graduation seem much stronger than the effects on employment.

Effects of Career and Technical Education on Earnings

Table 11 presents OLS regression models measuring the effect of varying amounts and types of CTE on (inflation adjusted) earnings. The first equation uses background characteristics to predict annual income. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model includes specific types of CTE courses to predict earnings, while the fourth model gives the direct effect of CTE on earnings and also shows the extent to which CTE mediates the effects of varying levels of post-secondary degree attainment. The percent of vocational coursework completed as a part of total high school coursework has significant

negative consequences for graduates from the classes of 1982 and 1992. In the 2004 cohort, there was an insignificant positive effect of the percent of CTE completed in high school on earnings; it appears that the control variables matter more in this most recent cohort. The completion of agriculture coursework has positive, but insignificant implications on earnings for the classes of 1992 and 2004. Completing health coursework has insignificant negative implications that become positive, but also insignificant in later cohorts. Home economics and consumer home economics have negative and significant impacts on earnings across all three cohorts. Unsurprisingly, both the completion of Bachelor's and Master's degrees has positive and significant earnings implications.

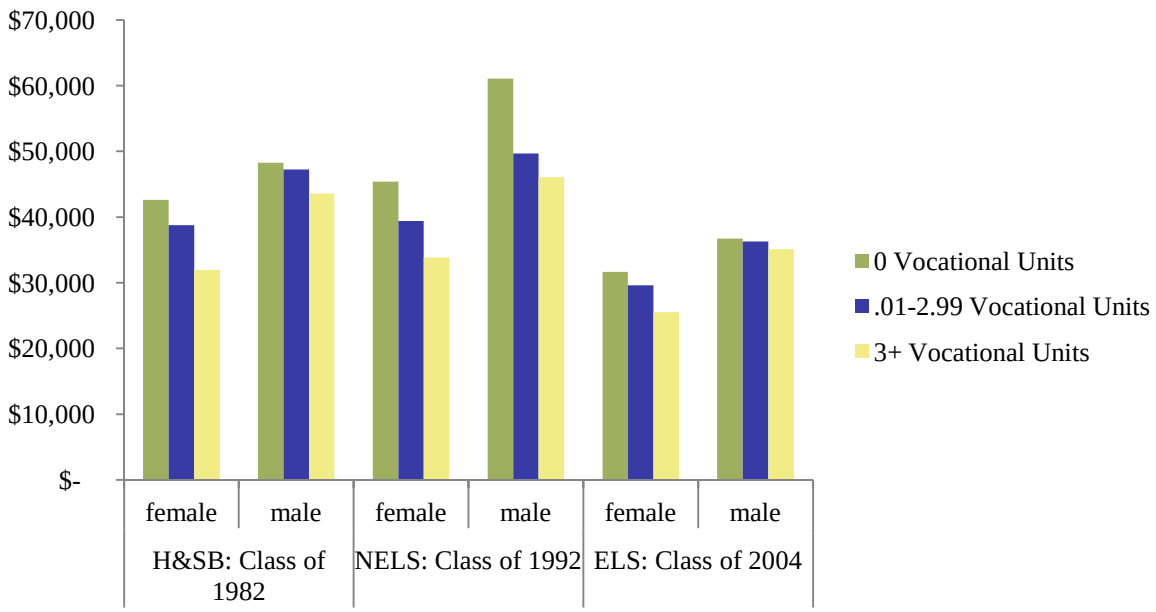
Tables 12, 13 and 14 are similar to table 11 in that they analyze the effect of completing varying amounts and types of CTE in high school. The difference is that participants are split based on their highest level of education completed at the final data collection for their respective cohort. The first equation uses background characteristics to predict annual income. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model includes specific types of CTE courses to predict earnings. For high school graduates with no additional education, general CTE has negative and significant consequences for members of the graduating classes of 1992 and 2004. For high school graduates who completed no additional schooling, the percent of high school coursework that was CTE had negative but insignificant effects for all cohorts on earnings. For those who completed some college, percent CTE coursework had an insignificant negative effect on the class of 1982 that became positive in 1992 and became even more positive in 2004, nearing significance. High school graduates who completed an Associate's degree or some college had positive earnings outcomes for completing

trade coursework as high school students. This was positive and significant for the 2004 graduates who completed trade coursework. Home economics and consumer home economics have negative and significant impacts on earnings across all three cohorts for participants who completed some college, and those who completed bachelor's degrees or higher. For participants who completed a bachelor's degree or higher, the percent of vocational coursework completed as a part of total high school coursework has negative consequences for all cohorts, and is significant for high school graduates from 1982 and 1992.

Career and Technical Course Completion Effect on Earnings for Females and Males

Figure 4 shows the distribution of earnings by number of vocational courses completed for each cohort of female and male high school graduates. These earnings are inflation adjusted to 2013 dollars using calculations from the Bureau of Labor Statistics. Across all three cohorts, graduates who completed fewer CTE courses earned more ten (HS&B) and eight years (NELS & ELS) after high school graduation. The difference between earnings for males within the same cohort was relatively small in the 1982 and 2004 cohorts, but was much larger for the 1992 cohort. The 2004 cohort earned less than their predecessors in the 1992 cohort; much of this is driven by females, of whom only 64% were working full-time and 26% were enrolled in post-secondary education. This reduction in employment and increase in schooling at the time of the 4th follow-up explains some of the drop in earnings from 1992 and 2004. Overall, it appears that the more CTE courses completed in high school, the smaller the earnings are for both female and male high school graduates.

Figure 4
Mean Earnings of by CTE Course Completion and Sex



Effects of Career and Technical Course Completion on Post-Secondary Education for Females and Males

Table 15 presents odds ratio coefficients from multinomial logistic models measuring the effect of varying amounts and types of CTE on post-secondary educational attainment for females and males. The first equation uses background characteristics to predict educational attainment. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model includes interactions between being male and both total high school units and the percent of CTE units out of the total number of high school units completed to predict post-secondary attainment. Across all three cohorts males were less likely to complete higher levels of education in all of the first models with background characteristics. In the more complex model that included the interaction terms, the percent of vocational coursework completed had significant negative effects, while being male no longer had significant negative effects. In the

1982 cohort the interaction between percent vocational coursework and male had strong positive effects on participating in some college or completing a bachelor's degree.

Effects of Career and Technical Course Completion on Employment for Females and Males

Table 16 presents odds ratio coefficients from logistic regressions estimating the impact of varying amounts and types of CTE completion on the likelihood of having any type of employment nine (HS&B) and seven (ELS & NELS) years after high school graduation. The first equation uses background characteristics to predict employment. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model adds interaction terms between being male and both total high school units and the percent of CTE units out of the total number of high school units completed to predict employment. The fourth model includes specific types of CTE courses, and the fifth model includes interactions between males and the specific CTE course types to predict employment. SES is a stronger predictor of employment for the class of 2004 than the classes of 1992 or 1982. Across all three cohorts, being male was one of the strongest predictors of employment even in the most complex models. For the class of 1982, in the third model, the interaction between male and percent vocational has significant positive effects on employment. For the same cohort in the fourth model, technology coursework has significant positive effects on employment. And finally, in the fifth model, home economics/consumer home economics coursework had significant negative impacts on employment, while the interaction between being male and home economics/consumer home economics coursework had significant positive impacts on employment. This indicates that home

economics/consumer home economics coursework hurt females' chances of employment and helped males. Similar to the earlier cohort, for the class of 1992, in the third model, the interaction between male and percent vocational has significant positive effects on employment. In the fifth model with interactions, technology, the interaction between being male and completing military coursework and the interaction between being male and completing home economics/consumer home economics coursework all had significant positive effects on employment. For the class of 2004, in the fourth model, agriculture and home economics/consumer home economics coursework had significant negative effects on employment. In the fifth model, with interactions, home economics/consumer home economics continued to have a significant negative effect, while the interaction between being male and completing agriculture coursework had a significant positive effect on employment.

Table 17 presents odds ratio coefficients from logistic regressions estimating the impact of varying amounts and types of CTE completion on employment for one of the most vulnerable populations in the economy, high school graduates with no post-secondary coursework completed for females and males. The first equation uses background characteristics to predict employment. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model adds interaction terms between being male and both total high school units and the percent of CTE units out of the total number of high school units completed to predict employment. The fourth model includes specific types of CTE courses, and the fifth model includes interactions between males and the specific CTE course types to predict employment. Similarly to the complete sample in table 3, across all three cohorts of high school graduates with no post-secondary education in table 4, being male was one of the strongest predictors of

employment even in the most complex models. For the class of 1982, the interaction between being male and completing home economics/consumer home economics had significant positive effects on employment. For 1992 graduates, in model 3 the interaction between the total number of high school units completed and being male had a significant negative effect on employment. In model 4, completing trade coursework had significant negative effects on employment, while in both models 4 and 5 technology coursework had significant positive effects on employment for participants who finished their education with a high school diploma. For the class of 2004, in both models 4 and 5 health courses significantly decreased the likelihood of employment, while in model 5, the interaction between being male and military coursework significantly increased the likelihood of employment.

Table 18 presents odds ratio coefficients from logistic regressions estimating the impact of varying amounts and types of CTE completion on employment for high school graduates with some post-secondary experience or an associate's degree completed for females and males. Similarly to the models in previous tables, in the first equation of table 18, I use background characteristics to predict employment. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model adds interaction terms between being male and both total high school units and the percent of CTE units out of the total number of high school units completed to predict employment. The fourth model includes specific types of CTE courses, and the fifth model includes interactions between males and the specific CTE course types to predict employment. For graduates from the class of 1982 who completed some college, in model 5 with interactions, agriculture coursework significantly decreased the likelihood of employment while the interaction between being male and completing agriculture coursework significantly

increased the likelihood of employment. This finding indicates that agriculture coursework hurt females' chances of employment while helping males. For the class of 1992, in model 5 with interactions, military coursework significantly decreased the likelihood of employment while the interaction between being male and completing military coursework significantly increased the likelihood of employment. This finding indicates that military coursework hurt female's chances of employment while helping males. For the class of 2004, in model 4 completing agriculture coursework significantly increased the likelihood of employment, while in model 5 home economics/consumer home economics coursework had significant negative effects on employment.

Table 19 presents odds ratio coefficients from logistic regressions estimating the impact of varying amounts and types of CTE completion on employment for participants who completed a bachelor's degree or higher for females and males. The first equation uses background characteristics to predict employment. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model adds interaction terms between being male and both total high school units and the percent of CTE units out of the total number of high school units completed to predict employment. The fourth model includes specific types of CTE courses, and the fifth model includes interactions between males and the specific CTE course types to predict employment. For the class of 1982, completing health coursework significantly increased the likelihood of employment in both models 4 and 5 for participants who completed a bachelor's degree or higher. In the fifth model, military coursework significantly decreased the likelihood of employment while the interaction between being male and completing military coursework significantly increased the likelihood of employment. This finding indicates that

military coursework hurt females' chances of employment while helping males. For the class of 1992, in model 4, completing technology and business coursework increased the likelihood of employment. In model 5, health coursework decreased the likelihood of employment, while the interaction of being male and completing health coursework did not have any effect on employment. For the class of 2004 who completed a bachelor's degree or higher, only the interaction between being male and completing agriculture coursework significantly increased the likelihood of employment.

Effects of Career and Technical Course Completion Earnings for Females and Males

Table 20 is a regression model measuring the effect of varying amounts and types of CTE on earnings for females and males. The first equation uses background characteristics to predict earnings. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model adds interaction terms between being male and both total high school units and the percent of CTE units out of the total number of high school units completed to predict earnings. The fourth model includes specific types of CTE courses, and the fifth model includes interactions between males and the specific CTE course types to predict earnings. Across all cohorts and models, being male, and of higher SES during high school had significant positive effects on earnings. For graduates from both 1982 and 1992, the percent of vocational coursework completed had significant negative effects on earnings. Additionally across all cohorts, in model 4 with coursework and model 5 with coursework interacted with being male, completing home economics/consumer home economics coursework had significant negative effects on earnings.

Tables 21, 22 and 23 are similar to table 20 in that they analyze the effect of completing varying amounts and types of CTE in high school. The difference is that participants are split based on their highest level of education completed at the final data collection for their respective cohort. The first equation uses background characteristics to predict earnings. The second equation adds total high school units and a continuous variable measuring the percent of CTE units out of the total number of high school units completed. The third model adds interaction terms between being male and both total high school units and the percent of CTE units out of the total number of high school units completed to predict earnings. The fourth model includes specific types of CTE courses, and the fifth model includes interactions between males and the specific CTE course types to predict earnings. For high school graduates who completed their education with a high school diploma in 2004, model 4 shows that technology coursework had significant negative effects on earnings. For participants with some college completed, across the cohorts home economics/consumer home economics coursework negatively impacted earnings in model 4. The negative effect increased when controlling for the interaction between being male and completing home economics/consumer home economics coursework. In the earliest cohort the earnings effects were significant, but the effects decreased over time. For graduates from the class of 2004 who completed some college, the percent of vocational coursework completed had significant positive effects on earnings, as did trade, which was largely driven by males. In table 10, for college graduates who completed high school in 1982 and 1992, home economics/consumer home economics coursework negatively impacted earnings in model 4. The negative effect increased when controlling for the interaction between being male and completing home economics/consumer home economics coursework in model 5.

For the 1982 and 1992 high school graduates, the percent vocational coursework completed had significant negative effects on earnings.

Chapter 5: Discussion and Conclusion

Changes in Career and Technical Course Completion Over Time

Over time, high school graduates from the graduating classes of 1982, 1992 and 2004 took fewer overall units in CTE. A decrease in general CTE units completed occurred between 1982 and 1992 and persisted in 2004. An increase in technical CTE units completed occurred between 1982 and 1992 and persisted in 2004. Technology course completion increased significantly from the class of 1982 to the 1992 cohort and remained high in 2004. Additionally, there was a small, but increasing group of high school graduates that completed health coursework. A more mixed academic and vocational high school experience was observed; this finding is consistent with prior research on tracking and CTE (Lucas, 1999; Neumark, 2007).

Differences in Career and Technical Course Completion for Females and Males

Across the three decades there have been notable differences in the types of CTE courses male and female high school graduates completed. The overall drop in total CTE units from the 1992 to 2004 cohorts was largely driven by a decrease in CTE units completed by females. Additionally, across all three cohorts male high school graduates completed more trade coursework than their female counterparts. Additionally, females completed far more business and marketing coursework in 1982 than males, but that difference decreased in 1992 and females and males completed nearly the same amount of business and marketing units in 2004. The average number of units of health coursework completed increased across the three cohorts; although both male and females completed more health courses over time, the largest increase in health units occurred for males.

Post-Secondary Attainment and Earnings

I hypothesized that all types of high school CTE would have negative effects on post-secondary degree attainment across cohorts. This hypothesis is based on previous work identifying large negative effects of high school CTE on post-secondary enrollment (Ainsworth & Roscigno, 2005; Arum, 1998; Arum & Shavit, 1995). Table 6 shows similar findings to prior research, showing that increasing the percent of vocational coursework completed as a part of total high school coursework decreases the likelihood of completing any type of post-secondary education across all cohorts. The completion of the majority of CTE course types decreased the likelihood of completing future education. This was true for all but health and technology coursework, consistently did not have adverse implications for completing further education beyond high school across all three cohorts, the one exception is the effect health on the attainment of a Master's degree or higher in the 1992 cohort.

These findings about educational attainment differ from Bozick and Dalton's research, which used an earlier wave of data from ELS: 2002 and determined that most of the school achievement differences between students who take a large number of occupational courses and students who take few or no occupational courses are largely due to preexisting differences between students before they enter high school, not the actual courses completed. Their work focuses on what occurs during high school, while mine focuses on the consequences of high school behaviors on future outcomes. In my work, I find that even with controls similar to what Bozick and Dalton used, such as total credits and vocational credits, CTE had significant negative effects on post-secondary degree attainment as measured in follow-up four of ELS.

Previous research on employment found that vocational education may inhibit future educational and occupational plans for some students, however, others argue that vocational

education teaches students marketable skills and attitudes that can help them find skilled jobs and reduce their risk of unemployment or employment as low paid, un-skilled workers (Arum & Shavit, 1995). Table 8 measures the likelihood of being employed for high school graduates who pursued no further education. This group is arguably the least-skilled and therefore the most vulnerable population in the labor market. For the class of 1982 there was no significant effect of any type of CTE. For the class of 1992, only technology coursework had a significant positive effect on the likelihood of being employed, while trade coursework had a significant negative effect. For the class of 2004, health coursework had a significant negative effect on employment. These findings do not demonstrate strong support of previous findings in increasing employability, however this finding is consistent with the literature on the recession that health care jobs increased while many other sectors faltered.

The results from this study are consistent with prior research showing large negative effects of high school CTE on all types of post-secondary enrollment. With negative implications on further education beyond high school, one must examine the impact on employment and earnings. If the current educational agenda in high schools is to graduate "college and career ready" (United States Department of Education, 2010) students, then efforts must be made to ensure that students are prepared with coursework that equips them for decent employment where they can earn a living wage or for post-secondary education. However, most CTE coursework across cohorts had little effect on employment; this is despite the potential selection bias inherent in CTE courses that often attracts lower performing students. Surprisingly, despite the efforts to increase employability, for the class of 2004, the percent of vocational coursework completed in high school, general CTE and home economics/consumer home economics had significant negative consequences on employment.

In conjunction with employment, earnings must also be considered when evaluating the effect of CTE coursework. I hypothesized that the impact of high school vocational education would have negative implications across cohorts on earnings. This hypothesis is based on findings that the impact of high school vocational education, finding little long-term economic benefit (Gustman & Steinmeier, 1983; Meyer & Wise, 1979; Neuman & Ziderman, 1999). However, I found mixed effects of CTE on earnings based on the type of CTE completed in high school. Completing health coursework has insignificant negative implications that become positive, but also insignificant in later cohorts. This is noteworthy given the decrease in overall earnings in the first decade of the 2000s when ELS labor-market outcomes were collected. Once again, home economics and consumer home economics have negative and significant impacts on earnings. Despite a reduction in both the number of participants completing home economics and consumer home economics as well as the mean number of units completed, this type of CTE coursework persists in its significant negative impact on earnings as shown in table 11. Surprisingly, despite concentrated job losses in goods-producing industries of manufacturing and construction (Sahin, Song & Hobijn, 2010), my analysis shows a significant positive effect of Trade coursework on earnings. It is possible that more trained workers in this field were less likely to lose their jobs.

The Effect of Career and Technical Course Completion for Females and Males

In prior research on the effect of CTE course completion in high school on post-secondary attainment, Arum and Shavit (1995) found that regardless of gender, CTE had negative effects on post-secondary enrollment. In this study I found that increasing the percent of

vocational coursework completed during high school had significant negative effects on all education beyond high school for both males and females.

My final hypothesis was that males who complete CTE coursework in high school earn more than their female counterparts because they are completing preparation for higher wage occupations. This is based on the findings about gender roles in labor market preparation from the National Center for Education Statistics, 1991; National Women's Law Center, 2005; and Sadker & Zittleman, 2009. In prior research, differences in CTE training by gender result in distinctly different employment opportunities with male dominated CTE fields paying an average wage of $19.62, while female fields pay $15.32 per hour (National Women's Law Center, 2009). Correspondingly, completing home economics/consumer home economics significantly decreased the likelihood of being employed.

In this study, I also found that across the three decades, many more females completed home economics coursework than males. In all three decades this coursework negatively impacted earnings. Additionally, the negative effect increased when controlling for the interaction between being male and completing home economics/consumer home economics coursework. If participants in home economics/consumer home economics coursework are less likely to be employed, and earn less, what purpose does this coursework serve in the labor market? Prior research has shown that in fact, students trained in female dominated career and technical courses like home economics/consumer home economics are at a large wage disadvantage when compared to those who enroll in a male dominated CTE (National Women's Law Center, 2009). This is in contrast to the current outcomes for those students who complete home economics/consumer home economics and are likely to encounter poverty and limited future educational opportunities. Therefore, policy makers should consider what purpose home

economics/consumer home economics courses serve to the future academic trajectory, especially for females who are less likely to work full-time and earn lower wages than their male counterparts.

For males in the most recent cohort, analyses show that interactions between high school CTE trade, business and marketing and being male had positive significant effects on wages in 2011 even when controlling for family SES and prior achievement. With young men enrolling and completing college at lower rates and facing higher unemployment rates than their female counterparts at this time, these high school CTE courses provide a pathway to employment even when the economy was faltering. This finding that CTE training mediated some of the negative effects of a downturn in the economy for young men should be investigated further in future research to examine specifically which sub-groups of young men benefited most from CTE in high school.

Limitations and Future Research

This analysis is limited to students with complete transcript data from on-time high school graduates, which includes 80% of survey participants across the three cohorts and disproportionately excludes high school dropouts. Therefore, these conclusions have limited generalizability beyond high school graduates. Additionally, descriptive statistics suggest that the subsample of participants analyzed in this study is slightly more White, Asian and female, and less Black, Hispanic and male than the complete samples of HS&B, NELS and ELS. In HS&B 76% of all graduates completed some general CTE, which is much higher than the 21% and 37% of graduates from NELS and ELS respectively. This could be the result of less sophisticated course documentation in 1982 and may not reflect the true variation in courses completed by the

earliest cohort in the study. Selection bias in the type of students that high school CTE classes attract likely impacts all outcomes; controls have been used, but it is possible that additional controls could be added to the models to decrease omitted variable bias.

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Table 4: *Courses in Each Category of High School Career and Technical Education*

General CTE	Agriculture	Health	Trade
basic skills	agribusiness and agricultural production	health sciences	construction trades
basic skills, careers and employment	agricultural business and management	audiology and speech pathology	brickmasonry, stonemasonry, and tile setting
basic skills, general	soep - supervised occupational experience program	basic clinical health sciences	electrical and power transmission installation
	agricultural mechanics	chiropractic	carpentry
	agricultural production	dentistry	miscellaneous construction trades
	agricultural products and processing	emergency/disaster science	plumbing, pipefitting, and steamfitting
	agricultural services and supplies	epidemiology	construction trades, other
	horticulture	health sciences administration	mechanics and repairers
	international agriculture	hematology	electrical and electronics equipment repair
	agribusiness and agricultural production, other.	medical laboratory	heating, air conditioning, and refrigeration mechanics
	agricultural sciences	medicine	industrial equipment maintenance and repair
	agricultural sciences, general	nursing	miscellaneous mechanics and repairers
	animal sciences	optometry	stationary energy sources
	food sciences	osteopathic medicine	vehicle and mobile equipment mechanics and repairers
	plant sciences	pharmacy	mechanics and repairers, other
	ornamental horticulture	podiatry	
	soil sciences	population and family planning	
	agricultural sciences, other	pre-dentistry	
	renewable natural resources	pre-medicine	
	renewable natural resources, general	pre-pharmacy	
	conservation and regulation	pre-veterinary	
	fishing and fisheries	prosectorial science	
	forestry production and processing	prosectorial science, other	
	wildlife management	public health laboratory science	
	marine management and oceanography	public health laboratory science, other	
	renewable natural resources, other	toxicology (clinical)	
		veterinary medicine	
		bio-medical technology	
		health sciences, other	

Technology	Military	Home Economics & Consumer Home Economics	Business & Marketing	
construction trades	military sciences	home economics	business and management	secretarial and related programs
brickmasonry, stonemasonry, and tile setting	aerospace science (air force)	home economics, general	business and management, general	typing, general office, and related programs
carpentry	coast guard science	business home economics	accounting business administration and management	business and office, other
electrical and power transmission installation	military science (army)	family and community services	business economics	marketing and distribution
miscellaneous construction trades	naval science (navy, marines)	family/consumer resource management	human resources development	apparel and accessories marketing
plumbing, pipefitting, and steamfitting	military sciences, other	food sciences and human nutrition	institutional management	business and personal services marketing
construction trades, other	military technologies	human environment and housing	insurance and risk management	entrepreneurship
mechanics and repairers	military technologies	individual and family development	international business management	financial services marketing
electrical and electronics equipment repair		international/comparative home economics	investments and securities	floristry, farm and garden supplies marketing
heating, air conditioning, and refrigeration mechanics		textiles and clothing	labor industrial relations	food marketing general marketing
industrial equipment maintenance and repair		home economics, other	management information systems	home and office products marketing
miscellaneous mechanics and repairers		vocational home economics	management science	hospitality and recreation marketing
stationary energy sources		consumer and homemaking home economics	marketing management and research	insurance marketing
vehicle and mobile equipment mechanics and repairers		child care and guidance management and services	organizational behavior	transportation and travel marketing
mechanics and repairers, other		clothing, apparel, and textiles management, production, and services	personnel management	vehicles and petroleum marketing
		food production, management, and services.	real estate	marketing and distribution, other
		home furnishing and equipment management, production, and services	small business management and ownership	communications
		institutional, home management, and supporting services	taxation.	communications, general
		vocational home economics, other	trade and industrial supervision and management	advertising
			business and management, other	communications research
			business and office	journalism (mass communications)
			accounting, bookkeeping, and related programs.	public relations
			banking and related financial programs	radio/television news broadcast
			business data processing and related programs	radio/television, generala
			office supervision and management	special languages
			personnel and training programs	communications, other

Table 5

Comparison of demographics of all survey participants with transcript data and on-time high school graduates with transcripts

	All survey participants with transcript data with weights						On-time high school graduates with weights					
	HS&B: 1982		NELS: 1992		ELS: 2004		HS&B: 1982		NELS: 1992		ELS: 2004	
	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*
Male	50%	13,020	50%	15,250	50%	14,070	49%	10,480	50%	12,550	48%	11,010
Black	11%	13,020	13%	15,130	14%	13,980	10%	10,480	11%	12,450	12%	10,970
Asian	1%	13,020	3%	15,130	4%	13,980	2%	10,480	4%	12,450	4%	10,970
Hispanic	12%	13,020	10%	15,130	16%	13,980	11%	10,480	9%	12,450	14%	10,970
Other	3%	13,020	1%	15,130	5%	13,980	2%	10,480	1%	12,450	5%	10,970
White	72%	13,020	72%	15,130	61%	13,980	75%	10,480	76%	12,450	66%	10,970
General track	45%	11,850	54%	14,710	38%	14,530	43%	9,630	50%	12,020	36%	11,370
College prep track	35%	11,850	35%	14,710	51%	14,530	38%	9,630	41%	12,020	55%	11,370
Vocational track	21%	11,850	11%	14,710	10%	14,530	19%	9,630	9%	12,020	9%	11,370
No vocational	10%	13,020	13%	17,290	11%	14,810	7%	10,480	8%	13,740	11%	11,550
Vocational sampler	20%	13,020	28%	17,290	34%	14,810	17%	10,480	26%	13,740	32%	11,550
Vocational concentrator	71%	13,020	59%	17,290	55%	14,810	77%	10,480	66%	13,740	57%	11,550

Table 6

Multinomial Logistic Regression Analysis of Post-Secondary Attainment

	H&SB: Class of 1982						NELS :Class of 1992						ELS: Class of 2004					
	Some College or AA		Bachelor's Degree		MA or Doctorate		Some College or AA		Bachelor's Degree		MA or Doctorate		Some College or AA		Bachelor's Degree		MA or Doctorate	
Male	0.668***	0.674***	0.747***	0.729**	0.776	0.763	0.645**	0.815	0.445***	0.582**	0.247***	0.332***	0.593***	0.568***	0.460***	0.422***	0.291***	0.264***
SES2	1.099	1.104	1.701***	1.717***	1.208	1.139	1.742**	1.746**	1.729**	1.750**	2.383*	2.524*	1.409**	1.421**	1.442*	1.512**	1.355	1.451
SES3	1.180	1.195	2.310***	2.388***	1.794	1.792	2.282***	2.297***	3.487***	3.607***	4.089**	4.284**	1.984***	2.037***	2.854***	2.991***	2.173***	2.309***
SES4	1.396*	1.419**	3.151***	3.257***	2.566**	2.586**	4.565***	4.510***	8.006***	7.982***	10.704***	10.813***	2.930***	2.985***	5.665***	5.978***	5.427***	5.871***
SES5	1.326	1.357*	5.652***	5.908***	6.328***	6.378***	6.183***	6.315***	21.550***	22.845***	35.040***	38.047***	4.081***	4.222***	11.532***	12.301***	13.969***	15.309***
Black	1.278	1.313*	1.221	1.307	1.649	1.718*	1.130	1.151	0.970	1.111	0.875	1.006	2.478***	2.488***	2.595***	2.578***	3.419***	3.466***
Hispanic	0.974	0.985	0.847	0.848	1.067	1.048	1.893**	1.843**	1.434	1.396	1.730	1.679	1.820***	1.789***	1.470*	1.437*	1.356	1.337
Asian	0.769	0.775	1.128	1.145	3.010**	2.982**	1.231	1.246	1.297	1.477	1.497	1.723	2.789***	2.690***	4.290***	4.083***	4.368***	4.235***
Math Test	1.013***	1.015***	1.067***	1.073***	1.108***	1.118***	1.022**	1.024***	1.082***	1.088***	1.146***	1.154***	1.038***	1.040***	1.103***	1.110***	1.145***	1.154***
Total HS Units	1.014		1.032*		1.055***		1.015		1.140**		1.174***		1.057***		1.134***		1.171***	
% Vocational	0.997		0.948***		0.913***		0.971***		0.931***		0.925***		0.954***		0.913***		0.892***	
General CTE		1.015		0.880**		0.878		0.859**		0.488***		0.629*		0.863***		0.737***		0.639***
Agriculture		1.047		0.861		0.436**		0.785***		0.638***		0.384*		0.887**		0.767***		0.762*
Health		1.031		0.775		0.523		1.077		0.797		0.563*		0.982		0.963		0.980
Trade		0.974		0.766***		0.660***		0.861***		0.696***		0.648***		0.864***		0.700***		0.660***
Technology		1.046		1.093		0.853		1.064		1.193		1.288		1.046		1.060		0.946
Military		0.852		0.432***		0.560		1.051		0.958		0.638		0.870**		0.695***		0.581***
Home Ec & Consumer Home Ec		0.978		0.759***		0.692**		0.887**		0.681***		0.612**		0.856***		0.672***		0.609***
Business & Marketing		1.006		0.835***		0.662***		0.923		0.808***		0.816**		0.881***		0.863**		0.846**
Note. Exponentiated coefficients.						8140						7780						9230

omitted categories are white females, lowest quintile SES who graduated from high school but pursued no post-secondary education

* p<0.05 ** p<.01 *** p<0.001

Table 7

Logistic Regression Analysis of Any Employment, All Not Currently Enrolled in Post-Secondary Education

	HS&B: Class of 1982			NELS: Class of 1992			ELS: Class of 2004		
Male	3.215***	3.247***	2.602***	3.785***	3.768***	4.306***	2.096***	2.214***	1.919***
SES2	1.259	1.249	1.252	0.958	0.94	0.919	1.319*	1.301*	1.313*
SES3	1.347*	1.332*	1.326*	1.338	1.295	1.265	1.491**	1.444**	1.464**
SES4	1.465**	1.440*	1.443*	1.564	1.463	1.471	1.738***	1.644***	1.690***
SES5	1.115	1.086	1.100	1.669*	1.529	1.528	1.681***	1.542**	1.633**
Black	1.090	1.086	1.134	1.19	1.154	1.227	1.210	1.197	1.285
Asian	1.011	1.009	1.030	1.049	1.009	0.962	0.864	0.845	0.883
Hispanic	0.606	0.599	0.591	0.736	0.738	0.741	1.007	0.979	1.008
Other	1.021***	1.019***	1.019***	1.022***	1.020**	1.017*	1.033***	1.028***	1.030***
Total HS Units		1.017			0.974			1.034**	
% Vocational		0.998			0.991			0.988**	
General CTE			0.997			1.016			0.908**
Agriculture			1.057			1.097			1.097
Health			0.842			0.92			0.972
Trade			1.083			0.906			1.036
Technology			1.395*			1.259			1.021
Military			0.898			0.885			0.919
Home Ec & Consumer Home Ec			0.944			0.928			0.931*
Business & Marketing			0.998			1.002			0.974
N	8120	8120	8120	5950	5950	5950	6900	6900	6900

Note. Exponentiated coefficients.

* p<0.05 ** p<0.01 *** p<0.001

Table 8

Logistic Regression Analysis of Any Employment, High School Graduates with no Additional Schooling

	H&SB: Class of 1982			NELS: Class of 1992			ELS: Class of 2004		
Male	4.981***	5.004***	3.888***	5.945***	6.819***	14.374***	3.472***	3.478***	2.893***
SES2	1.131	1.127	1.138	0.994	0.935	0.885	1.319	1.321	1.327
SES3	1.181	1.177	1.175	0.772	0.724	0.626	1.386	1.386	1.372
SES4	1.179	1.159	1.172	1.533	1.414	1.351	2.591*	2.590*	2.523*
SES5	1.219	1.198	1.244	1.000	1.000	1.000	0.986	0.985	0.97
Black	1.284	1.280	1.336	0.727	0.878	0.962	1.619	1.62	1.938
Asian	0.984	0.986	1.004	0.704	0.694	0.628	1.249	1.257	1.29
Hispanic	0.594	0.594	0.585	1.774	1.614	1.953	0.426	0.429	0.436
Other	1.017**	1.016*	1.015*	0.986	0.990	0.979	1.025*	1.025*	1.028*
Total HS Units		1.015			0.922			1.004	
% Vocational		0.998			1.003			1.000	
General CTE			0.987			1.048			0.936
Agriculture			1.141			1.171			1.075
Health			0.782			1.062			0.668*
Trade			1.082			0.853***			1.087
Technology			1.288			1.950*			1.003
Military			1.150			0.877			0.996
Home Ec & Consumer Home Ec			0.962			1.018			1.06
Business & Marketing			1.007			1.155			0.911
N	3710	3710	3710	990	990	990	700	700	700

Note. Exponentiated coefficients.

* p<0.05 ** p<0.01 *** p<0.001

Table 9

Logistic Regression Analysis of Any Employment, Some College

	H&SB: Class of 1982			NELS: Class of 1992			ELS: Class of 2004		
Male	1.832*	1.855*	1.934	5.440***	5.331***	4.527***	2.438***	2.514***	2.215***
SES2	1.196	1.208	1.229	0.992	0.979	1.023	1.273	1.255	1.312
SES3	1.339	1.332	1.454	1.399	1.376	1.355	1.291	1.272	1.316
SES4	1.599	1.617	1.665	1.418	1.321	1.423	1.397	1.362	1.431
SES5	1.521	1.584	1.584	0.882	0.796	0.857	1.375	1.329	1.457
Black	0.755	0.778	0.819	1.565	1.535	1.625	1.078	1.079	1.137
Asian	1.117	1.121	1.159	1.372	1.327	1.353	0.782	0.781	0.817
Hispanic	0.813	0.883	0.929	0.512	0.511	0.452*	1.031	1.037	1.062
Other	1.024	1.024*	1.024*	1.028**	1.025**	1.025**	1.015*	1.012	1.013*
Total HS Units		1.023			0.971			1.031	
% Vocational		1.005			0.990			0.993	
General CTE			1.173			1.027			0.931
Agriculture			0.910			1.253			1.227*
Health			0.949			0.953			1.074
Trade			1.030			1.074			1.027
Technology			1.253			0.995			1.057
Military			0.452*			0.791			0.986
Home Ec & Consumer Home Ec			1.017			0.920			0.924
Business & Marketing			1.002			0.960			1.018
N	1520	1520	1520	2520	2520	2520	2860	2860	2860

Note. Exponentiated coefficients.

* p<0.05 ** p<0.01 *** p<0.001

Table 10

Logistic Regression Analysis of Any Employment, Bachelor's Degree or Higher

	H&SB: Class of 1982			NELS: Class of 1992			ELS: Class of 2004		
Male	2.069***	2.040***	1.771**	1.536	1.527	1.629	1.649**	1.668**	1.578*
SES2	1.744	1.748	1.848	0.418	0.4	0.412	1.331	1.322	1.326
SES3	1.608	1.645	1.658	0.796	0.812	0.882	1.363	1.352	1.351
SES4	1.727	1.781	1.713	0.777	0.834	0.929	1.234	1.211	1.207
SES5	0.878	0.933	0.923	0.942	1.105	1.218	1.054	1.015	1.026
Black	0.870	0.878	0.872	0.785	0.816	0.784	1.037	1.039	1.111
Asian	1.021	1.023	1.090	0.705	0.758	0.703	0.706	0.69	0.732
Hispanic	0.569	0.582	0.607	0.849	0.832	0.829	0.762	0.754	0.753
Other	1.013	1.016	1.011	1.015	1.021	1.017	1.019	1.017	1.017
Total HS Units		1.002			1.038			1.023	
% Vocational		1.010			1.037*			0.990	
General CTE			0.887			0.826			0.846
Agriculture			1.104			0.898			0.963
Health			110.265**			0.629			1.074
Trade			1.156			1.05			1.167
Technology			1.769			1.512*			0.984
Military			0.926			1.000			0.784
Home Ec & Consumer Home Ec			0.889			1.052			1.01
Business & Marketing			1.158			1.343*			0.955
N	2890	2890	2890	2440	2440	2400	3330	3330	3330

Note. Exponentiated coefficients.

* p<0.05 ** p<0.01 *** p<0.001

Table 11

Regression Analysis of Earnings, All Not Currently Enrolled in Post-Secondary Education

	HSB: Class of 1982					NELS: Class of 1992				ELS: Class of 2004		
Male	9821.948***	10000.190***	8719.477***	9123.715***	13152.599***	13188.688***	13059.426***	13873.214***	7658.971***	7650.785***	6632.005***	7246.807***
SES2	4147.345***	3968.605***	3989.442***	3776.163**	1874.483	1524.370	1629.284	1607.566	1847.261	1818.575	1813.783	1569.837
SES3	3850.701***	3594.853**	3619.687**	2965.520*	3401.234	2862.145	2834.427	2210.406	2220.126*	2222.427*	2180.311*	1316.723
SES4	6121.714***	5624.208***	5762.830***	4869.777***	5791.564**	4765.245*	5058.313*	3812.702	4007.095***	4007.991***	4051.288***	2611.505*
SES5	8600.477***	7645.676***	7712.496***	5781.184***	12929.739***	11537.838***	11778.392***	8394.219***	4958.650***	4975.546***	5180.283***	3190.952*
Black	56.810	-362.339	96.786	-184.347	-3512.536	-4138.981*	-3729.501	-3748.816*	-3515.556**	-3525.642**	-3041.352*	-3266.963*
Hispanic	-387.520	-571.795	-465.944	-380.971	1182.852	643.856	710.581	990.259	-835.251	-778.330	-492.733	-456.404
Asian	670.608	228.659	111.667	-600.608	3163.218	3037.005	3176.941	3070.453	6168.319***	6200.408***	6453.077***	5473.464**
Math Test	313.923***	264.328***	278.331***	199.152***	317.460***	265.764***	256.303***	149.410*	325.886***	321.742***	315.705***	212.670***
Total HS Units		141.986				61.825				122.691		
% Vocational		-100.697***				-125.077*				6.285		
General CTE			347.452	485.879			-793.808	-478.337			-483.380	-283.832
Agriculture			-57.005	122.050			492.141	805.425			289.607	542.880
Health			-613.283	-372.796			108.026	509.408			701.918	727.622
Trade			-293.735	-69.360			-610.185*	-382.555			662.733*	964.861***
Technology			-378.262	-318.343			806.800	590.267			-89.424	-149.099
Military			-1354.252	-810.772			-1197.840	-1042.467			-908.149*	-715.674
Home Ec & Consumer Home Ec			-1376.659***	-1165.117***			-1305.549**	-920.574*			-1064.494***	-716.737*
Business & Marketing			-504.606*	-297.257			-332.349	-52.795			436.753	462.556
Some College				1638.559				-215.327				2119.145
BA				6114.556***				8178.578***				9593.518***
MA+				9644.156***				15231.639***				5475.741**
_cons	18570.182***	22375.488***	22375.488***	22470.090***	20641.700***	24308.562***	25194.385***	25767.176***	13744.935***	10627.643***	14501.179***	13841.244***
N	7110	7110	7110	7070	5600	5600	5600	5600	6030	6030	6030	6030

Note. Earnings outcomes are standardized to 2013 dollars using calculations from the Bureau of Labor Statistics for on-time high school graduates who are not currently enrolled in post-secondary education who earned at least one dollar.

Table 12

Regression Analysis of Earnings for High School Graduates Who Did Not Pursue Any Post-Secondary Education

	HSB: Class of 1982			NELS: Class of 1992			ELS: Class of 2004		
Male	12081.384***	12090.889***	11455.053***	20216.388***	20335.876***	21187.600***	12339.980***	12490.430***	11643.342***
SES2	5651.246***	5564.920***	5615.936***	330.584	-6.301	-112.745	671.710	688.087	894.933
SES3	4724.328**	4651.182**	4732.483**	6001.678	5733.755	4846.298	-1782.658	-1779.163	-1464.514
SES4	6365.138***	6182.076***	6346.827***	4803.949	4027.437	4138.454	2481.968	2403.974	2737.418
SES5	6122.606**	5814.112*	5891.139**	6709.853	6844.317	5128.393	-5038.342	-5190.792	-3274.387
Black	-30.411	-195.365	214.116	-6092.580	-5846.328	-6383.111	-3137.391	-3242.391	-2671.690
Hispanic	-884.920	-964.149	-866.340	1266.632	1039.939	712.932	1236.318	1463.261	1586.455
Asian	-49.830	-189.728	-72.149	-6016.912	-5416.987	-4929.479	-6043.000*	-5894.094	-4575.836
Math Test	113.702*	104.218	109.804*	108.184	114.542	68.694	251.764**	246.473**	245.124**
Total HS Units		17.286			-355.890			149.290	
% Vocational		-30.588			-39.360			-10.447	
General CTE			352.093			-1654.516*			-637.979
Agriculture			710.361			223.312			504.403
Health			-996.211			-1801.970			-415.277
Trade			-256.089			-742.892			156.195
Technology			-490.660			1937.314			-1901.485*
Military			-0.894			651.903			-362.891
Home Ec & Consumer									
Home Ec			-497.857			69.717			-298.348
Business & Marketing			-216.152			-542.505			955.467
_cons	21578.729***	22383.560***	22585.573***	22328.831***	31687.913***	25458.087***	11809.284***	8350.823	12539.853***
N	3130	3130	3130	930	930	930	560	560	560

* p<0.05 ** p<.01 *** p<0.001

Note. Earnings outcomes for high school graduates who completed no post-secondary education who earned at least one dollar.

Table 13

Regression Analysis of Earnings for High School Graduates Who Completed Some College

	HSB: Class of 1982			NELS: Class of 1992			ELS: Class of 2004		
Male	6700.128***	6799.595***	3424.844	11687.619***	11680.939***	10778.636***	8436.593***	8189.583***	6940.502***
SES2	1131.846	1090.920	718.249	3131.329*	3189.695*	3398.309*	1090.507	1055.495	1231.620
SES3	-216.627	-282.226	-393.039	2948.296	2988.799	3133.691	2402.264	2511.437*	2535.629*
SES4	3241.861	3199.673	2964.686	2564.984	2559.119	3111.363	3298.629**	3549.834**	3662.730**
SES5	4717.240	4445.176	3869.777	9563.519*	9649.039*	10190.542**	11.021	413.104	782.970
Black	-3982.217	-4083.327	-3686.439	-5934.118**	-5898.434**	-5388.229*	-4019.174**	-4042.550**	-3376.198*
Hispanic	-1182.339	-1237.013	-807.489	-3114.924	-3058.804	-2911.374	-2167.840*	-1981.312	-1657.046
Asian	2829.340	2667.187	2052.082	-4954.552*	-4897.418*	-5201.536*	-976.172	-690.090	-315.273
Math Test	237.438*	222.915*	207.034	65.550	71.719	64.133	123.973**	135.646**	127.960**
Total HS Units		75.539			-151.982			75.214	
% Vocational		-43.602			4.894			77.104	
General CTE			1271.331			332.388			-242.947
Agriculture			-1098.398			1490.046			886.427
Health			266.112			254.988			952.844
Trade			819.958			468.701			1037.069**
Technology			-1636.393			-259.518			314.334
Military			-4008.830			-1069.716			-548.622
Home Ec & Consumer Home Ec			-2293.702***			-826.082			-624.786
Business & Marketing			-411.411			271.637			348.583
_cons	24914.763***	24812.226***	28627.195***	27758.357***	31003.386***	27563.581***	18499.519***	14900.308***	17646.133***
N	1340	1340	1340	3330	3330	3330	3660	3660	3660

* p<0.05 ** p<.01 *** p<0.001

Note. Earnings outcomes for high school graduates who completed some post-secondary education who earned at least one dollar.

Table 14

Regression Analysis of Earnings for High School Graduates Who Completed a Bachelor's Degree or Higher

	HSB: Class of 1982			NELS: Class of 1992			ELS: Class of 2004		
Male	9361.360***	9701.626***	9099.121***	10383.815***	10476.892***	10523.903***	6213.832***	6228.622***	5691.632***
SES2	2054.430	1804.911	2225.272	1146.143	1190.023	1214.447	6.308	3.646	73.898
SES3	2557.581	2088.145	2490.666	-656.631	-769.721	-561.871	-1709.560	-1719.904	-1647.003
SES4	4135.174	3659.409	3764.554	2902.958	2684.742	2883.093	-1068.783	-1079.108	-1034.321
SES5	5989.182**	5216.632*	5314.710*	5295.047**	4968.703*	5226.864*	249.011	217.019	336.323
Black	1195.460	953.396	1553.526	2163.819	2168.757	1710.494	-3290.400	-3282.231	-3137.321
Hispanic	881.734	636.409	1079.432	4392.192	4201.456	3767.623	-2889.118	-2887.974	-2856.918
Asian	-1087.959	-1445.383	-1394.977	2910.650	2783.492	2775.542	4608.515*	4601.727*	4561.872*
Math Test	413.446***	351.321***	375.157***	326.955***	308.105***	295.457**	356.939***	356.642***	342.331***
Total HS Units		256.176			128.123			-28.390	
% Vocational		-122.488*			-65.633			-5.346	
General CTE			-69.324			2468.034			-378.471
Agriculture			-639.197			-1556.119			-158.919
Health			-1563.904			3848.515			25.788
Trade			-484.899			-522.237			555.374
Technology			493.362			831.148			83.466
Military			-2705.465			-221.501			-1037.830
Home Ec & Consumer Home Ec			-1689.953*			-2033.940*			-1047.848
Business & Marketing			-202.010			317.443			323.502
_cons	19475.949***	18279.190*	22790.618***	26879.722***	25498.790***	28090.941***	18316.851***	19147.253***	19247.707***
N	2640	2640	2640	3090	3090	3090	3760	3760	3760

* p<0.05 ** p<.01 *** p<0.001

Note. Earnings outcomes for high school graduates who completed a BA or higher who earned at least one dollar.

Table 15

Multinomial Logistic Regression Analysis of Post-Secondary Attainment with Interactions by Sex

	Some College or AA			Bachelor's Degree			MA or Doctorate		
				H&SB: Class of 1982, *N*=8140					
Male	0.663***	0.668***	0.645	0.708***	0.747***	0.632	0.711*	0.776	0.703
SES2	1.107	1.099	1.086	1.780***	1.701***	1.679***	1.204	1.208	1.194
SES3	1.188	1.18	1.158	2.526***	2.310***	2.256***	1.955*	1.794	1.757
SES4	1.415**	1.396*	1.376*	3.753***	3.151***	3.095***	3.142***	2.566**	2.523**
SES5	1.361*	1.326	1.315	8.294***	5.652***	5.562***	10.471***	6.328***	6.231***
Black	1.292	1.278	1.284	1.462**	1.221	1.228	2.081**	1.649	1.657
Hispanic	0.980	0.974	0.977	0.881	0.847	0.849	1.119	1.067	1.070
Asian	0.783	0.769	0.765	1.422	1.128	1.123	3.996***	3.010**	2.993**
Math Test	1.015***	1.013***	1.013***	1.087***	1.067***	1.067***	1.139***	1.108***	1.108***
Total HS Units		1.014	1.020		1.032*	1.037*		1.055***	1.062**
% Vocational		0.997	0.409*		0.948***	0.002***		0.913***	0.000***
Total HS Units*Male			0.988			0.992			0.990
% Vocational*Male			3.574*			7.151**			7.252
				NELS: Class of 1992, N=7780					
Male	0.681**	0.645**	4.128	0.467***	0.445***	18.515	0.254***	0.247***	3.952
SES2	1.882**	1.742**	1.694**	2.022***	1.729**	1.655*	2.905**	2.383*	2.316*
SES3	2.574***	2.282***	2.269***	4.527***	3.487***	3.481***	5.438***	4.089**	4.097**
SES4	5.610***	4.565***	4.526***	12.335***	8.006***	8.012***	17.054***	10.704***	10.770***
SES5	8.861***	6.183***	6.055***	44.114***	21.550***	21.348***	74.876***	35.040***	34.807***
Black	1.379	1.13	1.136	1.45	0.97	0.987	1.285	0.875	0.88
Hispanic	2.290***	1.893**	1.861**	1.964**	1.434	1.413	2.381*	1.73	1.709
Asian	1.391	1.231	1.229	1.603	1.297	1.283	1.918	1.497	1.498
Math Test	1.032***	1.022**	1.022**	1.110***	1.082***	1.081***	1.181***	1.146***	1.146***
Total HS Units		1.015	1.062		1.140**	1.249***		1.174***	1.263***
% Vocational		0.971***	0.076***		0.931***	0.001***		0.925***	0.001***
Total HS Units*Male			0.933			0.860*			0.898
% Vocational*Male			0.421			0.868			0.278
				ELS: Class of 2004, *N*=9230					
Male	0.496***	0.593***	0.221*	0.337***	0.460***	0.105**	0.203***	0.291***	0.028***
SES2	1.432**	1.409**	1.405**	1.518**	1.442*	1.443*	1.454	1.355	1.357
SES3	2.134***	1.984***	1.974***	3.274***	2.854***	2.859***	2.581***	2.173***	2.181***
SES4	3.372***	2.930***	2.945***	7.390***	5.665***	5.731***	7.405***	5.427***	5.494***
SES5	5.114***	4.081***	4.112***	17.510***	11.532***	11.697***	23.023***	13.969***	14.167***
Black	2.688***	2.478***	2.479***	2.797***	2.595***	2.576***	3.555***	3.419***	3.388***
Hispanic	2.130***	1.820***	1.828***	1.813***	1.470*	1.476*	1.675*	1.356	1.362
Asian	3.312***	2.789***	2.799***	5.537***	4.290***	4.296***	5.791***	4.368***	4.360***
Math Test	1.050***	1.038***	1.038***	1.129***	1.103***	1.104***	1.177***	1.145***	1.146***
Total HS Units		1.057***	1.030		1.134***	1.093***		1.171***	1.114***
% Vocational		0.954***	0.015***		0.913***	0.000***		0.892***	0.000***
Total HS Units*Male			1.046			1.072*			1.109*
% Vocational*Male			0.500			0.151			0.104

Exponentiated coefficients.

* p<0.05 ** p<.01 *** p<0.001

Note. omitted categories are white females, lowest quintile SES who graduated from high school but pursued no post-secondary education

Table 16

Logistic Regression Analysis of Any Employment by Sex, All Not Currently Enrolled in Post-Secondary Education

	H&SB: Class of 1982					NELS: Class of 1992						ELS: Class of 2004			
Male	3.215***	3.247***	1.013	2.602***	1.898***	3.785***	3.768***	47.515**	4.306***	2.899**	2.096***	2.214***	1.853	1.919***	1.924***
SES2	1.259	1.249	1.237	1.252	1.235	0.958	0.94	0.9	0.919	0.921	1.319*	1.301*	1.298*	1.313*	1.316*
SES3	1.347*	1.332*	1.311	1.326*	1.311	1.338	1.295	1.268	1.265	1.25	1.491**	1.444**	1.437**	1.464**	1.462**
SES4	1.465**	1.440*	1.427*	1.443*	1.430*	1.564	1.463	1.459	1.471	1.45	1.738***	1.644***	1.630***	1.690***	1.685***
SES5	1.115	1.086	1.074	1.100	1.098	1.669*	1.529	1.576	1.528	1.524	1.681***	1.542**	1.533**	1.633**	1.631**
Black	1.090	1.086	1.095	1.134	1.125	1.19	1.154	1.222	1.227	1.263	1.210	1.197	1.217	1.285	1.288
Asian	1.011	1.009	1.012	1.030	1.027	1.049	1.009	1.003	0.962	0.962	0.864	0.845	0.849	0.883	0.883
Hispanic	0.606	0.599	0.596	0.591	0.586	0.736	0.738	0.74	0.741	0.737	1.007	0.979	0.984	1.008	1.005
Other	1.021***	1.019***	1.019***	1.019***	1.019***	1.022***	1.020**	1.018*	1.017*	1.017*	1.033***	1.028***	1.028***	1.030***	1.030***
Total HS Units		1.017	1.009				0.974	1.025				1.034**	1.035*		
% Vocational		0.998	0.473				0.991	0.264*				0.988**	0.169**		
Total HS Units*Male			1.035					0.873**					0.999		
% Vocational*Male			8.125*					48.302**					3.614		
General CTE				0.997	0.975				1.016	0.995				0.908**	0.935
Agriculture				1.057	1.003				1.097	0.938				1.097	0.902
Health				0.842	0.831				0.92	0.899				0.972	0.942
Trade				1.083	1.193				0.906	0.94				1.036	1.007
Technology				1.395*	1.268				1.259	1.345*				1.021	1.080
Military				0.898	0.887				0.885	0.693				0.919	0.943
Home Ec & Consumer Home Ec				0.944	0.930*				0.928	0.909				0.931*	0.907*
Business & Marketing				0.998	0.991				1.002	0.985				0.974	0.998
General CTE*Male					1.085					1.08					0.919
Agriculture*Male					1.091					1.378					1.601**
Health*Male					1.138					1.000					1.255
Trade*Male					0.904					0.971					1.038
Technology*Male					1.354					0.717					0.897
Military*Male					1.004					1.962*					0.929
Home Ec & Consumer Home Ec*Male					1.474*					1.666*					1.177
Business & Marketing*Male					1.125					1.218					0.924
N	8120	8120	8120	8120	8120	5950	5950	5950	5950	5860	6900	6900	6900	6900	6900

Note. Exponentiated coefficients.

* p<0.05 ** p<0.01 *** p<0.001

Table 17

Logistic Regression Analysis of Any Employment by Sex, High School Graduates with No Additional Schooling

	H&SB: Class of 1982					NELS: Class of 1992					ELS: Class of 2004				
Male	4.981***	5.004***	0.984	3.888***	2.951***	5.945***	6.819***	1586.163***	14.374***	17.654***	3.472***	3.478***	0.347	2.893***	3.124*
SES2	1.131	1.127	1.121	1.138	1.120	0.994	0.935	0.897	0.885	0.887	1.319	1.321	1.289	1.327	1.323
SES3	1.181	1.177	1.176	1.175	1.160	0.772	0.724	0.840	0.626	0.617	1.386	1.386	1.385	1.372	1.380
SES4	1.179	1.159	1.167	1.172	1.147	1.533	1.414	1.379	1.351	1.363	2.591*	2.590*	2.594*	2.523*	2.459*
SES5	1.219	1.198	1.187	1.244	1.242	1.000	1.000	1.000	1.000	1.000	0.986	0.985	0.982	0.97	0.952
Black	1.284	1.280	1.290	1.336	1.311	0.727	0.878	1.364	0.962	0.980	1.619	1.62	1.643	1.938	1.944
Asian	0.984	0.986	0.984	1.004	0.998	0.704	0.694	0.777	0.628	0.606	1.249	1.257	1.223	1.29	1.286
Hispanic	0.594	0.594	0.575	0.585	0.559	1.774	1.614	1.752	1.953	1.937	0.426	0.429	0.449	0.436	0.431
Other	1.017**	1.016*	1.016*	1.015*	1.016*	0.986	0.990	0.986	0.979	0.978	1.025*	1.025*	1.026*	1.028*	1.029*
Total HS Units		1.015	1.003				0.922	1.092				1.004	0.962		
% Vocational		0.998	0.644				1.003	1.417				1.000	1.045		
Total HS Units*Male			1.066					0.785***					1.097		
% Vocational*Male			3.748					3.364					0.892		
General CTE				0.987	0.976				1.048	1.061				0.936	0.970
Agriculture				1.141	1.213				1.171	1.303				1.075	0.771
Health				0.782	0.778				1.062	1.059				0.668*	0.649*
Trade				1.082	1.209				0.853***	0.867				1.087	1.054
Technology				1.288	1.109				1.950*	2.116*				1.003	1.043
Military				1.150	1.446				0.877	0.879				0.996	0.925
Home Ec & Consumer Home Ec				0.962	0.948				1.018	1.019				1.06	1.073
Business & Marketing				1.007	1.005				1.155	1.152				0.911	0.998
General CTE*Male					1.059					0.943					0.934
Agriculture*Male					0.919					0.804					1.672
Health*Male					1.038					1.000					1.172
Trade*Male					0.888					0.975					1.043
Technology*Male					1.742					0.675					0.956
Military*Male					0.644					1.003					2.955*
Home Ec & Consumer Home Ec*Male					1.678*					1.025					0.941
Business & Marketing*Male					1.081					1.033					0.841
N	3710	3710	3710	3710	3710	990	990	990	990	970	700	700	700	700	700

Note. Exponentiated coefficients. * p<0.05 ** p<0.01 *** p<0.001

Table 18
Logistic Regression Analysis of Any Employment by Sex, Some College

	H&SB: Class of 1982					NELS: Class of 1992				ELS: Class of 2004					
Male	1.832*	1.855*	0.330	1.934	1.163	5.440***	5.331***	0.095	4.527***	3.622*	2.438***	2.514***	2.808	2.215***	2.240***
SES2	1.196	1.208	1.213	1.229	1.174	0.992	0.979	0.997	1.023	1.013	1.273	1.255	1.250	1.312	1.319
SES3	1.339	1.332	1.343	1.454	1.477	1.399	1.376	1.362	1.355	1.360	1.291	1.272	1.269	1.316	1.327
SES4	1.599	1.617	1.668	1.665	1.769	1.418	1.321	1.296	1.423	1.426	1.397	1.362	1.354	1.431	1.414
SES5	1.521	1.584	1.626	1.584	1.557	0.882	0.796	0.796	0.857	0.857	1.375	1.329	1.331	1.457	1.447
Black	0.755	0.778	0.765	0.819	0.791	1.565	1.535	1.567	1.625	1.738	1.078	1.079	1.087	1.137	1.133
Asian	1.117	1.121	1.143	1.159	1.161	1.372	1.327	1.335	1.353	1.368	0.782	0.781	0.781	0.817	0.814
Hispanic	0.813	0.883	0.866	0.929	0.937	0.512	0.511	0.536	0.452*	0.470	1.031	1.037	1.046	1.062	1.050
Other	1.024	1.024*	1.024	1.024*	1.022	1.028**	1.025**	1.025**	1.025**	1.024*	1.015*	1.012	1.012	1.013*	1.013*
Total HS Units		1.023	1.005				0.971	0.954				1.031	1.035		
% Vocational		1.005	1.309				0.990	0.220				0.993	0.391		
Total HS Units*Male			1.077					1.147					0.991		
% Vocational*Male			2.127					41.958					2.064		
General CTE				1.173	1.152				1.027	1.047				0.931	0.986
Agriculture				0.910	0.488*				1.253	1.054				1.227*	1.054
Health				0.949	0.943				0.953	0.939				1.074	1.021
Trade				1.030	1.621				1.074	1.051				1.027	1.032
Technology				1.253	1.071				0.995	1.108				1.057	1.098
Military				0.452*	0.438				0.791	0.580*				0.986	1.042
Home Ec & Consumer Home Ec				1.017	0.997				0.920	0.907				0.924	0.889*
Business & Marketing				1.002	0.981				0.960	0.950				1.018	1.041
General CTE*Male					1.055					0.894					0.850
Agriculture*Male					2.143*					1.757					1.548
Health*Male					0.686					1.000					1.991
Trade*Male					0.626					1.041					0.999
Technology*Male					2.076					0.659					0.924
Military*Male					1.041					2.148*					0.875
Home Ec & Consumer Home Ec*Male					1.390					1.449					1.355
Business & Marketing*Male					1.357					1.119					0.912
N	1520	1520	1520	1520	1520	2520	2520	2520	2520	2480	2860	2860	2860	2860	2860

Note. Exponentiated coefficients.

* p<0.05 ** p<0.01 *** p<0.001

Table 19

Logistic Regression Analysis of Any Employment by Sex, who Completed a Bachelor's Degree or Higher

	H&SB: Class of 1982					NELS: Class of 1992					ELS: Class of 2004				
Male	2.069***	2.040***	1.921	1.771**	1.810*	1.536	1.527	0.586	1.629	0.709	1.649**	1.668**	3.083	1.578*	1.798*
SES2	1.744	1.748	1.756	1.848	1.863	0.418	0.400	0.402	0.412	0.436	1.331	1.322	1.319	1.326	1.254
SES3	1.608	1.645	1.635	1.658	1.681	0.796	0.812	0.825	0.882	0.946	1.363	1.352	1.354	1.351	1.304
SES4	1.727	1.781	1.782	1.713	1.709	0.777	0.834	0.841	0.929	0.980	1.234	1.211	1.209	1.207	1.172
SES5	0.878	0.933	0.931	0.923	0.931	0.942	1.105	1.121	1.218	1.321	1.054	1.015	1.014	1.026	1.006
Black	0.870	0.878	0.883	0.872	0.872	0.785	0.816	0.837	0.784	0.816	1.037	1.039	1.034	1.111	1.044
Asian	1.021	1.023	1.029	1.090	1.106	0.705	0.758	0.750	0.703	0.745	0.706	0.690	0.688	0.732	0.719
Hispanic	0.569	0.582	0.586	0.607	0.608	0.849	0.832	0.837	0.829	0.832	0.762	0.754	0.754	0.753	0.753
Other	1.013	1.016	1.016	1.011	1.011	1.015	1.021	1.02	1.017	1.017	1.019	1.017	1.017	1.017	1.018
Total HS Units		1.002	1.003				1.038	1.037				1.023	1.031		
% Vocational		1.010	1.882				1.037*	6.413				0.990	0.405		
Total HS Units*Male			0.998					1.014					0.978		
% Vocational*Male			2.432					391.08					0.790		
General CTE				0.887	0.862				0.826	0.743				0.846	0.820
Agriculture				1.104	1.227				0.898	0.785				0.963	0.815
Health				110.265**	65.410**				0.629	0.457*				1.074	1.185
Trade				1.156	1.118				1.05	0.795				1.167	1.211
Technology				1.769	2.048				1.512*	1.398				0.984	1.062
Military				0.926	0.340**				1.000	1.000				0.784	1.117
Home Ec & Consumer Home Ec				0.889	0.890				1.052	0.946				1.01	1.051
Business & Marketing				1.158	1.195				1.343*	1.264				0.955	0.946
General CTE*Male					1.079					1.24					1.156
Agriculture*Male					0.867					1.252					1.935*
Health*Male					194.970					1.000					0.738
Trade*Male					1.035					1.442					0.916
Technology*Male					0.764					1.440					0.870
Military*Male					5.002**					1.000					0.565
Home Ec & Consumer Home Ec*Male					1.005					3.159					0.812
Business & Marketing*Male					0.881					1.312					1.025
N	2890	2890	2890	2890	2890	2440	2440	2440	2400	2370	3330	3330	3330	3330	3330

Note. Exponentiated coefficients. * p<0.05 ** p<0.01 *** p<0.001

Table 20

Regression Analysis of Earnings by Sex, All Not Currently Enrolled in Post-Secondary Education

	HSB: Class of 1982					NELS: Class of 1992				ELS: Class of 2004		
Male	9821.948***	10000.190***	8719.477***	7095.874***	13152.599***	13188.688***	13059.426***	12057.983***	7658.971***	7650.785***	6632.005***	4355.847**
SES2	4147.345***	3968.605***	3989.442***	3954.996***	1874.483	1524.37	1629.284	1615.346	1847.261	1818.575	1813.783	1869.235
SES3	3850.701***	3594.853**	3619.687**	3561.591**	3401.234	2862.145	2834.427	2809.525	2220.126*	2222.427*	2180.311*	2092.438
SES4	6121.714***	5624.208***	5762.830***	5711.894***	5791.564**	4765.245*	5058.313*	4947.834*	4007.095***	4007.991***	4051.288***	3994.394***
SES5	8600.477***	7645.676***	7712.496***	7660.188***	12929.739***	11537.838***	11778.392***	11685.207***	4958.650***	4975.546***	5180.283***	5120.318***
Black	56.810	-362.339	96.786	52.123	-3512.536	-4138.981*	-3729.501	-3755.309	-3515.556**	-3525.642**	-3041.352*	-3020.292*
Hispanic	-387.520	-571.795	-465.944	-460.533	1182.852	643.856	710.581	617.947	-835.251	-778.33	-492.733	-466.638
Asian	670.608	228.659	111.667	178.711	3163.218	3037.005	3176.941	3635.646	6168.319***	6200.408***	6453.077***	6539.642***
Math Test	313.923***	264.328***	278.331***	280.184***	317.460***	265.764***	256.303***	258.879***	325.886***	321.742***	315.705***	318.241***
Total HS Units		141.986				61.825				122.691		
% Vocational		-100.697***				-125.077*				6.285		
General CTE			347.452	-113.327			-793.808	-1672.395***			-483.38	-707.529*
Agriculture			-57.005	-302.245			492.141	-918.081			289.607	-52.784
Health			-613.283	-245.250			108.026	-87.5			701.918	393.863
Trade			-293.735	-450.305			-610.185*	-1702.302**			662.733*	-678.23
Technology			-378.262	-345.284			806.8	1118.928			-89.424	17.608
Military			-1354.252	-419.670			-1197.84	-1920.629*			-908.149*	-1187.270**
Home Ec & Consumer Home Ec			-1376.659***	-1442.033***			-1305.549**	-1315.645***			-1064.494***	-1052.782***
Business & Marketing			-504.606*	-614.180**			-332.349	-364.559			436.753	-127.013
General CTE*Male				804.762				1707.415				479.236
Agriculture*Male				291.336				1686.631				447.314
Health*Male				-2759.109				1550.162				1165.102
Trade*Male				201.340				1219.041				1555.811**
Technology*Male				-12.112				-627.138				-8.612
Military*Male				-1306.654				946.508				715.142
Home Ec & Consumer Home Ec*Male				608.697				202.992				49.469
Business & Marketing*Male				672.887				84.034				1267.435*
_cons	18570.182***	19633.267***	22375.488***	23087.559***	20641.700***	24308.562***	25194.385***	25622.406***	13744.935***	10627.643***	14501.179***	15473.951***
N	7110	7110	7110	7110	5610	5610	5610	5610	6030	6030	6030	6030

Note. Earnings outcomes are standardized to 2013 dollars using calculations from the Bureau of Labor Statistics for on-time high school graduates who are not currently enrolled in post-secondary education

* p<0.05 ** p<0.01 *** p<0.001

Table 21

Regression Analysis of Earnings by Sex for High School Graduates who Did Not Pursue Any Post-Secondary Education

	HS&B: Class of 1982				NELS: Class of 1992				ELS: Class of 2004			
Male	12081.384***	12090.889***	11455.053***	9151.988***	20258.298***	20365.698***	21066.031***	23806.564***	12339.980***	12490.430***	11643.342***	9557.686**
SES2	5651.246***	5564.920***	5615.936***	5622.036***	483.396	129.436	35.763	2.363	671.710	688.087	894.933	1220.311
SES3	4724.328**	4651.182**	4732.483**	4668.352**	6122.936	5824.652	4935.671	4780.542	-1782.658	-1779.163	-1464.514	-1173.583
SES4	6365.138***	6182.076***	6346.827***	6259.407***	5111.568	4269.740	4380.837	4235.825	2481.968	2403.974	2737.418	3439.024
SES5	6122.606**	5814.112*	5891.139**	5739.589*	9341.783	9437.484	7693.755	6682.194	-5038.342	-5190.792	-3274.387	-2648.541
Black	-30.411	-195.365	214.116	190.588	-6291.144	-6153.476	-6654.832	-6304.774	-3137.391	-3242.391	-2671.690	-2818.308
Hispanic	-884.920	-964.149	-866.340	-861.720	1247.110	966.889	626.808	771.499	1236.318	1463.261	1586.455	1763.972
Asian	-49.830	-189.728	-72.149	-311.793	-7178.973	-6600.196	-6047.546	-6170.124	-6043.000*	-5894.094	-4575.836	-4357.506
Math Test	113.702*	104.218	109.804*	108.688*	113.378	116.875	70.791	70.132	251.764**	246.473**	245.124**	247.795**
Total HS Units		17.286				-349.490				149.290		
% Vocational		-30.588				-47.571				-10.447		
General CTE			352.093	-316.474			-1694.877*	-1368.108**			-637.979	-879.191
Agriculture			710.361	568.958			194.213	1975.916			504.403	2052.776
Health			-996.211	-858.303			-1857.041	-1228.048			-415.277	839.487
Trade			-256.089	-727.233			-740.125	-534.737			156.195	-300.764
Technology			-490.660	-1977.781			2071.414	3753.395			-1901.485*	-1990.095
Military			-0.894	1428.366			644.898	-3476.855			-362.891	-526.393
Home Ec & Consumer Home Ec			-497.857	-365.782			9.592	268.748			-298.348	-266.104
Business & Marketing			-216.152	-461.733			-590.256	-745.474			955.467	-497.332
General CTE*Male				1037.493				-786.316				261.523
Agriculture*Male				263.897				-2127.617				-1872.569
Health*Male				-2079.674				-6608.483				-7436.026
Trade*Male				587.657				-292.077				502.703
Technology*Male				2075.331				-3474.588				-16.055
Military*Male				-1856.866				4818.640				1361.919
Home Ec & Consumer Home Ec*Male				-1173.203				-915.356				-141.214
Business & Marketing*Male				1379.512				842.415				2218.295*
_cons	21578.729***	22383.560***	22585.573***	23964.290***	22079.932***	31658.634***	25542.240***	24162.341***	11809.284***	8350.823	12539.853***	13791.357***
N	3130	3130	3130	3130	920	920	920	920	560	560	560	560

Note. Earnings outcomes are standardized to 2013 dollars using calculations from the Bureau of Labor Statistics for on-time high school graduates who are not currently enrolled in post-secondary education

* p<0.05 ** p<0.01 *** p<0.001

Table 22

Regression Analysis of Earnings for High School Graduates by Sex who Completed Some College

	HS&B: Class of 1982				NELS: Class of 1992				ELS: Class of 2004			
Male	6700.128***	6799.595***	3424.844	3559.283	12688.656***	12659.662***	11952.635***	8066.098	10407.307***	9925.825***	8654.927***	3734.081
SES2	1131.846	1090.920	718.249	464.920	1894.7	1845.491	2340.691	2344.071	2716.597	2699.725	2887.404*	2800.516*
SES3	-216.627	-282.226	-393.039	-318.273	2899.287	2866.49	3151.066	3092.274	3870.306*	4076.575*	4103.611*	3921.437*
SES4	3241.861	3199.673	2964.686	2682.329	3615.339	3480.185	4335.866	3957.601	4940.758**	5462.912***	5558.989***	5237.515***
SES5	4717.240	4445.176	3869.777	3678.445	12239.133*	12053.087*	12755.094*	12559.128*	1618.261	2437.378	2965.027	3096.613
Black	-3982.217	-4083.327	-3686.439	-3605.501	-6447.752*	-6504.099*	-5920.596*	-6062.328*	-4287.697*	-4307.512*	-3658.818	-3605.536
Hispanic	-1182.339	-1237.013	-807.489	-851.485	-1818.124	-1881.734	-1676.161	-1812.579	-1324.687	-973.102	-583.368	-638.172
Asian	2829.340	2667.187	2052.082	2239.306	-3795.109	-3818.917	-3891.34	-2480.971	1579.045	2127.748	2656.640	2950.254
Math Test	237.438*	222.915*	207.034	206.932	90.118	86.127	81.248	85.565	82.188	105.774	95.903	100.400
Total HS Units		75.539				-78.284				96.906		
% Vocational		-43.602				-18.909				141.224*		
General CTE			1271.331	1580.556			356.486	-784.847			-290.796	-527.362
Agriculture			-1098.398	-3450.473*			1641.856	-1692.841*			937.793	683.788
Health			266.112	490.504			729.177	968.309			1470.213	859.089
Trade			819.958	3168.998			194.199	-1064.858			1332.928**	-885.260
Technology			-1636.393	-2413.283			184.654	283.16			466.329	-932.446
Military			-4008.830	-1755.453			-1550.310*	-1049.782			-250.076	93.389
Home Ec & Consumer Home Ec			-2293.702***	-2753.947***			-1012.25	-1194.197*			-339.877	-658.201
Business & Marketing			-411.411	-341.245			445.421	144.522			744.505	281.663
General CTE*Male				-761.800				2183.671				565.994
Agriculture*Male				2387.732				4024.780*				370.412
Health*Male				-7022.114				-3916.32				2017.039
Trade*Male				-2519.126				1639.213				2687.889***
Technology*Male				1367.097				5.155				2437.676
Military*Male				-5515.420				-529.038				-526.664
Home Ec & Consumer Home Ec*Male				3566.954**				949.66				1010.327
Business & Marketing*Male				-247.498				1012.343				1182.001
_cons	24914.763***	24812.226***	28627.195***	28584.025***	27642.926***	30143.069**	27396.116***	28948.497***	19244.283***	13578.940**	16959.894***	19246.415***
N	1340	1340	1340	1340	2380	2380	2380	2380	2410	2410	2410	2410

Note. Earnings outcomes are standardized to 2013 dollars using calculations from the Bureau of Labor Statistics for on-time high school graduates who are not currently enrolled in post-secondary education

* p<0.05 ** p<0.01 *** p<0.001

Table 23

Regression Analysis of Earnings for High School Graduates by Sex who Completed a Bachelor's Degree or Higher

	HS&B: Class of 1982				NELS: Class of 1992				ELS: Class of 2004			
Male	9361.360***	9701.626***	9099.121***	7177.724***	11763.228***	11955.229***	12724.400***	15159.960***	6176.881***	6220.995***	5447.835**	6319.777*
SES2	2054.430	1804.911	2225.272	2587.386	1671.911	1858.568	2086.676	2221.159	34.662	17.673	171.592	342.187
SES3	2557.581	2088.145	2490.666	2643.808	-722.053	-957.890	-553.231	-430.450	-1279.26	-1316.829	-1208.919	-874.041
SES4	4135.174	3659.409	3764.554	3725.780	3023.047	2404.294	2786.793	3041.751	-163.035	-215.443	-178.306	64.629
SES5	5989.182**	5216.632*	5314.710*	5523.783**	6119.665*	5163.592*	5650.266*	5824.504*	1492.849	1392.285	1513.349	1701.826
Black	1195.460	953.396	1553.526	1544.383	2144.871	2146.195	1718.382	1720.919	-3745.015	-3733.026	-3604.238	-3453.084
Hispanic	881.734	636.409	1079.432	1038.222	7613.362	7105.648	7056.717	6899.404	-1578.55	-1600.784	-1519.079	-1500.155
Asian	-1087.959	-1445.383	-1394.977	-894.726	9797.423***	9687.849***	9730.955***	9698.039***	7248.644**	7216.944**	7160.486**	7311.132**
Math Test	413.446***	351.321***	375.157***	375.705***	389.304***	348.212***	331.907**	331.833**	354.425***	351.473***	331.385***	333.714***
Total HS Units		256.176				78.193				-27.89		
% Vocational		-122.488*				-196.244*				-19.552		
General CTE			-69.324	-1470.746			2249.217	611.027			-144.233	-332.11
Agriculture			-639.197	-287.200			-2465.430*	-2445.716			-560.063	-641.134
Health			-1563.904	-393.463			3606.369	-135.987			115.552	1.348
Trade			-484.899	-1990.382			-1839.224*	-1032.731			988.212	380.32
Technology			493.362	4141.182*			644.625	453.738			-39.687	1136.118
Military			-2705.465	-7381.217**			-1309.095	-1386.300			-1474.849	-3157.831***
Home Ec & Consumer Home Ec			-1689.953*	-1996.978**			-2557.833**	-1983.077			-1508.466*	-774.605
Business & Marketing			-202.010	-13.443			-133.959	730.689			75.249	-226.962
General CTE*Male				2844.841*				4122.477				207.372
Agriculture*Male				-361.764				229.325				4.179
Health*Male				-2459.889				7014.318				523.248
Trade*Male				1583.528				-1017.362				708.119
Technology*Male				-5257.869*				568.472				-1835.915
Military*Male				4955.925				-144.762				2879.509
Home Ec & Consumer Home Ec*Male				2180.134				-2094.778				-3432.625
Business & Marketing*Male				-435.985				-2452.568				802.849
_cons	19475.949***	18279.190*	22790.618***	23496.360***	25296.636***	28136.341***	28899.621***	27686.843***	18897.516***	20013.117**	20566.667***	19868.096***
N	2640	2640	2640	2640	2300	2300	2300	2300	3060	3060	3060	3060

Note. Earnings outcomes are standardized to 2013 dollars using calculations from the Bureau of Labor Statistics for on-time high school graduates who are not currently enrolled in post-secondary education

* p<0.05 ** p<0.01 *** p<0.001

Table 24

Logistic Regression Analysis of Full-Time Employment, All Not Currently Enrolled in Post-Secondary Education

	NELS: Class of 1992					ELS: Class of 2004				
Male	4.468***	4.500***	158.931**	5.060***	6.010***	2.195***	2.237***	1.323	2.019***	1.766***
SES2	1.314	1.342	1.290	1.317	1.316	1.178	1.168	1.162	1.174	1.175
SES3	1.429	1.483	1.465	1.477	1.472	1.266*	1.250*	1.239	1.261*	1.255*
SES4	1.038	1.125	1.126	1.134	1.134	1.433**	1.405**	1.386**	1.432**	1.422**
SES5	1.696**	1.889**	1.922**	1.913**	1.908**	1.472***	1.429**	1.415**	1.489***	1.483**
Black	1.132	1.181	1.215	1.182	1.196	0.899	0.894	0.915	0.939	0.940
Hispanic	1.403*	1.465*	1.453*	1.416*	1.413*	0.827	0.825	0.831	0.856	0.857
Asian	1.184	1.176	1.164	1.247	1.228	0.794	0.789	0.793	0.811	0.808
Math Test	1.010	1.013*	1.012	1.011	1.011	1.025***	1.023***	1.023***	1.024***	1.024***
Total HS Units		1.031	1.082*				1.024*	1.022		
% Vocational		2.881	2.311				0.674	0.286*		
Total HS Units*Male			0.851**					1.009		
% Vocational*Male			6.026					6.601**		
General CTE				0.967	0.942				0.924**	0.929
Agriculture				1.097	0.930				1.101	0.918
Health				0.973	0.957				1.067	1.028
Trade				0.975	1.041				1.053*	1.024
Technology				1.261	1.364*				1.008	1.064
Military				1.070	0.863				0.961	0.978
Home Ec & Consumer Home Ec				1.020	1.024				0.943	0.907**
Business & Marketing				1.128*	1.135*				1.018	1.020
General CTE*Male					1.061					0.980
Agriculture*Male					1.380					1.443**
Health*Male					3.632					1.296
Trade*Male					0.916					1.036
Technology*Male					0.691					0.914
Military*Male					1.891*					0.961
Home Ec & Consumer Home Ec*Male					1.000					1.242**
Business & Marketing*Male					0.966					0.994
N	5950	5950	5950	5950	5950	6900	6900	6900	6900	6900

Exponentiated coefficients.

* p<0.05 ** p<.01 *** p<0.001

Note. Full-time employment for on-time high school graduates who are not currently enrolled in post-secondary education