Career and Technical Education in High School: Good for Students?

by Monica Mean
University of Maryland, Baltimore County

Introduction

College for All?

The majority of jobs that will be created in the next decade will require some form of postsecondary education (Carnevale, Smith, & Strohl, 2013). As a result, educators and the general public have pushed 4-year college degrees as essentially a requirement to enter the workforce, but in reality, many of those jobs that will be created are actually "middle-skill" jobs that require some postsecondary training, but not necessarily bachelor's degrees (National Skills Coalition, 2017; Carnevale, Jayasundera, & Hanson, 2013).

The Problem

Getting into a 4-year college does not equate to success in college. Over one million students drop out of college each year (Raisman, 2013), with first generation and economically disadvantaged college students at the greatest risk (Shapiro, Dundar, Huie, Wakhungu, Yuan, Nathan, & Hwang, 2017). It is estimated that approximately one-third to one-half of students who start college do not finish (Chatterjee & Ionescu, 2012; Restuccia & Urrutia, 2004).

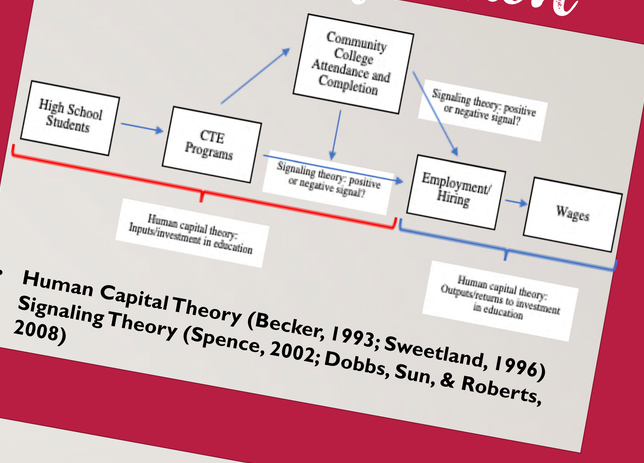
Career and Technical Education (CTE)

CTE typically provides students with both academic and technical skills, and knowledge and training necessary to succeed in careers. After years of decline, CTE has seen a resurgence of attention lately as a means for students to acquire the foundational skills for many types of jobs while they are still in high school, providing them an advantage for finding employment after high school (National Skills Coalition, 2017; Holzer & Lerman, 2009). Given CTE's focus on workforce training, it is important to understand the impact it has on postsecondary trajectories and labor outcomes for students who did not complete a 4-year university degree.

Research Questions

1. **Does the number of CTE credits influence pathways take after HS and employment outcomes three years after HS? Does this influence vary by concentrator status, subgroups, or career clusters?**
2. **How does community college attendance influence the effects of the outcomes in RQ1?**
3. **Is there heterogeneity among the trajectory and labor outcomes between students who are CTE concentrators and those who are not?**

Theory of Action



- **Human Capital Theory (Becker, 1993; Sweetland, 1996)**
- **Signaling Theory (Spence, 2002; Dobbs, Sun, & Roberts, 2008)**

Results

Table. Coefficients for Number of HS CTE Credits

Outcome	Base Model	Base Model with School FE
Post-HS Trajectories		
Working FT (Odds Ratio)	1.049***	1.026
	(0.013)	(0.018)
4-Year College (Odds Ratio)	0.962***	0.949***
	(0.011)	(0.015)
2-Year College (Odds Ratio)	1.047***	1.036**
	(0.014)	(0.017)
Labor Outcomes Three Years After HS		
Working FT (Odds Ratio)	1.044***	1.045**
	(0.013)	(0.018)
Hours Worked per Week	0.098	-0.022
	(0.085)	(0.108)
Annual Income (Natural Log)	0.034***	0.037***
	(0.011)	(0.013)
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

1. Subgroup analyses highlights:

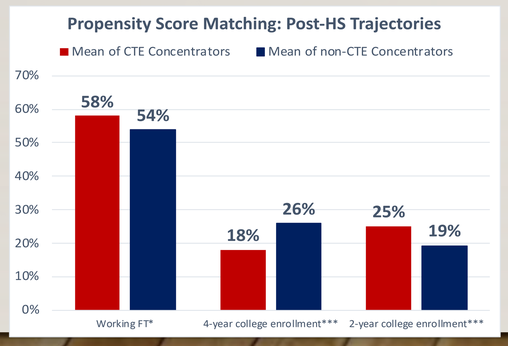
- Each additional CTE credit that **African-American students** take is associated with a **18-20 percent decrease in the odds of attending a 4-year college and a 3-4 percent decrease in the odds of attending a 2-year college** compared to the odds for white students.
- Low-income students work 30 mins more per week for each additional CTE credit taken compared to higher income students.

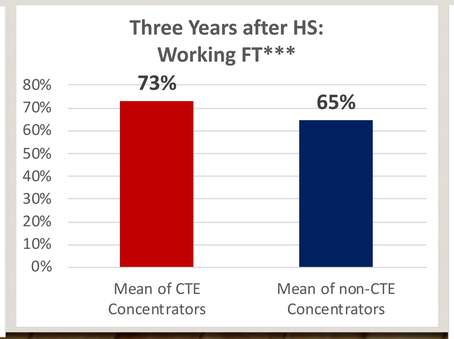
2. CTE concentrator analyses highlights:

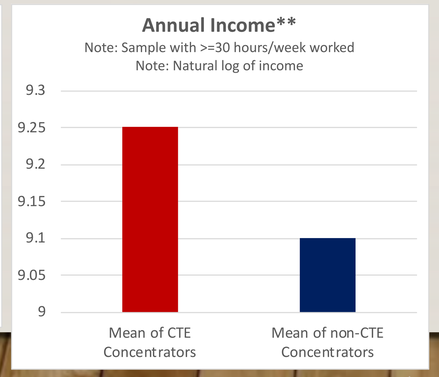
- Each additional CTE credit for CTE concentrators is associated with a **9-10 percent increase in the odds of working FT after high school and a 6 percent increase in the likelihood of enrolling in a 4-year college** compared to academic concentrators' odds.
- Each additional CTE credit that **CTE concentrators** earn is associated with a **14-17 percent increase in odds of working FT** three years after HS compared to the odds for academic concentrators.

3. Community college interactions were not significant.

4. Positive associations for the **manufacturing, architecture, agriculture, and transportation** career clusters in particular.







Methods

Regression Analyses and Propensity Score Matching

Primary Explanatory Variable: Number of CTE Credits Taken in HS

Outcomes:

- **Post-HS Trajectory** (Worked FT, Enrolled in 4-Year College, Enrolled in 2-Year College)
- **Labor Outcomes Three Years After HS** (Worked FT, Number of Hours Worked/Week, and Annual Income)

Regression Analyses:

1. Base Model: $Y_{is} = \alpha_0 + \alpha_1 X_{is} + \alpha_2 A_{is} + e_{is}$
2. School Fixed-Effects: $Y_{is} = \alpha_0 + \alpha_1 X_{is} + \alpha_2 A_{is} + SCHFixedEffects_s + e_{is}$
3. Subgroup Interaction Model
4. Concentrator Interaction Model
5. Community College and Concentrator Interaction Model

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