POLICY BRIEF:

Returns to Two-Year Degrees and Certificates in Texas

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SUMMARY

This study documents the variation in the course requirements and economic benefits of community college credentials. Short-term credentials can be earned in as little as three months while Applied Associate's degrees typically require at least two years to complete. Disaggregating Associate's degrees into Academic and Applied Associate's degrees makes evident variation in the earnings associated with each kind of degree. Applied Associate's degrees are associated with early career earnings that are similar to Bachelor's degrees while Associate's degrees are associated with some of the smallest wage increases.

It was found that considering only a single category of community college credentials masks variation in the value of these degrees, namely the high value of Applied Associate's degrees. Results suggest that even after accounting for the self-selection of individuals into higher education, Applied Associate's degrees significantly increase early career earnings.

Study Overview

Post-secondary education is increasingly necessary for individuals to earn a living wage, and its expansion is necessary for the nation to remain competitive in a global economy. Simultaneously, tuition at four-year institutions is rising, making this route to a post-secondary credential more financially difficult for students from low-income families. There has a been a resurgence of policy and academic interest in two-year institutions, particularly with respect to the ways in which these institutions may provide education to students for whom the opportunity to attend a four-year university is restricted by academic or financial barriers. As of 2014, 40% of post-secondary students were enrolled at two-year colleges (National Center for Education Statistics, 2016).

Community college credentials are an increasingly important part of post-secondary education in the United States. Two-year institutions have been receiving additional attention from students, researchers and policy makers, yet it is still not clear how much labor market value these degrees have. Previous studies have been limited in their ability to differentiate between types of community college credentials (CCCs), and been unable to limit selection bias.

Due to the large proportion of post-secondary students that attend community college, and the increasing accessibility of these institutions to low-income and first generation college goers, community colleges are receiving additional attention from policy makers (Ma & Baum, 2016; National Center for Education Statistics, 2011; Shear, 2010). Despite this attention, the existing literature does not agree that community college

degrees or certificates.[1] increase the earning of community college graduates, relative to students who complete only a high school diploma. This study seeks to determine the value of two-year degrees and certificates in the Texas labor market relative to the value of a high school diploma. This brief addresses the following question: What is the causal effect of community college credentials on earnings? What types of credentials are the most valuable?

The Landscape of Post-Secondary Education in Texas

Between 1996 and 2011 it was more common for individuals in Texas to complete a high school degree than to complete a post-secondary degree. In the data used for this study one in four individuals who graduated high school after 1995 had completed any kind of post-secondary credential within seven years of graduating high school. In 2010 42% of individuals in the nation had completed some kind of post-secondary credential (Carnevale, Jayasundera, & Hanson, 2012).

There are a variety of credentials offered at community colleges ranging from certificates that can be completed in as little as one month, to degrees that require 60 credits. A credential requiring the completion of 60 credits would take two-years for a full time student who was not required to take any remedial courses or repeat any courses.

Short-term and Long-term Certificates

According to a report from the Center on Education and the Workforce at Georgetown, community college certificates are the second most common credential behind Bachelor's degrees (Carnevale, Jayasundera, & Hanson, 2012). These certificates are the fastest growing type of post-secondary credential in the United States. Certificates are vocationally specialized, much more so than Bachelor's degrees and many kinds of Associate's degrees. Certification programs typically focus on technical skills or industry specific knowledge that are required to enter certain occupations. In some fields, individuals are required to demonstrate their possession of such knowledge through a certification exam. In other fields, a certification exam is not required, however the knowledge or skills required to do the work can be difficult or inefficient to acquire outside of a formal program. This difficulty stems from the specificity of the technical knowledge required, as with automotive repair, or from the cost of the equipment that is required to do a job, as with inert gas welding.

Certifications earned at a two-year institution (which I will refer to as certification programs) are commonly confused with industry based certifications (which I will refer to as certification exams) (Carnevale, Rose, & Hanson, 2012). Certificates earned at a two-year college are obtained by earning a certain number of credits, while industry based certificates are earned by passing a certification or licensing exam. In certain fields, many in health care, individuals are required to successfully complete a certification program and pass an

[1] I refer to the set of degrees and certificates earned at a community college as community college credentials (CCC). These credentials include Applied Associate's degrees, Associate's degrees, Long-term certificates, and Short-term certificates. I use two-year college, two-year institution and community college interchangeably. I use Bachelor's degree or four-year degrees to refer to the degrees earned at four-year colleges and universities. I use post-secondary degrees or credentials to refer to the full set of two or four-year higher education credentials.

exam. In other fields the certification program is designed to help individuals pass such an exam, but not required of individuals to be eligible to take the exam, as is the case with the real estate licensing exam.

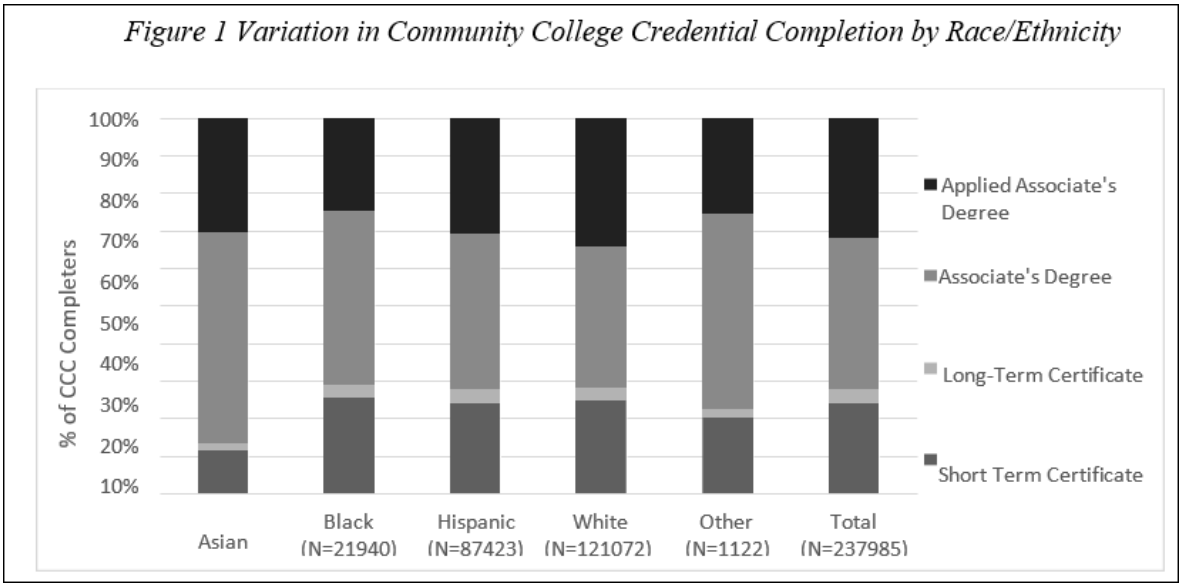
Post-secondary certifications are increasingly common and increasingly diverse, such that characterizations of certificates as a single category fail to be meaningful. Assessing certificates as a single category means equating a jewelry making certification earned in six weeks to a nursing assistant's program that lasts two-years. For the purposes of this study, post-secondary certificates will be split into Long-term certificates and Short-term certificates. Short-term certificates are more common than Long-term certificates. Short-term certificates typically require between 12 and 30 credits and can be completed in 3-6 months. Long-term certificates require between 30 and 60 credits to complete and can be completed in 1-2 years.

Associate's degrees and Applied Associate's degrees

These degrees take longer to earn than most certificates, typically requiring 60 credits to complete. The primary difference between Associate's and Applied Associate's degrees relates to course content and field of study. Unlike certificates, Associate's and Applied Associate's degrees require students to take courses that are not directly related to their field of study, composition courses or a foreign language for example. Associate's degrees typically require students to take more courses that are not directly related to one's field of study than Applied Associate's degrees. Associate's degrees typically begin with a year of general education courses, similar to those courses taken during the first two-years of a Bachelor's degree program. Individuals completing an Applied Associate's degrees will begin taking vocational education courses during their first year alongside general education courses. Associate's degrees, sometimes called Academic Associate's degrees, are more common among transfer students than Applied Associate's degrees.

Figure 1 shows Community College credential completion rates within each racial/ethnic group. Long-term certificate earners represent the smallest proportion of each group. Associate's degree earners are overrepresented among Asian students and underrepresented among white students. Applied Associate's degrees are overrepresented among White students and underrepresented among Black students. Asian students complete Short-term certificates less often than any other racial/ethnic group.

Figure 1 Variation in Community College Credential Completion by Race/Ethnicity



Expanding on existing research, this study differentiates between four types of credentials offered at two-year colleges: Short-term certificates, Long-term certificates, Associate's degrees and Applied Associate's degrees. These credentials vary in the number of course credits required to complete them, as well as the content of those courses. While all community college credentials are considered to be more vocational in nature than Bachelor's degrees, certificates are the most vocationally focused, followed by Applied Associate's degrees and then Associate's degrees. Among Texas students who graduated high school between 1995 and 2011, Associate's degrees are the most common community college credential, followed by Applied Associate's degrees and Long-term certificates. Short-term certificates are the least common. The total number of community college credentials that are completed in the seven years following high school, however, is dwarfed by the number of students completing a Bachelor's degree during this time. Recent years have seen an increase in the number of individuals who earn community college credentials, so the overall composition of post-secondary degrees in the nation is changing.

Table 1 reports the results from the OLS model outlined above. The smallest wage increases are associated with completing some community college (58%) or some university credits (46%) but not a degree. The community college credentials associated with the largest wage increases are Applied Associate's degrees (164%) followed by Long-Term Certificates (162%). The wage increases associated with these degrees are larger than the wage increases associated with Bachelor's degrees. However, this ordering of degrees with respect to labor market value will change over time (Figure 5). Short–term certificates are associated with a surprisingly high wage premium of 119%. Associate's degrees are associated with the smallest wage increases of 86%.

Table 1 OLS Regression Predicting Earnings during the First Year After Highest Degree Completion

	PE	SE	Sig
Degree			
High School *(ref)*	---	---	---
Some CC	0.578	0.002	***
Short-Term Certificate	1.190	0.006	***
Long-Term Certificate	1.620	0.015	***
Associate's Degree	0.864	0.005	***
Applied Associate's Degree	1.639	0.005	***
Some University	0.459	0.005	***
Bachelor's Degree	1.465	0.003	***
Race			
White *(ref)*	---	---	---
Asian	-0.014	0.005	***
Black	-0.084	0.003	***
Hispanic	-0.105	0.002	***
Other	-0.051	0.002	***
Female	-0.216	0.003	***
Free/Reduced Price Lunch	0.047	0.002	***
HS Graduation Controls Included	X		
K-12 District Controls Included	X		
Time To Degree Controls Included	X		
Intercept	8.85077	0.003	***
N	2112513		

The predicted wage increases are larger than those reported in previous studies. This is due to the presence of both full and part time workers in the data. The ERC earnings data does not contain information about the number of hours worked per week, so I am unable to separate full time and part time workers. The proportion of individuals who are employed full time increases with each additional level of education (National Bureau of Labor Statistics, 2014). As a result, the coefficients reported below capture the increase in wages as well as hours worked that is associated with each successive level of education. Restricting the sample to only individuals who appeared in all four quarters and earned more than $15,000 (40 hours a week at minimum

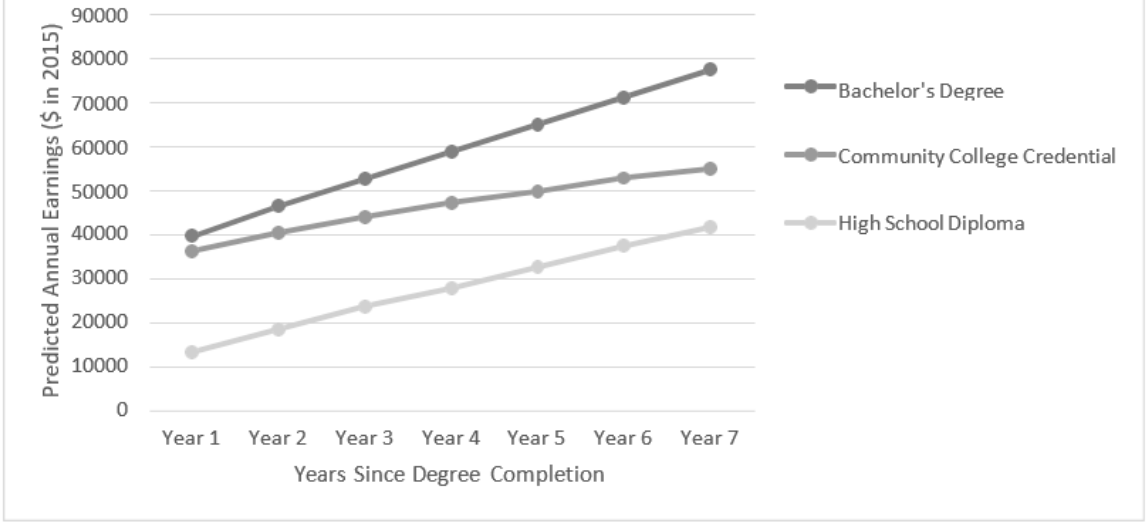
wage) during their first year of employment following graduation produced smaller coefficients (30-80% earnings increases) that paralleled previous studies. This exercise confirmed that the large wage increases are the result of the presence of many people working less than full time, and the uneven distribution of these people across levels of education.

The coefficients for each of the race/ethnicity variable are negative and significant. The largest decreases are seen among Black (8%) and Hispanic students (10%). Interestingly, the coefficient for free or reduced price lunch subsidy enrollment is positive and significant. Those who enrolled in a lunch subsidy program during high school make 4.7% more than those who were not enrolled, net of other factors. Women make 21.6% less than their male counterparts, net of other factors.

The OLS regression model was repeated to predict the annual wages for each of the seven years following the completion of one's highest degree. The wage premiums were expressed as percentage wage increases in the model, but transformed to dollars and plotted in Figure 2 and Figure 3. The two graphs show similar information, however Figure 2 reports earnings for a collapsed category that includes all community college credentials, and in Figure 3 that group is split into its component parts.

Figure 2 shows the predicted wages associated with three different levels of education: high school diplomas, a collapsed category that includes all community college credentials, and Bachelor's degrees. The trends parallel findings from previous studies. Both types of post-secondary degrees are associated with higher wages than a high school diploma. Immediately after graduation the predicted wages of community college credential completers and Bachelor's degree completers are similar, however over the next seven years the wages of community college credentials holders become more similar to the wages of high school graduates.

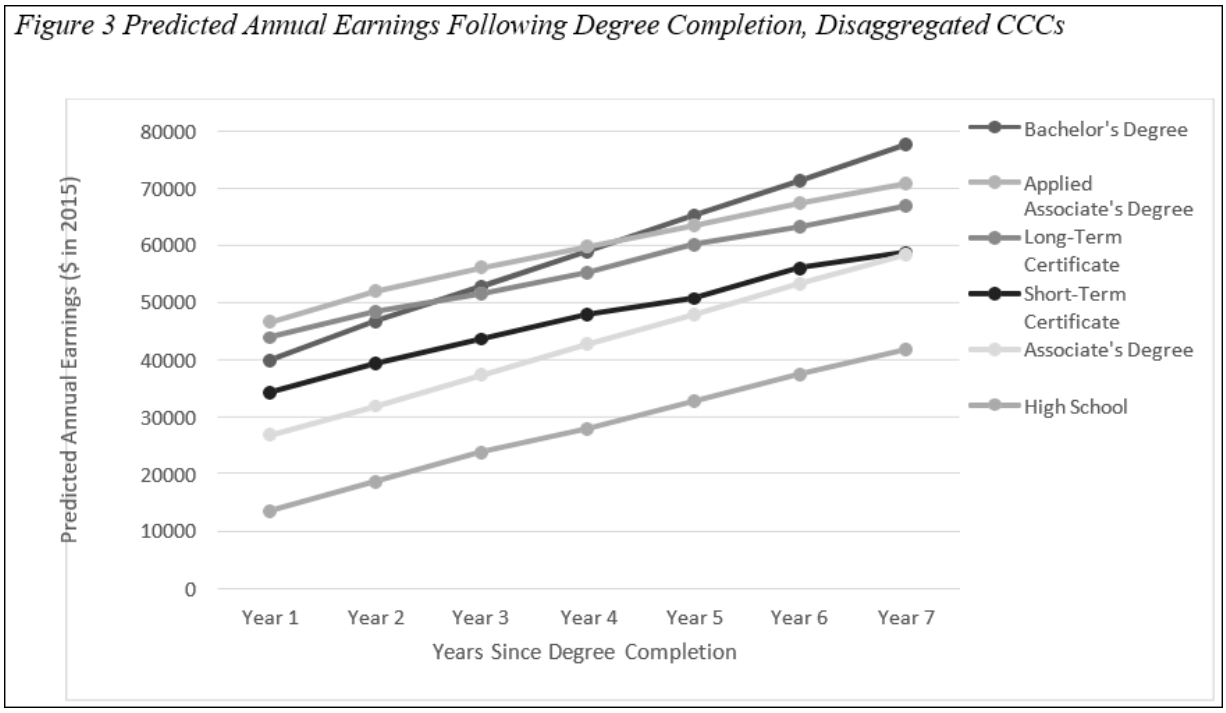
Figure 2 Predicted Annual Earnings Following Degree Completion, Aggregated CCCs



In Figure 3 the groups of high school graduates and Bachelor's degree completers remain the same, but community college credentials are split into four categories of credentials. A comparison of Figure 2 and Figure 3 makes evident the masking of trends that occurs when community college credentials are treated as a single category. The earnings among Short-term certificate completes and Associate's degree completers in Figure 3 is similar to the collapsed category of all community college credentials in Figure 2, likely due to the

large number of people earnings Associate's degrees. The predicted salaries of individuals who earn Long-term certificates or Applied Associate's degrees are more similar to the salaries of four-year degree completers, than people who complete other kinds of two-year credentials. Bachelor's degree holders initially earn less than individuals who completed a Long-term certificate or Applied Associate's degree. However, in the fifth year following graduation the predicted wages among Bachelor's degree holders are higher than those of any sub-baccalaureate degree group. Such a reversal is not seen between any of the two-year credentials, which means that the community college credentials that are associated with the highest wage increases in the year following graduation are still associated with the highest wages seven years later.

Figure 3 Predicted Annual Earnings Following Degree Completion, Disaggregated CCCs



Conclusions/Key Findings

This study used a unique data set that contains administrative records for the entire population of Texas community college students (10% of the nation's population). As became evident, the course requirements, timing and labor market value of the four different types of community college credentials varies in important ways.

This study documents the variation in the course requirements and economic benefits of community college credentials. Short-term credentials can be earned in as little as three months while Applied Associate's degrees typically require at least two years to complete. Disaggregating Associate's degrees into Academic and Applied Associate's degrees makes evident variation in the earnings associated with each kind of degree. Applied Associate's degrees are associated with early career earnings that are similar to Bachelor's degrees while Associate's degrees are associated with some of the smallest wage increases.

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