POLICY BRIEF

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Exiting High School into the New Economy: How Community College Baccalaureate Programs Support High-Demand Degree Attainment for Texas Public School Students

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Background

Over half of the students enrolled in public higher education are enrolled in community colleges. For decades, community colleges have provided an avenue for students to transfer to four-year institutions and pursue a bachelor's degree in addition to providing a critical avenue for upward mobility for historically underserved student populations. In Texas, community colleges are critical to the state's 60x30 plan, which aims for 60% of Texas residents age 25-34 to have some form of postsecondary degree or certificate by 2030 (Texas Higher Education Coordinating Board [THECB], n.d.).

In addition to producing associate degrees and certificates, more and more community colleges are offering baccalaureate degrees, typically programs that are submitted to and approved by states' higher education governing body. Over the last two decades, 23 states have approved baccalaureate programs at community colleges to support the production of degrees in demand by high-growth sectors of the economy (Fulton, 2020). In Texas, the first community college baccalaureate program was approved in 2003, and since then, the number of community colleges offering bachelor's degrees in health, technology, engineering, business, and early childhood has rapidly increased. The number of CCBPs has expand each year since then.

11%

growth in high-demand degree attainment

KEY FINDINGS

- Community college baccalaureate programs (CCBPs) have small, positive effects on the likelihood of students enrolling in community college who otherwise would not have.
- CCBPs have slightly increased the likelihood of bachelor's degree attainment for Texas students within four years of exiting from high school.
- CCBPs have had a sizable impact on the likelihood of earning a degree that is in demand by high-growth occupations in students' localities.
- Students from urban school districts, students with disabilities, and males benefitted the most from having access to CCBPs. Rural communities also experienced growth, but less growth than urban areas.

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Overview

- This brief provides estimates of the effects of the expansion of baccalaureate programs at Texas community colleges on the likelihood of attaining bachelor's degrees and degrees in demand by high-growth occupations for Texas public high school graduates (N = 518,857).
- Data were provided by the Texas Education Research Center with student-level outcomes and key predictors linked from information provided by the Texas Education Agency, the Texas Higher Education Coordinating Board, and the Texas Workforce Commission.

Purpose

While CCBPs have emerged as a popular option for students, there is limited research as to how students fair when they attend CCBPs and how expansion of access to CCBPs corresponds to shifts in the number of students earning bachelor's degrees after high school, particularly students who may not have pursued a bachelor's degree without access to a CCBP. Moreover, the purpose of CCBPs, nationally as well as in Texas, was to support the demand of skills needed in fast-growing occupations. Yet, no research to date has examined whether CCBPs are indeed fulfilling this purpose on a statewide basis. This brief examines not just whether students are more likely to earn a bachelor's degree with access to a CCBP but also whether their more likely to earn a degree in demand by high-growth occupations in students' local industries.

Findings

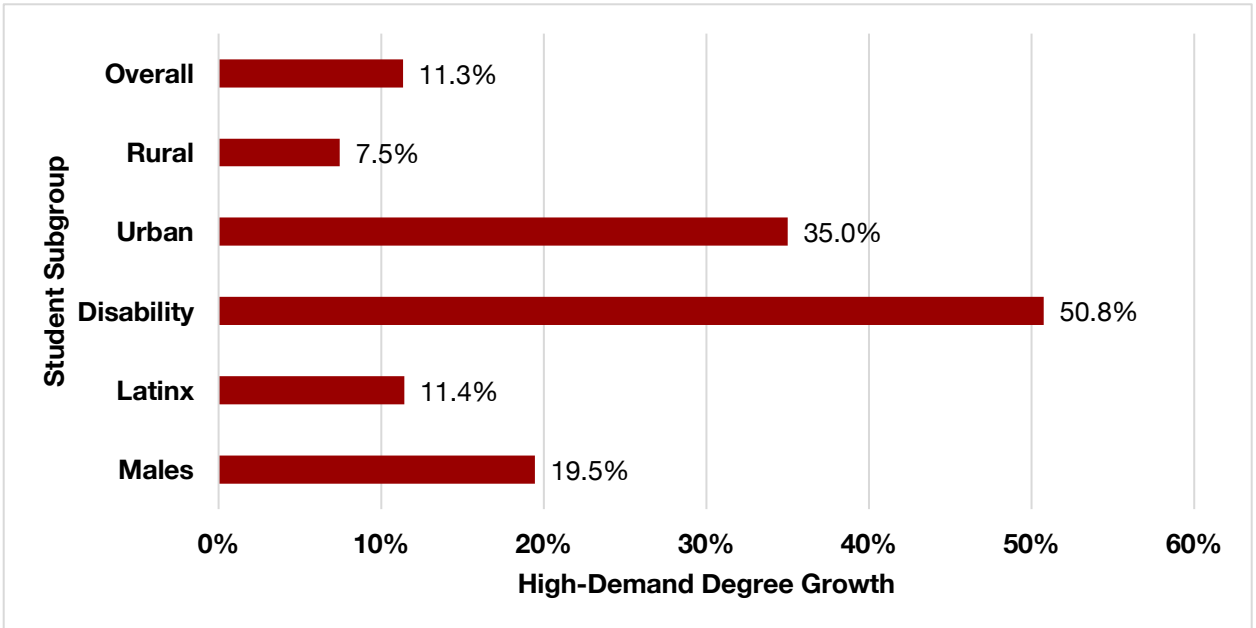
This study finds that CCBPs are increasing the number of degrees earned by students. In this brief, we focus my discussion of findings on those that compare outcomes for students who had access to a CCBP in their county of residence compared to students who did not have a CCBP in their county. Results suggest that access to a CCBP increases the likelihood that a student goes to any form of postsecondary education, suggesting that these programs are also attracting some students who may not have gone to college at all if these programs were not nearby.

CCBPs increase the number of degrees earned.

Additionally, this study found that the expansion of CCBPs has resulted in small gains in attainment of bachelor's degrees. We estimate that approximately 3.5% more students are earning bachelor's degrees in four years if they attended high schools in counties that have at least one CCBP. The students most likely to enroll and benefit from these CCBPs are primarily students with low-achievement performance and students in lower tracked math classes.

The largest effect of CCBPs is on the growth in the completion of degrees in high demand. Evidence suggests that CCBPs are bolstering the growth of degrees in demand by high-growth occupations. As shown in Figure 1, students with access to CCBPs have exhibited an 11% growth in high-demand degree attainment. This growth is concentrated in particular areas of the state and in particular student demographic subgroups. The largest gains were observed for students exiting urban high schools, students with disabilities, and males. Students in rural areas also benefitted from access to CCBPs, albeit the growth in these areas of the state is smaller. Compared to White students, Latinx students benefitted from approximately the same amount of growth due to CCBPs.

Figure 1: Growth in High-Demand Degrees Earned by Students with Access to Community College Baccalaureate Programs



Conclusion

This study provided evidence that CCBPs in Texas community colleges are supporting local economies throughout the state by increasing the percentage of students completing high-demand degrees. This is the first statewide study to evaluate whether CCBPs are indeed filling a gap by equipping students with the skills and degrees necessary in many high-growth economic sectors. For the cohorts examined in this study, it is promising to observe that not only are CCBPs supporting growth in degree completion in these important areas but also that this growth is supporting mobility for historically marginalized groups of students, including Latinx students, students with disabilities, and students in urban and rural communities. Given the widening gender gap in higher education, it is also promising to see significant growth in attainment of these degrees for males as well.

Future research should investigate the extent to which baccalaureate degrees from Texas community colleges are translating into post-baccalaureate degrees (master's and above) and workforce outcomes, including employment in a high-growth industry and wages. Researchers have argued that students graduating with community college baccalaureate degrees may face additional hurdles with their degrees being recognized by other institutions as equivalent to degrees earned at universities (Floyd et al., 2012). More research in the Texas context is needed to determine if the students earning degrees from CCBPs are matriculating into the workforce and post-baccalaureate education as well as their experiences within these sectors.

Policy Recommendations

- Continue support for CCBPs, especially for communities with less access to institutions of higher education to promote completion rates
- Align expectations for CCBP growth and approval with anticipated demands of the surrounding local economies
- Clarify pathways between coursework, credentials, and degrees in high-demand industries for positive college and workforce outcomes that are tied to community college funding

Research Team Bio

Angela Crevar, Ph.D. is a postdoctoral in the Educational Leadership Policy program at Texas Tech University. She holds a B.S. in Elementary Education and a M.Ed. In Reading Instruction. She is currently the high school principal of a hybrid school. Her research interests are focused on the intersection of secondary and postsecondary education with an emphasis on college and career trajectories.

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References

Floyd, D. L., Felsher, R. A., & Catullo, L. (2012). Graduate education issues and challenges: Community college applied and workforce baccalaureates. *New Directions for Community Colleges*, *2012*(158), 95-101.

Fulton, M. (2020). Community college bachelor's degrees: An update on state activity and policy considerations. *Education Commission of the States*. https://www.ecs.org/wp-content/uploads/Community-College-Bachelors-Degrees.pdf.

THECB. (n.d.). *60x30TX: Building a talent strong Texas*: https://www.highered.texas.gov/

Appendix

Sample

High school cohorts were constructed from the student enrollment files. We restrict the sample to students with non-missing data on their demographics in 9th grade, their 8th grade math course, and their 7th grade STAAR achievement data. STAAR math and reading achievement variables were chosen, as not all students complete the same math assessment in 8th grade. Students' 8th grade math course was necessary given extensive research illustrating how completing Algebra I in 8th grade is strongly linked to high school and postsecondary outcomes. We further restrict the sample to include students who do not enroll in a four-year university and remain in state after high school. The final sample included N = 523,461 students who either enrolled at a two-year postsecondary institution or exited high school and entered the workforce. Table 1 illustrates the full set of characteristics of the three high school cohorts. Column 1 shows characteristics of all students in the state, whereas Columns 2-3 show characteristics of students in the study sample.

Outcomes

We considered two main outcomes for this study. The first outcome is whether the student completed a bachelor's degree within four years of their exit from high school. The second outcome is whether the student's degree was considered in demand by high-growth occupations in the area where they attended college. Pairing Standard Occupation Classification (SOC) codes from the Texas Workforce Commission's (TWC) biannual report with the SOC to CIP crosswalk from the National Center of Education Statistics, we considered students to have earned a high-demand degree if one of the occupations listed in the crosswalk matched one or more high-growth occupations in students' local board area, which is updated biannually by TWC. In other words, students' degrees are common or necessary to satisfy one of more of the occupations in current demand by local industry.

Methodology

We employ three complementary approaches to estimating the effect of community college baccalaureate programs on degree attainment: high school fixed effects, intent-to-treat approach, and instrumental variable estimation. First, the baseline model included covariates of students' demographics at 9th grade and their high school entry characteristics described above. This approach is illustrated as:

$$Y_{ijc} = \beta_0 + \beta_1 CCBP_{ijc} + \beta_2 X_i + \theta_j + \theta_c + \varepsilon_{jc}$$

where Y represents the outcome of interest. The parameter of interest is β_1, which represents the marginal change in the percentage point likelihood that student *i* who exited high school *j* in cohort *c* attained a bachelor's degree and/or attained a high-demand degree if they enrolled in a community college baccalaureate program. θ represents a high school fixed effect, limiting comparisons to students who exited from the same high school. Cohort fixed effects are also included to account for time-invariant confounding variation. The error is clustered at the county level.

Table 1. Descriptive statistics of Texas public high school cohorts

	All High School Students	Community College	Enter Workforce
Demographic characteristics			
Male	0.51	0.49	0.56
Asian	0.04	0.02	0.01
Black	0.13	0.12	0.14
Latinx	0.49	0.51	0.52
White, non-Latinx	0.32	0.32	0.30
Other race/ethnicity	0.03	0.03	0.03
Special education	0.07	0.06	0.10
Economically disadvantaged	0.55	0.55	0.64
High school entry characteristics			
Highest math: Regular	0.74	0.80	0.87
Highest math: Algebra 1 or higher	0.26	0.20	0.13
Math achievement percentile	50.00	47.58	42.37
Reading achievement percentile	50.00	47.38	41.64
Urbanicity			
Major urban	0.17	0.15	0.17
Major suburban	0.16	0.17	0.16
Other central city, urban	0.34	0.34	0.32
Other central city, suburban	0.14	0.15	0.14
Independent town	0.01	0.01	0.01
Non-metropolitan, fast-growing	0.06	0.07	0.06
Non-metropolitan, stable	0.05	0.05	0.05
Rural	0.03	0.04	0.03
Charter	0.05	0.03	0.06
Number of Students	846683	270054	248803

The second approach exploits variation in students' proximity to a community college baccalaureate program based on where they went to high school. This model yields a more conservative estimate of the effect of CCBP expansion and includes potential spillover effects from local university competition. Rather than including an indicator for whether a student attended a community college baccalaureate program, We include an indicator representing whether the student went to high school in a county that has a community college that offers a baccalaureate program. The covariates and fixed effects remain the same as the above model. The estimate generated by this intent-to-treat approach represents the marginal shifts to degree outcomes from having access to a CCBP, likely a lower-bound estimate compared to what is produced by the first model.

Lastly, we employ an instrumental variable strategy using the same variation exploited in the second model- variation in access to a CCBP high school proximity. The instrument is whether a student has a CCBP in the same county where they went to high school. We use a two-stage least squares modelling approach to first estimate the likelihood in enrollment in a CCBP, and then use newly predicted values of the likelihood of CCBP enrollment to estimate the effect of CCBPs on degree outcomes. Note that the first stage of the instrument met current standards of the field (F-statistic of 100 or greater).

Results from these three specifications are listed in Table 2 below. All results are presented in the form of marginal changes in the percentage point likelihood that a student attained achieves each outcome. Standard errors are listed in parentheses.

As seen below, all models yielded statistically significant results. We consider the intent-to-treat model to be the lower bound estimate of the effect of CCBS on degree outcomes, and the IV estimates to be the upper bound of the effect. Results suggest that CCBS programs have led to a slight increase in the likelihood that students in the sample complete a bachelor's degree within four years of exiting high school and a moderate increase in the likelihood that students earn a high-demand degree.

Table 2: Estimates of effects of community college baccalaureate programs

	Earned Bachelor's	Earned Degree in High-Demand
Panel A. Baseline		
Attends CCBS	0.004 ***	0.138 ***
	(0.001)	*(0.005)*
Panel B. Intent-to-treat		
County has CCBS	0.002 *	0.005 *
	(0.001)	*(0.002)*
Panel C. Two-stage least squares		
Instrument	0.006 *	0.346 *
	(0.003)	*(0.179)*
	518,857	518,857

*Note: *** p < 0.001, ** p < 0.01, * p < 0.05*
All regressions include demographic and high school entry covariates in addition to high school and cohort fixed effects.