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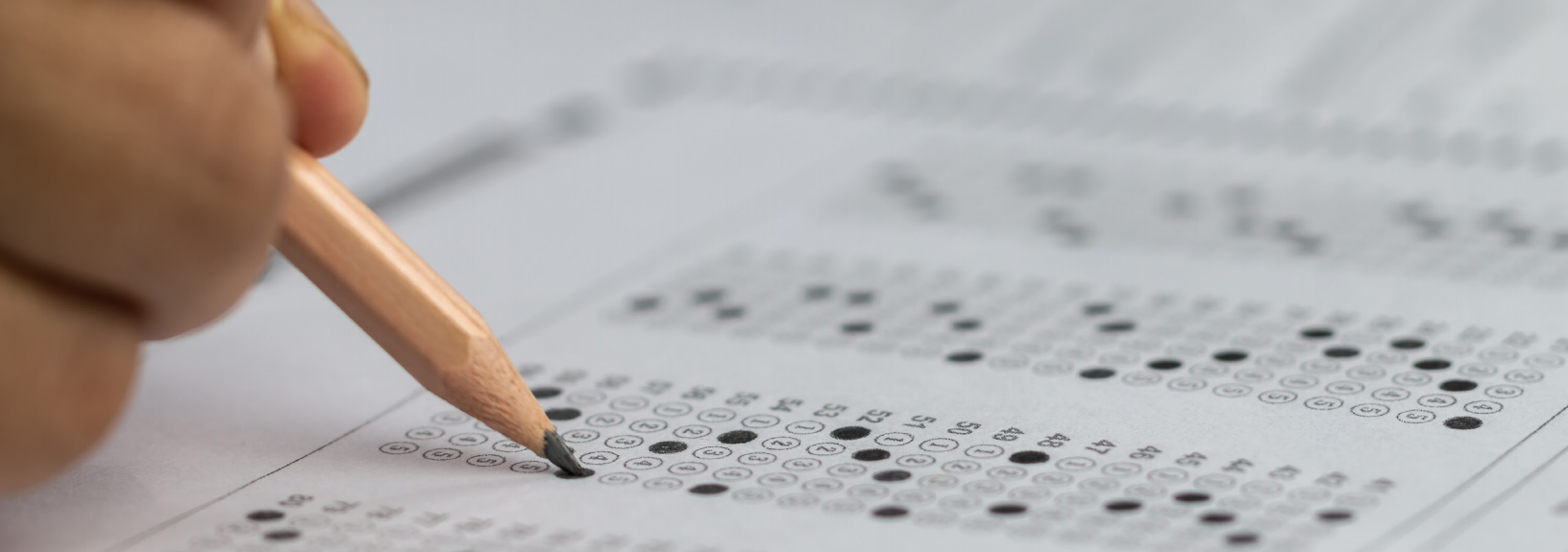


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Placement Tests, Initial Enrollments, and Student Outcomes in the Technical College System of Georgia

Michael D. Bloem, David C. Ribar, and Jonathan Smith

Child & Family Policy Lab

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Context

Institutions within the Technical College System of Georgia (TCSG) offer programs that lead to technical certificates of credit, diplomas, and associate degrees. TCSG uses tiered standards based on different minimum thresholds of several common tests, including the ACCUPLACER, SAT, and ACT, to place students into courses for its programs. The criteria are intended to ensure each student has the appropriate math and language skills to succeed in the student's chosen program.

This Report

This report analyzes characteristics associated with students' program choices, academic progress, and program completion using student data from TCSG. It examines students who enrolled in TCSG award programs in the Fall 2013 term through the Summer 2020 term. It focuses on how placement test criteria and outcomes relate to program enrollment, program progression, and credentials earned in TCSG. It also investigates how initial enrollment outcomes are related to subsequent student outcomes.

Key Findings

- Students from a variety of backgrounds enroll in programs for each type of award, but some students are more likely to enroll in particular programs than others. Women, White students, older students, and students who did not obtain a high school diploma have relatively high rates of enrollment in certificate programs. Men, Black students, and economically disadvantaged students have high rates of enrollment in diploma programs. Younger students and economically disadvantaged students have high rates of enrollment in associate degree programs.
- Placement test scores are only moderately associated with program enrollments. Across many types of tests, average scores are slightly higher for students who enroll in associate degree programs and slightly lower for students who enroll in diploma programs. Average scores for students who enroll in certificate programs are between these two groups.
- Although placement test scores have the potential to influence initial program enrollment, TCSG permits students to retake the tests and

improve their scores. Many students take advantage of this flexibility, especially students with very low initial test scores. Retaking appears to reduce the impact of test scores on initial program enrollments. Placement test criteria do not appear to be a substantial barrier to program entry.

- Placement test scores are moderately related to students' completion of certificate and degree programs and weakly related to their completion of diploma programs. For associate degree programs, the relationships mostly appear at the high end of the distribution of test scores. Thus, test scores provide limited information about students' abilities to succeed academically. Advice on students' initial course placements needs to consider their circumstances holistically.
- Initial program level is an important predictor of whether students complete a credential and what type of credential they obtain. Within the programs, 29% of students who begin in an associate degree program complete a credential, while 41% of students who begin in a diploma program and 37% of students who begin in a certificate program do so. A plurality of students in each program earns a certificate. Many students who earn diplomas or associate degrees also earn a certificate.

Introduction

Institutions within the Technical College System of Georgia (TCSG) offer programs that lead to technical certificates of credit (certificates), diplomas, and associate degrees. TCSG uses tiered standards to place students into courses for these programs. The standards consist of minimum thresholds for several common skills and aptitude tests, including the ACCUPLACER, SAT, and ACT, with progressively higher standards applying to required courses for certificate, diploma, and associate degree programs. This multi-measure, tiered system is intended to ensure each student has the appropriate math and language skills to succeed in the student's chosen program.

Evidence on the impact of placement standards on program enrollment and student success in technical college settings is needed by TCSG and similar higher education institutions. Existing research largely focuses on two-year and four-year colleges and on students looking to earn associate or bachelor's degrees. Admission or placement exams at these institutions often determine whether students are eligible for admission^{1,2,3} or required to take remedial coursework.^{4,5} Evidence indicates that test-score criteria are consequential for student enrollment, progression, and completion. Differences in program offerings, students' educational goals, and their demographic characteristics may mean the implications vary. TCSG students can earn a certificate, diploma, or associate degree on the same campus and in the same subject matter, thereby providing more program options to students interested in a particular field than at other institutions.

This report analyzes characteristics associated with students' program choices, academic progress, and program completion using student data from TCSG. It examines students who enrolled in TCSG award programs in the Fall 2013 term through the Summer 2020 term. It focuses on how placement test outcomes and criteria relate to program enrollment and success, as measured by program progression and credentials earned, in TCSG. It also investigates how initial enrollment outcomes are related to subsequent student outcomes. It uses descriptive quantitative analyses that show the total, unconditional relationships between these outcomes and multivariate analyses that indicate the relationships after controlling for other characteristics of the students. The research is intended to help TCSG deliver on its mission to provide education and training "focused on building a well-educated, globally competitive workforce for Georgia."⁶

The report addresses three broad research questions:

1. What are the characteristics of students who enroll in TCSG's certificate, diploma, and associate degree programs?
2. Do placement test results and criteria influence program enrollment and subsequent student outcomes?
3. How does initial program enrollment relate to progression within TCSG, including retention, academic progress, and program completion?

Background

TCSG Programs and Placement Policies

TCSG consists of 22 technical colleges offering over 600 programs across its campuses.⁷ TCSG students can enroll in programs and earn credentials at three different award levels: certificate, diploma, and associate degree. Although program offerings can vary across colleges, there are often program offerings at multiple program levels within a given field. For example, in early childhood care and education, Gwinnett Technical College offers one associate degree program, one diploma program, and five certificate programs. Typically, 9–36 credit hours are required for certificate programs, 37–59 hours for diploma programs, and 60–73 hours for degree programs. In academic year (AY) 2019–20, 26% of students were enrolled in certificate programs, 30% in diploma programs, and 50% in associate degree programs. These percentages add to more than 100% because students can enroll in multiple programs during the year (for instance, beginning the year in a certificate program and subsequently enrolling in a diploma program). Meanwhile, 74% of awards conferred in AY 2019–20 were certificates, 13% were diplomas, and 12% were degrees. As with the enrollments in multiple programs, students could earn multiple awards, and many students in diploma and degree programs complete certificates (“embedded certificates”) as part of their programs.

TCSG uses tiered criteria to place students into courses for its different credential programs. The primary tests used to place students during our sample period are COMPASS and ACCUPLACER. In the first few years of our data, students primarily took the COMPASS tests but later switched to the Classic ACCUPLACER tests, which Next Generation ACCUPLACER recently replaced. Each of these types of tests has four main subjects that,

while sometimes going by different names, test in the content areas of reading, writing, arithmetic, and algebra.

TCSG sets placement criteria based on students' test scores on each of these test subjects. These criteria generally determine whether students are required to take a Learning Support course in math or English.⁸ For example, with the Next Generation ACCUPLACER, students must score at least a 249 on the Writing test to be eligible for degree-level courses, a 224 to be eligible for diploma-level courses, and a 218 to be eligible for certificate-level courses. Entering these program levels below these scores would require a student to take a Learning Support course in English and therefore change the educational experience relative to students who do not require Learning Support. Meanwhile, there are similar course placement criteria based on students' scores on the other test subjects, including reading, arithmetic, quantitative reasoning, and advanced algebra (although relatively few students take this test subject).

There are additional pathways into the three program levels that are not based on the COMPASS or ACCUPLACER tests. Students can submit SAT or ACT scores, which also can be used to place students into programs; TCSG sets score thresholds for the SAT and ACT that determine students' eligibility for diploma- and degree-level courses. Finally, students who have previously earned an associate degree are automatically eligible for diploma- or degree-level courses, and students with two years of verified work experience in a given field are automatically eligible for placement into certificate programs in the same field. About 20% of matriculating (enrolling) students in our data do not take any of the COMPASS or ACCUPLACER tests and are presumably placed into programs based on one of these alternative pathways.

Data

We use TCSG data for “beginning students” who first enrolled in a TCSG award program between the Fall 2013 and Summer 2020 terms. These first-time credential seeking students exclude high school students, transfer students, and students who enrolled prior to the Fall 2013 term. The data include students' demographic characteristics (age, gender, race/ethnicity). They also indicate whether the student is a single parent, out of the workforce, an English learner, economically disadvantaged (received need-based financial aid), disabled, or a first generation college-goer.⁹

The data include term-by-term academic information, including program enrollment, credit hours earned, grade-point average (GPA), and credentials earned. In each program, we observe both the subject area (or majors) and levels associated with different credentials (certificate, diploma, and degree). We focus on students' initial program of entry. Finally, we observe a set of post-program employment and continuing education outcomes for students who earn a credential. The post-program information comes from direct outreach to the students by the institutions and other sources. If students earned multiple credentials, we focus on the post-TCSG outcomes associated with the highest credential earned. More detailed information about the construction of our analysis measures is provided in Appendix A.

Characteristics of Beginning Students

To answer the first research question on who enrolls in TCSG's certificate, diploma, and associate degree programs, Table 1 shows the percentages of entering students with different characteristics in each program level. The rows in Table 1 list the students' characteristics, including gender, race and ethnicity, educational background, and age group, among others. The first column in Table 1 lists the percentages of students with these characteristics among students who initially enrolled in certificate programs. The second and third columns list percentages among students who initially enrolled in diploma programs and associate degree programs, respectively.

As Table 1 shows, women are much more likely than men to initially enroll in certificate programs, while there is more balance in diploma and degree programs. There are also substantial differences by race. Nearly half of students in the certificate program are White, and 37.5% are Black, while 42.3% of students who enroll in diploma programs are White, and 46.4% are Black. Hispanic students make up 10.7% of initial enrollees in degree programs and somewhat smaller percentages in the other programs.

Table 1 also shows that students of various ages enroll in program levels at substantially different rates. Over 60% of students initially enrolled in a degree program are under 21 years old, compared to 46.5 and 51.0% for certificate and diploma programs, respectively. These differences are largely offset by the relatively large number of 40-years-or-older enrollees in certificate programs and, to a lesser extent, diploma programs.

Table 1. Percentages of Beginning Students with Selected Characteristics in Different Initial Programs

	Initial program level		
	Certificate (%)	Diploma (%)	Degree (%)
<i>Gender</i>			
Male	40.5	52.8	46.9
Female	59.5	47.2	53.1
<i>Race</i>			
Black	37.5	46.4	38.5
White	49.3	42.3	43.7
Hispanic	8.4	7.2	10.7
Asian	1.3	1.0	2.3
Other race	2.4	2.1	3.4
Unknown race	1.1	0.9	1.3
<i>Initial Education</i>			
Less than HS	15.2	10.9	8.9
HS degree (or equivalency)	81.5	85.9	86.7
Some college	2.7	3.0	3.9
BA degree or higher	0.5	0.3	0.4
<i>Age Group at Entry</i>			
Under 21	46.5	51.0	60.4
21–25	17.7	20.1	18.4
26–30	10.8	9.9	8.5
31–35	7.6	6.0	4.8
36–40	5.8	4.2	3.1
Over 40	11.6	8.7	4.7
<i>Other characteristics</i>			
Single parent	6.9	7.6	5.6
Out-of-workforce	3.3	2.9	1.5
English learner	1.2	1.4	1.3
Economically disadvantaged	47.3	75.6	68.0
Disabled	3.1	5.4	3.9
First generation student	51.1	57.7	51.8
Veteran	1.7	2.3	2.8
Number of Students	66,416	68,917	56,714

Notes. Sample includes all students listed as a “Beginning Student” between the Fall 2013 and Summer 2020 term. Students who enrolled with two majors with different program levels are included in both program levels.

Over half the students in each program are first generation college-goers, and many students are economically disadvantaged, with the percentages ranging from 47.3% in certificate programs to 75.6% in diploma programs. We note that the economic disadvantage measure is based on students' use of need-based financial aid. The differences across award levels could reflect students in diploma and associate degree programs requiring more aid or finding it more worthwhile to apply for aid. Small proportions of the students are single parents, out of the workforce, English learners, disabled, or veterans. The rates of students with these characteristics are similar across programs.

Overall, Table 1 demonstrates that program levels tend to serve different types of students, demographically speaking—likely because of the variety of majors in each program level and specific needs of students in different demographic groups, such as by age. In the next section, we explore an additional potential explanation for variations in students' characteristics across program levels—academic preparation.

Placement Test Scores and Program Enrollment

To answer the second research question about the relationship between students' placement test scores and their initial program enrollments, Table 2 shows the average scores for the COMPASS, Classic ACCUPLACER, and Next Generation ACCUPLACER tests for students who initially enrolled in certificate programs (first column), diploma programs (second column), and associate degree programs (third column).¹⁰

Despite the different tests and the different scales, a pattern emerges: average test scores are highest for degree program enrollees, followed by certificate programs, and then diploma programs. This is true of all the math and English language tests, except the Next Generation ACCUPLACER Quantitative Reasoning test. The highest credential having the highest average test score is not surprising and is generally true in other educational contexts. However, the fact that certificate program enrollees have, on average, higher test scores than diploma program enrollees likely relates to the earlier results that certificate programs tend to serve students from different backgrounds than the other programs.

To show the entire relationship between test scores and initial program level, we produce Figure 1. The four panels show how the full range of the Next Generation ACCUPLACER Writing test scores relate to initial program

Table 2. Average Placement Test Scores for Beginning Students in Different Initial Programs

	Number of test takers	Initial program level		
		Certificate	Diploma	Degree
COMPASS (Range: 0–100)				
Reading	30,521	80.4	77.9	82.0
Writing	30,669	68.0	60.8	71.3
Math	29,914	43.5	40.9	47.4
Algebra	27,311	29.0	26.0	31.4
Classic ACCUPLACER (Range: 20–120)				
Reading	14,592	72.9	70.9	76.0
Sentence skills	14,656	77.8	75.8	81.4
Arithmetic	14,500	51.0	50.9	55.4
Algebra	9,659	48.4	46.6	54.7
Next Gen ACCUPLACER (Range: 200–300)				
Reading	3,128	250.5	248.8	252.4
Writing	3,125	250.4	248.8	252.7
Arithmetic	3,092	248.9	248.2	251.6
Quantitative reasoning	2,052	240.9	241.3	245.4

Notes. The averages are calculated for all students recorded as a “Beginning Student” between the Fall 2013 and Summer 2020 terms who took the listed test (row) and initially enrolled in the listed program (column). The averages use students’ highest test score at initial program enrollment. Students who enrolled with two majors with different program levels are included in both.

enrollment and how the test scores used for program placement for this test subject are attained by students. Panel (a) of Figure 1 plots the percentage of students at each test score who enroll in the three program levels based on the first time they took the test. Panel (b) also plots enrollment percentages at different test scores but uses the students’ highest test scores. To provide context about students’ initial and highest test scores, panel (c) plots the percentage of students at different initial test scores who retake the test, and panel (d) shows the frequency distributions of initial and highest test scores.

Panel (a) reveals several results. First, the program to which students initially enroll is not strongly associated with first test scores when those test scores are below 249 (the rightmost vertical line, indicating the score required of students to enter a degree program without facing Learning Support course requirements). Each of the color plots overlaps with one another at the lower test scores. Second, that pattern changes for test scores at or above 249. As scores increase after 249, students are increasingly likely to enroll in a degree program over the alternative program levels. Third, exactly at 249, there is a

Figure 1. Next Generation ACCUPLACER Writing Test Scores, Program Level Enrollment, and Test Retaking



Notes. The horizontal axis in each of the graphs are scores on the Next Generation ACCUPLACER Writing test. Panel (a) groups students by their first score and plots the percent of students entering each program level for each score. Panel (b) is the same but instead groups students by their highest score. Panel (c) again uses first scores and plots the percent of students who retook the test. Panel (d) plots the distribution of both first and highest scores. The vertical lines represent the placement criteria score thresholds. 249 is the threshold for degree-level courses, 224 for diploma-level courses, and 218 for certificate-level courses.

modest jump in the percentage of students who enroll in the degree program. That means that two students who are very similar to one another, but one scores a 248 and the other scores a 249, become more likely to take divergent paths. This is precisely because the placement criteria of 249 incentivizes students to start in a degree program while the additional Learning Support courses that would be required for those who scored a 248 encourages enrollment in other program levels. There is less evidence that the other

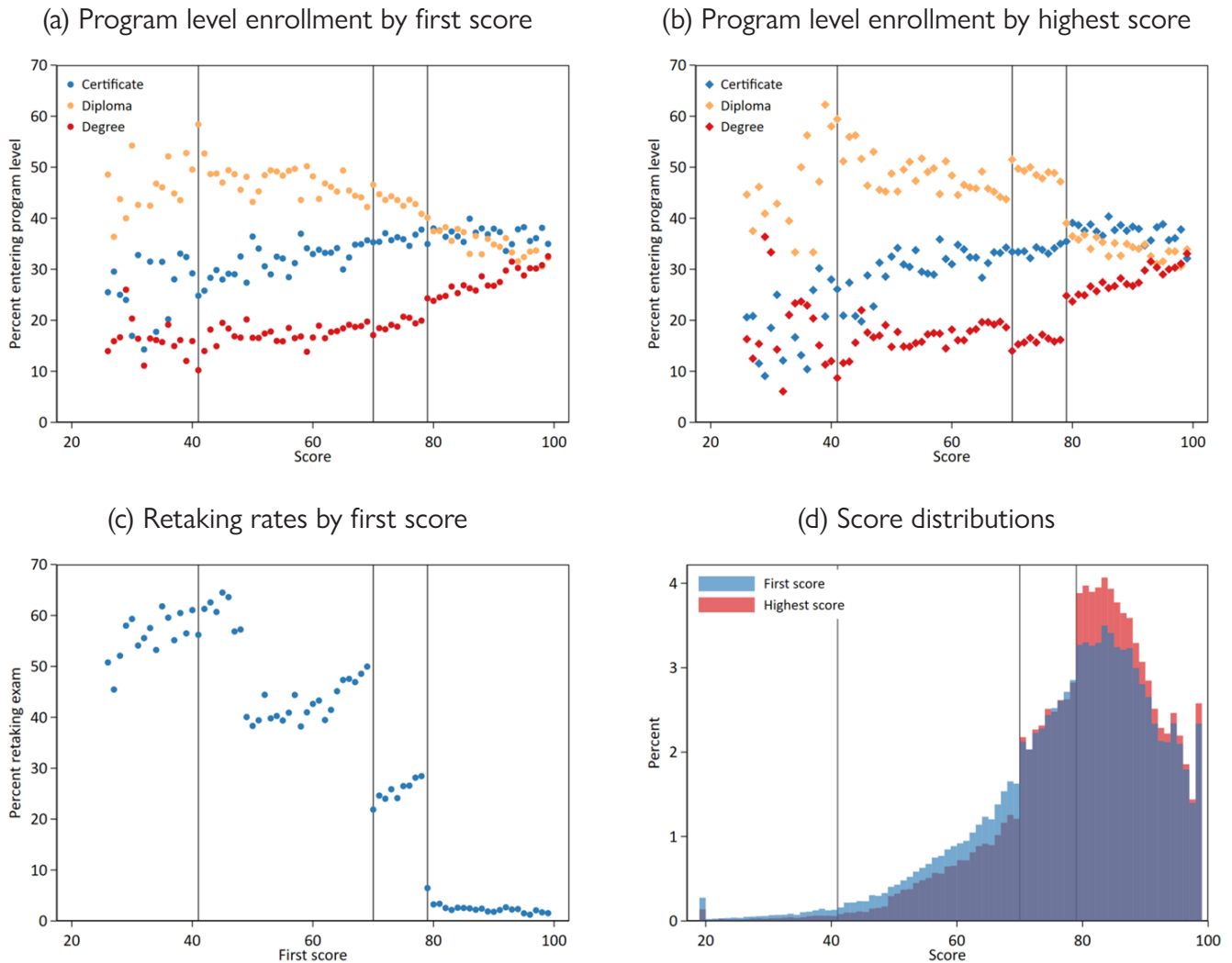
placement criteria impact initial enrollment levels, as there are no large jumps at the other two vertical lines.

The modest impact of the program placement criteria minimum scores in panel (a) can be partially explained in the remaining panels of Figure 1, which show that students retake the tests to attain high enough scores to enroll in the program of their choice without additional learning supports. Turning to panel (b) that plots students' highest Next Generation ACCUPLACER Writing test score, we see a much larger jump in the percentage of students initially enrolling in a degree program after earning a maximum score of 249 or higher, compared to panel (a). The jump occurs because about 25% of students who initially score a 248 (or just below) retake the writing test, while almost no students who score a 249 or above retake. This retaking effect also occurs at the thresholds that would necessitate Learning Support course requirements for entry into certificate and diploma level programs. As panel (d) shows, not only are students retaking the exams when they are below the placement criteria scores for different program levels, but they also improve their scores, at least for those looking to start a degree program. The blue histogram shows the distribution of students' first scores, showing there are more students just above the degree placement threshold than predicted. More importantly, because panel (c) shows that those near the placement criteria are more likely to retake the test, the red histogram in panel (d) shows an excess of students who score just above 249 relative to the first scores. In other words, those students who retake also improve their scores to just above the placement score required for a degree program with no Learning Supports.

Overall, panel (a) shows that the Next Generation ACCUPLACER Writing test scores do impact initial program enrollment but mostly for degree programs. However, the modest magnitude is explained partially by the fact that students can retake the test, which increases the number of students who have maximum test scores above the degree placement criteria—and those students are very likely to enroll in the degree program (panel (b)).

To show that these results are not unique to the Next Generation ACCUPLACER, Figure 2 shows the same set of panels for the COMPASS Reading test. Many similar patterns emerge, but there are some notable differences. First, except for the highest end of the test score distribution, students are most likely to enroll in a diploma program (orange), followed by the certificate program (blue), and lastly, a degree program (red).

Figure 2. COMPASS Reading Test Scores, Program Level, Enrollment, and Test Retaking



Notes. The horizontal axis in each of the graphs are scores on the COMPASS Reading test. Panel (a) groups students by their first score and plots the percent of students entering each program level for each score. Panel (b) is the same but instead groups students by their highest score. Panel (c) again uses first scores and plots the percent of students who retake the test. Panel (d) plots the distribution of both first and highest scores. The vertical lines represent the placement criteria score thresholds. 79 is the threshold for degree-level courses, 70 for diploma-level courses, and scores below 41 send students to adult education.

Second, panel (a) shows small to modest changes in the percent of students who enroll in a particular program level at each of the three placement score criteria (vertical lines), not just the degree threshold. But the explanation for the modest impacts remains the same. Panel (b) shows that when maximum scores are used, there is a sizeable increase in the percentage of students initially enrolling in a degree program if they score a 79 or above, at the expense of diploma programs. And there is an increase in diploma programs (at the expense of degree programs) for those scoring 70 or higher. Scores

of 79 and 70 are where additional learning supports are required for diploma and degree programs, respectively. The story is less clear around 40, where scoring below would send students to adult education courses. These sizable jumps are because students retake the test around the thresholds (panel (c))¹¹ and improve their score (panel (d)), especially those looking to enter degree programs.

We report the same four-paneled figures for each main subject of the COMPASS, Classic ACCUPLACER, and Next Generation ACCUPLACER tests in Appendix B. While some tests show different relationships with the distribution of test scores and initial program enrollment, the figures consistently show that students retake the tests to get over the placement thresholds. This frequently (but not always) leads to a modest increase in the percentage of students scoring just above a placement criterion who initially enroll in the program associated with that criterion.

Progression and Completion

To answer our third research question, Table 3 shows how students' initial program enrollment choices relate to their progression, completion, and employment outcomes. Following the previous tables, the columns represent the initial level of enrollment, but the statistics are restricted to students who enter TCSG between the Fall 2013 and Summer 2017 to allow for sufficient time for students to complete their programs.

The top portion of Table 3 considers GPA and credit hours. Students who initially enroll in a certificate program have the highest average GPA (2.28) after their first semester, but at the same time, they also are more likely to enroll part time and attempt the fewest average credit hours (8.97). Also, 42.2, 24.6, and 14.1% of students in certificate programs earn at least 15, 30, and 45 credits, respectively, during their enrollment at TCSG. Diploma and degree programs typically require more credit hours than certificates, which is reflected in the statistics on whether they earn 15, 30, or 45 credits. However, these statistics are lower for students initially enrolled in a degree program than a diploma program, despite typically requiring fewer credits to earn the credential. The lower levels of credits among associate degree students may result from them being more likely to transfer to other institutions.

Next, Table 3 shows the average rates of earning each credential by each initial program. In each program level, the most common credential earned

Table 3. Student Progression and Completion by Initial Program Level

	Initial program level		
	Certificate	Diploma	Degree
<i>GPA and Credits</i>			
GPA in first term	2.28	2.22	2.05
Attempted credits in first term	8.97	9.96	9.67
Earned at least 15 credits	42.2%	54.9%	51.0%
Earned at least 30 credits	24.6%	39.0%	35.3%
Earned at least 45 credits	14.1%	28.2%	25.2%
<i>Completion</i>			
Earned certificate	34.9%	36.3%	23.7%
Earned diploma	5.5%	23.4%	8.8%
Earned degree	4.1%	5.1%	16.6%
Earned any credential	37.3%	40.6%	28.7%
<i>Employment (conditional on earning a credential)</i>			
Employed and not continuing education	63.4%	63.9%	62.2%
Continuing education	7.1%	17.8%	14.8%
Employed and continuing education	7.9%	11.5%	12.6%
Military	0.2%	0.3%	0.4%
Unemployed	1.1%	0.8%	1.6%
Unavailable for employment	15.1%	1.7%	0.9%
Employment status unknown	5.2%	4.0%	7.4%
Number of students	45,049	44,965	25,858

Notes. The sample includes all students listed as “Beginning Student” between the Fall 2013 and Summer 2017 terms. Students who enrolled with two majors with different program levels are included in both program levels.

is a certificate. Few students who initially enroll in a certificate program earn credentials at other levels. Among students who start in a diploma program, 23.4 percent earn that credential, and only 5.1% earn a degree. Among students who start in a degree program, 16.6% earn that credential, and 8.8% earn a diploma. Overall, these statistics suggest that students infrequently earn a higher credential than the one associated with the initial program level. However, because of the opportunities to complete embedded certificates and other credentials, a fair number of diploma and degree students leave TCSG with a lower credential than the one associated with their initial program level.

The last portion of Table 3 lists employment outcomes for students who earned a degree by their initial program level. The first row shows that similar percentages of students (62–64%) are employed after earning a credential, regardless of the initial program. However, rates of continuing education diverge, with 7.1% for students in certificate programs, 17.8% of students in diploma programs, and 14.8% of students in associate degree continuing their education but not being employed. Similar percentages of students in each group continue their education and are employed. Another notable difference is that 15.1% of certificate students who complete a credential report being unavailable for employment, while only 1.7% of students in diploma programs and 0.9% of students in degree programs do so.¹²

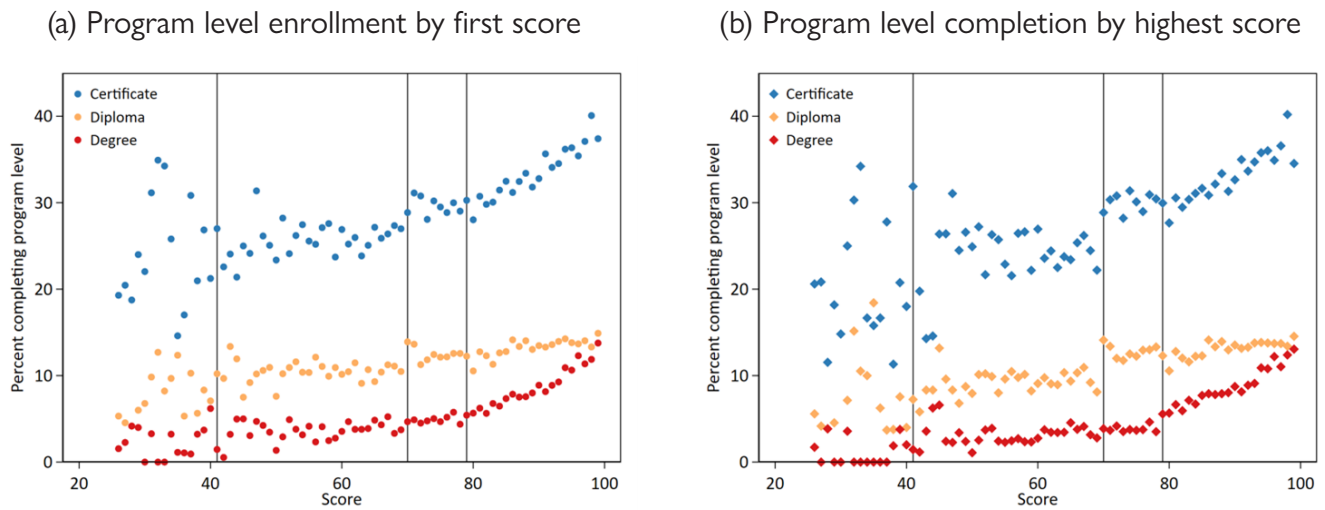
While Table 3 shows average progression and completion outcomes by program level, Figure 3 revisits research question 2, which considers how placement test scores relate to credentials earned. The different colors correspond to completion of the three different credentials, regardless of which program level the students begin. Panel (a) shows results for the first COMPASS Reading test score and panel (b) does so for the highest score.

A few results stand out from Figure 3. First, certificates are the most common credential for the entire distribution of test scores, followed by diplomas, and then degrees. This is partially because, as we previously showed, many diploma and degree students complete certificates during their programs. Second, the rates of earning a certificate and degree sharply increase once test scores are above 80. The weak relationship between test scores and program completion below this threshold contrasts with findings from other studies that better-prepared students tend to outperform underprepared students.

Third and finally, and similar to the enrollment results, there are modest jumps in the relationship between highest score and credentials earned (panel (b)) at the placement criteria thresholds, but the relationship is attenuated with first scores (panel (a)). This implies that there may be a small causal impact of first test score (and initial program level) on credential completion, but the fact that students can retake exams and ultimately enroll in the program they prefer mitigates such a relationship.

Note that we showed results for the COMPASS Reading test. Appendix B shows similar results for the other COMPASS tests. Classic ACCUPLACER and Next Generation ACCUPLACER were adopted by TCSG too recently to meaningfully explore completion outcomes.

Figure 3. COMPASS Reading Test Scores and Program Level Completion



Notes. The horizontal axis in each of the graphs are scores on the COMPASS Reading test. Panel (a) groups students by their first score and plots the percent of students completing a credential at each program level for each score. Panel (b) is the same but instead groups students by their highest score. The vertical lines represent the placement criteria score thresholds. 79 is the threshold for degree-level courses, 70 for diploma-level courses, and scores below 41 send students to adult education.

Our earlier analyses revealed that there are differences in the characteristics of students who enter each award program. Several characteristics, such as students' ages, educational backgrounds, economic status, and test scores, might also be associated with their schooling outcomes. The associations observed in Table 3 may be affected by the mutual associations that these characteristics have with both initial program enrollments and schooling outcomes. To address this issue, we conduct and report results from multivariate regression models. These models can measure the associations between initial program enrollments and later schooling outcomes, while accounting for associations from other characteristics. Relative to the results in Table 3, the regression results effectively compare students with similar backgrounds, academic preparation, and field of interest but who start in different program levels.¹³ In particular, the regression results account for all the characteristics listed in Table 1, students' initial COMPASS test scores, and the area of the program that they enrolled in, such as an automotive program or an early care educator program.¹⁴

We report predicted levels of credential attainment from the regression models (regression-adjusted probabilities of credential attainment) in Table 4. Panel A of Table 4 reports results for all COMPASS test takers and finds that students who initially enter a diploma program are 14.3 percentage points less likely to earn a certificate than students with very similar backgrounds,

Table 4. Student Completion by Initial Program Level – Regression Adjusted Averages

	Initial program level		
	Certificate	Diploma	Degree
<i>Panel A: Full sample (N = 82,237)</i>			
Earned certificate	40.9%	26.6%	20.4%
Earned diploma	6.2%	20.9%	10.4%
Earned degree	4.0%	6.2%	13.0%
Earned any credential	42.2%	31.0%	25.3%
<i>Panel B: Eligible to enter any program without Learning Support (N = 15,684)</i>			
Earned certificate	47.1%	30.3%	25.6%
Earned diploma	5.2%	27.2%	15.5%
Earned degree	6.0%	12.2%	23.0%
Earned any credential	49.5%	36.3%	34.6%
<i>Panel C: Eligible to enter certificate & diploma programs without Learning Support, but would need Learning Support to enter degree programs (N = 46,382)</i>			
Earned certificate	41.3%	26.8%	19.9%
Earned diploma	7.0%	21.6%	10.2%
Earned degree	4.2%	5.6%	11.3%
Earned any credential	42.6%	31.5%	24.7%
<i>Panel D: Learning Support required to enter any program (N = 17,934)</i>			
Earned certificate	33.4%	23.2%	18.1%
Earned diploma	5.7%	15.4%	7.2%
Earned degree	3.1%	2.5%	7.1%
Earned any credential	33.9%	25.8%	20.4%

Notes. The sample includes all students listed as “Beginning Student” between the Fall 2013 and Summer 2017 terms that took the COMPASS test and had a listed major in their first enrolled term (excluding double majors). The table reports adjusted averages using a regression that accounts for factors including first COMPASS test scores, gender, race, education, age, and the “other characteristics” listed in Table 1.

academic preparation, and field of interest who start in a certificate program. The difference is 20.5 percentage points relative to those who start in a degree program. In the next row, we find students who start in a diploma program are much more likely to earn a diploma than those who start in a certificate program. However, we also see that starting in a degree program results in a 4.3 percentage point higher chance of earning a diploma than those who start in a certificate program. A similar story holds for earning a degree, whereby those initially entering a diploma program are more likely to earn a degree than those who begin a certificate program.

Panel A masks the fact that students can start in the same program levels with or without Learning Supports, as prescribed by their placement scores. Panels B, C, and D split the full sample into groups of students who require different Learning Supports. Panel B shows students who score high enough on all COMPASS tests to enter any program level with no Learning Supports. Results for this academically-prepared subgroup are similar to the top panel but generally speaking, the relationships are larger in magnitude and more stark. Panel C is very much in line with the full sample, mainly because most of the full sample falls into this group of students who need some Learning Supports.

Panel D of Table 4 shows results for students with the lowest COMPASS scores who require Learning Supports regardless of the program level. We see different results from the other groups. In the third column, students who initially enter a degree program are only slightly more likely to earn a diploma than similar students who enter a certificate program. Similarly, those who initially enter a diploma program are no more likely to earn a degree than similar students who enter a certificate program. Additionally, the rates of earning a diploma or degree when starting in those respective program levels are substantially lower than more prepared students in the previous panels.

Conclusion and Policy Recommendations

This report provides information on the characteristics of students who enroll in certificate, diploma, and associate degree programs at TCSG institutions and how students' scores on skills tests, such as the COMPASS and ACCUPLACER tests, are related to their initial program enrollments. It also examines how initial program enrollments and test scores relate to success. The analyses provide a few broad conclusions and several policy recommendations.

First, TCSG's programs at each award level serve students with diverse characteristics and from many different backgrounds. This tremendous diversity notwithstanding, some students are more likely to enroll in particular programs than others. Women, White students, older students, and students who did not obtain a high school diploma or equivalency have relatively high rates of enrollment in certificate programs. Men, Black students, and economically disadvantaged students have high rates of enrollment in diploma programs. Younger students and economically disadvantaged students have high rates of enrollment in associate degree programs. The programs have different requirements, cover different areas, and prepare students for different types of jobs, and, naturally, the programs would be differentially appealing.

Also, there are some differences in the types of financial aid that are available to students. For example, Georgia's Helping Outstanding Pupils Educationally (HOPE) program supports qualified resident students in certificate and diploma programs through its HOPE Grant, HOPE Career Grant, and Zell Miller Grant programs. In contrast, it supports qualified resident students in associate and bachelor degree programs through HOPE and Zell Miller Scholarships. Men, Black students, and economically disadvantaged students are much less likely to receive HOPE and Zell Miller Scholarships than other students,¹⁵ which may reduce their likelihood of enrolling in degree programs. The high rates of some types of students in particular programs, especially men, Black students, and economically disadvantaged students in diploma programs, should be examined more closely to make sure that these programs and the supports for these programs are positively attracting students and that other programs are not negatively pushing students away.

Second, TCSG students who score higher on their initial skills tests are more likely to enroll in degree programs and less likely to enroll in diploma programs, but the associations are modest. There is no clear association between test scores and enrollments in certificate programs. When we examine the full distribution of test scores, we find moderate relationships between test scores and enrollments at the high end of the test score distribution—at scores higher than the threshold for placement into associate degree courses—but little relationship at lower parts of the distribution. The modest relationship and the relatively high proportions of students with low scores who enroll in diploma and degree programs suggest that placement tests are not substantial barriers to program enrollments.

Third, students' opportunities to retake skills tests may explain the modest relationships between program enrollments and initial test scores. TCSG institutions allow students to retake the skills tests, improve their score above the placement criteria, and enroll in programs without Learning Support course requirements. Many students take advantage of this opportunity, especially students who score below the regular course placement thresholds for certificate and diploma programs. By itself, an individual test score may be a noisy signal and provide only limited information about a student's ability to complete entry-level coursework. TCSG institutions' flexibility in allowing students to retake tests helps to address this issue and achieve better program placements.

Fourth, students who score higher on their placement tests are more likely to complete programs and obtain credentials, but the associations are modest,

especially for completing diploma programs. The associations are also non-linear—the associations between test scores and program completion are weakly positive below the threshold for placement into entry-level courses for degree programs and stronger and positive above that threshold. This is additional evidence that test scores provide some information about students' abilities to succeed in their academic programs, but that the information is limited. Advice on students' initial course placements needs to consider their circumstances holistically.

Fifth, in contrast to placement test scores, students' initial program enrollment choices are strong predictors of whether they earn credentials and which credentials they earn. These relationships hold even after we use statistical techniques that account for differences in students' backgrounds, test scores, academic preparation, and fields of interest. Only 29% of students who begin in an associate degree program complete a credential, while 41% of students who begin in a diploma program and 37% of students who begin in a certificate program do so. The lower completion rate for students who enroll in associate degree programs may reflect these students being more likely to transfer to other institutions to complete their schooling.

When we consider which credentials students earn, we find that completion rates for each type are higher among students who initially enrolled in those programs. Some of this relationship is mechanical—students who begin coursework specifically for a diploma or degree program have shorter paths to completing those programs than students who begin other coursework. Some of this relationship also likely reflects students' intentions and desires about the programs they want to complete. Through their choices, students who enroll in a particular program signal that they intend to complete that program. Therefore, it is natural that their completion outcomes would differ from those of students whose initial choices signaled a desire to complete a different program.

We also find, however, that regardless of their initial enrollments, students are more likely to complete certificates than other credentials—that is, a plurality of students in each enrollment track completes a certificate. TCSG institutions encourage diploma and degree students to organize their coursework so that they obtain embedded certificates as they are completing their primary programs. These efforts include using the DegreeWorks tool and other advising to align students' course selections. As a result, students obtain usable credentials faster, and many of them complete their programs with multiple credentials. This feature of TCSG's curriculum also increases students' success

in obtaining marketable credentials, even if they are not the credentials the students initially sought.

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7. TCSG also oversees Georgia’s adult literacy program and its economic and workforce development programs.
8. In some cases, the criteria determine whether students are directed toward adult education or whether students are eligible for a math course that is higher than the entry level for a particular program level.
9. Though infrequent, student background information can change across terms. We create time-invariant indicators for whether the student ever reported having these characteristics in any term of enrollment.
10. Each test can be taken multiple times. Table 2 reports the highest test scores by the time of initial program enrollment. Students who initially enrolled in multiple programs are included in the averages for each program.
11. We find an increase in retaking just below a score of 49 that does not align with TCSG’s placement criteria. Perhaps this is because campuses can set their own criteria above the system-wide minima that we investigate.
12. We do not have a definitive explanation for this result. A closer examination of the students from certificate programs who report being unavailable for employment reveals that almost

all have high school equivalency degrees (90 percent), and very few received financial aid (1 percent) or reported being first generation students (3 percent). The students in this category tend to be older than other students, and a high percentage are male (62 percent).

13. There are many reasons and predictors of why students start in different program levels beyond our available data. Such omitted variables implies that our results should not be interpreted as causal effects.

14. Some of the areas only have a single award level (for instance, only lead to a certificate). Because of this, the results from the regression analysis should be interpreted as applying to program areas that lead to multiple credentials. We restrict the analysis to COMPASS test takers because the other tests were only adopted recently by TCSG.

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