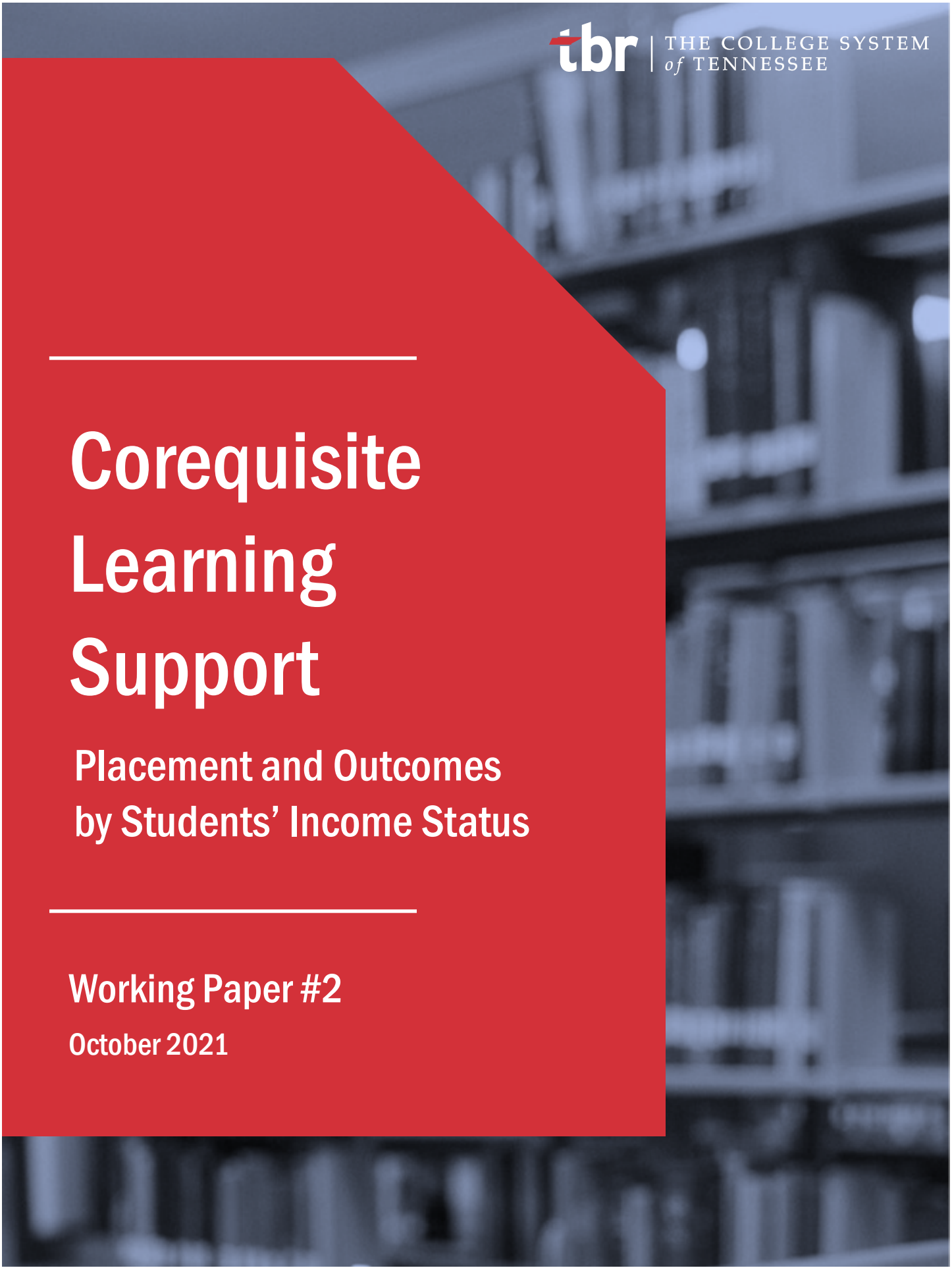

tbr | THE COLLEGE SYSTEM of TENNESSEE

Corequisite Learning Support

Placement and Outcomes by Students' Income Status

Working Paper #2

October 2021

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About this Project

The College System of Tennessee is the state's largest public higher education system, with 13 community colleges, 27 colleges of applied technology, and the online TN eCampus. The system is governed by the Tennessee Board of Regents.

This report is part of *Gaining Momentum: Refining Corequisite Learning Support to Boost Student Success in the First Year and Beyond*, a TBR project focused on identifying best practices and developing equity-focused data insights about corequisite learning support at community colleges.

TBR is grateful to the Education Commission of the States' *Strong Start to Finish* network for their support of this project.

Click here to learn more about this project.

Summary of Findings

Low-income students were placed into learning support at higher rates than non-low-income students.

Students at Tennessee community colleges can be placed into corequisite learning support courses if they do not meet benchmarks for college readiness.

From fall 2015 to 2019, 68% of low-income students were placed into learning support, compared to 49% of non-low-income students.

Some students are placed into learning support for multiple subjects. Low-income students were placed in learning support for all three subjects at twice the rate of non-low-income students.

Trends in learning support placement differed by college and region.

At every community college in Tennessee from fall 2015 to 2019, low-income students were placed into learning support at higher rates than non-low-income students.

Additionally, in all but four counties in Tennessee, low-income students were placed into learning support at higher rates than their non-low-income peers.

Placement rates were high for low-income students across the state. For example, at Nashville State Community College, 76% of low-income students were placed into learning support compared to 49% of non-low-income students. At Southwest Tennessee Community College, 88% of low-income students were placed into learning support compared to 70% of non-low-income students.

Low-income learning support students completed gateway math courses at lower rates than non-low-income students.

From fall 2015-2019, 36% of low-income students who were placed into learning support math completed a college-level math course by the end of their first year, compared to 43% of non-low-income students. *This represents a seven-percentage point gap between low-income and non-low-income students.*

Academic preparation may account for some of these differences, as low-income students had ACT math scores and high school GPAs that were lower, on average, than non-low-income students. However, even after using statistical methods to account for factors such as academic preparation, race, and college, low-income students were three percentage points less likely than their non-low-income peers to complete gateway math courses within their first year of enrollment.

Gaps in outcomes for low-income learning support students persisted in longer-term outcomes as well.

Low-income students who were placed into learning support courses persisted and graduated at lower rates than non-low-income students in learning support. These gaps exist for every combination of learning support placement.

Among low-income students who were placed into corequisite learning support at community colleges from fall 2015 to 2019, fewer than half returned for the following year of enrollment, and only one in seven graduated within three years.

Learning Support & Equity at Tennessee Community Colleges

Background

Low-income students who attend community colleges face a variety of challenges in pursuit of their degrees. Financial barriers can be a major factor in student success (Deming & Dynarski, 2009). Tennessee has demonstrated a considerable commitment to making community college affordable for students, particularly through last-dollar scholarships like Tennessee Promise and Tennessee Reconnect.

Recent research, however, suggests academic barriers may inhibit low-income students' degree completion. More than two-thirds of community college students nationwide take at least one developmental education course, and these students are disproportionately from low-income backgrounds (Ganga et al, 2018). Despite long-standing differences in academic preparation, "most developmental education reforms are not explicitly designed to improve outcomes of students with particular characteristics" (Brathwaite & Edgecombe, 2018). Research from one statewide developmental education reform explored trends in placement, progression, and completion, and found that some subgroup differences were *intensified* by developmental education reforms. Before researchers teased out these trends, they were hidden by the overall improvement from the reform (Brathwaite & Edgecombe, 2018).

The closure of equity gaps is a foundational component of the work of Tennessee community colleges. According to the Tennessee Board of Regents' (TBR) equity policy, this commitment means "ensuring that each student has access to a high-quality education and that each student receives what they need to be successful through the intentional design of the college experience" (TBR, 2019b). Yet, low-income students, Black and African American students, and returning adults are disproportionately impacted by learning support policies. Additionally, equity gaps persist in outcomes like retention and graduation rates.

Corequisite Learning Support

With the introduction of systemwide corequisite learning support in 2015, Tennessee hoped to increase the number of students completing college-level courses in their first year. Upon enrolling at a Tennessee community college, all students have the opportunity to enroll directly in college-level gateway courses. Some students are also placed into a corequisite learning support course alongside the college-level course.

TBR's learning support policy establishes methods to determine whether a student will be placed into learning support for math, reading, or writing (TBR, 2019a). According to this policy, students can be placed into or out of a corequisite learning support course through one of four assessment metrics: the ACT, SAT, ACCUPLACER, or by completing SAILS competencies. A student must satisfy cut scores in at least one of these placement methods to bypass learning support courses.

This paper will seek to further understand low-income students' placement and outcomes since corequisite learning support reforms were implemented in fall 2015.

For the following analyses, low-income students are defined as Pell grant recipients in their first term of enrollment as first-time freshmen. Acknowledging that this is an imperfect measure, the trends reported subsequently may be underreported as not all low-income students are Pell grant recipients (Delisle, 2017).

Placement into Learning Support

Sixty percent of first-time freshmen at community colleges from fall 2015 to 2019 were placed into at least one learning support course. [1]

From fall 2015 to fall 2019, 60,726 low-income students enrolled at Tennessee community colleges as first-time freshmen, which accounted for 56% of all first-time enrollments.

Figure 1 shows the proportion of first-time freshmen who were placed into learning support from fall 2015 to 2019 by income. Among low-income students, 68% were placed into learning support for at least one subject upon enrolling in college, including:

- 52% were placed into learning support *math*.
- 41% were placed into learning support *reading*.
- 45% were placed into learning support *writing*.

These placement rates differed from their non-low-income peers. Among non-low-income students, 49% were placed into learning support for at least one subject upon enrolling in college, including:

- 36% were placed into learning support *math*.
- 25% were placed into learning support *reading*.
- 27% were placed into learning support *writing*.

Even after using more rigorous data analysis methods to account for other factors, low-income students were still more likely to be placed into learning support than their non-low-income peers, especially for reading and writing. Overall, low-income students were three percentage points more likely than non-low-income students to be placed into learning support, after accounting for other factors.[2]

Figure 1: Percent of First-Time Freshmen Placed into Learning Support, 2015-2019

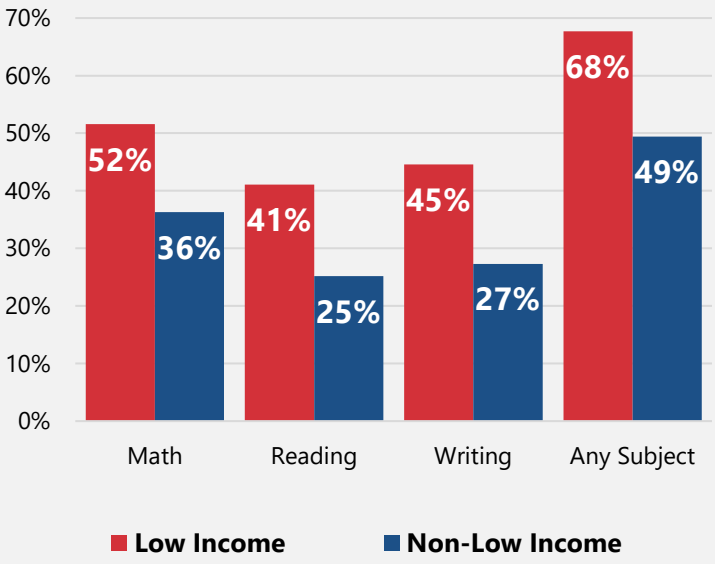
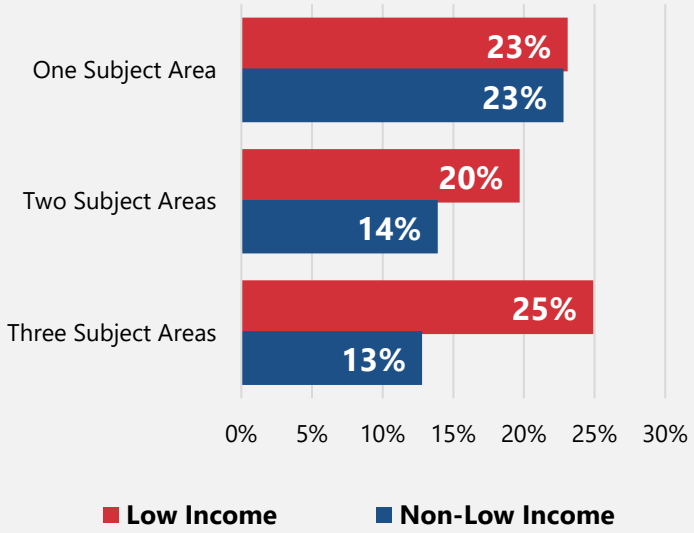


Figure 2: Percent of First-Time Freshmen Placed into Learning Support, 2015-2019



[1] Placement rates reflect the proportion of students who required learning support upon enrolling in college. In some cases, students can fulfill math learning support requirements by participating in the SAILS program during high school. In this analysis, students who completed SAILS are *excluded* from those who were placed into learning support. When SAILS completers are included, the math learning support placement rate increases by around 10 percentage points for both low-income and non-low-income students.

[2] The data appendix at the conclusion of this report includes more detailed results of these analyses.

In total, 57% of low-income students require learning support in at least one subject area. However, only 49% of non-low-income students do so--an 18-percentage point difference.

Yet, students may be placed into learning support for one, two, or three subject areas. As **Figure 2** shows, low-income students were placed into learning support for one subject area at the same rate as their non-low-income peers. *However, low-income students were placed into learning support for two or three subject areas at much higher rates than non-low-income students.*

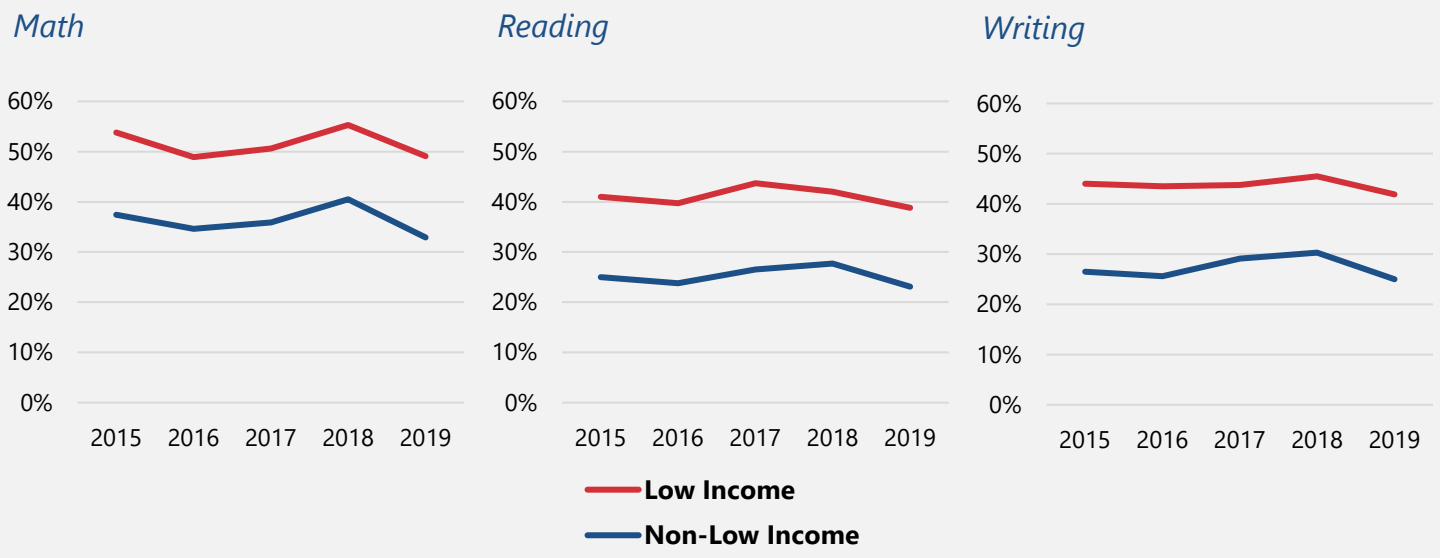
As **Table 1** shows, relatively few students required some combination of learning support that does not include math. The most common combination of placements for low-income students is placement into all three subjects with 24.9% of first-time, low-income students from 2015-2019 requiring these supports. The next most common combinations were math only (15.5%) and reading and writing only (8.5%).

Placement rates have changed modestly over time, as shown in **Figure 3**. Efforts to address learning support needs before students arrive in the fall have slightly lowered placement rates for low-income students, particularly in math. Yet the gap in placement rates between low-income and non-low-income students for all subjects remains wide.

Table 1: Percent of First-Time Freshmen Placed into Learning Support by Subject, 2015-2019

Subject Area	Low-Income Students	Non-Low-Income Students	Difference
Math Only	15.5%	15.4%	0.1 pp
Reading Only	3.5%	3.6%	-0.1 pp
Writing Only	4.1%	3.8%	0.3 pp
Math & Reading	4.1%	3.2%	0.9 pp
Math & Writing	7.1%	5.0%	2.1 pp
Reading & Writing	8.5%	5.7%	2.8 pp
Math, Reading, & Writing	24.9%	12.8%	12.1 pp
Any Placement	**67.7%**	**49.4%**	**18.3 pp**
No Placement	32.3%	50.6%	-18.3 pp

Figure 3: Percent of First-Time Freshmen Placed into Learning Support Over Time



Differences by College & Student Group

Learning support placement for low-income students also differs by college, as shown below in **Table 2**. From fall 2015 to 2019, low-income students at Jackson, Nashville, Northeast, and Southwest were placed into at least one learning support course at a higher rate than the system rate.

Table 2: Percent of First-Time Freshmen Placed into Learning Support by College, 2015-2019

College	Low-Income Students in Any LS	Non-Low-Income Students in Any LS	Difference
Chattanooga	60.2%	43.6%	16.6 pp
Cleveland	61.5%	46.6%	14.9 pp
Columbia	60.7%	48.0%	12.7 pp
Dyersburg	66.1%	46.1%	20.1 pp
Jackson	71.1%	49.9%	22.1 pp
Motlow	61.9%	51.1%	10.8 pp
Nashville	76.4%	48.8%	27.6 pp
Northeast	69.8%	53.4%	16.5 pp
Pellissippi	62.7%	44.7%	17.9 pp
Roane	59.4%	43.5%	15.9 pp
Southwest	87.7%	69.9%	17.9 pp
Volunteer	63.0%	49.2%	13.8 pp
Walters	60.5%	45.1%	15.5 pp
All Colleges	**67.7%**	**49.4%**	**18.3 pp**

Across all colleges, female low-income students were placed into math and reading learning support at a higher rate than male low-income students. However, female low-income students were placed into writing learning support at a lower rate than male students. Black low-income students were also placed into learning support at a higher rate than any other group.

Differences across Tennessee

Learning support placement differs across the state. The maps on the following page show placement rates and gaps in placement rates by county.

The first map (**Figure 4**) shows the overall placement rate into at least one learning support course for all first-time students from 2015 to 2019. Counties with high placement rates, shown in red, were concentrated in the northeast and west regions of the state.

The second map (**Figure 5**) depicts the placement gap, representing how many percentage points higher the rate of placement is for low-income versus non-low-income students. In all but three counties, low-income students were placed into learning support at higher rates than their non-low-income peers.

The widest placement gaps are found in relatively rural counties like Stewart, Unicoi, Decatur, Hardeman, and Lauderdale. For example, in Hardeman County, 101 first-time, non-low-income students were placed into learning support at a rate of 52% while 256 first-time, low-income students were placed into learning support at a rate of 78%, representing a 26-point gap.

Low-income students are placed into learning support at higher rates in the state's urban counties as well, as **Table 3** below shows. From 2015 to 2019, 87.8% of first-time, low-income students from Shelby County were placed into learning support, compared to 69.0% of non-low-income students.

Table 3: Learning Support Placement by County, 2015-2019

County	Low-Income Students in Any LS	Non-Low-Income Students in Any LS	Difference
Davidson	80.6%	63.7%	16.9pp
Hamilton	64.7%	46.4%	18.3pp
Knox	66.3%	47.2%	19.1pp
Rutherford	72.2%	58.9%	13.3pp
Shelby	87.8%	69.0%	18.8pp

Figure 4: Learning Support Placement Rate, 2015 - 2019

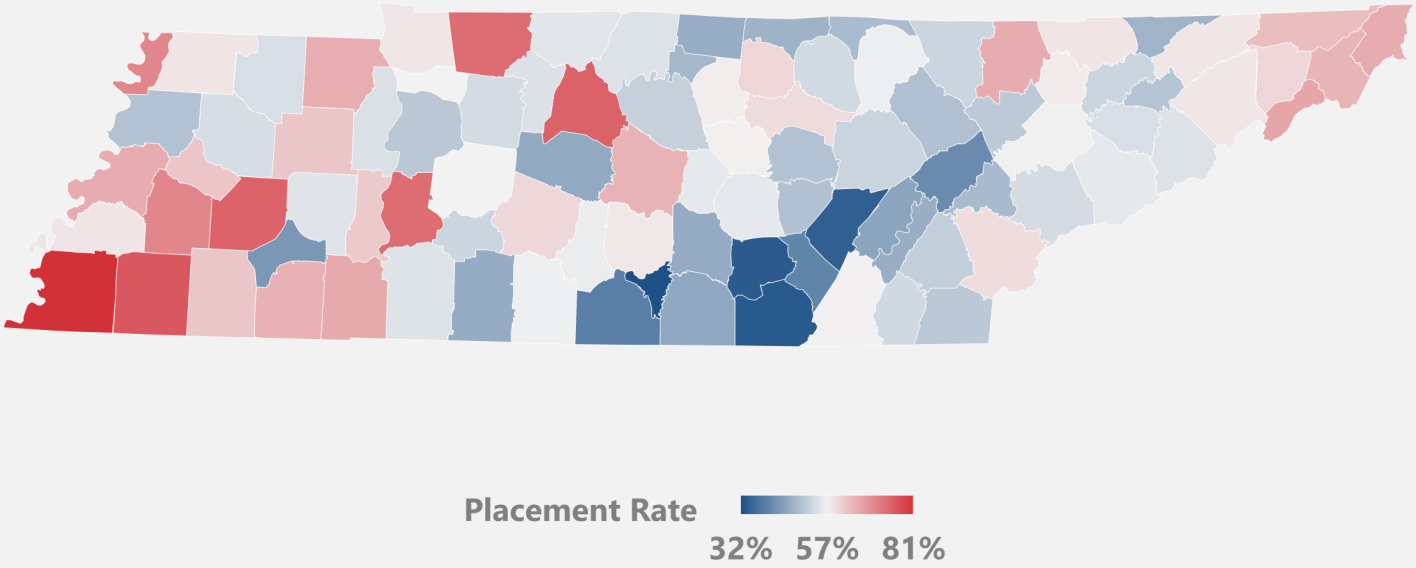
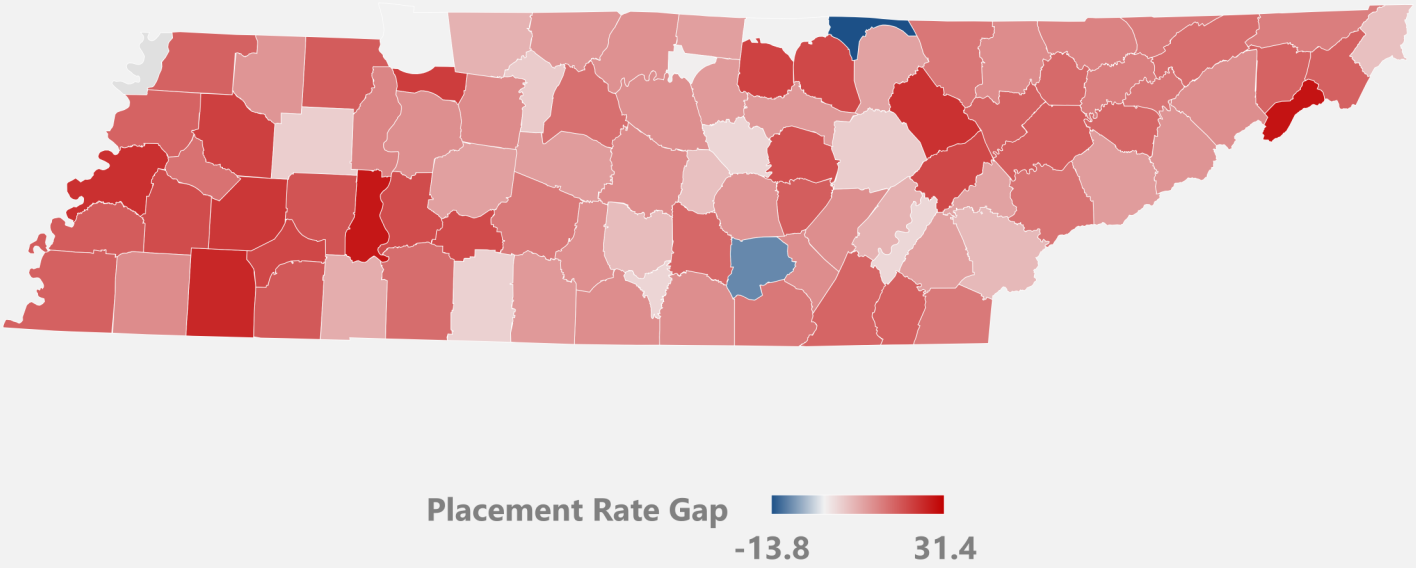


Figure 5: Learning Support Placement Gap between Low-Income and Non-Low-Income Students, 2015 - 2019



Note: Counties with fewer than 25 students in either the low-income or non-low-income student group were omitted from Figure 5. These counties are depicted in grey. If the placement rate gap is negative in Figure 5, as is the case for a handful of counties depicted in blue, that means that low-income students were placed into learning support at *lower* rates than their non-low-income peers. This was the case in only 3 counties: Grundy, Lake, and Pickett.

Success in Learning Support

Gateway Course Enrollment

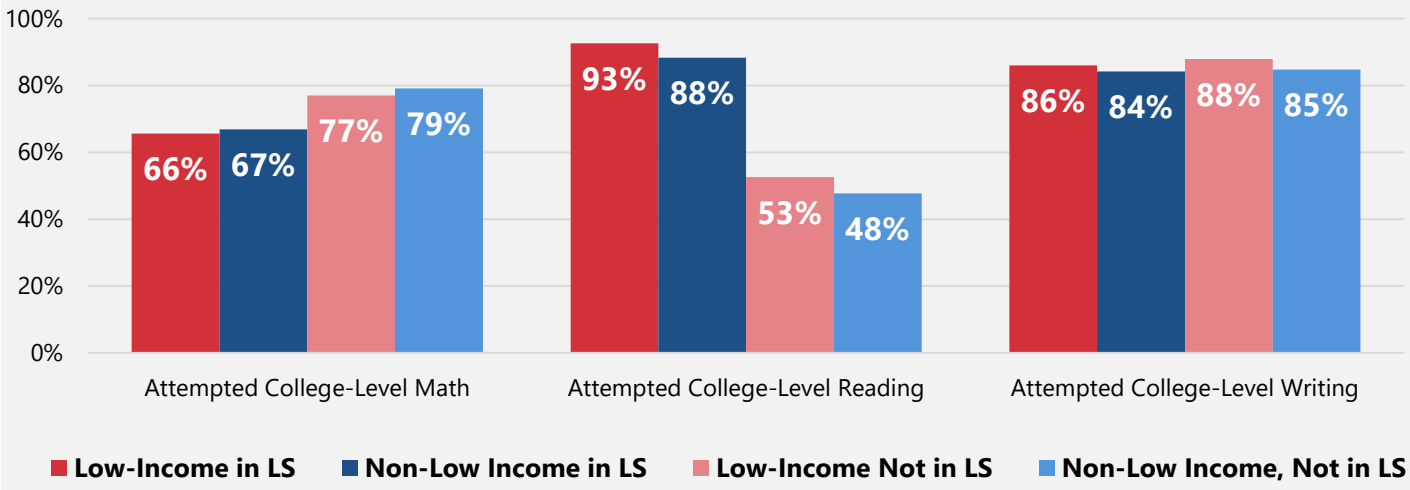
Corequisite learning support made it possible for each student to enroll in college-level courses in their first year regardless of their learning support placement. **Figure 6** below shows that most learning support students attempted college-level courses, but differences existed by student group and subject.

- In *math*, 66% of low-income learning support math students attempted a college-level math course in their first academic year—only slightly lower than the rate for non-low-income learning support students.
- In *reading*, on the other hand, most students who were placed into learning support for reading attempted a paired college-level reading course in their first academic year. In fact, low-income students who were placed into learning support for reading attempted a college-level reading course at slightly higher rates than their non-low-income peers in their first academic year.
- *Writing* follows a similar trend: 86% of low-income learning support writing students attempted college-level writing--slightly higher than the rate for non-low-income learning support students.

Lower rates of enrollment in college-level math courses may be a result of the fact that *low-income students are far more likely than other students to be placed into learning support for all three subjects*, as discussed in the previous section. TBR's learning support policy requires that "learning support competencies should be addressed as quickly as possible" but recommends that "it may be appropriate to address literacy requirements prior to math" (TBR, 2019a). Thus, one reason fewer students who require learning support attempt college-level math is that they may require learning support in multiple subjects and were addressing reading and writing requirements first.

For students who do not require learning support, gateway course enrollment patterns differ. Since 2015, only half of first-time students who did not require learning support in reading attempted one of the college-level courses that are typically paired with reading in their first year. However, non-learning support students attempted college-level math and writing courses at comparable or slightly higher rates than learning support students.

Figure 6: Gateway Course Enrollment Rates in Students' First Year, 2015-2019



Gateway Course Success

Passing Gateway Courses When Attempted

Course pass rates reflect the success of students in college-level gateway courses among students who attempted those courses. This metric helps illuminate patterns in student success among students who can enroll in gateway courses.

In all subjects, students who did not require learning support had higher course pass rates than students who were placed into learning support. However, even among learning support students, gaps in pass rates were present across students' groups as **Figure 7** shows.

- In *math*, low-income learning support students passed gateway math courses at rates nine percentage points *lower* than their non-low-income peers who were also placed into learning support. Among students who were not placed into learning support, the pass rate for low-income students was also nine percentage points lower than non-low-income students.
- For *reading* and *writing*, the gaps between low-income students and non-low-income students in learning support were smaller than in math. Low-income students placed into learning support writing passed college-level writing courses at a rate five points lower than non-low-income peers who were also in learning support.

About the Data

The dataset for this analysis uses the end-of-term enrollment data and course data to explore outcomes for first-time freshmen. Low-income students are identified based on whether the student received a Pell Grant during their first term.

Learning support placement is based upon the subjects for which students qualify for support, not enrollments in learning support.

Gateway courses are college-level courses that students typically take in their first year. For math, this includes all 1000-level math courses. For writing, this is English 1010. For reading, this includes courses that are paired with learning support reading.

Student success outcomes are analyzed at the conclusion of the student's first academic year as a first-time freshman, including the preceding summer, fall, spring, and trailing summer, as well as any known prior credit from dual enrollment at community colleges.

Gateway Course Enrollment: Reflects the proportion of first-time freshmen who attempted a college-level gateway course in the subject area.

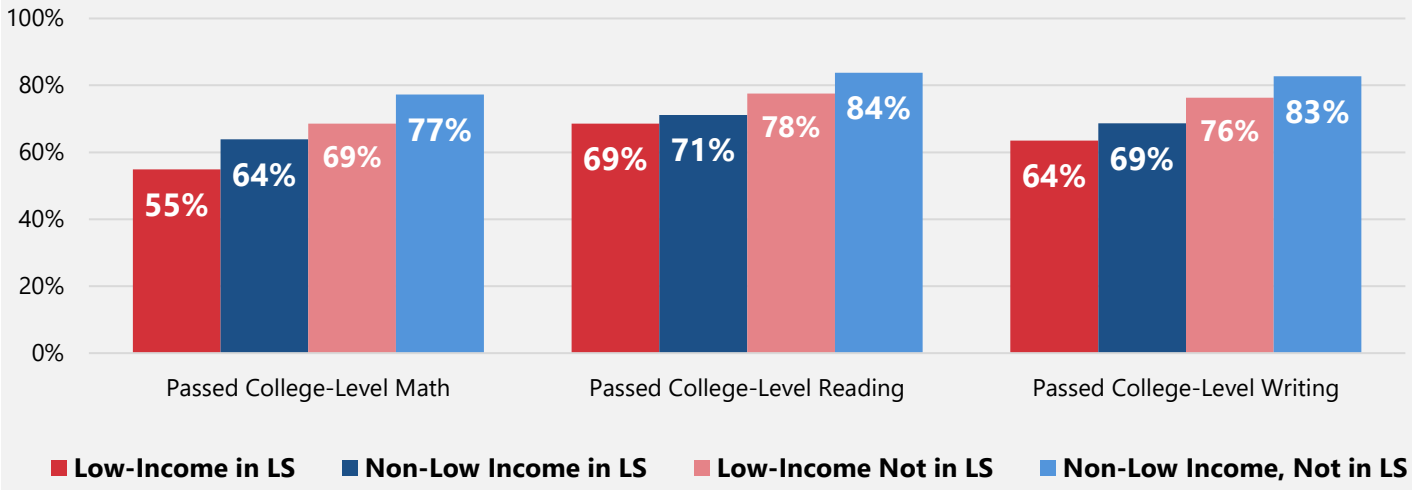
Gateway Course Pass Rates: Reflects the proportion of first-time freshmen who passed the college-level course with a grade of D or better. This is calculated as the number of students who passed the course divided by the number of students who attempted the course.

Gateway Course Completion: Reflects the proportion of first-time freshmen who attempted and passed the college-level course with a grade of D or better. This is calculated as the number of students who passed the course divided by the total number of students in the cohort or subgroup.

Retention Rates: Reflects the proportion of first-time freshmen who returned as a student at any TBR community the following spring or fall, or who earned a degree or certificate prior to the start of the following spring or fall.

Graduation Rates: Reflects the proportion of first-time, full-time freshmen who earned a degree or certificate at any TBR community college within three years of enrolling.

Figure 7: Gateway Course Pass Rates in Students' First Year, 2015-2019



Completing Gateway Courses in the First Year

Course completion rates reflect how many first-time students successfully passed college-level gateway courses but are not limited to students who attempted those courses. Completion rates, therefore, illuminate patterns *both* in student access to gateway courses *and* their success in those courses.

As **Figure 8** shows, low-income students completed gateway math and writing courses at lower rates than non-low-income students. From 2015 to 2019:

- In *math*, 36% of low-income learning support students completed a college-level math course in their first year, compared to 43% of non-low-income learning support students. This represents a seven-percentage point gap.
- In *reading,* 64% of low-income learning support students completed a college-level reading course, compared to 63% of non-low-income students. In other words, the gap between low-income and non-low-income students largely disappears in reading.
- In *writing*, 55% of low-income learning support students completed a college-level writing course, compared to 58% of non-low-income students.

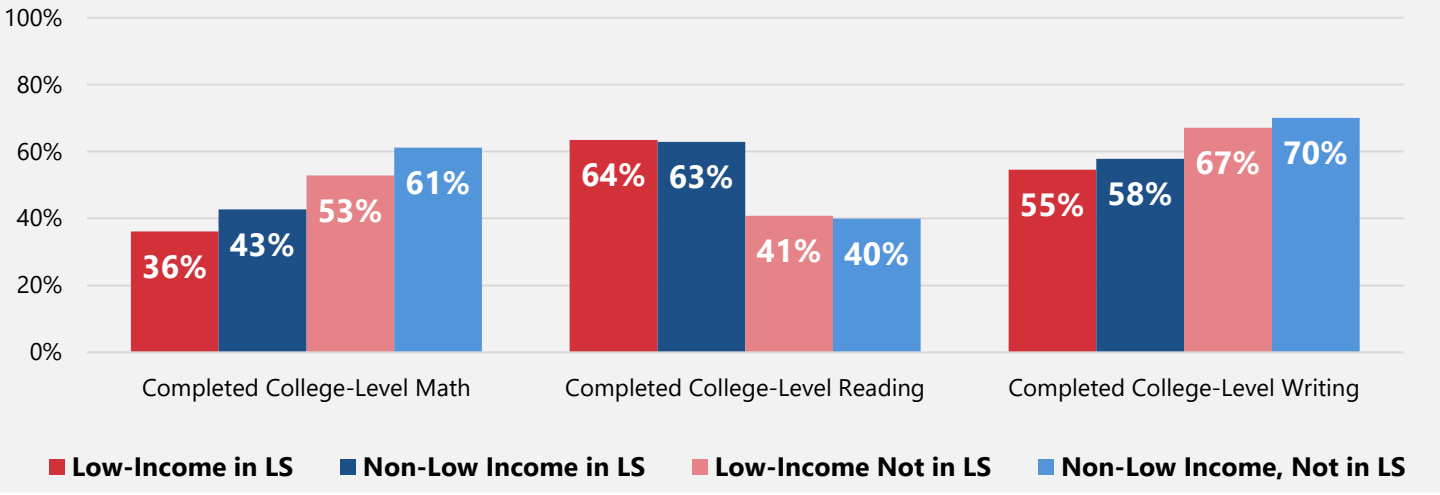
Even after controlling for other factors such as race, gender, age, college, ACT score, high school GPA, and term, low-income learning support math students were still three percentage points less likely than their non-low-income peers to complete a gateway math course in their first academic year. [3] However, after controlling for other factors, the effect of low-income status on gateway reading and writing completion is not statistically significant, mirroring the negligible differences found in the descriptive analyses.

The gap in gateway math completion rates between low-income and non-low-income students may be influenced by two related factors:

- Low-income learning support students attempted college-level math courses at lower rates, as discussed in the previous section. Low-income students are more likely to be placed into learning support for all three subject areas, which likely results in delays in math enrollment due to guidance provided in TBR's learning support policy.
- On average, ACT subject scores and high school GPAs were lower among low-income students than among non-low-income students.

The following section explores outcomes in college-level math courses in greater detail.

Figure 8: Gateway Course Completion Rates in Students' First Year, 2015-2019



[3] The data appendix at the conclusion of this report includes more detailed results of these analyses.

A Closer Look at Math

The largest gaps by income status exist for students who are placed into learning support for math.

Distribution of ACT Math Scores

Of first-time students who were placed into math learning support from 2015 to 2019, the most common ACT math score was 16. This is true for both low-income and non-low-income students.

However, as **Figure 9** shows, a higher percentage of non-low-income students had ACT scores of 17 and 18, which were just below the learning support cut point of 19. Conversely, more low-income students had lower ACT math scores.

Gateway Math Completion Rates

As previously discussed, the rate at which low-income learning support students completed a gateway math course in their first academic year is lower than their non-low-income peers. This gap persists across ACT math scores.

As **Figure 10** shows, this gap appears to widen slightly as ACT math scores increase. For example, low-income students with an ACT math score of 13 complete gateway math courses at a rate two percentage points lower than non-low-income students with the same score, but this gap grows to seven percentage points for students with an ACT math score of 17. Importantly, however, course completion rates also rise for both subgroups as ACT math scores rise.

Additionally, as **Figure 11** shows, for students who were placed into math learning support between fall 2015 and 2019, gateway math course completion rates in the first year rose alongside high school GPA for both low-income and non-low-income students. However, some gaps were present based on students' income status even after accounting for high school GPA.

Figure 9: ACT Math Scores Among Learning Support Math Students, 2015-2019

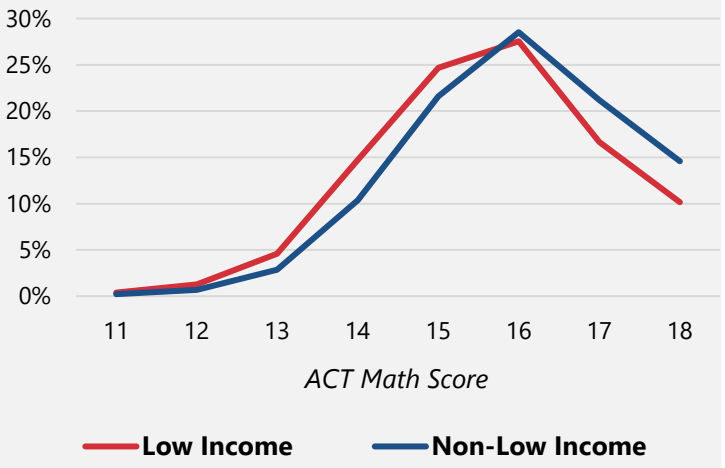


Figure 10: Gateway Math Completion Rates for Learning Support Students by ACT Math Subscore, 2015-2019

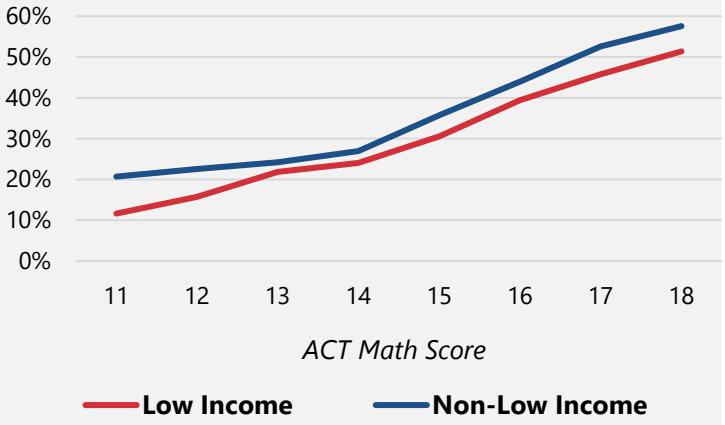
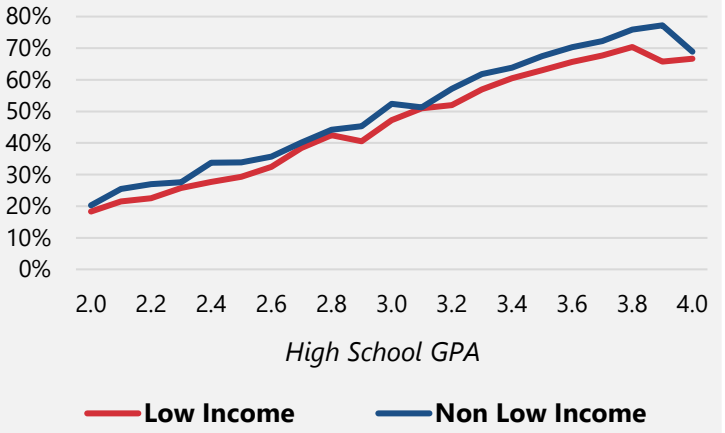


Figure 11: Gateway Math Completion Rates for Learning Support Students by High School GPA, 2015-2019



First-Year Retention Rates

Fall-to-Spring Retention

Figure 12 shows fall-to-spring retention rates for learning support students. Among learning support students, low-income students persisted from the fall to the spring semester at slightly *higher* rates than their non-low-income peers. Low-income students who required learning support returned for the spring semester at a rate of 72% compared to 69% of non-low-income learning support.

Fall-to-Fall Retention

By the time the following academic year begins, low-income learning support students returned at *lower* rates than their non-low-income peers. As **Figure 13** shows, 45% of low-income learning support students returned compared to 50% of non-low-income learning support students.

However, as **Table 4** shows, the gap between low-income and non-low-income students was negligible among students who were placed into learning support for all three subject areas. Low-income students who were placed into learning support for all three subject areas persisted at the lowest rate of any group.

Table 4: Fall-to-Fall Retention by Learning Support Placement, 2015-2019

Subject Area	Low-Income Students	Non-Low-Income Students	Difference
Math Only	51.9%	57.2%	-5.3 pp
Reading Only	52.5%	58.4%	-5.8 pp
Writing Only	48.8%	52.1%	-3.3 pp
Math & Reading	45.7%	50.0%	-4.3 pp
Math & Writing	45.3%	47.0%	-1.8 pp
Reading & Writing	44.2%	46.1%	-1.9 pp
Math, Reading, & Writing	40.0%	41.0%	-1.0 pp
Any Placement	45.3%	49.9%	-4.6 pp
No Placement	59.1%	62.8%	-3.7 pp
All Students	**49.8%**	**56.4%**	**-6.7 pp**

Figure 12: Fall-to-Spring Retention, 2015-2019

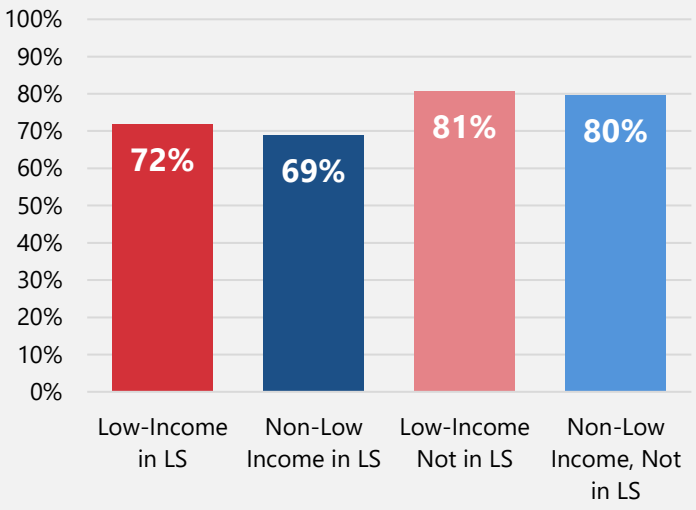
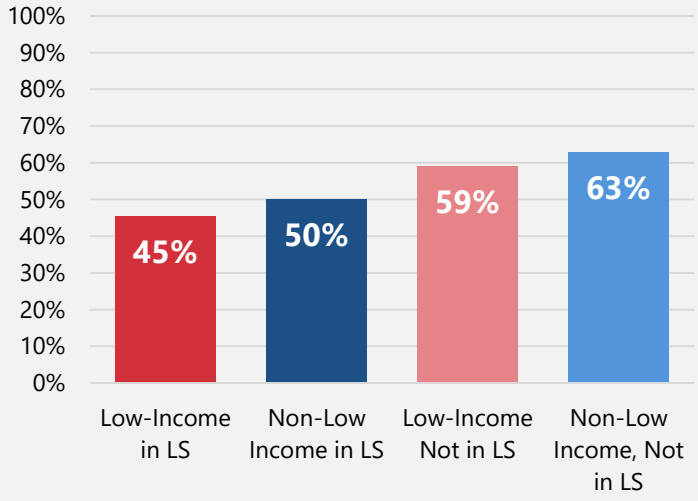


Figure 13: Fall-to-Fall Retention, 2015-2019



Three-Year Graduation Rates

Figure 16 shows three-year graduation rates for first-time, full-time students who were placed into learning support upon enrolling in college. Students who were placed into learning support in at least one subject graduated at lower rates than students who did not require learning support. Within both groups of students, however, low-income students graduated at lower rates than their non-low-income peers.

Among first-time, full-time students who began in 2017, 14% of low-income students who were placed into learning support graduated within three years, compared to 21% of non-low-income students in learning support.[4]

As **Table 6** shows, for every combination of placements, low-income students graduate at lower rates than their non-low-income peers. Since placement into learning support for all three subject areas was the most common placement for low-income students, it is important to note that these students graduate at the lowest rate. Only 7.6% of these students graduated within three years. On the other hand, the most common placement for non-low-income students was placement into math learning support alone; these students graduated at the highest rate, aside from students who were not placed into learning support at all.

Figure 14: Three-Year Graduation Rates for First-TIme, Full-Time Freshmen, 2015-2017

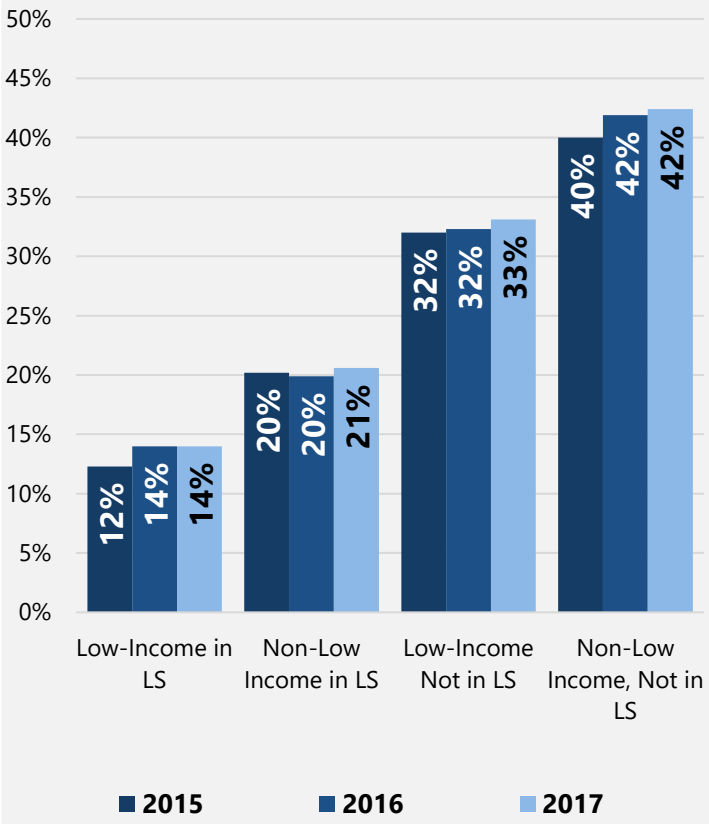


Table 5: Three-Year Graduation Rates for First-Time, Full-Time Freshmen, 2015-2017

Subject Area	Low-Income Students	Non-Low-Income Students	Difference
Math Only	21.4%	28.2%	-6.8 pp
Reading Only	19.1%	26.4%	-7.3 pp
Writing Only	17.3%	22.1%	-4.8 pp
Math & Reading	14.3%	19.8%	-5.5 pp
Math & Writing	13.4%	17.5%	-4.0 pp
Reading & Writing	11.0%	14.9%	-3.8 pp
Math, Reading, & Writing	7.6%	11.4%	-3.8 pp
Any Placement	13.4%	20.2%	-6.8 pp
No Placement	32.5%	41.4%	-8.9 pp
All Students	**17.2%**	**27.7%**	**-10.4 pp**

[4] It is important to note that these rates represent groups of different sizes. Approximately 7,300 students each year were low-income and required learning support, whereas the non-low-income students who required learning support were nearly half the size—representing approximately 4,000 students. The student groups that do not require any learning support were smaller--approximately 3,700 low-income students and closer to 4,400 non-low-income students. So while the 41.4% three-year graduation rate for non-low-income students who do not require learning support is promising, it only represents one-fifth of the student population.

Key Takeaways

Tennessee's community colleges are committed to closing the equity gaps that persist for students of color, low-income students, and other groups who have been traditionally underserved by higher education. When corequisite learning support was implemented systemwide in 2015, the system's learning support policy acknowledged that these reforms "reflected the commitment of the College System of Tennessee and its institutions to enhance access to and success in postsecondary education for all students" (TBR, 2019a). Still, gaps persist for low-income learning support students, especially in college-level math courses.

Over two-thirds of first-time, low-income students were placed into learning support in at least one subject area, and one-quarter were placed into all three subject areas.

Learning support placement patterns differed across the state. However, in all but three counties in Tennessee, low-income students were placed into learning support at higher rates than their non-low-income peers. Counties with the highest placement rates were concentrated in the northeast and west regions of the state.

Though there were no major differences in completion rates by income status for reading and writing gateway courses, **equity gaps persist for low-income learning support students in math.**

- Academic preparation may account for some of these differences; among students placed into learning support, low-income students had lower ACT math scores, on average, than White students.
- The need to address reading and writing learning support may also explain some of this gap. Low-income students were more likely to be placed into learning support for all three subjects. For students with three placements, TBR policy recommends that students complete reading and writing in the first semester, even if it means delaying math enrollment, which means some low-income students never had the chance to take a college-level math course.
- Even after controlling for a variety of factors that may influence success, **low-income students were still three percentage points less likely than their non-low-income peers to complete a gateway math course** in their first academic year.

Gaps exist in longer-term outcomes as well. Low-income students who require learning support graduated at lower rates than their non-low-income peers. These gaps existed for every combination of learning support placement.

This working paper is part of *Gaining Momentum: Refining Corequisite Learning Support to Boost Student Success in the First Year and Beyond.* ***Click here to learn more about this project.***

Additional Resources

Belfield, C., Jenkins, D., & Fink, J. (2019, July). *Early Momentum Metrics: Leading Indicators for Community College Improvement*. Communication College Research Center. https://ccrc.tc.columbia.edu/media/k2/attachments/early-momentum-metrics-leading-indicators.pdf

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TBR--The College System of Tennessee. (2019a). TBR Learning Support Policy. policies.tbr.edu/policies/learning-support-formerly-100

TBR—The College System of Tennessee. (2019b). TBR Diversity and Equity Policy. https://policies.tbr.edu/policies/diversity

Data Appendix

Appendix Table A1: Probability of Placement into Learning Support, First-Time Freshmen, Fall 2015-Fall 2019

	Any Learning Support			Learning Support Math			Learning Support Reading			Learning Support Writing		
	Marginal Effect	Standard Error		Marginal Effect	Standard Error		Marginal Effect	Standard Error		Marginal Effect	Standard Error	
Low-Income	0.030	0.005	***	0.000	0.004		0.015	0.003	***	0.015	0.003	***
Asian	0.025	0.019		0.036	0.016	*	0.012	0.011		0.010	0.013	
Black	0.040	0.008	***	0.019	0.006	**	0.020	0.004	***	0.002	0.004	
Hispanic	0.018	0.009	^	0.029	0.007	***	0.002	0.005		0.002	0.005	
Other Race/Ethnicity	0.028	0.011	**	0.021	0.008	*	0.005	0.006		0.012	0.006	^
Male	-0.012	0.005	*	-0.002	0.004		-0.020	0.002	***	0.015	0.003	***
Age	0.013	0.004	**	0.010	0.003	***	-0.004	0.002	**	0.000	0.002	
Recent High School Grad	-0.123	0.010	***	-0.232	0.010	***	0.020	0.005	***	0.014	0.006	*
High School GPA	-0.130	0.005	***	-0.056	0.004	***	-0.022	0.002	***	-0.032	0.003	***
ACT Subject Score	-0.149	0.001	***	-0.112	0.001	***	-0.067	0.001	***	-0.082	0.001	***
Learning Support Math							0.055	0.003	***	0.074	0.003	***
Learning Support Reading				0.036	0.004	***				0.150	0.003	***
Learning Support Writing				0.061	0.004	***	0.162	0.003	***			
Number of Observations	87,693			87,655			87,658			87,646		

Note: Each panel reflects a separate logit estimation of the probability of a student being placed into a learning support course. Each model also includes controls for institution and term. The model predicting placement into any learning support includes the students' ACT composite score; other models include the ACT subject score that is used to determine placement. Estimates were calculated with robust standard errors. ***p<.001 **p<.01 *p<.05 ^p<.10

Appendix Table A2: Probability of Completing a Gateway Course in the First Year, First-Time Freshmen, Fall 2015-Fall 2019

	College-Level Math			College-Level Reading			College-Level Writing		
	Marginal Effect	Standard Error		Marginal Effect	Standard Error		Marginal Effect	Standard Error	
Low-Income	-0.032	0.004	***	-0.007	0.004	^	-0.019	0.004	^
In Learning Support Math	0.021	0.005	***	0.035	0.005	***	-0.012	0.004	***
In Learning Support Reading	-0.107	0.005	***	0.296	0.006	***	-0.091	0.005	***
In Learning Support Writing	-0.067	0.005	***	-0.001	0.006		-0.021	0.005	
Asian	0.117	0.017	***	0.020	0.018		0.010	0.015	
Black	-0.008	0.007		0.010	0.007		-0.021	0.006	
Hispanic	0.060	0.008	***	0.045	0.008	***	0.034	0.007	***
Other Race/Ethnicity	-0.022	0.009	*	-0.006	0.009		-0.016	0.008	
Male	-0.001	0.004		-0.021	0.004	***	-0.019	0.003	***
Age	0.006	0.003	**	0.008	0.003	**	0.004	0.002	**
Recent High School Grad	0.058	0.009	***	0.066	0.009	***	0.039	0.008	***
High School GPA	0.038	0.004	***	0.212	0.004	***	0.278	0.004	***
ACT Subject Score	0.011	0.001	***	-0.005	0.001	***	-0.009	0.001	***
Number of Observations	87,655			87,658			87,658		

Note: Each panel reflects a separate logit estimation of the probability of a student attempting and passing a college-level course with a grade of D or better by the conclusion of their first academic year of enrollment (including fall, spring, trailing summer, and any known credit earned prior to the student's first-time freshman term. Each model also includes controls for institution and term. Estimates were calculated with robust standard errors. ***p<.001 **p<.01 *p<.05 ^p<.10