

College and Career Promise Leading to Transfer Outcomes: A Regression Discontinuity Analysis

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BRIEF DESCRIPTION

This brief is the second in a series that addresses the relationship between North Carolina's dual enrollment program, Career and College Promise (CCP), and community college attainment in the state. The purpose of this study is to understand participation trends for one of the two pathways within CCP - the College Transfer Pathway. The study presented in this brief uses a quasi-experimental research design to explore community college outcomes, namely persistence, graduation, and number of courses taken among College Transfer Pathway students.

INTRODUCTION

Dual enrollment in North Carolina, called Career and College Promise (CCP), is an opportunity for high school students to earn college credit in courses that also count for high school graduation requirements.¹ There are two broad pathways within CCP in which students choose to participate, the College Transfer Pathway and Career and Technical Education Pathway. This brief focuses on student participation in the College Transfer Pathway, where students take general education courses, including math and English, meant to fulfill general education requirements at North Carolina community colleges or University of North Carolina (UNC) System schools.² The College Transfer Pathway is meant to facilitate the transfer of students from a community college to a UNC System school, allowing for "maximum transferability of credits."³ Maximizing transferability of credits helps ensure that students taking a course at any community college, including through dual enrollment, know what courses they would receive credit for at a UNC System school.⁴ The admission criteria for students to enroll in the transfer pathway include: the student must be a high school junior or senior, have a high school weighted GPA of 3.0, and demonstrate college readiness in math and English.⁵

This purpose of this brief is to present College Transfer Pathway participation rates and to estimate the causal impact of participation in the pathway on community college outcomes, including persistence, graduation, and number of courses taken. The causal impact is estimated using a rigorous research design to compare outcomes for students just above the 3.0 GPA threshold who participate in the College Transfer Pathway to outcomes of students just below the threshold.

¹ North Carolina State Law, 2011

² Coltrane & Eads, 2018; Eads, 2018

³ <https://www.nccommunitycolleges.edu/academic-programs/college-transferarticulation-agreements/comprehensive-articulation-agreement-caa>

⁴ Ibid.

⁵ North Carolina State Law, 2011

KEY POINTS

- » Participation in the College Transfer Pathway shows a positive relationship with community college persistence and community college graduation outcomes for Black students, LatinX students, and students who participate in Free and Reduced Lunch.
- » Outcomes presented in this brief suggest that students who participate in the College Transfer Pathway may be choosing to enroll in a UNC System school after high school rather than completing their credential at a North Carolina Community College.
- » Participation in the College Transfer Pathway is associated with a statistically significant increase ($p < 0.001$) of almost 3 courses that transfer from a North Carolina Community College to a UNC System institution.

THE PROJECT

This brief builds on descriptive results presented in [the first brief of this series](#) about College and Career Promise to further explore relationships between participation in the College Transfer Pathway and community college outcomes.⁶ Table 1 (see Appendix) shows us that relative to all North Carolina 10th graders, students in the College Transfer Pathway are more likely to be female (63 compared to 50 percent) and white (76 compared to 56 percent), to speak English at home (93 compared to 86 percent), and to have a higher high school GPA (4.0 on average, compared to 3.2).

CHARACTERISTICS OF COLLEGE TRANSFER PATHWAY PARTICIPANTS COMPARED TO ALL STUDENTS

Figure 1. All Students - Gender

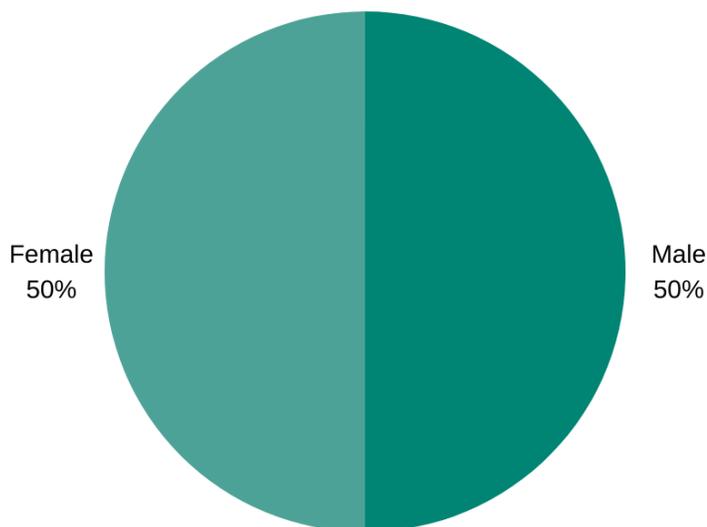
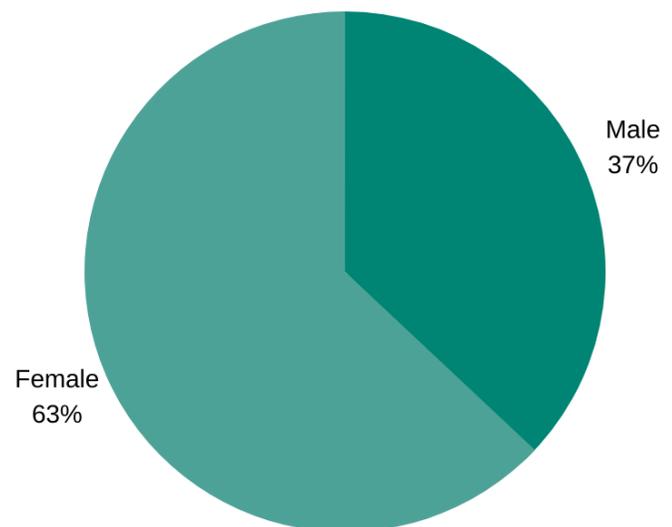


Figure 2. College Transfer Pathway - Gender



⁶Deal, 2020

Figure 3. All Students - Race/Ethnicity

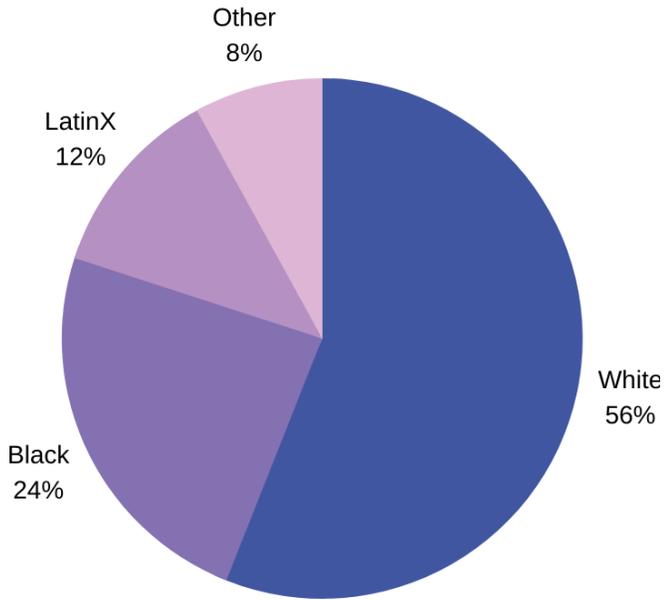


Figure 4. College Transfer Pathway- Race/Ethnicity

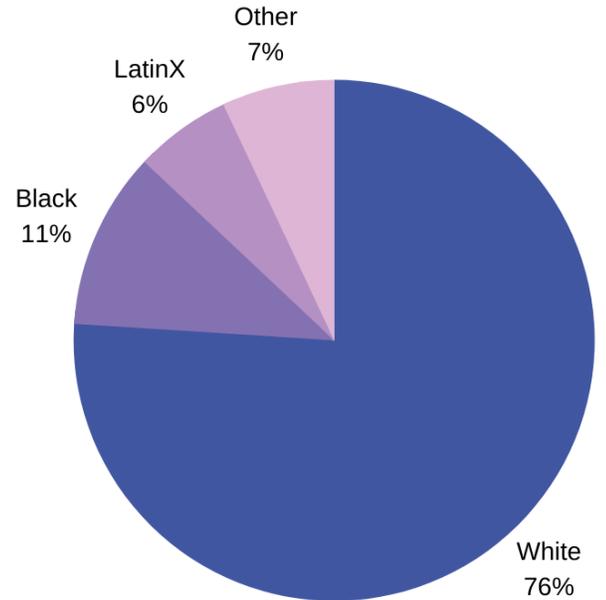


Figure 5. All Students - Economically Disadvantaged

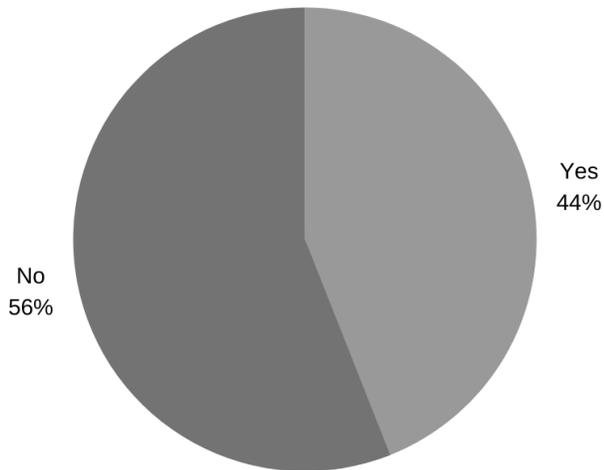
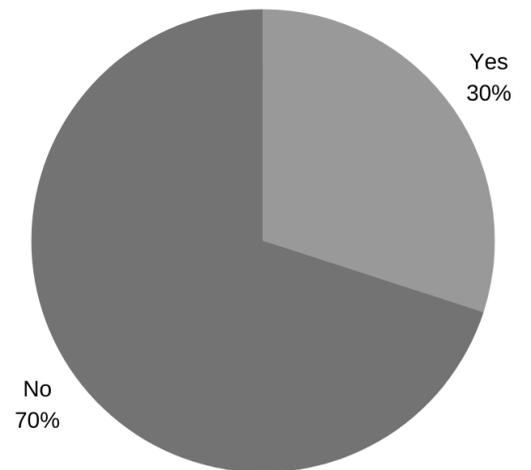


Figure 6. College Transfer Pathway - Economically Disadvantaged⁷



⁷ Defined as participation in Free or Reduced Lunch Programs

Figure 7. All Students - Home Language⁸

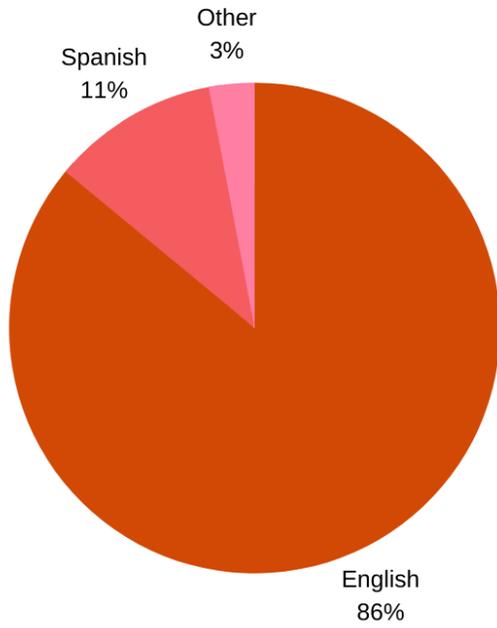


Figure 8. College Transfer Pathway - Home Language⁹

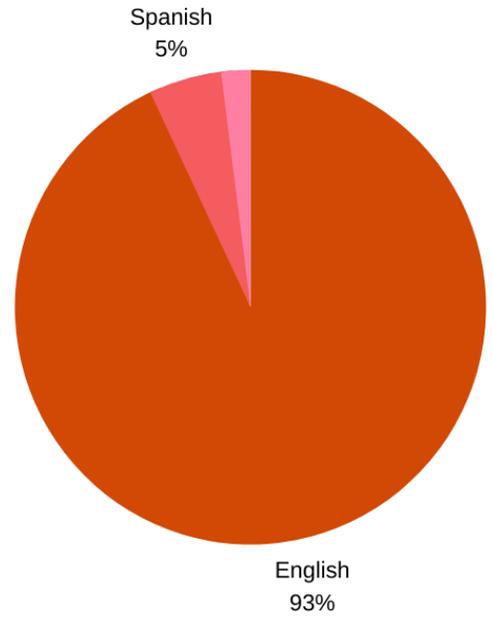
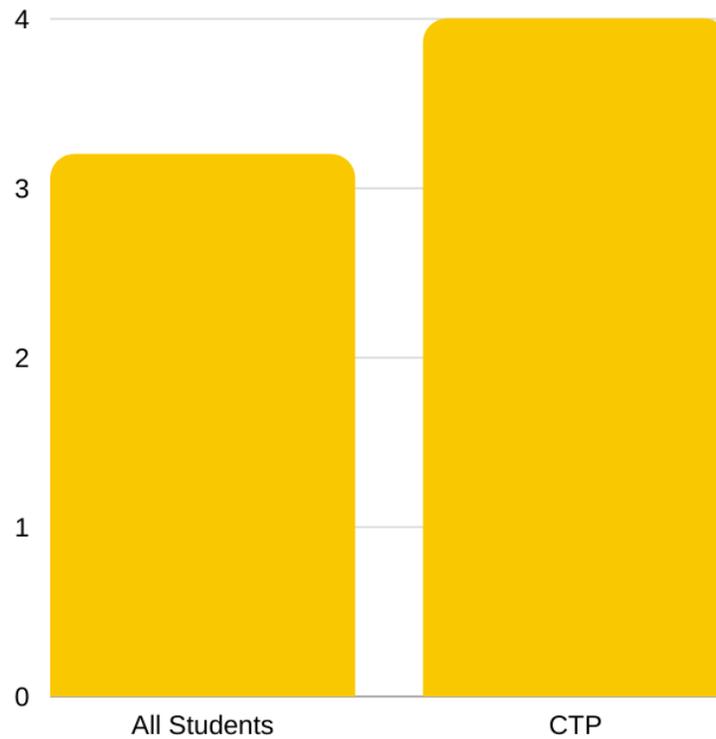


Figure 9. GPA



⁸ Sample includes students who ever participated in the College Transfer Pathway, were juniors in 2015-2016 in traditional North Carolina high schools, who remained enrolled at the same high school through 12th grade; "Other" languages include more than 80 languages.

Source: The North Carolina Department of Public Instruction, 2014-2015 academic year.

⁹ Ibid.

The process of a student deciding to enroll in college through the College Transfer Pathway is likely driven by characteristics and experiences that are also related to postsecondary outcomes. For example, students are more likely to select to enroll in college if they have more social capital available to them, have more financial ability to pay for college, and have differing college options available to them.¹⁰ These same students are also more likely to persist and graduate when they arrive at college. Thus, comparing community college outcomes for students who participate in the College Transfer Pathway to students who do not participate will not accurately estimate the effect of the program on postsecondary attainment. These student background characteristics can lead to biased estimates of the effects of participation in the transfer pathway on college attainment if not controlled for in experimental or quasi-experimental research design. I address this potential source of bias using a rigorous quasi-experimental design called fuzzy regression discontinuity (RD) to estimate the causal effects of the College Transfer Pathway program.¹¹ RD methods use a cutoff point (high school GPA in this case) which determines whether or not a student can participate in the program. This cutoff point is externally determined and imposed upon students who therefore cannot influence it in any way. A fuzzy RD accounts for the reality that some students whose GPA falls under the cutoff point¹² are granted exceptions to participate in the College Transfer Pathway.¹³

Students are allowed to enroll in the College Transfer Pathway if they have a weighted high school GPA of 3.0 or above. Thus, students earning a 2.99 or below do not meet the eligibility requirements to participate. The GPA used in this study is the 2014-2015 10th grade weighted, cumulative, high school GPA, which is used to determine eligibility for participation in the transfer pathway in the student's 11th grade year.¹⁴ RDs allow for causal effects to be estimated because students who have a GPA slightly above and slightly below the 3.0 GPA cutoff are not substantively different in their knowledge, interest in college, and later performance in postsecondary education. By using the GPA cut score for enrollment, I am able to estimate the causal effects of the College Transfer Pathway on community college attainment.

OUTCOME DEFINITIONS

Persisted Year 1 to Year 2: persistence in a community college to the second year after high school.

College Courses Taken: the number of community college courses earned either during or after high school.

Graduated Community College: earning a community college credential (certificate, diploma, or associate's degree) during or after high school.

UNC System Transfer Courses: the number of courses completed either during or after high school that transfer to a UNC System institution (This number is calculated by comparing the courses that a student took in the transfer pathway with the courses that would be accepted at a UNC System school.)

¹⁰ Goodman, Hurwitz, & Smith, 2017

¹¹ For more information on this research design, see Imbens & Lemieux, 2008

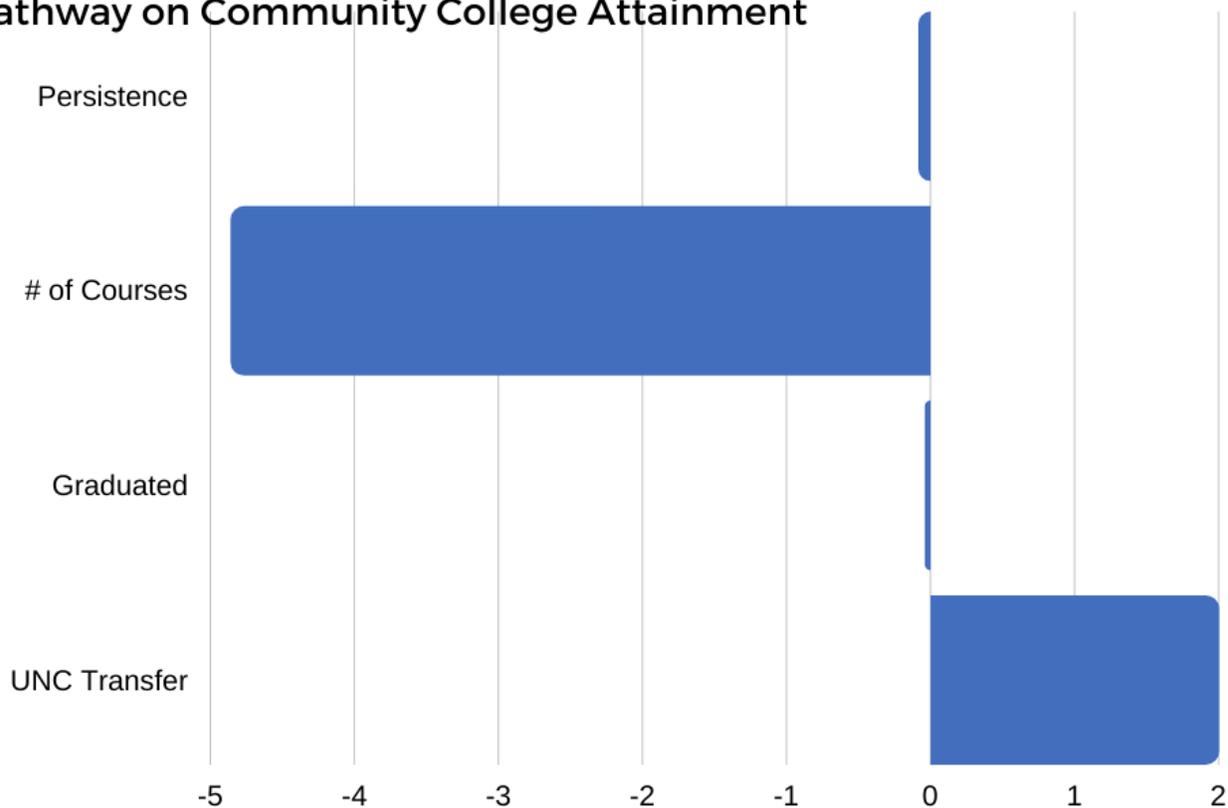
¹² 3.3% (n=58) of College Transfer Pathway participants in this sample had less than a 3.0 weighted high school GPA

¹³ High school principals can grant students access to the pathways on an individual basis.

¹⁴ For additional information on the data source and sample, [please see the first brief in this series](#).

Figure 10 (see Appendix for table with estimates) shows RD results that suggest no significant effect of the College Transfer Pathway on persistence, the number of courses taken in the first postsecondary year, or graduation, inclusive of associate’s degrees, diplomas, and certificates within 100% time (two years) to graduation. Looking at the effect of participation in the College Transfer Pathway on the number of classes that transfer to a UNC System school, results show that students who participate take 2.722 ($p < 0.001$) more courses that are transferable. When a student has completed more courses, it reduces the number of classes they will need to take for their bachelor’s degree. The positive UNC System transfer course outcome supports a hypothesis that students who are taking College Transfer Pathway courses through the community college may be enrolling directly in a UNC System or other school after high school instead of continuing on at the community college.

Figure 10. Fuzzy RD estimates of the Effect of College Transfer Pathway on Community College Attainment

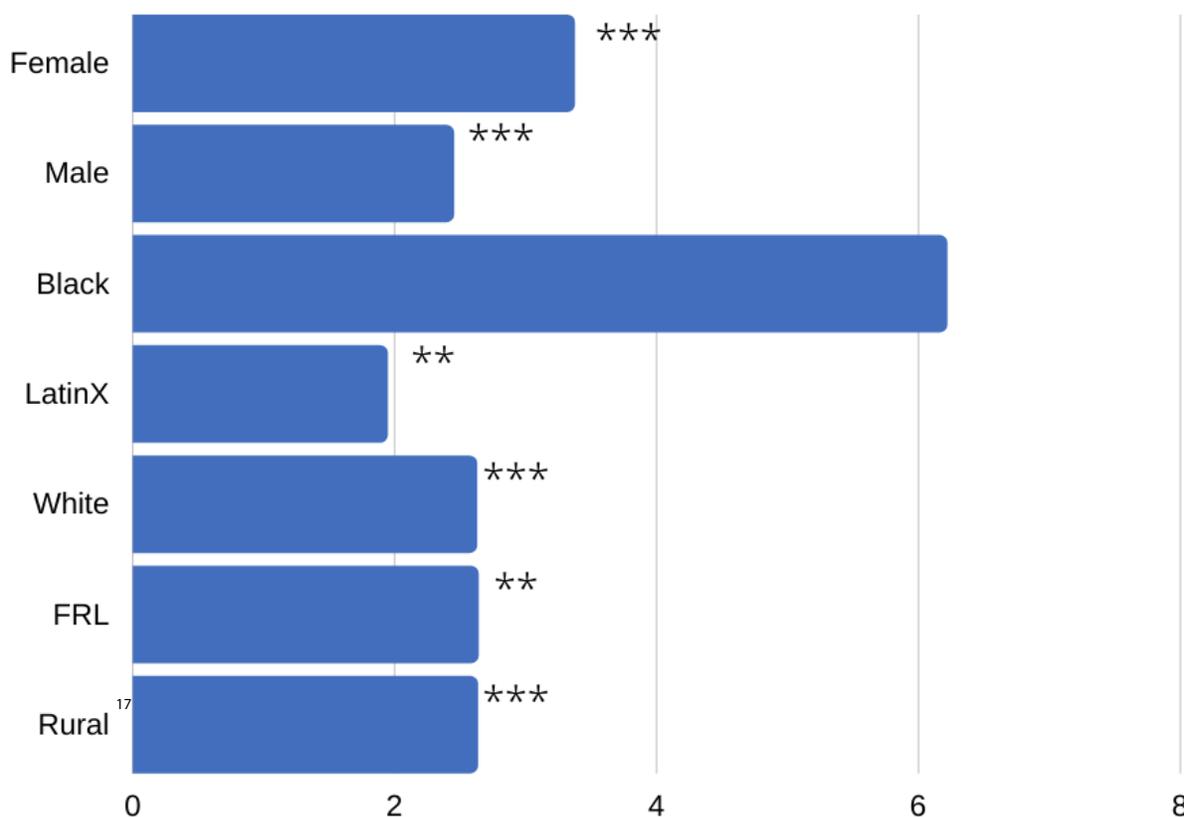


Note: *** $p < 0.001$; when using RD, there is an optimal bandwidth for every outcome which is determined by Stata (rbdwselect), the bandwidth determines the resulting sample size which also differs by outcome (Calonico et al., 2017).

Source: Author’s calculations based on student’s 10th grade demographics in 2014-2015, who were juniors in 2015-2016 in traditional North Carolina high schools, and who stayed in the same high school through 12th grade. Students in this analysis are limited to those enrolled in the College Transfer pathway.

To understand if the College Transfer Pathway has the potential to increase college attainment across North Carolina, it is important to understand who benefits from participation in the program. I present subgroup analyses of the effects of participation in the transfer pathway on community college outcomes in Table 3 (see Appendix).¹⁵ Results presented in Figure 11 below suggest that patterns in aggregate results from Figure 10 hold across subgroups of students, where the main statistically significant relationship is between enrollment in the College Transfer Pathway and the number of UNC System transfer courses taken, a trend that holds for all students except Black¹⁶ students. Results in Table 3 (see Appendix) also show that there is a statistically significant and negative relationship between participation in the transfer pathway and overall number of courses taken for female and white students. Given the transfer agreement in North Carolina, this finding points to the potential that students are enrolling in a UNC System institution after high school instead of the community college. Finally, results show positive relationships for Black students, LatinX and for students who participate in Free and Reduced Lunch programs.

Figure 11. Fuzzy RD estimates of the Heterogenous Effect of College Transfer Pathway on # of UNC Transfer Courses Taken



Note: *p<.05; **p<.01; ***p<.001

Source: Author's calculations based on students' 10th grade demographics in 2014-2015, who were juniors in 2015-2016 in traditional North Carolina high schools, and who stayed in the same high school through 12th grade.

¹⁵ It is noteworthy that these results have larger standard errors and therefore the results are less precise.

¹⁶ Black students are those whose race/ethnicity is listed as "African American" or "Black" in the North Carolina Department of Public Instruction's demographic records.

¹⁷ Rural is defined using census data that includes rurality designations by county.

FOR DECISION MAKERS: IMPACT ON PRACTICE & POLICY

- » **Policy Implication:** Results of the study summarized in this brief point to a positive relationship between participation in the College Transfer Pathway and persistence and graduation outcomes for Black students, LatinX students, and students who participate in Free and Reduced Lunch programs. These positive impacts of the program can only be realized if those students have equitable access and participation in the program. For instance, LatinX students participate in the transfer pathway at a rate of 6% but make up 12% of all North Carolina high school students. Similar patterns are observed for Black students and students who participate in Free and Reduced Lunch (see Table 1). Participation in the transfer pathway is especially policy relevant given the stated goals for postsecondary attainment in North Carolina and for the CCP program at-large where both aim to increase the number of students who have earned a credential.¹⁸ Given we know that Black, LatinX and low-income students are among the groups of students least likely to access higher education, it is important that state-wide marketing, recruitment and retention policy focus on these populations so that North Carolina's College Transfer Pathway provides postsecondary opportunities for students who may not already be college bound.¹⁹
- » **Practice Implication:** As noted earlier, North Carolina has spent substantial effort aligning the community college and UNC System institutions' curricula to facilitate college transfer. These results suggest that these efforts could be useful in helping students articulate their credit earned in the College Transfer Pathway to their postsecondary aspirations. The alignment of coursework is important and staff who are in positions to advise College Transfer Pathway students should be well-versed in the Comprehensive Articulation Agreement and other institutional-level transfer pathways to ensure students maximize the value of their credits. To help students maximize credit, staff can help high school students weigh the opportunity costs and benefits of participation in the College Transfer Pathway toward bachelor's degree attainment.
- » **Future Research:** This study does not follow the students long enough to measure bachelor's degree outcomes. Results presented in this brief may not show effects on persistence and graduation because the majority of students accessing the College Transfer Pathway are directly enrolling in a bachelor's degree after high school. For the graduation outcome in particular, further research should follow this cohort of students through 2020-2021 (two years into postsecondary education), to provide a clearer picture of the impact of College Transfer Pathway participation on credential attainment.

ABOUT THIS BRIEF

Deal, S. (2020). *College and Career Promise Leading to Transfer Outcomes: A Regression Discontinuity Analysis*. Raleigh, NC: Belk Center for Community College Leadership and Research.

Acknowledgements: The following individuals contributed feedback to this brief and its content: Andrea DeSantis, Audrey J. Jaeger, Melissa Whatley, Katie Bao, Brooks Bowden, Anna Egalite, and Lisa Chapman. Erin O'Quinn contributed to the graphic design of this brief.

¹⁸ myFutureNC Commission, 2019

¹⁹ Fink et al., 2017

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APPENDIX

Table 1
Characteristics of College Transfer Pathway Participants Compared to All Students

	All Students	College Transfer Pathway
<i>Students' Demographic Characteristics</i>		
Female	50%	63%
White	56%	76%
Black	24%	11%
LatinX	12%	6%
Economically Disadvantaged	44%	30%
<i>Home Language</i>		
English	86%	93%
Spanish	11%	5%
Other	4%	2%
<i>Mean Weighted High School GPA</i>		
	3.2	4.0
<i>Observations</i>		
	82,816	7,446

Note: Sample includes students who ever participated in the College Transfer Pathway, were juniors in 2015-2016 in traditional North Carolina high schools, who remained enrolled at the same high school through 12th grade; "Other" languages include more than 80 languages.

Table 2
Fuzzy RD estimates of the Effect of College Transfer Pathway on Community College Attainment

Outcome	(1) Mean GPA = 3.0	(2) RD-IV	Bandwidth	Observations
First-stage Estimates of College Transfer Pathway Takeup	0.089 (0.286)	0.416 (0.003)***	+/- 0.657	8,316
Persisted Year 1 to Year 2	0.650 (0.478)	-0.080 (0.126)	+/- 0.728	4,547
# College Courses Taken	11.261 (6.556)	-4.856 (4.760)	+/- 0.364	2,308
Graduated Community College	0.078 (0.268)	-0.035 (0.125)	+/- 0.507	3,350
UNC Transfer Courses	4.780 (3.315)	2	+/- 0.419	2,767

Note: *** $p < 0.001$; when using RD, there is an optimal bandwidth for every outcome which is determined by Stata (rdbwselect), the bandwidth determines the resulting sample size which also differs by outcome (Calonico et al., 2017).

Table 3
Fuzzy RD estimates of the Heterogeneous Effects of the College Transfer Pathway on Postsecondary Attainment

Outcome	(1) Female	(2) Male	(3) Black	(4) LatinX	(5) White	(6) Free/ Reduced Lunch	(7) Rural
Persisted Year 1 to Year 2 (if not graduated)	-0.188 (0.162)	0.096 (0.200)	-0.700 (0.827)	0.041 (0.268)	-0.027 (0.134)	0.203 (0.242)	-0.073 (0.143)
# College Courses Taken	-2.12 (1.253)*	-1.799 (1.595)	-4.247 (6.153)	1.270 (2.332)	-2.164 (1.014)*	-1.730 (1.983)	-0.853 (1.126)
Graduated Community College	-0.075 (0.165)	0.022 (0.185)	-0.567 (0.797)	0.229 (0.310)	-0.033 (0.135)	0.028 (0.253)	-0.027 (0.128)
UNC Transfer Courses	3.373 (0.818)***	2.450 (-.551)***	6.217 (5.920)	1.944 (0.891)**	2.626 (0.453)***	2.638 (0.974)**	2.633 (0.566)***
Observations	4,184	4,132	2,140	1,240	4,398	3,854	3,326

Note: *p<.05; **p<.01; ***p<.001