

Evaluation of the Implementation and Impact of New Tech Network's College Access Network

Kristina L. Zeiser, Catherine Bitter, Dana Shaat, and Alberto Guzman-Alvarez
American Institutes for Research

July 2024



Contents

Acknowledgments.....	v
Executive Summary.....	vi
Introduction	1
The College Access Network.....	1
The Purpose of this Report	3
Study Design.....	4
Implementation Study	4
Descriptive Analysis of High School Senior Survey Data	5
Impact Study	6
Evaluating the Implementation of the College Access Network.....	11
Implementation of the College Access Network.....	11
Research Question 1. Student Perceptions of College Readiness Activities	13
Research Question 2. Enablers and Challenges to Achieving Improved College Access for Historically Underrepresented Student Populations.....	14
Research Question 3. Systems for Achieving Progress Toward Improved College Access	22
Examining Students’ College-Going Behaviors and Attitudes, and Perceptions of School Support and Helpfulness.....	24
Research Question 4. College-Going Behaviors and Attitudes.....	24
Research Question 5. Students’ Perceptions of School Support and Helpfulness.....	34
Evaluating the Impact of the College Access Network.....	36
Student Characteristics Before Applying Propensity Score Weights.....	36
Results of the Propensity Score Matching and Weighting	37
Research Question 6. Impacts of the College Access Network on High School Graduation and College Enrollment Outcomes	44
Research Question 7. Variation in Impacts, by Students’ Gender, Low-Income Status, and English Learner Status.....	47
Discussion.....	50
References	52
Appendix A. Addition Information Sample, Data, Methods.....	54
Appendix B. Detailed Information About the Implementation of the College Access Network	57
Appendix C. Additional Findings of Descriptive Analyses of High School Senior Survey Data	69
Appendix D. Additional Impact Study Findings.....	75

Exhibits

Exhibit 1. Implementation Features of the College Access Network	2
Exhibit 2. Visual Illustration of the Study Sample	7
Exhibit 3. Description and Timing of Student Outcome Measures	8
Exhibit 4. Example of a Difference-in-Differences on Proportion Enrolled in College	10
Exhibit 5. Summary of College Access Network Implementation, by Implementation Feature (2021–23)	12
Exhibit 6. Respondents’ College and Career Plans	25
Exhibit 7. Respondents’ College Application Rates and FAFSA/TASFA Completion Rates, Overall and by District.....	26
Exhibit 8. College Application and FAFSA/TASFA Completion Rates, by College Enrollment Intentions Overall and by District	27
Exhibit 9. Percentage of Respondents Who Applied to Three or More Colleges, by College Type.....	28
Exhibit 10. Respondents’ Reports of Being Accepted by Their First-, Second-, or Third-Choice College.....	29
Exhibit 11. Students’ Higher Education Aspirations	30
Exhibit 12. Student Beliefs About College	31
Exhibit 13. Student Beliefs About College Among Latinx and White Students	32
Exhibit 14. Student Beliefs About College, by Gender Identity	33
Exhibit 15. Student Perceptions of School Supports	34
Exhibit 16. Students’ Perceptions of the Helpfulness of Their Schools.....	35
Exhibit 17. School Staff Whom Students Reported Reaching Out to for College and Career Advice	35
Exhibit 18. Student Characteristics for the Treatment and Comparison District Focal Cohorts.....	37
Exhibit 19. Balance Statistics for Propensity Score Weighting of the Treatment District’s Focal Cohort and the Comparison District’s Focal Cohort.....	39
Exhibit 20. Balance Statistics for Propensity Score Weighting of the Treatment District’s Focal Cohort and the Treatment District’s Prior Cohort 1.....	40
Exhibit 21. Balance Statistics for Propensity Score Weighting of the Treatment District’s Focal Cohort and the Treatment District’s Prior Cohort 2.....	41

Exhibit 22. Balance Statistics for Propensity Score Weighting of the Treatment District's Focal Cohort and the Comparison District's Prior Cohort 1	42
Exhibit 23. Balance Statistics for Propensity Score Weighting of the Treatment District's Focal Cohort to the Comparison District's Prior Cohort 2	43
Exhibit 24. The Impacts of the College Access Network on High School Graduation and College Enrollment.....	45
Exhibit 25. The Impacts of the College Access Network on College Persistence and Enrollment in a 4-year College.....	46
Exhibit 26. Impacts of the College Access Network on Specific Student Groups: Student Subsamples	48
Exhibit A1. Number and Percentage of Students Who Took New Tech Network Surveys, by District and School	54
Exhibit A2. The Difference-in-Differences Regression Parameters to Calculate the Difference-in-Differences:	56
Exhibit B1. Implementation Features of the College Access Network	57
Exhibit C1. Number of Colleges Survey Respondents Reported Getting Accepted by, Overall and by College Type	69
Exhibit C2. Reasons That Students Selected as the Top Three Factors That Influenced Their College Decisions	70
Exhibit C3. Students' Self-Reported Knowledge of the College Application Process.....	71
Exhibit C4. Students' Thoughts About the Way They Would Pay for College	72
Exhibit C5. Students' Thoughts About the Way They Would Pay for College, by Race/Ethnicity	72
Exhibit C6. Students' Feelings About Going to College	74
Exhibit D1. Impacts of the College Access Network: Focal Cohort Compared With Both Prior Cohorts, Prior Cohort 1 Only, and Prior Cohort 2 Only	75
Exhibit D2. Impacts of the College Access Network on College Outcomes for Specific Student Groups.....	77

Acknowledgments

The authors would like to recognize and thank the various partners, collaborators, and colleagues who supported the successful execution of the 5-year evaluation described in this report. First, we would like to thank the teachers, administrators, counselors, and coaches without whose efforts none of this would be possible. We also thank Dr. Liz Bergeron and Matthew Swenson at New Tech Network for their partnership, support with data collection, and feedback throughout the evaluation. We would also like to thank the two districts in the study that provided the student-level administrative data needed to estimate the impact of the College Access Network. Finally, we would like to acknowledge multiple colleagues (current and former) at the American Institutes for Research who contributed to this research through data collection, data analysis, and quality assurance reviews across the years: Helen Duffy, Candice Handjojo, David Kamm, Oshin Khachikian, Robert Nathenson, Jordan Rickles, Carrie Scholz, Angela Su, Ashley Sunde, and Nancy Yuan. The implementation and evaluation of the College Access Network was funded by a grant from the Bill & Melinda Gates Foundation.

Executive Summary

In 2019, New Tech Network (NTN) initiated the NTN College Access Network through a Networks for School Improvement grant from the Bill & Melinda Gates Foundation. The goals of the initiative were to increase well-matched postsecondary enrollment (i.e., alignment between student achievement and college rigor to maximize the probability of students' college success) rates and address gaps in enrollment, persistence, and attainment for students who are traditionally underrepresented in higher education. Starting with 11 high schools in three districts in Texas, NTN coaches worked with school teams consisting of administrators, counselors, and teachers to identify and address challenges that students faced when planning for college and careers after high school.

In an effort to better understand the implementation and impact of the College Access Network, NTN partnered with the American Institutes for Research® (AIR®) to study the first cohort of networked schools. The implementation study included interviews and focus groups with coaches, school team members, and students to better understand successes and challenges, and researchers shared information from the implementation study with NTN on a regular basis to inform continuous improvement. AIR also examined data collected from high school seniors in spring 2022 to inform NTN and participating schools about students' college-going behaviors and attitudes. Finally, using district administrative records, AIR conducted an impact study to determine whether Latinx students attending schools associated with the College Access Network were more likely to graduate from high school or enroll and persist in college than similar students attending a neighboring school district. Results of the impact study suggest that the College Access Network had a significant positive impact on high school graduation (particularly for male Latinx students and Latinx students who were not classified as English learners), but differences in college enrollment and persistence in college did not achieve statistical significance for the overall sample of Latinx students, for English learners, or for students from low-income families.

Through the implementation study, school staff and students provided several suggestions for maximizing the effectiveness of college advisory programs such as the College Access Network:

1. **Start introducing the college application process at lower grade levels.** Although the College Access Network was designed to focus on students starting in Grade 11, students thought that many activities (such as college fairs) would have been helpful for ninth-grade students.

2. **Engage families deeply in the college-planning process.** Staff indicated that they needed greater support in creating more culturally responsive informational materials and messaging for families.
3. **Address socioeconomic challenges of college enrollment.** Schools may need to increase the focus on helping students and families identify ways to fund college, for example, by identifying scholarship opportunities and providing multiple engagement points to assist families in filling out the Free Application for Federal Student Aid (FAFSA®).
4. **Provide appropriate resources and staffing for college access efforts.** School teams mentioned both financial and human capital constraints on full implementation of college readiness initiatives, including staff time to plan and organize activities for students. Respondents shared that they would require a greater investment in terms of funding and staffing to achieve more progress in improving college access at their campuses.
5. **Shift school-wide mindsets to focus on equitable student outcomes.** School-wide professional development or information sharing may be necessary to push administrators and other school staff to focus on the outcomes of students who are “at the margins,” rather than being content with the successful outcomes of students whom they view as more “college ready.”

Introduction

The history of education in America has a legacy of inequity, with historically underserved populations, including racially marginalized students, students from low-income families, and English learners, having a lower probability of exposure to high-quality educational opportunities and experiences. Inequities are apparent throughout elementary, secondary, and postsecondary education, as evidenced by disparities in achievement test scores, graduation rates, college enrollment, and degree completion (Hussar et al., 2020; de Brey et al., 2021; National Center for Education Statistics [NCES], 2023; Reber & Smith, 2023). These persistent inequities have been resistant to changes in national and state policies designed to close achievement and attainment gaps that have been introduced over time. Moreover, because students' educational attainment is highly related to their earning potential in adulthood (Belfield & Bailey, 2019), inequities in educational experiences and outcomes are often passed from generation to generation.

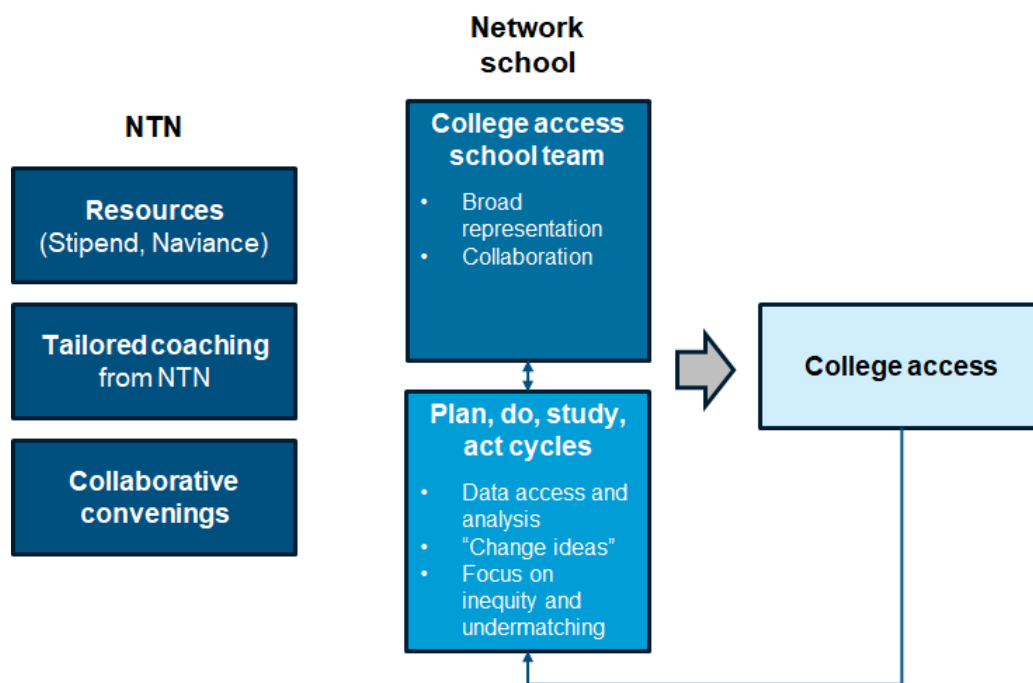
To address systemic challenges to achieving equitable educational experiences and outcomes for students, in 2018, the Bill & Melinda Gates Foundation launched an investment to develop and support Networks for School Improvement (NSI). Multiyear grants were made to 24 intermediaries that supported a total of 38 networks of middle and high schools. All these networks focused on ensuring that all students were on track during the transition into and out of high school, with a particular focus on supporting students who were Black, Latinx, or from low-income backgrounds. Working in partnership with schools, intermediaries used continuous improvement approaches to identify and collectively solve challenges to achieving equitable student outcomes. Although most (23) of these networks focused on getting and keeping eighth- and ninth-graders on track for high school graduation, five networks focused generally on college readiness and five networks focused on well-matched postsecondary enrollment (i.e., alignment between student achievement and college rigor to maximize the probability of students' college success). This report focuses on the implementation and impact of one of the five funded intermediaries that focused on addressing the phenomenon of postsecondary "undermatching," as we describe it in the sections that follow.

The College Access Network

In 2019, New Tech Network (NTN) initiated the NTN College Access Network through a Networks for School Improvement grant from the Bill & Melinda Gates Foundation. The goals of the initiative were to increase well-matched postsecondary enrollment rates and address gaps in enrollment, persistence, and attainment for students who are traditionally underrepresented in higher education. The focus and work of the College Access Network are informed by

research that points to undermatching (i.e., when academically qualified students, particularly Black and Latinx students and students from economically disadvantaged backgrounds, graduate from high school but attend less competitive or less rigorous colleges) as a challenge for postsecondary persistence and attainment (Hoxby & Avery, 2012). The College Access Network’s focus has also been informed by the college readiness framework developed by David Conley (2007), which outlines four college and career readiness domains: cognitive strategies, content knowledge, learning skills and techniques, and transition knowledge and skills. In addition, the approach of the NTN College Access Network is informed by improvement science (Bryk et al., 2015), which applies cycles of continuous improvement focused on a specific problem of practice within schools. Core implementation features of the College Access Network are illustrated in Exhibit 1.

Exhibit 1. Implementation Features of the College Access Network



Eleven high schools across three districts in Texas were selected by NTN to participate in the first cohort of the NTN College Access Network initiative. During Year 1 of implementation (the 2019–20 school year), each school established a team of staff members focused on college access, supported by one of two NTN coaches. School teams included a broad range of roles, including counselors, college readiness teachers, and administrators, and some teams grew over time to span a wider range of departments. During the following 2 school years (2020–21 and 2021–22, Years 2 and 3 of implementation, respectively), the established school-based college access teams further developed their work by planning and implementing “change ideas” (i.e., modifications to student college access activities) to address problems of practice

related to college access in their schools. Teams engaged in data tracking and analysis to identify areas of need and to monitor the success of activities implemented to support college access. Schools continued to receive direct support from an NTN coach during Years 2 and 3 of implementation. In addition, schools were given a \$6,000 annual stipend to support their college access activities and were granted access to Naviance, a K–12 college and career software application that can support and track student progress toward postsecondary readiness.

In all years, the school teams engaged in activities that fostered networking. Specifically, school teams participated in a series of NTN-facilitated convenings, which included professional learning, guidance, and networking opportunities for team members. The convenings provided opportunities for schools to learn from one another as they engaged in discussions related to schools' specific problems of practice. Outside of the convenings, school teams had opportunities to continue communication with other NTN College Access Network schools through an NTN-hosted slack.com platform.

The Purpose of this Report

The American Institutes for Research (AIR) conducted a multiyear implementation and impact study of the NTN College Access Network, which aimed to build an understanding of the ways in which the initiative had been implemented within the participating districts, student experiences in schools implementing the College Access Network, and the impact of this network on student outcomes. Specifically, the implementation study used qualitative interview and focus group data to address the following research questions:

1. What were students' perceptions of the activities that schools implemented to improve college access?
2. What did teachers, coaches, and school leaders participating in the College Access Network perceive to be the enablers of and challenges to achieving improved college access for Latinx, Black, and low-income students?
3. In what ways did school teams build understanding about the systems required to achieve progress toward improved college access for Latinx, Black, and low-income students?

To better understand students' high school experiences and the ways in which high schools could better meet student needs, NTN administers surveys to students attending partnering schools every spring. The AIR research team analyzed these survey data collected from high schools participating in the College Access Network to address the following research question:

4. What were the college-going behaviors and attitudes of students attending high schools in the College Access Network?

5. To what extent did students perceive their high schools to be supportive and helpful in their preparation for life after high school?

To assess the impact of the College Access Network, AIR focused on one school district that participated in the first cohort of the College Access Network because (a) available administrative records allowed us to measure student background characteristics and high school and college outcomes, and (b) similar data were available from a neighboring comparison district. Because more than 90% of the students enrolled in these districts were identified as Latinx, the impact evaluation examined the impact of the College Access Network among Latinx students. The impact evaluation addressed the following research questions:

6. *Among Latinx students*, what was the impact of the College Access Network on high school graduation and college enrollment outcomes?
7. Did impacts of the College Access Network differ within the population of Latinx students by students' gender, low-income status, or English learner (EL) status?

Study Design

Although NTN's College Access Network expanded to include 49 high schools across three states by the end of the 5-year project, the 11 high schools in Texas that participated in the College Access Network during its seminal year, in 2019–20, served as the basis for AIR's evaluation. The data sources and study participants varied across three arms of the evaluation: an implementation study, a descriptive analysis of high school senior survey data, and an impact study. In this section, we provide a brief overview of the sample, data, and methods associated with each of the three evaluation components.

Implementation Study

Sample and Data

Data for the qualitative implementation study were collected across 3 study years.

- **Year 1.** In spring 2020, we conducted interviews with the College Access Network's director and two NTN coaches.
- **Year 2.** In spring 2021, we conducted interviews with the principals or assistant principals of 10 schools, focus groups with the college access teams at 11 schools, and virtual interviews with two NTN coaches and one district-level representative. Also in spring 2021, to better understand the ways in which the approaches to college readiness at participating schools were similar to or different from those at nonparticipating schools, we interviewed

representatives from four comparison schools with similar student demographics, including three college and career readiness coordinators/specialists and one early college counselor.

- **Year 3.** In spring 2022, the AIR team conducted virtual interviews with school principals, focus groups with college access school teams, focus groups with students, and interviews with NTN coaches from the NTN College Access Network schools. In total, we conducted interviews with the principals or assistant principals of five schools. We held focus groups with the school teams at nine schools and student focus groups at four schools. In addition, we interviewed two NTN coaches. Scheduling interviews and focus groups in Year 3 was challenging because several schools had experienced turnover in administration, and new administrators were less familiar with the College Access Network. In addition, schools were reluctant to set up focus groups with students in the spring, when seniors were busy with postsecondary planning, graduation activities, and Advanced Placement (AP) course exams.

Topics of the qualitative data collection included activities, or change ideas, implemented to improve college access (including use of the Naviance platform), impressions of the support received from NTN, and school teams' focus on issues of inequity and undermatching. In addition, school team respondents were asked to reflect on lessons learned through participating in the College Access Network with respect to improving college access at their schools.

Methods

The AIR team conducted a systematic qualitative analysis of the data collected in interviews and focus groups, guided by a set of constructs based on the interview topics. The constructs identified were aligned with the research questions and key implementation features of the NTN initiative. For each year of data collection, the interviews were coded in NVivo, allowing us to identify commonalities and differences in approaches, successes, and challenges across schools. The findings in this report draw on interviews and focus groups conducted between spring 2021 and spring 2023.

Descriptive Analysis of High School Senior Survey Data

Sample and Data

NTN conducts two end-of-year surveys with high school students on an annual basis. First, the student experience survey is administered across grade levels to capture information about students' experiences in high school, including the extent to which they feel supported by teachers, activities related to preparing for college that students engaged in throughout the year, and ways in which their school supported them through the transition out of high school. AIR researchers collaborated with NTN to add questions to the survey that directly ask students which factors they considered when choosing which colleges to apply to and attend, what they perceive to be the greatest benefits of attending college, what their understanding was of

different aspects of applying to and paying for college, and how they are feeling about going to college. This report focuses on survey responses from 2,144 high school seniors who attended the 11 participating high schools and took the survey in spring 2022. These high school seniors represented the incoming Grade 11 students who were the focus of college readiness activities when the College Access Network launched in fall 2021. Approximately 59% of high school seniors in these schools took the survey, with response rates differing across schools (see Appendix Exhibit A1).

The second survey is a senior exit survey that NTN administers to high school seniors starting in March. This survey asks more about specific college-going intentions and behaviors, including what students plan to do after high school, the number and types of colleges students applied to and got accepted by, and whether students took an entrance examination or completed the Free Application for Federal Student Aid (FAFSA) or the Texas Application for State Financial Aid (TASFA). This report focuses on survey responses from 1,879 high school seniors who attended the 11 participating high schools and took the survey in spring 2022. Approximately 52% of high school seniors in these schools took the survey, with response rates differing across schools (see Appendix Exhibit A1).

Methods

Using data from the two student surveys, we calculated percentages and means to generate summary statistics from the survey data. For example, for questions pertaining to the number of colleges to which students applied, we report the percentage of students who applied to zero, one, two, three, four, or five or more colleges. For questions in which students were asked to rate different reasons for the importance of college on a scale of one to 10, we calculated average responses across survey respondents. To examine whether student responses differed across the three participating districts, for some of the survey questions, we provide summary statistics by district. In addition, the student experience survey included measures of students' gender identity and race/ethnicity, and so we examined survey responses across these student subgroups and present survey findings in which we observed meaningful variation across student groups.

Impact Study

Sample and Data

The AIR team collected data from two districts, one of which participated in the College Access Network, while the other was a neighboring comparison district. For our comparison sample, we excluded “special campuses,” such as girl’s high schools, technical schools, alternative high schools, campuses that disproportionately served older students or special education students, and early college high schools, as these schools differed systematically from the traditional high

schools that participated in the College Access Network. After these exclusions, the sample included 13 high schools, six in the treatment district and seven in the comparison district.

Within each district and school, we collected data for three cohorts of students. The focal cohort comprised students who were enrolled in the 11th grade in 2020–21 (focal cohort students in the treatment district are those who received the treatment). We also collected information on two prior cohorts, students who were enrolled in the 11th grade in 2019–20, and students who were enrolled in the 11th grade in 2018–19. Because of the impact of the pandemic on both school districts, it was crucial to gather data from earlier cohorts to allow us to compare student outcomes both over time and across districts. Refer to Exhibit 2 for a visual illustration of the district data we collected.

Exhibit 2. Visual Illustration of the Study Sample

	Treatment district			Comparison district		
School year	Focal cohort	Prior cohort 1	Prior cohort 2	Focal cohort	Prior cohort 1	Prior cohort 2
2016–17			9			9
2017–18		9	10		9	10
2018–19	9	10	11	9	10	11
2019–20	10	11	12	10	11	12
2020–21	11	12	PS1	11	12	PS1
2021–22	12	PS1	PS2	12	PS1	PS2
2022–23	PS1	PS2		PS1	PS2	
2023–24	PS2			PS2		

Note. PS = postsecondary.

From each district, we collected comprehensive student demographic data such as gender, race/ethnicity, low-income status, special education status, and EL status. To understand students' level of college readiness, it was important to gather data on student coursework in the ninth and 10th grades, prior to the treatment. This included their participation in AP courses and enrolment in college readiness courses such as OnRamps.¹

To measure our high school graduation outcome, we requested data on high school graduation from the school districts. For college enrollment outcomes, we requested data from the

¹ OnRamps is a partnership program across K–12 and higher education, particularly the University of Texas at Austin, that provides dual enrollment and distance learning opportunities for students.

National Student Clearinghouse (NSC). These data provide detailed information on college enrollment for each enrollment period (i.e., by semester), enabling us to track students throughout their college journey and determine if, and when, they were enrolled in college. Significantly, the NSC data allowed us to identify consecutive enrollment periods, covering fall 2020 to fall 2024. Using these data, we constructed five college enrollment outcome measures. In Exhibit 3, we illustrate the timing of outcome measures for the three cohorts of students included in the impact evaluation.

Exhibit 3. Description and Timing of Student Outcome Measures

Outcome measure	Description	FOCAL cohort	Prior cohort 1	Prior cohort 2
High school graduation	Graduated high school within 2 years of enrollment in the 11th grade	Spring 2022	Spring 2021	Spring 2020
College enrollment by the first fall after expected high school graduation ^a	Enrollment in any college in the first fall after expected high school graduation	Fall 2022	Fall 2021	Fall 2020
College enrollment by the second fall after expected high school graduation	Enrollment in any college in the first fall, first spring, or second fall after expected high school graduation	Fall 2023	Fall 2022	Fall 2021
Persistence in college to the first spring after expected high school graduation	Consecutive enrollment in any college in both the first fall and spring semester immediately following expected high school graduation	Spring 2023	Spring 2022	Spring 2021
Persistence in college to the second fall after expected high school graduation	Consecutive enrollment in any college in the first fall, first spring, and second fall immediately following high school graduation	Fall 2023	Fall 2022	Fall 2021
Enrollment in a 4-year college	First enrollment was at a 4-year college, within 3 semesters after expected high school graduation	Fall 2023	Fall 2022	Fall 2021

^a The NSC data do not distinguish between college courses taken during high school (dual enrollment) and college enrollment after high school. For that reason, we did not count any enrollment prior to the first fall after expected high school graduation, as that might be capturing dual enrollment.

Methods

Because districts' participation in the College Access Network was not randomly assigned, differences in student characteristics between the treatment and comparison condition may introduce bias in the results. For example, if the students in the comparison district are, on average, higher achieving in math than students in the treatment district, any results we produce without controlling for this difference could be due to students' higher achievement rather than the intervention. In this study, we rely on two quantitative methods to create treatment and comparison groups that are statistically equivalent. Specifically, we use propensity score reweighting, coupled with a difference-in-differences regression approach. Our analytic models are doubly robust in that they include not only the propensity score weights but all the variables used to calculate the weights as covariates (Funk et al., 2011). Appendix A provides additional details of the methods we used to calculate the weights and estimate the impact model.

The first step in our analysis was to calculate and apply propensity score weights. This technique helps us equate students in the treatment and comparison districts on observed demographic data such as gender, low-income status, and whether they were an English learner,² as well as measures of academic performance such as scores on standardized math and English tests, participation in AP courses, and enrollment in college preparatory courses. By incorporating these weights into our analysis, we can fairly compare students in the treatment and comparison districts by balancing out any observed differences in their backgrounds and academic profiles.

Next, we performed difference-in-differences analysis to estimate impacts on student outcomes. Because the comparison district faced the same broad environmental/economic conditions over time as the treatment district, such as state-level changes in high school graduation requirements, the COVID-19 pandemic, and changes in college admission requirements, we would expect to see similar trends in student outcomes over time, in the absence of the treatment. The difference-in-differences statistical approach allowed us to compare changes over time between different groups by leveraging data collected before and after the intervention (which started in the 2020–21 school year) in both the treatment and comparison districts. By comparing trends in outcomes over time and using propensity score weights to create equivalent samples of students across districts, we assume that any observed differences in student outcomes between schools in the treatment district and schools in the comparison district represent the impact of the College Access Network. Box 1 provides a simplified illustrative example of the difference-in-differences approach.

² We did not consider race or ethnicity in estimating the weights because we focused solely on Latinx students.

Box 1. What Is a Difference-in-Differences Model?

Difference-in-differences models are a statistical method that allows researchers to estimate intervention and program impacts by comparing outcomes both across groups and across time (Card & Krueger, 2000; Angrist and Pischke, 2009). In Exhibit 4, we provide example data to describe the steps that we followed to estimate the impact of the College Access Network by comparing the outcomes of students in the treatment district and the comparison district across cohorts that entered the 11th grade in prior cohorts and the focal cohort that entered the 11th grade in the year the College Access Network was launched.

1. First, we estimated the difference in the outcome measure between the focal cohort and the two prior cohorts *within the treatment district*. This accounts for any factors that are constant over time and specific to that school district, and it represents change within the school district over time *including those induced by the introduction of the College Access Network*.
2. Next, we estimated the difference in the outcome measure between the focal cohort and the two prior cohorts *in the comparison district*. This accounts for any factors that are constant over time and specific to that school district, and it represents change within the school district over time.
3. Finally, we estimate the difference between the two differences calculated above. This represents the change in the outcome over time *that can be attributed to the College Access Network*.

Exhibit 4. Example of a Difference-in-Differences on Proportion Enrolled in College

Condition	Prior cohorts	Focal cohort	Difference
Treatment	52%	63%	11% Difference 1
Comparison	54%	59%	5% Difference 2
Difference	-2%	4%	6% Difference-in-difference

To examine whether impacts of the College Access Network varied across students with different background characteristics, we examined the impacts for male students, low-income students, and English learners. For these analyses, we restricted our sample to the specific group of students of interest, as well as their counterparts (e.g., both female and male students), and estimated the main impact model using that smaller subsample of students.

Evaluating the Implementation of the College Access Network

In this section, we summarize findings from the multiyear implementation study of the College Access Network. The aim of the implementation study was to build an understanding of the ways in which the initiative had been implemented within the participating schools during the first 3 years of implementation and to identify lessons learned by participants through the schools’ efforts to improve college access for historically underrepresented student populations. We begin by summarizing the implementation of the College Access Network across a range of key features, highlighting the extent to which the initiative was implemented as planned at the participating schools. We then present findings associated with the three implementation study research questions (see Box 2).

Implementation of the College Access Network

Qualitative data collection during the first 3 years of implementation revealed that college access teams across schools made progress in implementing the key features of the College Access Network. However, variation was found regarding the extent to which the features were fully implemented and sustained over the 3 years. A summary of findings related to the implementation features of the College Access Network can be found in Exhibit 5. This summary provides context for the implementation study research questions, which refer to students’ perceptions of activities schools implemented to improve college access, school team members’ perceptions of enablers of and challenges to achieving improved college access outcomes, and the ways in which school teams built an understanding about the systems required to achieve progress toward improved college access for Black, Latinx, and low-income students. Detailed findings related to the implementation of the College Access Network can be found in Appendix B.

Box 2. Implementation Research Questions

Research question 1. What were students’ perceptions of the activities that schools implemented to improve college access?

Research question 2. What did teachers, coaches, and school leaders participating in the College Access Network perceive to be the enablers of and challenges to achieving improved college access for Latinx, Black, and low-income students?

Research question 3. In what ways did school teams build understanding about the systems required to achieve progress toward improved college access for Latinx, Black, and low-income students?

Exhibit 5. Summary of College Access Network Implementation, by Implementation Feature (2021–23)

Implementation feature	Key findings
Resources	• Stipends provided to school teams were used to implement multiple new and modified activities, as well as change ideas focused on helping students complete key college readiness activities, including providing incentives for completing college preparation tasks and hosting workshops and events focused on college planning. • Many schools reported challenges (e.g., teacher and student training, allocation of time for completing activities) in establishing Naviance as an effective tool for college readiness. • Several schools discontinued the use of Naviance in Year 3 and began to use Google Forms or SchoolLinks.
Tailored coaching	• Coaches provided critical support and guidance for school team leads, serving as valuable thought partners and providing resources to inform the teams' work. • Teams reported a lower intensity of coaching in Year 3, with coaches having an increased workload and scheduling conflicts limiting coaches' attendance at school team meetings.
Collaborative convenings	• School teams valued the opportunities provided at convenings to learn from other schools and districts with similar student populations. • School teams found the convenings to be an important opportunity to reflect and plan, and to refocus on the primary goals of their work. • Teams viewed the opportunity to connect with other schools as a valuable aspect of the College Access Network. Several teams provided suggestions for improving communication, for example through role-specific connections.
College access school team	• Turnover among team members was high between Years 2 and 3, affecting the teams' work to varying degrees at several schools. • Schools' goals for college access were reported as consistent over the years and well aligned with the goals of the NTN College Access Network to ensure that students had equitable access to well-matched postsecondary opportunities and were aware of and well prepared for all postsecondary options.
Plan-Do-Study-Act (PDSA) cycles	• Respondents from the majority of schools reported engaging in PDSA cycles (although not necessarily using the PDSA terminology) to implement change ideas, collect data, identify areas needing improvement, and modify implementation.

Research Question 1. Student Perceptions of College Readiness Activities

To assess students' perceptions of activities schools implemented to improve college access, we conducted focus groups with 19 students at a small subset of participating schools (four schools total).³ Overall, students perceived the schools' college preparation efforts to be supportive and helpful. Because students were not generally aware of the College Access Network team structure and grant, we asked them about college readiness activities at their school generally. The activities that were perceived most favorably by students included college preparation courses in high school, college and career fairs, and FAFSA nights at the schools. Many of these activities had been mentioned by college access school teams as areas of focus for their work. During the focus groups, students provided a few suggestions for ways to improve these activities in future years.

- **College preparation courses.** Students perceived college preparation courses offered at their high school to be particularly beneficial in helping them craft their college application essays. Students from three of four focus groups spoke specifically about a course called College Transition that motivated them to seek out and look for colleges and take ownership of their college search. To facilitate this process, the course teacher invited college and armed forces recruiters to visit the class as guest speakers and give presentations. Students used Naviance to complete assessments of their skills and interests, to help identify potential career paths or majors. However, students voiced concern that the opportunity to take the course was not well known among students largely because it was not required for graduation. They felt that the class should be required so that all students could benefit from it. Beyond this course, students also perceived the availability of academically rigorous courses, such as early college and AP courses, as helpful and supportive of college readiness at their high school because the content of the courses was advanced and the relationships with the teachers brokered more resources to them.
- **College fairs and campus visits.** Students also perceived college fairs and campus visits made by recruiters from colleges and employers to be very helpful. Students reported that these events helped to bring them one step closer to life after high school and were very convenient, often at the school during the school day. Visitors

Key Findings

- Students shared multiple activities and strategies that they found useful in preparing them for college, many of which aligned with areas of focus for the school teams (e.g., college fairs and FAFSA nights).
- Students also suggested areas for improvement, including requiring college preparation courses for all students or including younger students in college readiness activities.

³ In Year 3 of the study, we conducted four focus groups with students at NTN high schools, all of which were drawn from one school district.

provided information about financing opportunities, including financial aid and college tuition reimbursement with the armed forces. College representatives helped students identify scholarships, discern majors, and think through career paths. Some students in the focus groups reported that they began to sort through their options only after seeing a college representative at their high school. One student, for example, reported that a college presentation was influential and helpful for her in deciding on a major and the university to attend. For this reason, students stated that attending a college fair earlier, for example in their sophomore year, would have been more helpful.

- **College outreach.** Students mentioned that “Operation College Bound,” a college fair led by the local community college and 4-year university, was particularly helpful. However, students noted that the presentations were limited in attendance to seniors and students had to take a bus to another high school, where the college fair was held. Students felt that this college fair might have been more effective if it could take place at their own high school and if younger students could attend.
- **College preparation nights.** Finally, students perceived college preparation nights at the high school (e.g., FAFSA sessions), which included family, as events that they would recommend to other students. FAFSA workshops were reportedly helpful for students and families to understand how to navigate and complete the applications. However, students perceived the availability of culturally relevant financial planning information, such as how to complete the FAFSA in Spanish, as lacking.

Despite students’ generally positive reports of college preparation activities at their schools, students at one high school specifically raised concerns that working with a few of the school counselors was challenging. Specifically, students felt counselors were at times uncooperative with students’ goals or not knowledgeable enough to provide them with required documents that they needed. As a result, some students turned to other staff at their school, such as librarians or teachers, for support. Students who worked successfully with counselors noted it required more initiative and preparation than a typical student at their school might have. For example, one student noted, “The resources are there. It’s just that you, as students, have to take the initiative and ... try to take advantage of those resources.”

Research Question 2. Enablers and Challenges to Achieving Improved College Access for Historically Underrepresented Student Populations

In the final year of the implementation study, we asked respondents to reflect on their work since the initiation of the College Access Network and share lessons learned regarding increasing college access for the prioritized student populations. These responses, combined with findings from prior years of the study, shed light on factors supporting or hindering college

readiness efforts and can serve to inform continued work to engage schools in meaningful efforts to improve college access.

Enablers to Achieving Improved College Access

School teams and leaders were asked to share lessons learned regarding approaches that they found enabled and supported an improvement in college access for prioritized groups of students at their school. Reported enablers generally fell into three areas of focus – *student-centered*, *family-centered*, and *knowledge-centered* approaches to fostering greater access. Respondents also expressed the importance of establishing collective responsibility for improving college access.

Student-Centered Approaches

Respondents shared the importance of a personalized, student-centered approach to postsecondary planning and advising, including one-on-one supports for students, as well as the identification and prioritization of groups of students who would benefit from additional support and guidance.

- **Identification of priority groups using data.** Respondents indicated that systematic data review and analysis have helped school teams identify priority groups for college access activities and advising. Respondents recognized the importance of setting specific goals, tracking progress, and identifying gaps and needs for targeted supports. The teams' ability to use data enabled them to engage in continuous improvement cycles to identify successes and areas to change to address their goals.
- **Personalized outreach and support.** Teams reported that providing prioritized and personalized support to students identified through data analyses allowed them to increase FAFSA and college application completion rates. Respondents reported identifying students or groups of students who had not yet completed key activities for college planning and meeting with them to help them complete forms and conduct planning activities. Connecting with students one-on-one and in smaller group settings was regarded as an effective way to build knowledge among groups of students who may need additional support and encouragement.

Key Findings

- Enablers of achieving improved college access, as reported by participants, generally fell into three areas of focus: *student-centered*, *family-centered*, and *knowledge-centered* approaches to fostering greater access.
- Respondents also expressed the importance of establishing collective responsibility for improving college access.

Family-Centered Approaches

Engaging families in the postsecondary planning process was reported as a critical factor in improving college access. One respondent emphasized, “Family support is important” for students to consider college as a postsecondary option.

- **Culturally responsive and inclusive communication and support.** Respondents from several schools acknowledged the need to engage with students and families in culturally relevant ways that accounted for the unique understanding, norms, and expectations of the families. For example, two principals shared the importance of “meet[ing] kids and their parents where they’re at” to ensure they are building from students’ and families’ current levels of knowledge about postsecondary opportunities and addressing the students’ and families’ specific needs. Another principal noted the importance of school-wide efforts to be inclusive of the diverse backgrounds and cultures present at the school, for example, by ensuring that communications were provided in multiple languages.
- **Building trust.** School teams noted that enabling progress with college access relied on fostering a college-going mindset among families who had limited prior exposure to college or limited knowledge about the college application process. Doing so required building relationships and trust between the school and families. Some respondents noted the importance of building trust so that all families, including those who were not U.S. citizens, felt more comfortable sharing personal information on college applications and the FAFSA. Some stated that having staff and administrators who shared the ethnic and racial identities of the students they served helped build stronger connections with families. Specifically, one principal said, “I think one of the biggest things is trust, for parents to trust the school and trust what we’re doing. So, when you see that the school is representing [the] diversity of the town and you have some of that similar diversity at the school as what you have in the town, then they trust you a little bit more and it’s a little bit easier.”
- Interviewees at one school noted the ripple effect that could happen when trust was built with families and students within the community. For example, one school team member said that students who had been successful in planning for and reaching their postsecondary goals would serve “as examples for years to come” for students with similar backgrounds. Staff found that the parents and students who attended college-planning events spread news about the event to their neighbors and acquaintances, which had slowly started diffusing the effort in an informal way. In short, some school teams saw the social-learning opportunities and trust within the community made possible by the work as a key outcome.

Knowledge-Centered Approaches

Providing clear and timely information about the college planning and application processes was noted across schools as an important factor in increasing college access. Through systematic, planned activities to build knowledge, students and families without prior college-going experience could gain the information they needed to pursue postsecondary goals.

- **Early introduction to college readiness and preparation activities.** School teams noted a need to increase knowledge and awareness of college options among families, as well as to provide deliberate instruction to students on how to navigate the college application process. For example, one team member stated, “I think our goal is really to build that confidence in our students of attainability of a college education, building . . . not only our students’ knowledge but the families’ knowledge . . . on things like financial aid, college applications, scholarship applications.”

NTN coaches also said that beginning college readiness activities *early* in students’ high school careers, as early as ninth grade, is critical. Coaches identified a need for school decision makers to recognize that small, actionable steps early in a student’s career could have big, meaningful effects on the success of college access efforts. In addition, students at two different schools noted that they would have appreciated being exposed to college fairs earlier. In the words of one student, “I think for sure . . . if we were introduced to it as sophomores, I think it would help a lot more. Just to form an idea . . . by junior year because then that’s when you start thinking about it much more.”

Respondents indicated that participation in the College Access Network allowed them to make progress building knowledge among families and students. For example, two different school teams noted that participation in the College Access Network had led to better organized resources, such as slide presentations and structured content for courses on college preparation and financing, for postsecondary-planning conversations. School teams also noted that both the frequency and structure of the conversations with students improved because of the NTN collaboration. In addition, staff members felt that students were more aware of the specific college preparation activities that they needed to complete and reported more instances of students proactively reaching out to high school team staff about college preparation tasks such as FAFSA completion. Finally, school teams reported that participation in the NTN College Access Network had led them to implement more deliberate instruction on college preparation, for example through a course, and to focus on exposing students to college in all its forms and all the ways it could be a reality for students.

- **Organizational links.** Responses from school teams indicated that relationships with local 2-year and 4-year colleges mattered for improving the college-going culture on the high school campus. Specifically, school teams mentioned that relationships with undergraduate affairs,

student affairs, and recruitment offices at these colleges were key to supporting teams' efforts to promote college awareness and access. In addition, team members noted the value of organizational links with other high schools that were navigating similar challenges and could share collective knowledge regarding their work with similar student populations.

Collective Responsibility and Commitment

Respondents emphasized the idea that collective responsibility and commitment within the school to achieving the goal of increased college access underlay all the factors above. Staff at two different schools reported that staff motivation for the work was a key enabler of improving college access. Having committed staff who shared personal motivation for and interest in the work mattered, according to these respondents. For example, one principal commented, "You got to have a team of people that will do it because they love the game. These people . . . do it outside of their school day. And on top of their regular school work, champion for all kiddos." In addition, coaches noted the importance of having strong commitment and motivation among school and district leaders, which was not consistently present among participating schools.

According to school coaches, participation in the College Access Network helped build commitment among both staff and leaders for this work. They noted that a key outcome of engagement in the College Access Network was increased awareness on the part of high school staff and leaders of what it takes to prepare all students for college. Two principals also reflected on the ways the partnership with NTN changed the campus climate and created a healthy sense of urgency with the students, to help them recognize the costs and benefits of timely college preparation.

Respondents from several schools also spoke about the value of a school-wide culture and collective responsibility among teachers and administrators focused on students' learning and growing in their plans for life after high school. For example, respondents from one school team explained that including club advisors and classroom teachers in college readiness efforts allowed students to obtain support from adults they had established relationships with and allowed school staff to integrate college readiness activities more easily throughout the regular school day. School team members across several different schools noted ways in which participation in the College Access Network had helped increase the collaborative focus on college readiness within their schools. Specifically, respondents noted that regularly scheduled team meetings to review and analyze data and outcomes fostered a sense of collective responsibility for improving college access among team members. For example, a respondent from one high school team stated, "One of the biggest outcomes is that our team here on campus understands how important everyone's role is. And then, understanding each other's roles, we can really be a true team in supporting our students."

Staff also were particularly struck by the way the partnership allowed them to create work plans and processes to institutionalize the NTN work beyond the school team to the campus staff more broadly. Similarly, coaches reflected that schools began to recognize that college preparation was a collective endeavor and not something they could leave to individual staff members. For example, one coach explained, “A lot of [team members] just felt like college access should just be one person’s job and they do it. And now they’re coming to see, we need so many more people involved in the work for it to get done.”

Key Findings

Challenges to achieving improved college access reported by respondents included challenges at the organizational level in the high school, such as

- school-level capacity for implementing college access activities and
- building school-wide buy-in for a focus on equity.

Respondents also reported challenges related to equity and cultural norms within the community served by the high school including

- addressing the socioeconomic challenges to college enrollment and
- helping students see themselves as college ready.

Challenges to Achieving Improved College Access

In addition to factors that enabled or support college access, we also asked respondents what they considered to be the most important challenges or barriers they continued to face in their efforts to increase college access and preparation for students who were traditionally underrepresented in higher education. Responses ranged from challenges at the organizational level in the high school to challenges related to equity and cultural norms within the community served by the high school.

- **School-level capacity for implementing college access activities.** Two school teams explained that implementing the NTN work was challenging because of issues with staffing, staff management, and communication among high school staff members. These teams articulated needing more support to do the NTN work. Specifically, identifying events and delineating the tasks needed to organize them was challenging because of the lack of dedicated roles for these purposes. In addition, one specific challenge noted was insufficient instructional staff to teach the number of college preparation courses needed to effectively reach all eligible students. Additional instructors were also seen as necessary to help develop course content and materials to teach such courses and to help spread awareness of the goals of the NTN work among the high school community broadly. In the absence of this greater awareness of the NTN work among high school staff, many school team members reported feeling as if they were “going it alone.” Because of the limitations in staffing and time, respondents at another school noted that they would benefit from more preplanned templates or example calendars that could be used to organize the work.

- **Building school-wide buy-in for a focus on equity.** Another challenge articulated by respondents from two different schools was convincing school leadership to see the value of the school team’s objectives related to equity. Respondents noted that building buy-in for a focus on students who had not traditionally seen college as an option, and not just supporting those who were already college bound, had been a barrier. As one coach noted when speaking about fostering a focus on equitable opportunities for students to attend more competitive colleges,

It’s really hard to get schools to think about this. Like one of my strongest, one of my schools that has some of the best postsecondary enrollment rates . . . I think they think they’re doing enough for their students who they think should be going off to 4 years. And it’s real hard to get them to talk about, “Well what’s happening for your middle? Like how are your middle students doing?” . . . And part of that’s the leadership is not on board so much with this work, and part of it’s the mindset. They think they’re doing fine. They’re not super open to having some of the equity conversations that we try to push them on.

- **Addressing socioeconomic challenges to college enrollment.** School teams, school leaders, and coaches noted that addressing the needs of students from economically disadvantaged backgrounds is an ongoing challenge to building a college-going culture. For example, parents might be working two or three jobs, sometimes late into the evening, and thus may not be available for school events focused on postsecondary planning or college preparation. Similarly, students often did not have access to transportation to return to the school during hours when school buses were not operating, and that resulted in their disengagement from extracurricular college preparation activities.

In addition, respondents from two different schools remarked that many students sought employment while in high school to support their families financially. Those work obligations might compete with college preparation activities or plans. One principal noted that the economic need to work put many students at a disadvantage for considering college compared with peers not facing that pressure. This principal noted that some students had “started putting their education on the back burner because they’re working. They just, they feel like, ‘Well, I already have a job. So, so be it. If I graduate, I graduate, if I don’t, I don’t.’”

Finally, although schools were supporting families to apply for the financial support they might need for their children’s college attendance, at least three respondents from two different schools noted that some parents would not attend FAFSA events or complete the FAFSA because they were not citizens and lacked the tax documentation that they believed they needed to complete federal forms. One school principal stated,

You know, parents of course in this area are very reluctant to even think about getting a loan, and a lot of our parents are even reluctant to give their social security numbers for

the FAFSA because they feel like they're either living here illegally and they feel like somebody's going to track them down or they just feel like that's a way for someone to track them down.

Building trust among families was noted as a critical way to overcome this challenge.

- **Helping students to see themselves as college ready.** At the broader cultural level, however, respondents noted that shifting students' and families' mindsets toward college remained a larger challenge, one that had been difficult to overcome. School teams at four schools indicated that families' expectations for their students and students' expectations for themselves did not always align with the goals of college readiness and accessibility. As one coach told us,

There's a cultural thing in [this city] where students tend to stay close to family. They don't want to go away for college. This idea of going away for college, it's brand new for them. A lot of folks want to stay close to family or they want to work for their family businesses after high school. So just trying to encourage students to go to this well-matched postsecondary institution, that's a couple states away, can be a big challenge.

Similarly, one principal explained that, for some students, "It's hard for them to see themselves even 20 minutes away at a school that's in another city, like that is very challenging for them," and as a result the school team worked to bring in guest speakers and have facilitated campus visits to show students schools "that are accessible to them." Another respondent noted that some students "aren't really aware of all the opportunities that are out there," and helping them realize that there was "something beyond this area" could be challenging, especially when no one in their families had attended college before.

Key Findings

Respondents cited multiple systems and structures that could support progress toward improved college access for students historically underrepresented in higher education, many of which aligned with the College Access Network approach. The systems cited aimed to enable a more intense, collective effort within schools to provide personalized and inclusive supports for college preparation. The systems also leveraged external knowledge and support through networking and district-level engagement.

In reflecting on these challenges, school team staff indicated difficulty guiding their students in seeing alternative realities and futures for themselves and helping them see beyond what was available to them in their hometown. Principals reflected that, even when they and their staff recognized these cultural tensions, they did not feel prepared to address them.

Research Question 3. Systems for Achieving Progress Toward Improved College Access

During the first 3 years of implementation, schools participating in NTN's College Access Network established and grew their school teams and gained an improved understanding of the structures and strategies needed to increase college access for all students. School teams identified and tested a wide range of change ideas, started to track key indicators of college readiness, and implemented online resources for students to explore college and career opportunities.

Through the focus groups and interviews, respondents cited systems within their schools and districts that they considered critical to achieving progress toward improved college access for students historically underrepresented in higher education, as well as key strategies to overcome the continuing challenges the school faced in improving college access. The systems they described include the following:

- **Data Systems.** Systematic data review and analysis helped school teams recognize the importance of setting specific goals, tracking progress, and identifying gaps and needs for targeted supports. Resources from NTN supported these efforts. Respondents emphasized the need for disaggregated data to identify priority groups of students and noted the importance of engaging in continuous improvement efforts, supported by coaching and professional learning, to assess the impact of change ideas and identify areas of improvement.
- **Comprehensive strategies for college preparation starting in ninth grade.** School teams in the College Access Network primarily focused on developing college readiness activities for junior and senior years. In Year 3, respondents noted an increased recognition that these activities, including relevant testing, should start even sooner so that students could be engaged in college readiness work during all 4 years of high school, to build knowledge among students who might not have had prior exposure to college and to help develop a college-going mindset among students. Respondents felt that doing so would elevate awareness on campus that college preparation starts from Day 1 of high school.
- **Sustained and expanded resources and staffing for college access efforts.** Several schools reported making an effort to sustain the work of the college access team in subsequent years, when NTN funding would be reduced. At the same time, teams mentioned both financial and staffing constraints on fully implementing college readiness initiatives, including staff time to plan and organize activities for students. Respondents explained that they would require a greater investment in funding and staffing to achieve more progress in improving college access at their campuses. Specifically, school teams discussed the need to recruit more staff and teachers with dedicated roles for this work, as well as to secure more resources and funds.
- **Family engagement and cultural responsiveness.** School teams and leaders felt that identifying effective ways to engage and inform families remained a challenge. Respondents noted the

pressures students often faced to choose employment or enrollment in a college close to home as their postsecondary plan. Principals reflected that they needed more effective outreach and communication systems to engage families and create culturally relevant ties with them.

- **School-based structures to encourage collective responsibility for college readiness.** The school team structure reportedly helped prioritize college access and readiness among a wider selection of staff members within schools by engaging a range of staff roles. In addition, the school team model helped to ensure that work was shared rather than taken on by a single staff member. School team members brought various areas of expertise to the table to inform the work. Multiple respondents reported the desire to continue school team meetings on a regular basis in the future. School teams in Year 3 had experienced a high level of turnover among both school staff and leadership. Ensuring that teams had tools and systems in place to document and continue the work with new and additional staff was critical to sustaining the activities and outcomes of the initiative.
- **Structured opportunities to learn from a community of schools with similar challenges and similar student populations.** School teams noted that the benefits of attending the NTN convenings included the high-quality professional development and guidance received during the convenings and the opportunity to learn from and collaborate with other schools facing similar challenges with respect to college access. Several respondents noted that continued networking and communication, in some cases hosted by the district, supported their work.
- **District support and engagement.** Multiple respondents reported that deeper engagement from the school district was needed to support and sustain this work. The district could play a key role in sustaining the initiative as NTN supports lessened, through allocating funds, staffing, and resources (e.g., technology) to support schools' college readiness activities. Specifically, respondents expressed a need for facilitation and guidance from the district to coordinate and collaborate with other campuses so that networking with them was more intentional and not voluntary. In addition, several respondents noted that district support would be critical for sustainability. In the words of one principal, "That conversation [about sustainability], New Tech needs to take [that] back also to our district. . . . How are you going to continue this momentum? . . . What's going to happen in 3 years now?"

The perspectives of school team members, school leaders, coaches, and students who have been part of NTN's College Access Network provided valuable insights into the strategies, structures, and systems that could support greater college access. Those perspectives also highlighted the remaining challenges to shifting mindsets and providing the resources and supports needed to make college a viable option for all students. These systems and considerations can serve to support schools' efforts to expand and sustain their work to make college access a central school-wide commitment.

Examining Students’ College-Going Behaviors and Attitudes, and Perceptions of School Support and Helpfulness

In this section, we provide key findings from two surveys that were administered in spring 2022: the Senior Exit Survey and the Student Experience Survey. Descriptive findings from these surveys allowed us to address research questions focused on students’ college-going behaviors and attitudes (see Box 3), and the extent to which they perceived that their schools supported them and prepared them for life after high school. Additional findings from analyses of the surveys are found in Appendix C.

Box 3. Student Survey Research Questions

Research question 4. What were the college-going behaviors and attitudes of students attending high schools in the College Access Network?

Research question 5. To what extent did students perceive their high schools to be supportive and helpful in their preparation for life after high school?

Key Findings

- A large percentage (79%) of students expressed a desire to enroll in college after high school, and the majority engaged in college readiness activities such as submitting a college application (79%), perhaps indicating that students who were less inclined to enroll directly in college were less likely to take the survey.
- We observed variation across districts in students’ college-going behaviors, including the completion of college entrance exams and submitting college applications.
- Although all students recognized the importance of college, when asked to rate specific reasons for the importance of college (e.g., to get training for a specific career), ratings were generally higher among Latinx and female students.

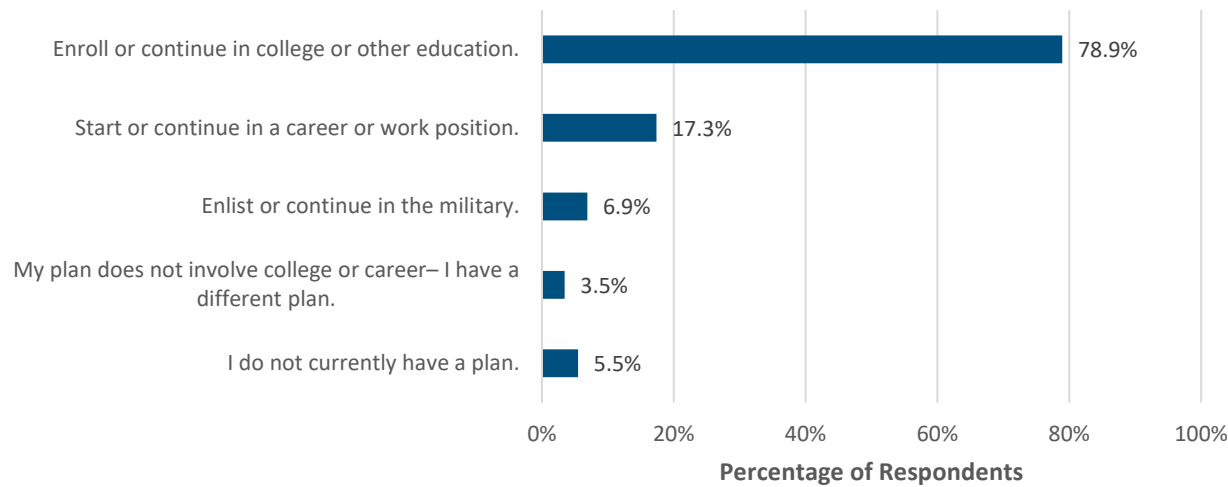
Research Question 4. College-Going Behaviors and Attitudes

The Senior Exit Survey focused on students’ plans for after high school and the actions they had taken to prepare for college. Students were asked about their post–high school plans, with response options including enrolling in college, starting a career or work position, entering the military, selecting a different plan, or not yet having a plan.⁴ As we illustrate in Exhibit 6, the majority of survey respondents (79%) indicated that they planned to enroll in college or other education after high school. A smaller percentage of students (17%) reported that they intended to enter a career or job. The percentages of students selecting the remaining options, including entering the military (7%),

⁴ Students could select more than one option, and the options were not mutually exclusive, so the sum of percentages across these options can be more than 100%. Across the college, career, and military response options, 86.5% selected one option, 12.9% selected two options, and about 1% selected all three options.

selecting another option (3%), and not having a postsecondary plan (5%), were small and relatively similar in magnitude.

Exhibit 6. Respondents’ College and Career Plans

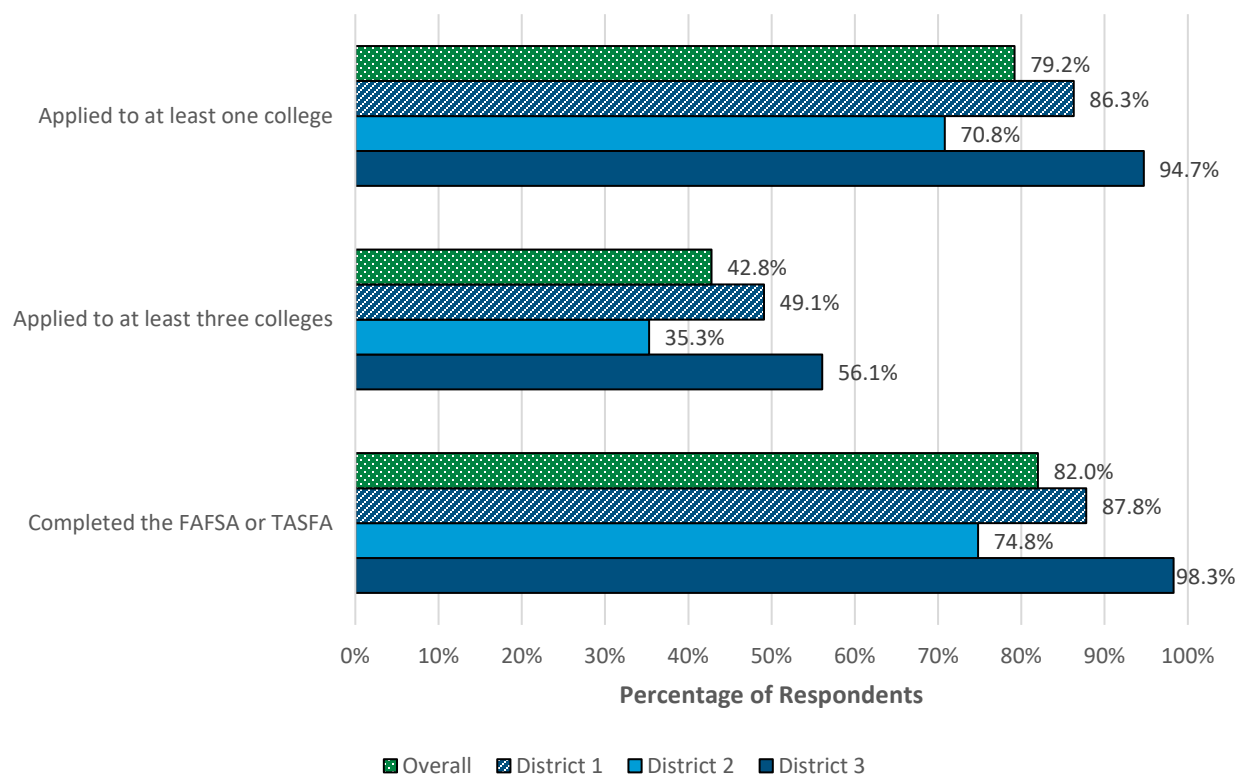


Note. A total of 1,699 survey respondents answered this question. Respondents could pick more than one option. From Senior Exit Survey, spring 2022.

Because of the high percentage of students who reported their intention to enroll in college after high school, we would expect to see a similarly high percentage of students completing college-going activities such as taking college entrance exams, submitting college applications, and completing the FAFSA or TASFA.⁵ In fact, across the participating districts, more than 90% of respondents reported taking the SAT, ACT, or Texas Success Initiative Assessment, a required college entrance examination in Texas. However, as we illustrate in Exhibit 7, college application rates and FAFSA/TASFA completion rates varied across participating districts. In general, college application rates and FAFSA/TASFA completion rates were highest in District 3, with more than 94% of students applying to at least one college and 98.3% completing the FAFSA or TASFA. In contrast, in District 2 and District 1, 70.8% and 86.3%, respectively, of respondents applied to at least one college, and 74.8% and 87.8%, respectively, completed the FAFSA or TASFA. A similar trend was observed with the percentage of respondents applying to three or more colleges, with 56.1% of respondents in District 3, 35.3% of respondents in District 2, and 49.1% of respondents in District 1 applying to three or more colleges.

⁵ Changes in the Texas Education Code made it mandatory for Grade 12 students starting in 2021–22 (the year in which the surveys were administered) to (a) complete the FAFSA, (b) complete the TASFA, or (c) submit a signed opt-out form to be eligible to graduate from high school. Therefore, rates of completing the FAFSA and TASFA may appear elevated relative to years prior to the introduction of this graduation requirement, or relative to other states that do not have this graduation requirement.

Exhibit 7. Respondents' College Application Rates and FAFSA/TASFA Completion Rates, Overall and by District

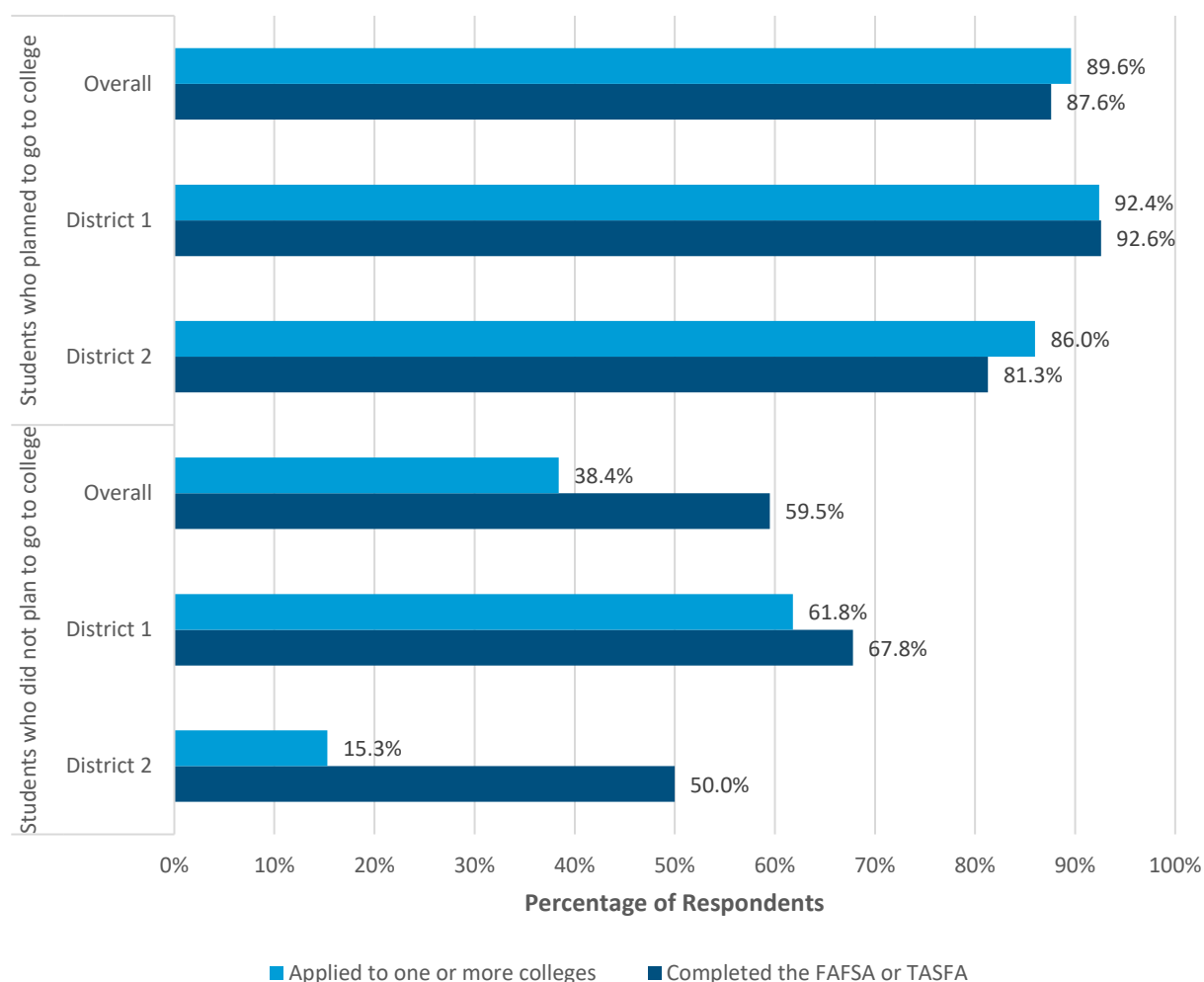


Note. FAFSA = Free Application for Federal Student Aid; TASFA = Texas Application for State Financial Aid. A total of 1,865 survey respondents reported the number of colleges they applied to; 922 from District 1, 886 from District 2, and 57 from District 3. A total of 1,832 survey respondents reported on their completion of the FAFSA or TASFA: 913 from District 1, 862 from District 2, and 57 from District 3. From Senior Exit Survey, spring 2022.

One potential explanation for the observed differences across districts is the behavior of students who did not intend to enroll in college immediately after high school. Among survey respondents, 1,483 reported plans to enroll in college immediately after high school, and 378 reported plans that did not include college enrollment. As we show in Exhibit 8, among students who intended to enroll immediately, the percentage of students who applied to at least one college and completed the FAFSA/TASFA exceeded 80% across districts. However, among students who did not intend to enroll immediately, students in District 1 were four times as likely as students in District 2 to submit at least one college application (61.8% vs. 15.3%). Although FAFSA/TASFA completion rates were higher for this subgroup of students in District 2, less than half (46.3%) of students in District 2 who did not intend to enroll immediately after high school completed the FAFSA or TASFA, compared with nearly two thirds (65.6%) of students with similar postgraduation intentions in District 1. In other words, self-reported college-going behaviors differed on the basis of what students planned to do

immediately after high school, but observed differences were much larger in District 2 relative to District 1, where over half of students applied to at least one college and completed the FAFSA or TASFA regardless of their intentions.⁶

Exhibit 8. College Application and FAFSA/TASFA Completion Rates, by College Enrollment Intentions Overall and by District



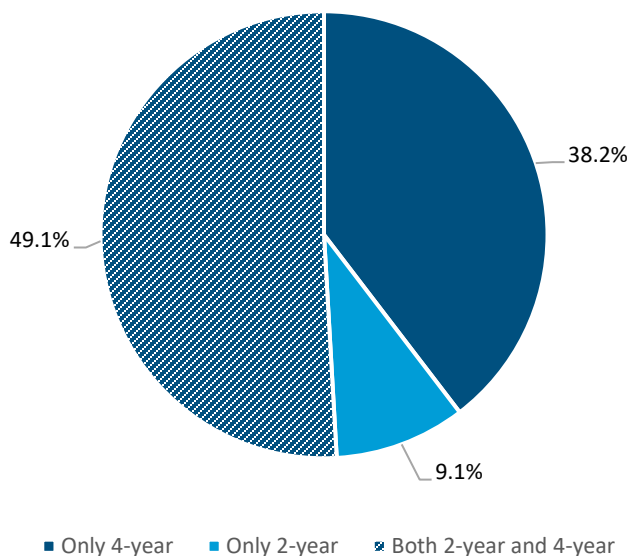
Note. FAFSA = Free Application for Federal Student Aid; TASFA = Texas Application for State Financial Aid. Among students who planned to go to college, 1,482 responded to questions about college applications (793 from District 1 and 626 from District 2) and 1,470 responded to questions about submitting the FAFSA/TASFA (799 from District 1 and 645 from District 2). Among students who did not plan to go to college, 378 responded to questions about college applications (126 from District 1 and 258 from District 2) and 358 responded to questions about submitting the FAFSA/TASFA (111 from District 1 and 216 from District 2). From Senior Exit Survey, spring 2022.

⁶ We have excluded District 3 from these analyses because very few students did not intend to enroll in college immediately after high school, and nearly all students who intended to enroll immediately in college engaged in these behaviors.

One strategy that the College Access Network encouraged in participating schools was to have students apply to at least three different colleges. The intention behind this strategy was to have students identify “reach schools” where it might be more difficult to get accepted, “well-fitting schools” that closely align with their academic performance in high school, and “safety schools” where students would be likely to be accepted. Across participating districts, 42.8% of survey respondents reported applying to three or more colleges. But were they applying to different types of colleges, as the College Access Network encouraged?

According to the results in Exhibit 9, it appears that survey respondents who applied to three or more colleges largely followed this guidance. Nearly half (49.1%) of students who applied to three or more colleges applied to both 2-year and 4-year colleges, while another 38.2% applied only to 4-year colleges. (Because we do not know which specific colleges they applied to, we cannot tell if these 4-year colleges varied by academic rigor or acceptance rates.) Only 9.1% of these students applied only to 2-year colleges, indicating that most students who applied to three or more colleges applied to at least one 4-year college.

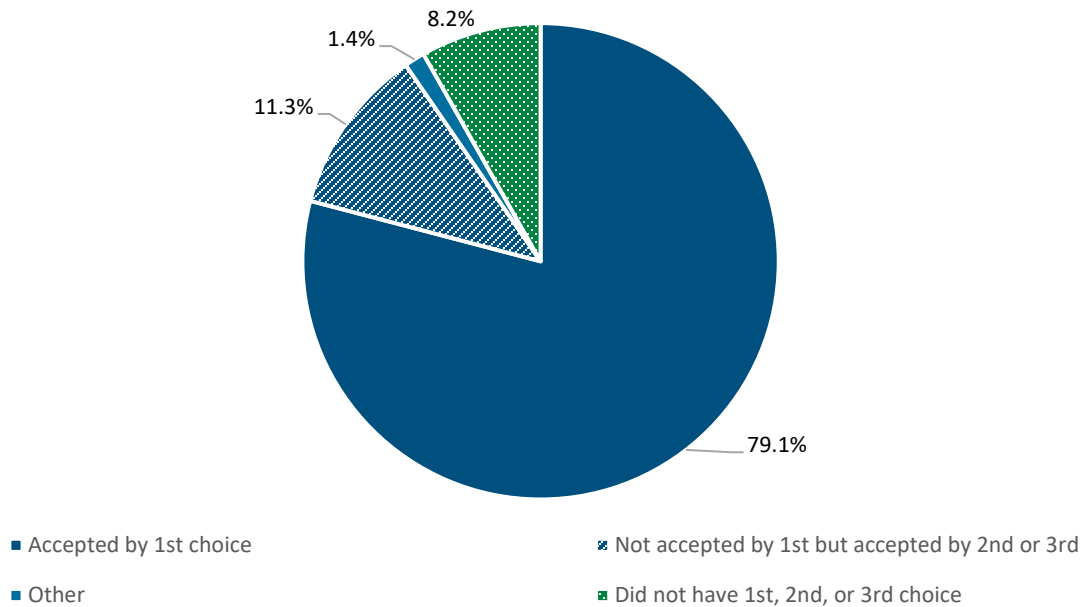
Exhibit 9. Percentage of Respondents Who Applied to Three or More Colleges, by College Type



Note. A total of 798 survey respondents reported applying to three or more colleges. From Senior Exit Survey, spring 2022.

Overall, 79% of survey respondents reported being accepted by their first-choice colleges (see Exhibit 10). An additional 11% of respondents reported that they were not accepted by their first-choice colleges but were accepted by their second- or third-choice colleges. Around 8% of survey respondents reported that they did not have a first, second, or third choice of college, suggesting that not all students engaged in the “junior wish list” program activities.

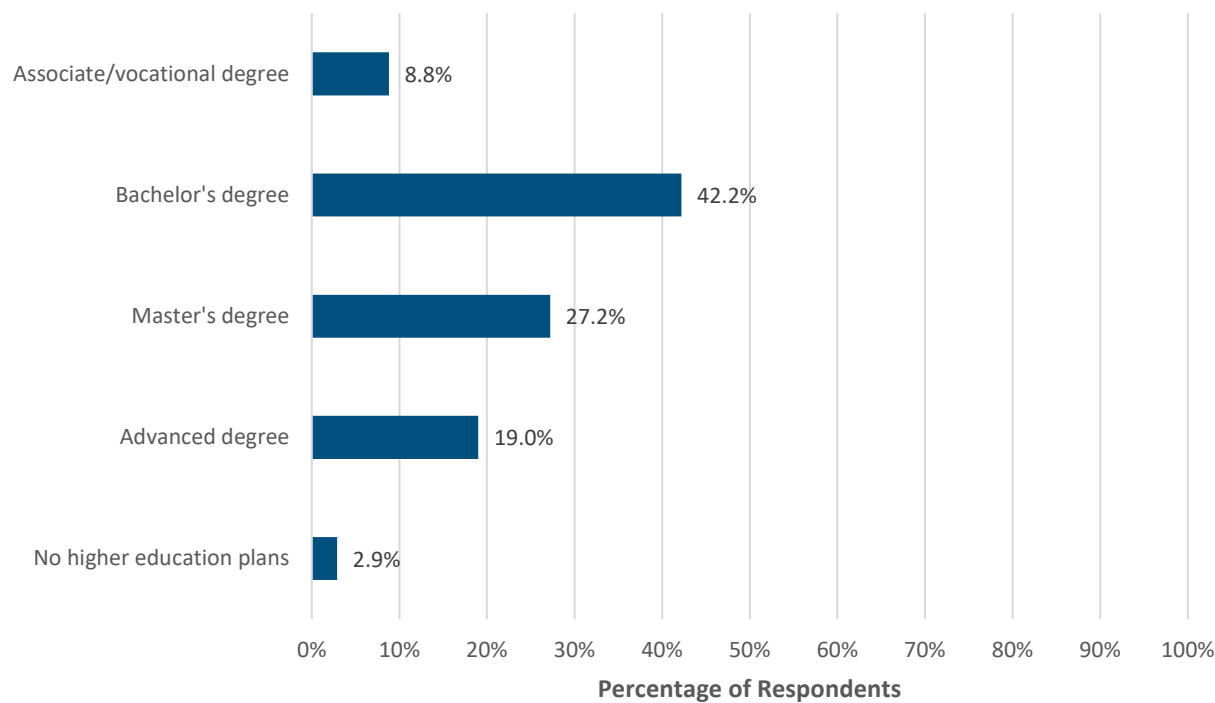
Exhibit 10. Respondents’ Reports of Being Accepted by Their First-, Second-, or Third-Choice College



Note. A total of 1,275 students reported that they were by at least one college. From Senior Exit Survey, spring 2022.

Most students who responded to the Student Experience Survey had a clear vision of their higher education goals (see Exhibit 11). A substantial portion of students intended to obtain at least a bachelor’s degree (42%), followed by a master’s degree (27%), and advanced degree (19%). A smaller percentage of students reported seeking associate’s or vocational degrees (8.8%), whereas very few respondents (2.9%) did not plan to pursue higher education at all.

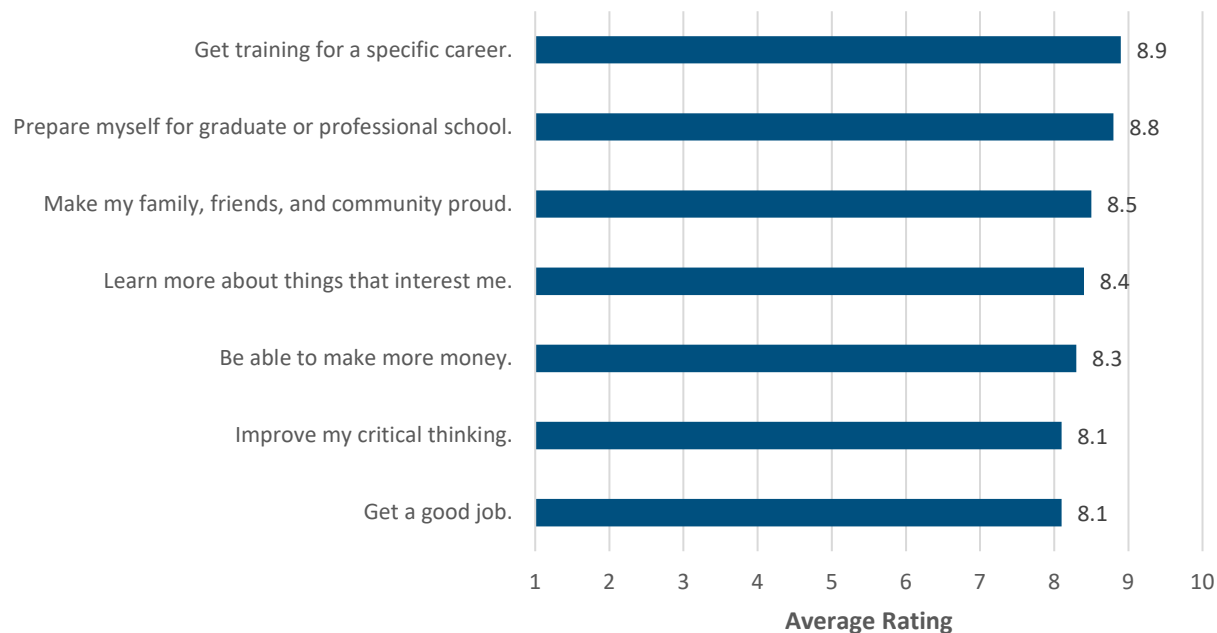
Exhibit 11. Students’ Higher Education Aspirations



Note. A total of 1,520 survey respondents reported the highest academic degree they intended to obtain. From Student Experience Survey, spring 2022.

Students were asked about their beliefs regarding the importance of college. They consistently acknowledged the significance of college in achieving a range of goals, such as, getting “a good job,” “improve critical thinking,” and “get training for a specific career.” Students reported an average value greater than 8 (on a scale from 1 to 10) for each survey item (see Exhibit 12). They reported the strongest beliefs about the importance of college for specialized career training and advanced education, with average values of 8.9 and 8.8, respectively. Although rated highly, the perceived importance of college for securing a good job and enhancing critical thinking skills was slightly lower, with an average value of 8.1.

Exhibit 12. Student Beliefs About College

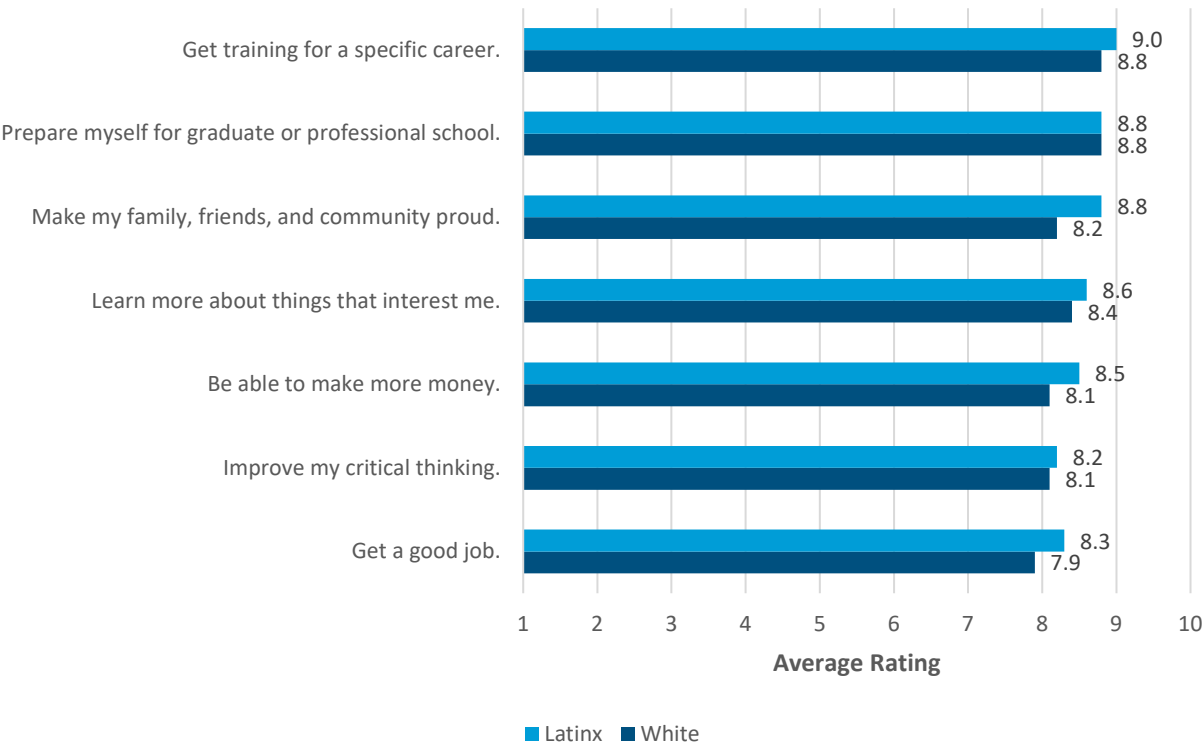


Note. Number of responses ranges from 1,755 to 1,834 across seven items. From Student Experience Survey, spring 2022.

When perceived importance of the value of college education was broken down by race and ethnicity, White and Latinx students showed similar patterns of responses, but average values for Latinx students tended to be larger (see Exhibit 13).⁷ However, Latinx students were more likely to place a higher emphasis on making their family, friends, and community proud (8.8 among Latinx students and 8.2 among White students) and being able to make more money (8.5 among Latinx students and 8.1 for White students).

⁷ To simplify the presentation of findings, we only include Latinx and White students in Exhibit 16, who represented 42% and 40% of survey respondents, respectively. Patterns for students from other racial/ethnic groups were similar, although Pacific Islander and Indigenous students notably rated the importance of college for career training at 9.4 and 9.6, respectively, signaling strong expectations of higher education as a pathway to career success.

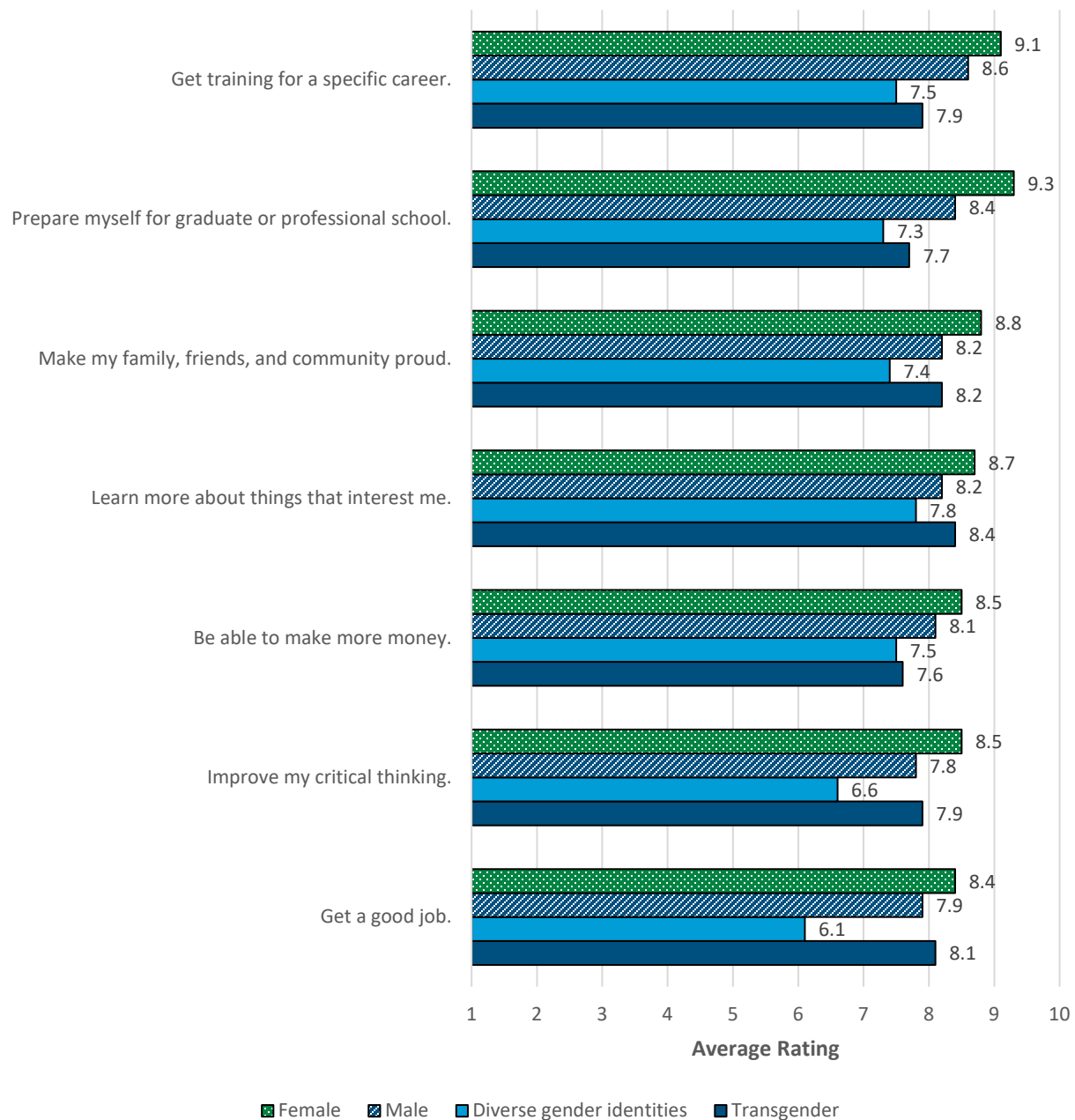
Exhibit 13. Student Beliefs About College Among Latinx and White Students



Note. Survey respondents included 792 Latinx students and 762 White students. Exact sample sizes for this slide may be somewhat smaller because of missing data on individual survey items. From Student Experience Survey, spring 2022.

Differences in responses about the perceived importance of the value of college education also emerged across gender identities (see Exhibit 14). Overall, female students exhibited higher scores across all the survey items, reflecting greater confidence in the benefits of a college education. For example, female students valued college as a stepping stone to graduate and professional schools, with an average score of 9.3, while average values for students associated with other gender identities ranged from 7.3 to 8.4. Students with diverse gender identities reported comparatively lower scores across all the survey items, illustrating systematic differences across gender identities in perceptions of the importance of college.

Exhibit 14. Student Beliefs About College, by Gender Identity



Note. Survey respondents included 833 male students, 816 female students, 14 transgender students, and 43 students with diverse gender identities. Exact sample sizes for this slide may be somewhat smaller because of missing data on individual survey items. From Student Experience Survey, spring 2022.

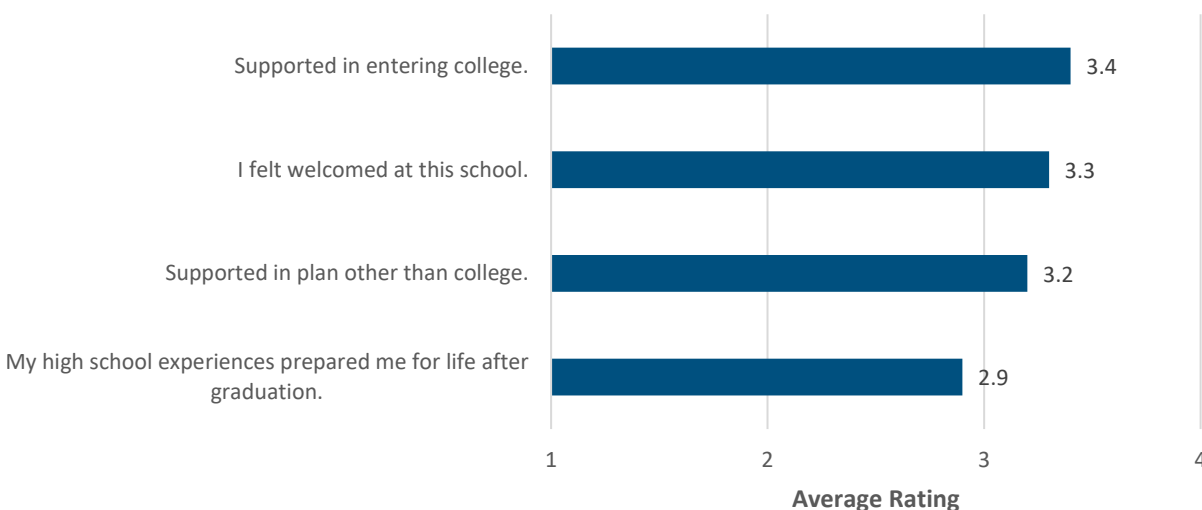
Research Question 5. Students' Perceptions of School Support and Helpfulness

Overall, surveyed students generally felt welcomed and supported by their schools (see Exhibit 15), believing that their school supported them in pursuing college or alternative paths after high school. In addition, students felt that their high school experience had adequately prepared them for life after graduation.

Key Findings

- Although seniors reported feeling supported by their schools, they perceived that their schools were more helpful with regard to preparing students for college than to getting them a job or preparing them to enter the workforce.
- Over half (55%) of survey respondents reported asking college and career advice from a teacher, perhaps demonstrating the way the College Access Network sought to involve diverse school staff in the college advising process. However, 23% of survey respondents did not report seeking advice from school staff.

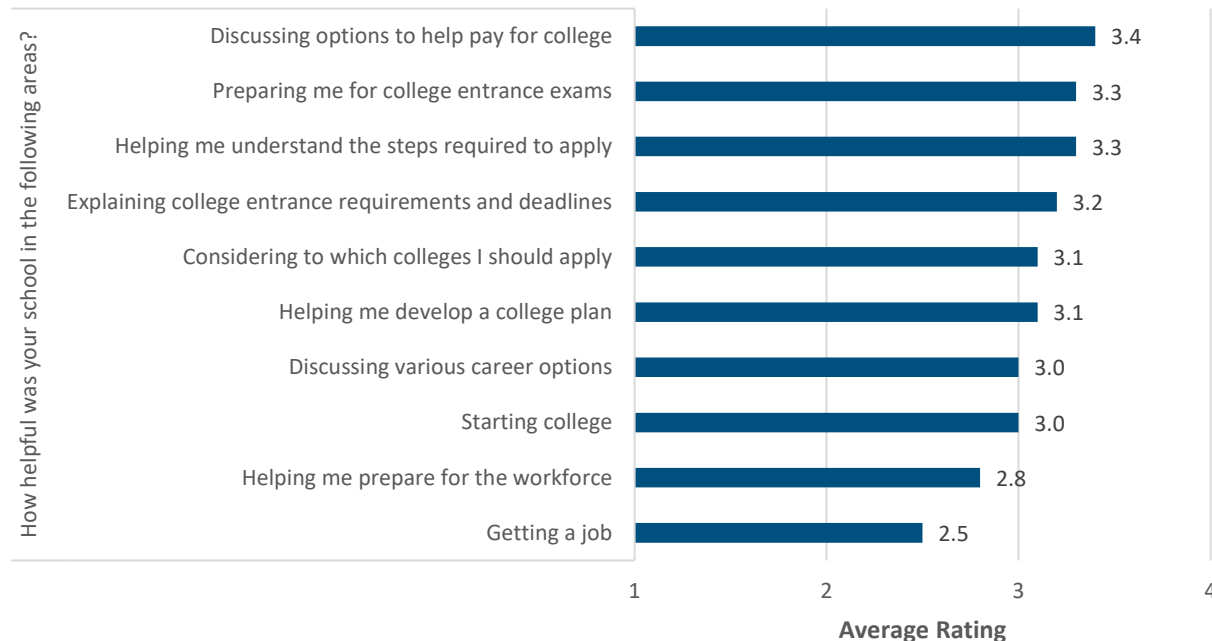
Exhibit 15. Student Perceptions of School Supports



Note. 1 = strongly disagree; 2 = somewhat disagree; 3 = somewhat agree; 4 = strongly agree. Number of responses ranges from 2,144 to 1,872 across the four items. From Student Experience Survey, spring 2022.

Students were also asked to rate the helpfulness of their schools in various aspects of their postgraduation plans. Students reported that their schools were most helpful in informing them of the steps required to apply to college, providing preparation for college entrance exams, and discussing options for paying for college (see Exhibit 16). However, students perceived that their schools were less helpful in getting them a job or preparing them to enter the workforce.

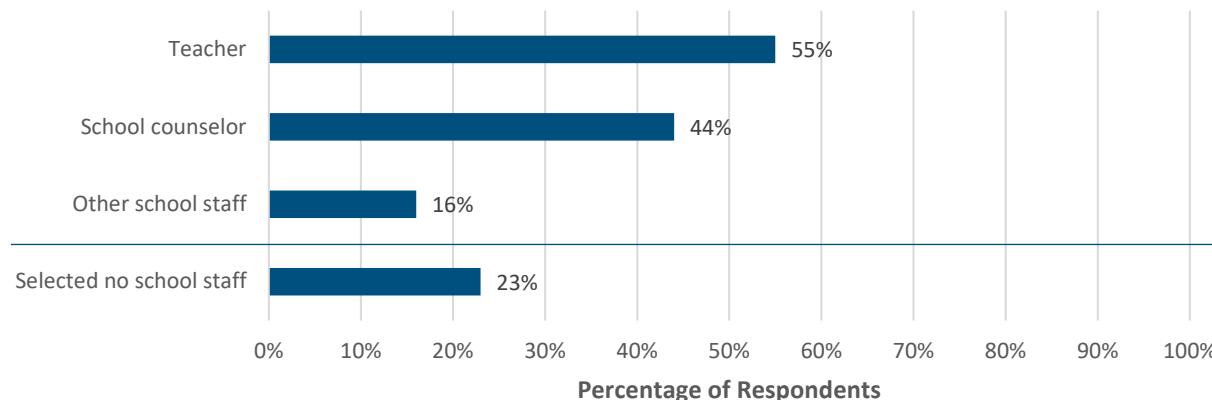
Exhibit 16. Students' Perceptions of the Helpfulness of Their Schools



Note. 1 = not much/not at all helpful; 2 = a little/mostly not helpful; 3 = quite a bit/somewhat helpful; 4 = a lot/very helpful. Number of responses ranges from 1,850 to 1,912 across 10 items. From Student Experience Survey, spring 2022.

Teachers were the primary source of guidance for college and career advice according to the student survey responses. Although 55% of students reported asking teachers for advice about college and careers, only 44% reported reaching out to school counselors (see Exhibit 17). Interestingly, almost a quarter of students did not seek advice from any school staff.

Exhibit 17. School Staff Whom Students Reported Reaching Out to for College and Career Advice



Note. Number of responses ranges from 352 to 1,183 across four items. Respondents could select more than one option. From Student Experience Survey, spring 2022.

Evaluating the Impact of the College Access Network

In this section, we present findings from the impact study (see Box 4 for the research questions). We begin by describing the characteristics of students in our analytic sample before and after the application of propensity score weights. Figures in this section demonstrate that, after propensity score weighting, Latinx students attending schools associated with the College Access Network and those

attending comparison schools were comparable in their demographic and academic backgrounds. We then present results from difference-in-differences models that offer causal estimates of the impact of the College Access Network on students' high school graduation rates, college enrollment, and persistence.

Box 4. Impact Study Research Questions

Research question 6. Among Latinx students, what was the impact of the College Access Network on high school graduation and college enrollment outcomes?

Research question 7. Did impacts of the College Access Network differ within the population of Latinx students by students' gender, low-income status, EL status, or course-taking behavior?

Student Characteristics Before Applying Propensity Score Weights

Before implementing our propensity score weighting approach, we examined the initial imbalance in student characteristics between Latinx students in the treatment district focal cohort and our comparison district focal cohort. As shown in Exhibit 18, students in the focal cohort of the treatment district were, on average, slightly older, more likely to be English learners, less likely to be eligible for free- and reduced-priced lunch, and lower scoring on their standardized assessments than those in the comparison district focal cohort. In addition, treatment district students, on average, took fewer AP courses than comparison students but were more likely to enroll in college preparatory courses.

Failing to account for these differences in student background characteristics could lead to incorrect conclusions about the effectiveness of the College Access Network on student outcomes because the results could potentially be driven by preexisting differences between groups. Therefore, we employed propensity score weighting to adjust for the observed differences between the treatment and comparison districts.

Exhibit 18. Student Characteristics for the Treatment and Comparison District Focal Cohorts

Characteristics	Treatment district (n = 1,456)	Comparison district (n = 2,535)	Mean difference (T-C)
Age	16.60	16.48	0.18
Female	50%	50%	0%
Hispanic	100%	100%	0.00
EL Status	28%	22%	6%
FRPL	60%	75%	-14%
Special Ed.	8%	8%	0%
Took AP courses	57%	78%	-21%
Took DC courses	31%	29%	2%
Took OnRamps	27%	11%	16%
Std. EOC Algebra 1	-0.03	0.01	-0.13
Std. EOC English 1	-0.05	0.08	-0.13
Missing EOC Algebra 1	2%	15%	-13%
Missing EOC English 1	0%	16%	-16%

Note. EL = English learner; FRPL = free or reduced-priced lunch; Special Ed = special education; Std. EOC = standardized end-of-course exams score; AP = Advanced Placement; DC = dual credit. The calculated mean difference may not equal the difference between the treatment and comparison district means presented in the table because of rounding.

Results of the Propensity Score Matching and Weighting

The first step in our analysis was to estimate propensity score weights, which were then applied to the sample to ensure that the treatment and comparison groups were balanced on observable baseline characteristics. As we show in Appendix A, we computed weights separately for each comparison cohort. This allowed us to assess the balance between the focal cohort in the treatment district with the following five groups:

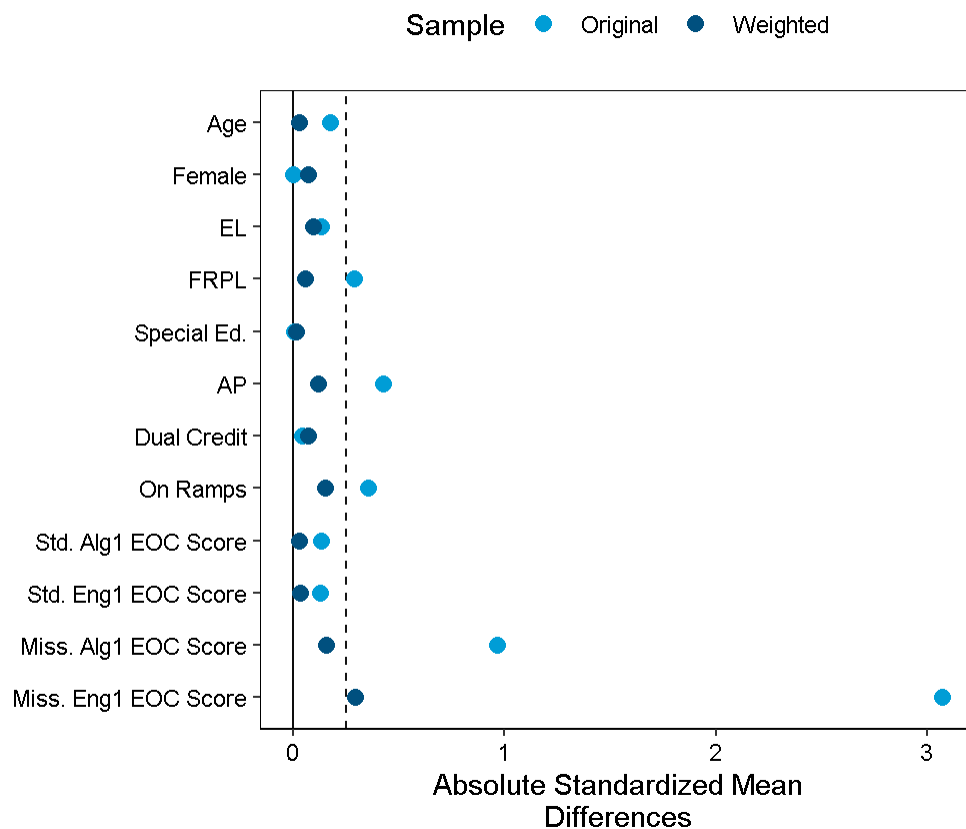
- the focal cohort in the comparison district,
- prior Cohort 1 in the treatment district,
- prior Cohort 2 in the treatment district,
- prior Cohort 1 in the comparison district, and
- prior Cohort 2 in the comparison district.

The results of these comparisons are illustrated in Exhibits 19 through 23.

To achieve balance, the absolute standardized mean difference should be below 0.25, as represented by the dotted line in the figures below (What Works Clearinghouse, 2022). The figures show that the samples were initially unbalanced with respect to many observable characteristics, particularly for comparisons across the treatment and comparison districts, where some of the differences exceeded a full standard deviation.

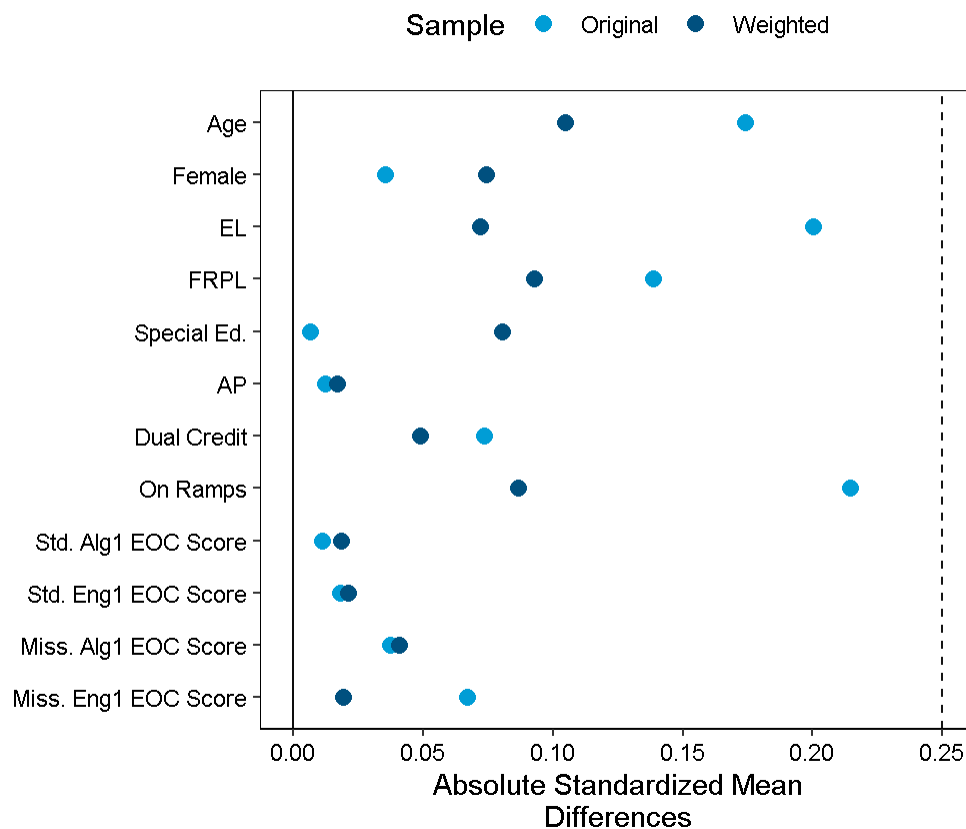
After applying the propensity score weights, the samples were balanced on all covariates, except for the missing indicator for standardized English 1 end-of-course (EOC) scores in the comparison of the focal cohort in the treatment district with the focal cohort in the comparison district. This indicator showed an imbalance of 0.28 standard deviations after weighting (refer to Exhibit 19). Additionally, the missing indicator for standardized English 1 EOC scores in the comparison of the focal cohort in the treatment district with Prior Cohort 1 and Prior Cohort 2 in the comparison district had an imbalance of 0.27 and 0.31 standard deviations after weighting, respectively (see Exhibit 22 and 23). Since we include these missing indicators as covariates in our impact regression analysis, our analysis model attempts to mitigate some of the remaining imbalance.

Exhibit 19. Balance Statistics for Propensity Score Weighting of the Treatment District's Focal Cohort and the Comparison District's Focal Cohort



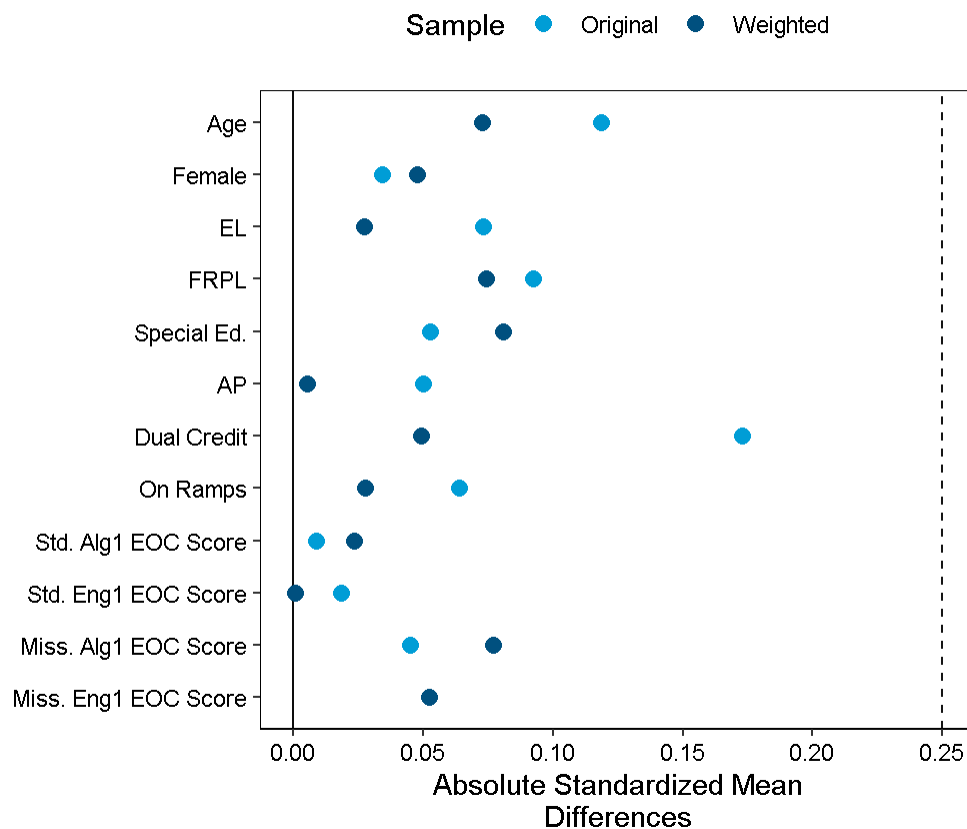
Note. EL = English learner; FRPL = free or reduced-price lunch; AP = Advanced Placement; Std. = standardized; Alg 1 = Algebra 1; EOC = end-of-course exam; Eng 1 = English 1. Love plot displaying covariate balance before and after propensity score weighting between the treatment district's focal cohort and comparison district's focal cohort. The solid line represents perfect balance (0 absolute standardized mean difference), whereas the dashed line indicates a threshold of 0.25 standardized mean difference.

Exhibit 20. Balance Statistics for Propensity Score Weighting of the Treatment District's Focal Cohort and the Treatment District's Prior Cohort 1



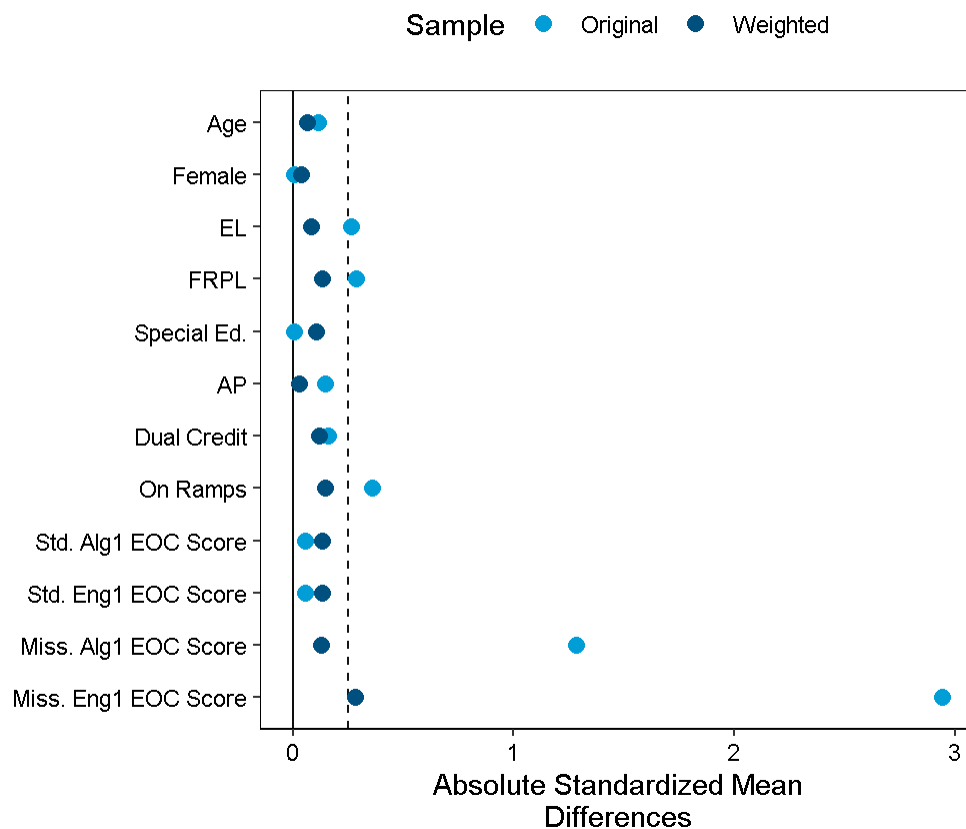
Note. EL = English learner; FRPL = free or reduced-price lunch; AP = Advanced Placement; Std. = standardized; Alg 1 = Algebra 1; EOC = end-of-course exam; Eng 1 = English 1. Love plot displaying covariate balance before and after propensity score weighting between the treatment district's focal cohort and treatment district's Prior Cohort 1. The solid line represents perfect balance (0 absolute standardized mean difference), whereas the dashed line indicates a threshold of 0.25 standardized mean difference.

Exhibit 21. Balance Statistics for Propensity Score Weighting of the Treatment District's Focal Cohort and the Treatment District's Prior Cohort 2



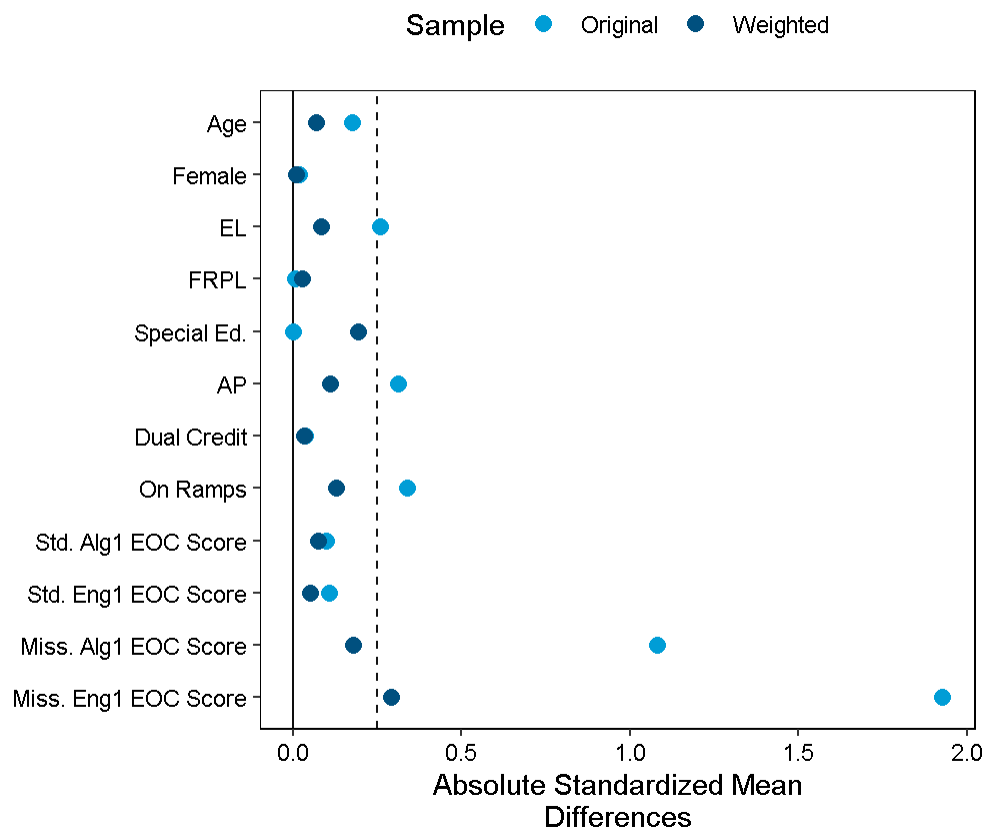
Note. EL = English learner; FRPL = free or reduced-price lunch; AP = Advanced Placement; Std. = standardized; Alg 1 = Algebra 1; EOC = end-of-course exam; Eng 1 = English 1. Love plot displaying covariate balance before and after propensity score weighting between the treatment district's focal cohort and treatment district's Prior Cohort 2. The solid line represents perfect balance (0 absolute standardized mean difference), whereas the dashed line indicates a threshold of 0.25 standardized mean difference.

Exhibit 22. Balance Statistics for Propensity Score Weighting of the Treatment District's Focal Cohort and the Comparison District's Prior Cohort 1



Note. EL = English learner; FRPL = free or reduced-price lunch; AP = Advanced Placement; Std. = standardized; Alg 1 = Algebra 1; EOC = end-of-course exam; Eng 1 = English. Love plot displaying covariate balance before and after propensity score weighting between the treatment district's focal cohort and comparison district's Prior Cohort 1. The solid line represents perfect balance (0 absolute standardized mean difference), whereas the dashed line indicates a threshold of 0.25 standardized mean difference.

Exhibit 23. Balance Statistics for Propensity Score Weighting of the Treatment District's Focal Cohort to the Comparison District's Prior Cohort 2



Note. EL = English learner; FRPL = free or reduced-price lunch; AP = Advanced Placement; Std. = standardized; Alg 1 = Algebra 1; EOC = end-of-course exam; Eng 1 = English 1. Love plot displaying covariate balance before and after propensity score weighting between the treatment district's focal cohort and the comparison district's Prior Cohort 2. The solid line represents perfect balance (0 absolute standardized mean difference), whereas the dashed line indicates a threshold of 0.25 standardized mean difference.

Research Question 6. Impacts of the College Access Network on High School Graduation and College Enrollment Outcomes

Key Findings

- The College Access Network had a significant, positive impact on high school graduation among Latinx students, with a magnitude of 7 percentage points.
- Impacts on college enrollment and college persistence outcomes were not statistically significant.
- Impacts of the College Access Network varied across subgroups of Latinx students. For example, the College Access Network had a significant, positive impact on high school graduation and college enrollment by the first fall after expected high school graduation among male Latinx students, but not among female Latinx students.

After applying propensity score weights, we estimated the difference-in-differences models to understand the impact of schools' participation in the College Access Network on student outcomes (see Exhibit 24). Our main analyses compared the outcomes of students in the focal cohorts to the outcomes of students in the two prior cohorts combined. First, we examined the impacts on high school graduation. The results show that students in the treatment group were significantly more likely than those in the comparison group to graduate from high school by approximately 7 percentage points.⁸ When we examined

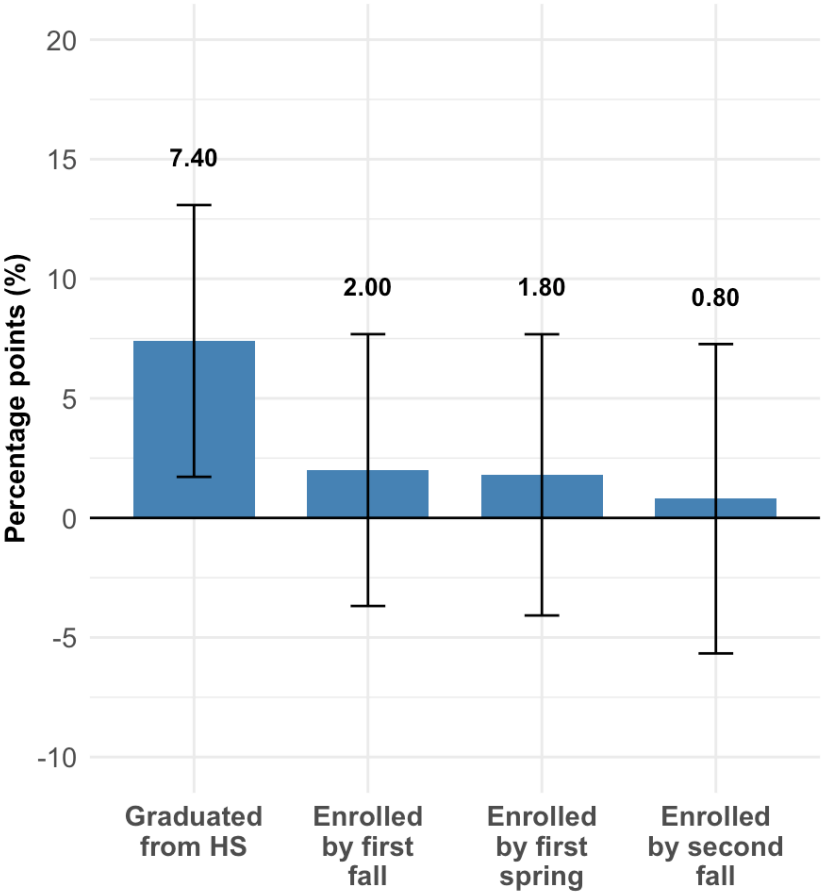
impacts on college enrollment outcomes, although college enrollment rates were generally higher among students who attended schools in the College Access Network, differences between college enrollment rates of these students and those of students who attended comparison schools were not statistically significant. Findings related to college persistence were similar, with higher persistence rates observed among students attending high schools in the College Access Network but with differences across groups not achieving statistical significance (see Exhibit 25).

Our sample includes three different cohorts of students; each cohort experienced different postsecondary environments. For example, students in Prior Cohort 2 would have entered college in 2020–21, the year that was most affected by the COVID-19 pandemic, whereas students in Prior Cohort 1 would have entered college in 2021–22, at which point the effects of the COVID-19 pandemic were starting to diminish. The focal cohort would have entered college in the 2022–23 academic year, when, presumably, the higher education environment had returned mostly to “normal.” Therefore, if the COVID-19 pandemic were to influence our results, we would expect to see stronger impacts when comparing the focal cohort with Prior Cohort 2 and weaker impacts when comparing the focal cohort with Prior Cohort 1.

⁸ These estimates are results from a linear probability model. We also estimated the impacts using a logistic regression, and the results are similar across both methods.

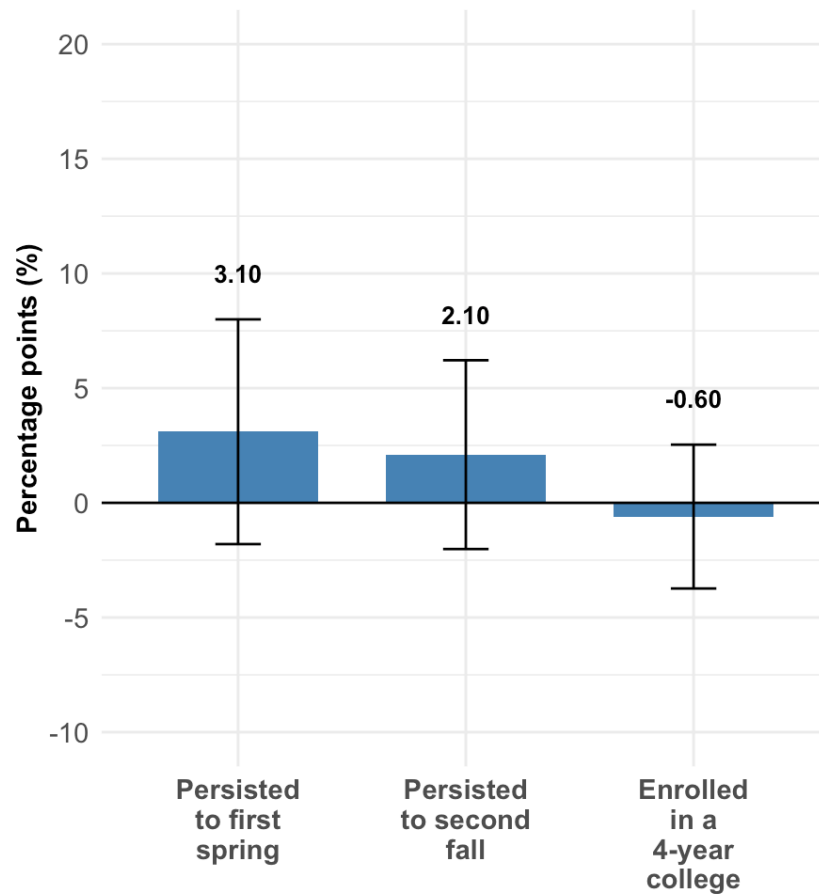
To understand the way the selection of the comparison cohort may have affected the observed impacts of the intervention, we estimated alternative difference-in-differences model in which we compared (a) the focal cohort to only Prior Cohort 1 and (b) the focal cohort to only Prior Cohort 2. The results, presented in Appendix D, aligned with our expectation that impacts would be weaker if we limited our sample to students in Prior Cohort 1. Although the impact on high school graduation was similar across the different models, when only students in Prior Cohort 1 were included in the analysis, the nonsignificant impacts on college enrollment were slightly negative and less than 2 percentage points; in contrast, when only students in Prior Cohort 2 were included in the analysis, nonsignificant impacts on college enrollment were positive and between 2 and 4 percentage points. Overall, results of these alternative analyses did not reveal a pattern of findings that would suggest that the COVID-19 pandemic was driving the impact estimates.

Exhibit 24. The Impacts of the College Access Network on High School Graduation and College Enrollment



Note. HS = high school. Error bars represent 95% confidence intervals. The results are statistically significant if the range within the error bars does not include 0 and are not significant if the range includes 0. Definitions of each outcome measure can be found in Exhibit 3.

Exhibit 25. The Impacts of the College Access Network on College Persistence and Enrollment in a 4-year College



Notes. Error bars represent 95% confidence intervals. The results are statistically significant if the range within the error bars does not include 0 and are not significant if the range includes 0. Definitions of each outcome measure can be found in Exhibit 3.

Research Question 7. Variation in Impacts, by Students' Gender, Low-Income Status, and English Learner Status

To better understand the impacts of the College Access Network on specific student groups, we examined the impacts by Latinx students' gender, low-income status, and EL status. In this section, we present findings from analyses focused on high school graduation, college enrollment immediately after expected high school graduation, and college persistence to the first spring after expected high school graduation. Findings for additional college outcomes, which did not achieve statistical significance for any of the student groups we examined, are presented in Appendix D.

The results in Exhibit 26 reveal that impacts of the College Access Network varied by gender and EL status, but impacts did not achieve statistical significance among low-income students. Among male Latinx students:

- Attending a high school in the College Access Network had a significant impact on high school graduation, with a difference of 13.5 percentage points. Although the graduation rate among male Latinx students in the treatment group was 89%, the graduation rate for similar male Latinx students in the comparison group was 75.5%.
- Attending a high school in the College Access Network had a significant impact on enrollment in college in the first fall after expected high school graduation, with a difference of 6 percentage points. Just over one quarter (26.6%) of male Latinx students in the treatment group enrolled in college in the first fall after expected high school graduation, compared with just over one fifth (20.6%) of similar male Latinx students in the comparison group.

In addition, among Latinx students who were not classified as EL students:

- Attending a high school in the College Access Network had a significant impact on high school graduation, with a difference of 6 percentage points. Although the graduation rate among non-EL Latinx students in the treatment group was 92%, the graduation rate for similar non-EL Latinx students in the comparison group was 86%.
- Attending a high school in the College Access Network had a significant impact on college persistence to the first spring after expected high school graduation, with a difference of 5 percentage points. Just over one fifth (22%) of non-EL Latinx students in the treatment group persisted in college to the first spring after expected high school graduation, compared with 17% of similar non-EL Latinx students in the comparison group.

Exhibit 26. Impacts of the College Access Network on Specific Student Groups: Student Subsamples

Student subsample	Treatment group mean	Adjusted comparison group mean	Treatment-comparison percentage point difference	p-value	Number of students
Graduated from high school					
Male	89.0%	75.5%	13.5%	.000	6,008
Female	92.1%	92.5%	-0.4%	.921	5,921
Non-FRPL	92.8%	82.7%	10.1%	.065	4,199
FRPL	88.7%	85.6%	3.1%	.216	7,730
Non-EL	91.8%	85.5%	6.3%	.016	9,476
EL	86.3%	79.1%	7.2%	.210	2,453
Enrolled in college by first fall after expected high school graduation					
Male	26.6%	20.6%	6.0%	.047	6,008
Female	33.5%	38.3%	-4.8%	.289	5,921
Non-FRPL	32.4%	31.0%	1.4%	.686	4,199
FRPL	28.0%	27.8%	0.2%	.962	7,730
Non-EL	29.9%	27.5%	2.4%	.413	9,476
EL	30.0%	28.5%	1.5%	.747	2,453
Persisted in college to first spring					
Male	19.3%	14.2%	5.1%	.057	6,008
Female	24.6%	26.8%	-2.2%	.547	5,921
Non-FRPL	23.6%	21.9%	1.7%	.632	4,199
FRPL	20.6%	18.6%	2.0%	.310	7,730
Non-EL	21.9%	16.7%	5.2%	.023	9,476
EL	21.9%	22.8%	-0.9%	.849	2,453

Note. FRPL = free or reduced-price lunch; EL = English learner. This table shows the impact estimates produced from the differential impact analysis on *subsets* of students. Specifically, the results in each row represent the outcome from an impact model on students within that group, for example, the female results are from a regression on *only the female Latinx students*. The results in the column “Treatment-control percentage point difference” show the difference between treatment and comparison students within the corresponding student subgroup.

Overall, study findings suggest that the College Access Network had a positive impact on Latinx students' high school graduation, but that impacts on high school graduation and college enrollment outcomes were not consistent across Latinx student subgroups. These findings highlight the importance of exploring variation in treatment effects across intersections of students' identities (e.g., race/ethnicity and gender) rather than exploring differential impacts based on individual student characteristics in isolation. To assist with the interpretation of the impact study findings, we list potential analysis limitations in Box 5.

Box 5. Impact Analysis Limitations

- Impact analyses excluded five of the 11 schools that launched the College Access Network because we were unable to obtain data from appropriate comparison schools.
- Our propensity score weighting approach allowed us to achieve balance on observable student characteristics, but the difference-in-differences models might not account for unmeasured (unobserved) characteristics. For example, it is possible that, because of the local economy, treatment schools were able to bounce back more quickly from the pandemic. In addition, it is possible that, within the Latinx population, there were unobserved differences in citizenship status. The district administrative data did not have information about students' parents' highest level of education, or the primary language spoken at students' homes, both of which are predictive of college outcomes.
- The College Access Network was focused on well-matched college enrollment, which we were not able to measure directly using administrative data. Although teachers and college advisors who work closely with students may have sufficient information to identify colleges that would be a good fit, information in administrative data cannot tell researchers whether students should attend a 4-year college instead of a 2-year college.

Discussion

When NTN designed and launched the College Access Network in fall 2019, they could not anticipate the nationwide impact that the COVID-19 pandemic would have on students' high school experiences, college aspirations, and academic preparation for life after college. Despite the disruption caused by the COVID-19 pandemic, NTN continued to work with school teams to develop plans to create more equitable supports for students to ensure that they successfully applied to and enrolled in colleges that aligned with their academic skills. During students' 11th- and 12th-grade years, coaches worked with school teams to use data to identify student needs, plan strategies to provide personalized student supports, and utilize tools such as Naviance to guide students in the transition to college. Although the network was designed to promote well-matched postsecondary enrollment, we observed variation across schools in the extent to which school teams were able to build a school-wide effort to combat undermatching.

Findings from the impact study suggest that attending a school associated with the College Access Network resulted in higher rates of high school graduation, particularly for male Latinx students and Latinx students who were not classified as ELs. The College Access Network also had a significant impact on male Latinx students' college enrollment immediately after expected high school graduation. However, despite schools' efforts to create more equitable college opportunities for students, we did not find significant impacts on college enrollment or college persistence outcomes for the overall sample of Latinx students, for EL students, or for students from low-income families. Findings from the implementation study may serve as guidance for other college advisory programs that focus on improving college-going outcomes for traditionally underserved student populations.

1. **Start introducing the college application process at lower grade levels.** Although the College Access Network was designed to focus on students starting in Grade 11, students thought that many activities (such as college fairs) would have been helpful for students in lower grade levels.
2. **Engage families deeply in the college-planning process.** Although schools frequently translated informational materials into multiple languages, school staff reported that they struggled to shift the mindsets of adults in the community to be more accepting of the idea of students' leaving the community to attend college. Staff indicated that they needed greater support in creating more culturally responsive informational materials and messaging for families.
3. **Address socioeconomic challenges to engaging in college-going activities.** School teams noted that low-income families struggled to participate in college-going activities because

of (a) parents' and/or students' employment during after school hours, which prevented them from attending informational sessions and events, and (b) transportation issues that prevented families from returning to school (or traveling to another location) after school hours. Schools may need to consider flexible, alternative modes of communicating college-going information to families that accommodate families' schedules. Schools may also consider identifying or providing transportation for families to attend events.

4. **Provide appropriate resources and staffing for college access efforts.** School teams mentioned both financial and human capital constraints on fully implementing college readiness initiatives, including staff time to plan and organize activities for students. Respondents shared that they would require a greater investment in terms of funding and staffing to achieve more progress in improving college access at their campuses.
5. **Shift mindsets school-wide to focus on equitable student outcomes.** School team members struggled to build school-wide buy-in for a focus on students who had not traditionally been viewed as "college bound." School-wide professional development or information sharing may be necessary to push administrators and other school staff to focus on the outcomes of students who are "at the margins," rather than being contented with the successful outcomes of their more "college-ready" students.

Together, results from this study highlight the fact that more research is needed to identify practices that will improve college enrollment outcomes for students who have been historically underrepresented in higher education. Although the College Access Network was designed to specifically support students from low-income families and students for whom language barriers might have prevented their families from receiving the guidance they needed for their children to transition to college, the network was not able to eradicate systemic barriers that students faced during this transition. In addition to providing supports and resources to students and their families, future efforts may consider interacting directly with communities outside of school, as well as addressing policies at both the K–12 and higher education levels that may unintentionally prevent students from achieving their college aspirations.

References

- Angrist, J. D., & Pischke, J. S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton University Press.
- Belfield, C. R., & Bailey, T. R. (2019). The labor market value of higher education: Now and in the future. In M. Paulsen & L. Perna (Eds.), *Higher education: Handbook of theory and research* (Vol. 34, pp. 373–414). Springer Nature.
- Bryk, A. S., Gomez, L., Grunow, A., & LeMahieu, P. (2015). *Learning to improve: How America's schools can get better at getting better*. Carnegie Foundation for the Advancement of Teaching.
- Card, D., & Krueger, A. B. (2000). Minimum wages and employment: A case study of the fast-food industry in New Jersey and Pennsylvania: Reply. *American Economic Review*, 90(5), 1397–1420.
- Conley, D. T. (2007). *Toward a more comprehensive conception of college readiness*. Educational Policy Improvement Center.
- de Brey, C., Snyder, T. D., Zhang, A., & Dillow, S. A. (2021). *Digest of Education Statistics 2019* (NCES 2021-009). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.
- Funk, M. J., Westreich, D., Wiesen, C., Stürmer, T., Brookhart, M. A., & Davidian, M. (2011). Doubly robust estimation of causal effects. *American Journal of Epidemiology*, 173(7), 761–767.
- Hoxby, C., & Avery, C. (2012, December). *The missing "one-offs": The hidden supply of high-achieving, low-income students* (NBER Working Paper 18586). National Bureau of Economic Research.
- Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., Cui, J., Smith, M, Bullock Mann, F., Barmer, A., & Dilig, R. (2020). *The condition of education 2020* (NCES 2020-144). National Center for Education Statistics.
- McCaffrey, D. F., Griffin, B. A., Almirall, D., Slaughter, M. E., Ramchand, R., & Burgette, L. F. (2013). A tutorial on propensity score estimation for multiple treatments using generalized boosted models. *Statistics in Medicine*, 32(19), 3388–3414.

National Center for Education Statistics. (2023). *College enrollment rates. Condition of education*. U.S. Department of Education, Institute of Education Sciences.
<https://nces.ed.gov/programs/coe/indicator/cpb>

Reber, S., & Smith, E. (2023). *College enrollment disparities, Understanding the role of academic preparation*. Brookings Institute.

What Works Clearinghouse (WWC). (2022). *WWC procedures and standards handbook, Version 5.0*. https://ies.ed.gov/ncee/wwc/Docs/referenceresources/Final_WWC-HandbookVer5_0-0-508.pdf

Appendix A. Addition Information Sample, Data, Methods

Exhibit A1. Number and Percentage of Students Who Took New Tech Network Surveys, by District and School

District	Number of seniors (2021–22)	Number of respondents to the Student Experience Survey	Student Experience Survey response rate	Number of respondents to the Senior Exit Survey	Senior Exit Survey response rate
District 1	1,854	1,171	63%	927	50%
School 1	328	18	5%	16	5%
School 2	232	170	73%	140	60%
School 3	363	317	87%	243	67%
School 4	342	344	101%	236	69%
School 5	371	168	45%	160	43%
School 6	218	154	71%	132	61%
District 2	1,694	894	53%	895	53%
School 7	631	335	53%	346	55%
School 8	234	197	84%	179	77%
School 9	76	4	5%	6	8%
School 10	753	358	48%	364	48%
District 3	80	79	99%	57	71%
School 11	80	79	99%	57	71%
Total	3,628	2,144	59%	1,879	52%

Impact Study Methods

Propensity Score Weighting

To estimate the propensity score weights, we first estimated a propensity score, $e(x)$, which is the conditional probability that a student was exposed to the treatment (i.e., was enrolled in the district that participated in the College Access Network), conditional on a set of

observable characteristics. Specifically, we estimated a propensity score model of the following general form:

$$\hat{e}(x) = \Pr(T = 1|X) = \frac{1}{1 + \exp(-f(X))} \quad (1)$$

Where T represents a binary treatment indicator coded as 1 for students who were enrolled in the treatment district and 0 if they were enrolled in the comparison district. X is a vector of student-level characteristics. These include age, gender, English learner status, free or reduced-priced lunch status, whether they were enrolled in special education, and whether they took college preparatory courses (e.g., AP, dual-credit, Texas OnRamps courses). The model also included students' end-of-course (EOC) exam scores for Algebra 1 and English 1, which were standardized to have a mean of 0 and a standard deviation of 1. We also included as covariates missing indicators for the EOC exam scores.

To increase our chances of achieving balance on the observed covariates, we used a machine learning approach to estimate the propensity scores, Generalized Boosted Models (GBMs) (McCaffrey et al., 2013). GBMs are utilized to flexibly model the relationship between covariates and treatment assignment, providing a robust method for handling complex relationships that may exist within the data (McCaffrey et al.). For simplicity, $f(X)$ represents the function learned by the GBM algorithm, which models the log-odds of treatment assignment as a function of the covariates, X .

To estimate propensity scores for each of our comparison cohorts, we subsetting our main analytic file into five subsamples. In each of the subsamples, the T binary indicator is coded as 1 for the focal cohort in the treatment district. The T binary indicator was coded as 0 for a different comparison group for each of the five subsamples:

- the focal cohort in the comparison district
- prior Cohort 1 in the treatment district
- prior Cohort 2 in the treatment district
- prior Cohort 1 in the comparison district
- prior Cohort 2 in the comparison district.

Within each subsample, we estimated our propensity scores, using our machine learning approach.

After estimating the propensity scores, we calculate the propensity score weights for the average treatment effect on the treated (ATT). For each treated individual in the focal cohort in

the treatment district, the weight is equal to 1, and for each comparison individual (including students in prior cohorts in the treatment district), the weight is $\frac{\hat{e}(x)}{1-\hat{e}(x)}$. These weights were then applied to the subsequent difference-in-differences model to adjust for differences in the covariates between the treatment and comparison groups.

Difference-in-Differences Model

To measure the impacts of the College Access Network on student outcomes, we estimate a two-level difference-in-differences model, with students nested within schools, and treatment status measured at the school level. Specifically, we estimate the following equation:

$$y_{isc} = \beta_0 + \beta_1 Post_c + \beta_2 T_{is} + \beta_3 Post_c \times T_{is} + \beta_4 X_i + u_s + \varepsilon_{isc} \quad (2)$$

Where y_{isc} is the outcome y for student i in cohort c in school s . Due to the nature of the outcomes of interest (high school graduation and college enrollment), we can only observe the outcome at a single time point for the focal cohort. Specifically, we cannot observe a student's high school graduation before and after the intervention. For that reason, we use the two prior cohorts as proxies for the preintervention measure of the outcome. Therefore, in both districts, the variable $Post_c$ is an indicator that equals 1 for students in the focal cohort and 0 for the prior cohorts. The variable T_{is} is an indicator that equals 1 if a student is in the a treatment school, and 0 otherwise, and $Post_c \times T_{is}$ is the interaction between the two indicators, and u_s and ε_{isc} are school and student level residuals, respectively. As Exhibit A2 shows, the coefficient of interest is β_3 , or the coefficient associated with this interaction term. This coefficient represents the difference in outcomes that is attributed with being enrolled in the treatment district during the focal cohort year, when schools launched the College Access Network.

Exhibit A2. The Difference-in-Differences Regression Parameters to Calculate the Difference-in-Differences:

Condition	$Post_c = 1$	$Post_c = 0$	Difference
$T_{is} = 1$ (treatment)	$\beta_0 + \beta_1 + \beta_2 + \beta_3 + \beta_4$	$\beta_0 + \beta_2 + \beta_4$	$\beta_1 + \beta_3$
$T_{is} = 0$ (comparison)	$\beta_0 + \beta_1 + \beta_4$	$\beta_0 + \beta_4$	β_1
Difference	$\beta_0 + \beta_2 + \beta_3$	$\beta_0 + \beta_2$	β_3

Note. This table displays which parameters are estimates for different values of the treatment indicator and the pre-post indicator.

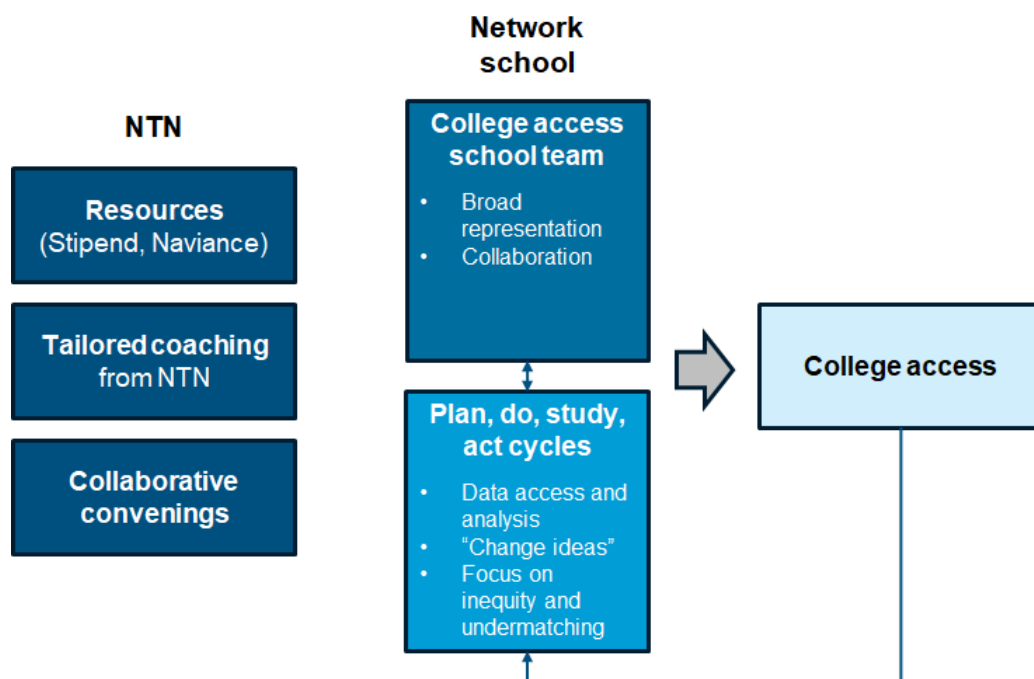
Appendix B. Detailed Information About the Implementation of the College Access Network

In this appendix, we describe key implementation features of the College Access Network and summarize findings from the 3-year implementation study. The aim of the implementation study was to build an understanding of the ways in which the initiative has been implemented within the participating schools and to identify lessons learned by participants through their efforts to improve college access for historically underrepresented student populations.

Implementation Features

Exhibit B1 shows the primary implementation features associated with the College Access Network. As shown in the exhibit, schools within the network established a college access team that included broad representation of school staff. These school-based teams conducted the core work of the NTN College Access Network by identifying, developing, and implementing strategies, or “change ideas,” to address problems of practice related to college access. The teams engaged in continuous improvement, or Plan, Do, Study, Act (PDSA) cycles, to evaluate and modify these ideas, collecting and analyzing relevant data to identify areas for improvement. In alignment with the goals of the NSI, teams maintained a focus on equity and ways to address “undermatching” when identifying and analyzing the change ideas.

Exhibit B1. Implementation Features of the College Access Network



Across 3 years of implementation, New Tech Network (NTN) provided critical support for the teams. First, resources were provided to the school teams to support their work, including a stipend to fund college access activities, as well as access to the Naviance college- and career-planning platform. In addition, NTN coaches provided professional development, guidance, and tools to support the work of the school-based teams. Finally, NTN hosted several network convenings that provided opportunities for school-based teams to connect across schools and learn from others engaged in similar work.

Below, we summarize the extent to which key features of the NTN College Access Network were implemented with fidelity among Cohort 1 schools, including establishment of school teams, goals, and vision; continuous improvement of school-based college readiness activities; focus on inequity and undermatching; and NTN supports to school teams.

Establishment of School Teams, Goals, and Vision

Over the 3 years of the implementation study, Cohort 1 schools established and grew their school-based college access teams. Typically, teams included a mix of counselors, college readiness teachers, classroom teachers, and one or two administrators. Most often, a college advisor/counselor, coordinator, or readiness teacher served as the team lead. School team respondents reported being included in their team because of their specific role related to college preparation, because they worked closely with juniors and/or seniors, or because of their strong relationships with students.

Over time, some teams reached out to and engaged with other departments within the school that were relevant to the work. For example, one team began involving the chair of the department that included economics classes because of the team's focus on developing financial literacy. In another case, a teacher who was also an athletic coach joined the team after working closely with his student athletes on their college applications and becoming increasingly committed to improving access for all students. Some of these new team members supported the teams' efforts to strengthen the school-wide focus on college access.

Key Findings

- School teams included a broad range of roles, including counselors, college readiness teachers, and administrators, and some teams grew over time to include a wider range of departments.
- Turnover among team members was high between Years 2 and 3, affecting the teams' work to varying degrees at several schools.
- Schools' goals for college access were reported as consistent over the years and well aligned with the NTN College Access Network goals to ensure that students had equitable access to well-matched postsecondary opportunities and were aware of and well prepared for all postsecondary options.

Principals' reported involvement with the school team varied across schools. For example, one principal reported, "I see myself as an equal participant. . . . I want to be a part of it as much as [other team members] are." This principal described attending all meetings and trainings. Most principals, however, reported serving in an advisory or facilitating role, providing guidance and thought partnership, communicating/liasing with the district, and offering administrative support (e.g., approving activities and expenses, scheduling).

Although the composition of the teams generally remained consistent from Year 1 to Year 2 of the study, school teams reported experiencing a high level of turnover among both school staff and leadership as they moved into Year 3, which created some challenges for teams in sustaining the work. In several cases, changes were a result of natural turnover as members retired or changed roles. One coach noted that teams with turnover "had a few bumps here and there in terms of building momentum" but could generally still meet their goals and objectives. However, team members from one school that experienced a high level of turnover noted challenges getting new members up to speed and making progress on their work.

Focus on Inequity and Undermatching

Respondents from school teams reported that their work aligned with the focus of the College Access Network to increase college access for student populations historically underrepresented in college. They also noted a high level of alignment between these goals and established school-wide goals and vision for students' postsecondary preparation:

- **Equitable access to postsecondary opportunities.** In Year 3, respondents from six of the 11 schools reported that NTN's emphasis on postsecondary opportunities for Black, Latino, and students from economically disadvantaged backgrounds aligned well with their school-wide goals for equity and college and career readiness. For example, one team member said, "I feel with the NTN vision, it really aligns because, of course, it is about reaching those populations, the Black [and] Latino populations, which predominantly make up our school population." Respondents noted an emphasis on activities to address the specific needs of students who were historically underrepresented in higher education, such as extending additional outreach to families who were new to the college application process or building connections between students and adults to ensure that they received support at school that might not be available at home.
- **Ensuring that students were aware of and well prepared for all postsecondary options, including college, career, and the military.** NTN's focus on ensuring that all students had postsecondary plans in place and were ready to make informed decisions about what they would do after graduation was noted by respondents at seven of the 11 schools as an important facet of their work within the College Access Network. For example, one school leader stated, "One of our main goals here is preparing students for after high school, and whatever that means, whether that means college, career, military, whatever that is." According to this respondent, the NTN College Access Network helped to make this effort "more intentional" by providing the tools and structures for goal setting.

In both Years 2 and 3, school teams reported a less explicit focus on undermatching. Although school teams implemented college-match activities with students, such as having students create a junior wish list on Naviance, when asked about the extent to which schools addressed or looked at the issue of undermatching specifically, respondents from several schools stated that it was not a main focus. One principal stated that they had not heard of the term before, but that students might have had informal discussions with counselors about whether their choices and goals were well matched.

Continuous Improvement of College Readiness Activities

Across the years, college access teams reported implementing new or refined student activities to promote college access and, somewhat less frequently, using continuous improvement cycles to evaluate and modify those activities. The NTN College Access Network's focus on inequity and undermatching continued to guide the activities implemented.

Activities With Students: Change Ideas

Coaches, school teams, and principals reported an array of activities implemented through the College Access Network initiative to support college readiness and access. Common activities that respondents highlighted included the following:

- **Prioritized and personalized support for students.** Many teams reported using data to identify gaps in college readiness and preparation among student groups and then using those data to provide prioritized support to individual students or groups of students. Examples provided by respondents included identifying students who had not yet made progress with college planning and pulling them into small groups or meeting one on one to help them complete forms and conduct planning activities. One school, for example, provided opportunities for students who had not yet passed the Texas Success Initiative Assessment to complete it during regularly scheduled math and English classes. Another school identified students traditionally underrepresented in advanced classes and then, through their Advancement Via Individual Determination program, worked to increase enrollment of these students and students from economically disadvantaged backgrounds in advanced classes.
- **Activities to support and incentivize FAFSA completion.** Respondents from the majority of schools reported hosting workshops or events, or implementing other activities to encourage and support students and their families in completing college preparation activities, particularly the FAFSA. Activities included events for students and/or parents to receive help with completing forms or participate in other college and career readiness activities. Several schools reported that translation services were available for families.
- **Allocation of time during the school day for college readiness activities.** Respondents from multiple schools reported working with classroom teachers to allocate class time for students, e.g., during an advisory period or English class, to complete college readiness activities (e.g., through Naviance) and receive direct support with college and scholarship applications, as well as FAFSA completion.

Key Findings

- School teams reported implementing multiple new and modified activities and change ideas focused on helping students complete key college readiness activities.
- Activities focused on providing incentives and direct support for completing college preparation tasks, specifically the FAFSA, and providing customized support for prioritized student groups.

- **Incentives for the completion of college readiness activities.** Teams from the majority of schools reported providing incentives (e.g., gift cards, t-shirts, raffles, door prizes, or refreshments at events) for activities such as FAFSA completion or for attendance at information sessions and workshops. In addition, some school teams reported hosting celebratory events for students who received scholarships, were accepted into college, or enlisted in the military, as an incentive aligned with college and career decision making.

Use of Continuous Improvement Cycles

To identify, implement, evaluate, and modify change ideas, NTN coaches supported teams in engaging in continuous improvement, or PDSA, cycles. In Years 2 and 3, school teams reported engaging in these cycles to a varying degree.

Key Findings

Respondents from the majority of schools reported engaging in Plan, Do, Study, Act (PDSA) cycles (although not necessarily using the PDSA terminology) to implement change ideas, collect data, identify areas needing improvement, and modify implementation.

In Year 3, teams at six schools reported engaging directly in work related to PDSA cycles, and several reported that the PDSA cycles helped them make meaningful modifications to their change ideas. For example, a respondent from one school told us that “the PDSA cycle helped us to pause, reflect on [the activity], and now we know what we need to do this year to make it more efficient.” In a similar manner, teams from seven schools reported engaging in work aligned with continuous improvement, but they were not always aware of the terminology and did not refer to the work as PDSA cycles. For example, one school described their work aligned with continuous improvement as follows:

You have to . . . tweak your process and look at your current data and what strategies you need to do to be able to get more students to do FAFSA. . . . We have checkpoints where, “Hey, on this date, we’re going to evaluate where we’re at and see what we need to do. If we’re ahead of where we need to be, how did we get ahead? What are some things that we did maybe that caused us to get ahead?” Or if we’re behind, “Why are we behind, and what do we need to do to catch up?”

A few schools reported engaging in continuous improvement to inform activities they planned for students but not fully completing the PDSA cycles. When asked about the extent to which they engaged in PDSA cycles, one school team member responded, “We’ve utilized them, our problem is the coming back afterward and seeing like, ‘Okay, how did this go? What are some changes we can do? How did it affect our kids positively?’ So our part is the reflection part. So, we have great ideas, we implement them, we do it, but then we need to come back and look at it all and see what we could do better for improvement.”

Across years, most schools reported that equity was a significant focus of their college readiness work through the College Access Network. Approximately half of the schools in Year 3 reported looking at ethnicity or socioeconomic status to identify students for additional support. For example, one school team member reported,

When looking at students who say they don't have postsecondary plans or need help, [we] look at race, ethnicity, and at socioeconomic status to kind of gauge and help narrow [the] focus even more on specific supports. And if you're going to create a group of students, let's try to pull in groups that are similar [and] may have similar needs, and really target them in a different way or in a similar way, depending on what those needs are.

A few schools reported that, because nearly their entire student population is Black or Latino, they did not identify subgroups of students who need extra support by ethnicity. A respondent from one of these schools explained that they “don't have to worry about reaching out to a specific group because it's our entire group.”

NTN Supports

NTN provided multiple supports from Years 1 to 3 as schools established their teams, identified change ideas, and engaged in PDSA cycles. A key support provided by NTN was the assignment of a coach to guide and assist school teams' efforts. In addition, a core goal of the NTN College Access Network was to connect schools and districts to learn from one another and collaborate on addressing problems of practice. To this end, NTN facilitated three convenings per year and fostered sustained communication among schools through monthly school team lead meetings and communication platforms. Respondents reported that the sharing, learning, and collaboration that happened across the network was a valuable aspect of their involvement with the initiative.

Coaching Supports for School Teams

Respondents agreed that coaches' support, guidance, and partnership advanced the NTN College Access Network's mission and supported schools' efforts to implement meaningful change ideas to improve college access and readiness. Coaches supported school teams primarily by conducting site visits to schools, hosting monthly team leader meetings, and attending school team meetings. In-person work with schools was disrupted by COVID, and some activities, including site visits, switched to a virtual format for Year 2 and part of Year 3.

- **Site visits.** Annual site visits focused on topics such as identifying FAFSA goals, conducting student empathy interviews, and planning change ideas.
- **Team lead meetings.** Coaches facilitated monthly virtual team lead meetings to bring together team leads from schools across the network. According to coach interviews, each meeting was based on an underlying topic, objective, and activity. For example, a focus

within the Year 3 meetings was equitable leadership to help team leaders consider their own leadership identities and ways in which equity is a focus of their work.

- **School team meetings.** In Year 2, nearly all respondents reported that coaches often participated (virtually) in the school teams' regularly scheduled meetings (either every other week, monthly, or quarterly depending on the school).

Organized internally by school team members, those meetings were largely used to “check in” on the teams' plans, activities, and progress in meeting their goals for students' improved college readiness and access. According to principals and school team members, coaches played a pivotal role in those meetings by helping teams “narrow our focus,” “stay grounded,” and “polish up” useful strategies in their schools. As a departure from Year 2, in Year 3, according to most teams, their coaches did not often participate in the school teams' regularly scheduled meetings. Most frequently, respondents identified scheduling conflicts as the primary barrier to the coach's attendance.

Key Findings

- Coaches provided critical support and guidance for school team leads, serving as valuable thought partners and providing resources to inform the teams' work.
- Teams reported a lower intensity of coaching in Year 3, with coaches having an increased workload and scheduling conflicts limiting coaches' attendance at school team meetings.

Respondents also noted that, in addition to the planned activities, the coaches were available (e.g., through email) to respond to questions and provide informal support as needed throughout the year. Perceptions among respondents regarding the coaches' support included the following:

- **School teams viewed coaches as valuable thought partners.** School teams described coaches as key thought partners, saying they played an important role in brainstorming ideas and troubleshooting challenges. Most teams indicated that their coach shared helpful advice and ideas to support their planning, and that the coach played a central role in brokering ideas across College Access Network schools. One team lead thought the conversations with the coaches surrounding equity and leadership were some of the most valuable supports they received that year from the College Access Network. The team lead commented, “It opened my eyes. . . . I got to have that conversation with our team. I got to have that conversation with our administrators. I got to have that conversation where our counselors need to understand what we've done in the past is not going to be good enough to get 100% of our kids what they need.”
- **Coaches provided useful resources, particularly surrounding data utilization.** More than half the school teams interviewed in Year 3 said that their coach provided them with useful resources, ranging from resources to support students in applying for financial aid to

resources for internal meeting facilitation. School teams most frequently reported that their coach provided useful, data-focused resources.

- **Coaches were accessible and responsive.** School teams expressed appreciation for their coach’s accessibility and responsiveness to questions and concerns. Teams valued the timeliness, consistency, and informative nature of coach responses. For example, one school team member noted, “[It’s] been very helpful to know that someone out there actually knows the answer and is willing to help.”
- **Some schools felt disconnected from NTN coaches in Year 3.** All schools experienced turnover in their assigned coach in the third year, working with a new coach for at least part of the year. Several teams noted that they felt distant from NTN coaches in Year 3 without coach participation in school team meetings. One team attributed the disconnect to their own busy schedule. The lead noted, “Personally, I wasn’t very motivated for those coach meetings because of how full my plate felt this year.” Another team member believed the distance could be a result of scaling the College Access Network, saying, “I feel that there’s a huge disconnect in communication with our coaches . . . only because I truly feel that they’re spread too thin now. The network has grown so much.” Coaches also mentioned that they had a fuller workload than they had in previous years.

Naviance

As part of the College Access Network, NTN supported schools in implementing the Naviance college- and career-planning software. Respondents provided mixed reports on the implementation and utility of Naviance. Over the 3 years of data collection, three schools reported discontinuing its use.

Key Findings

- Many schools reported challenges (e.g., teacher and student training, allocation of time for completing activities) in establishing Naviance as an effective tool for college readiness.
- Several schools discontinued the use of Naviance in Year 3 in favor of Google Forms or SchoolLinks.

School teams reported implementing certain aspects of Naviance, including the junior wish list, the SuperMatch college search tool, and the career interest profile. One school provided positive feedback on Naviance as a tool for college readiness. The principal of this school said, “I think it’s an easy program. I think the kids like it, you know, and just like Khan Academy. I do think those are two great programs because [they’re] very easy to access.” However, schools generally did not share positive perceptions of Naviance’s suitability for college readiness activities and noted challenges getting students to engage with the Naviance activities. For example, one principal stated,

[Naviance] is a little more challenging to use than anticipated, so I think a lot of students are reluctant to work on it or they stop at moments. . . . I think it's just a very overwhelming platform that's a little bit more time consuming than we anticipated. So, I think that's where we don't have the students using it as frequently as they could or they should.

In Year 3, three school teams reported that they discontinued the use of Naviance for their college and career readiness efforts in favor of other tools like SchoolLinks. One school team member stated that the reason for the switch was “based on the needs of our students. . . . [SchoolLinks is] a lot more user friendly. It's easier for kids to access.”

College Access Network Convenings

Another key support provided by NTN for College Access Network participants was the facilitation of networking and knowledge building among schools. NTN hosted three convenings per year that included participating schools across all cohorts. The convenings focused on topics such as FAFSA and postsecondary applications for seniors, planning activities for students, and the junior wish list process. These convenings were held virtually during COVID and returned to an in-person format in spring of Year 3. All schools identified them as important spaces to connect, learn, and collaborate across the network. Feedback included the following:

Key Findings

- School teams valued the opportunities provided at convenings to learn from other schools and districts with similar student populations.
- School teams found the convenings to be an important opportunity to reflect and plan, and to refocus on the primary goals of their work.

- **School teams valued the opportunity to learn from other schools at convenings.** Respondents spoke about the way listening to colleagues in other schools or districts inspired them to bring home new ideas for their own schools, many of which they later implemented. To this point, schools commented on the importance of sharing and hearing from schools in contexts that were both similar to and different from their own. Teams appreciated learning from schools in similar contexts to gain insight into ways in which to address shared challenges. For example, reflecting on the intentional pairing of teams based on school context at a Year 3 convening, one member noted, “The conversations that were happening within our table at this last convening were a little bit more on point with where we are. It really gave us an idea of how to work with our population, how to work with our size of school, [how] to reach certain goals.” School teams also valued the diversity in size, population, locale, and resources among College Access Network schools. Teams thought that the diversity helped expand their thinking regarding what could be possible, as exemplified in one respondent's comment: “Something that I liked a lot was engaging with

other [schools and districts] because working with the different populations and looking at our different needs, that always brought a lot of enlightenment and ideas and . . . wealth into the convenings.” Respondents from all schools spoke of the importance of the convenings for establishing cross-network connections. A few interviewees added to this sentiment, saying that the convenings established a certain degree of comfort among schools that made it easier to reach out to one another afterward.

- **School teams valued the dedicated time for reflection and planning at convenings.** Respondents from half of the schools said that they saw the convenings as important planning times for their internal team. Some teams thought the sharing of ideas helped to inspire and set the tone for planning new activities, and members of others mentioned that they found that the convening activities pushed them to consider more deeply the purpose and direction of their plans. As one respondent said, “I think the convening really connected us again and brought back our purpose as to why we’re on this team.” More broadly, one respondent thought that the convenings helped foster a greater sense of purpose across the larger College Access Network, saying, “Having these discussions with those people in different areas, it’s a validation of why we work so hard and why we won’t ever stop working this hard to make sure that these kids are getting the right support.”

Continued Networking Opportunities

A goal of the NTN College Access Network was to foster relationships among schools to enable ongoing sharing of ideas and information. To facilitate communication among schools outside of the convenings, NTN established a slack.com channel for participating schools. Nevertheless, in both Years 2 and 3, schools reported that fostering sustained communication among College Access Network schools was an area in need of improvement.

Key Findings

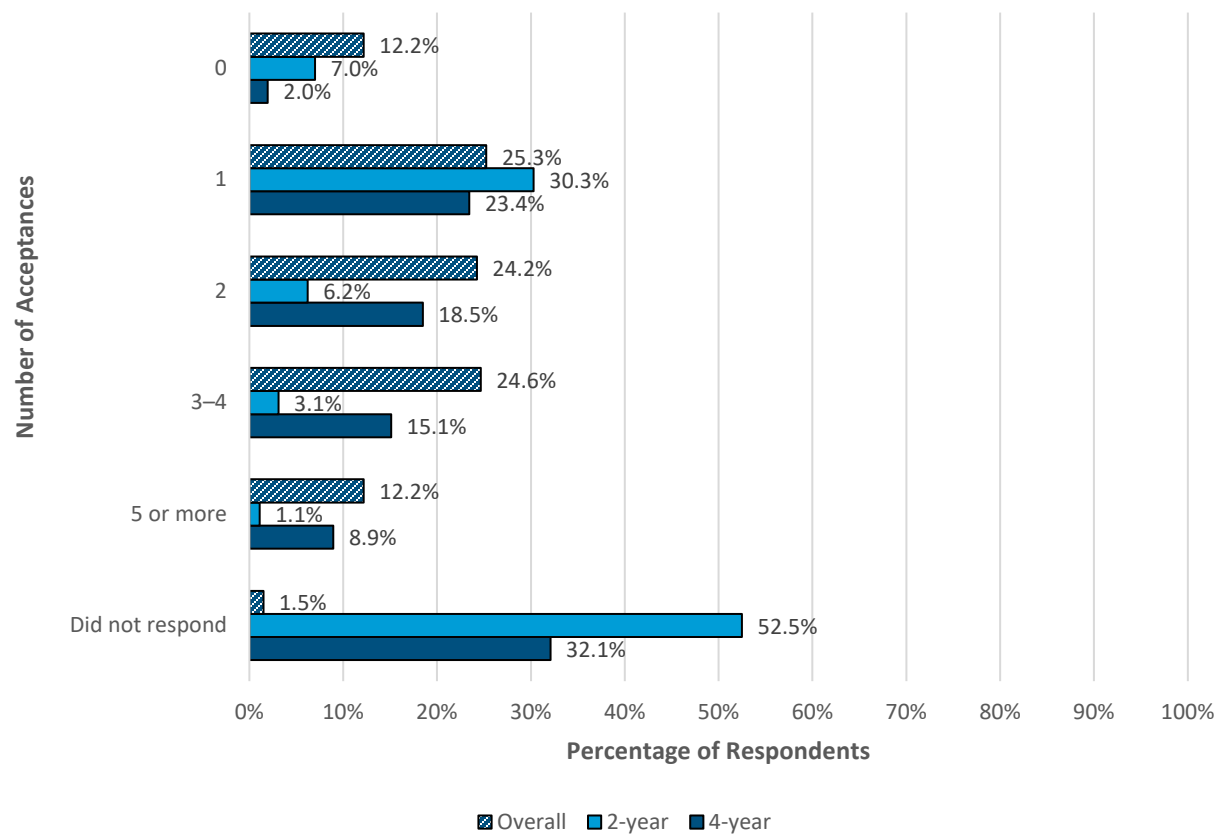
- School teams reported limited communication and networking with other schools outside of the convenings. Most communication reported was independent from the NTN initiative, for example, through district-wide counselor meetings.
 - Teams viewed the opportunity to connect with other schools as a valuable aspect of the network. Several teams provided suggestions for improving communication, for example through role-specific connections.
- **Outside of convenings, sustained communication with the broader College Access Network tended to be role based and independent of NTN facilitation.** Most school team members reported making few or no outreach attempts to members of the broader College Access Network outside of convenings. Those who did communicate with other College Access Network schools tended to do so in role-based, district-specific contexts.
 - **Teams offered suggestions for ways in which NTN might further facilitate connections.** Several respondents made suggestions for ways NTN might better facilitate connections

among schools in the broader College Access Network. First, two school teams suggested fostering more role-dependent connections. For example, one principal said it would be helpful to have a message thread via email or text with other principals. Second, a school suggested that NTN consider making more connections based on the school context to promote the sharing of ideas and data. They said, “We can work together as two different campuses to align certain ideas and test them out together with our respective populations and then reflect on those. It would even give us more of an insight, like what did you see happen at your campus? What did we see happen at our campus?” Finally, two teams suggested expanding opportunities for all team members to participate in monthly Zoom calls like the team lead meetings.

Appendix C. Additional Findings of Descriptive Analyses of High School Senior Survey Data

The Senior Exit Survey asked students to report the number of colleges they were accepted by, both overall and separately and for 2-year and 4-year colleges. Over three quarters (86%) of survey respondents reported being accepted by at least one college, and almost two thirds of respondents (66%) reported being accepted by at least one 4-year college (see Exhibit C1).

Exhibit C1. Number of Colleges Survey Respondents Reported Getting Accepted by, Overall and by College Type

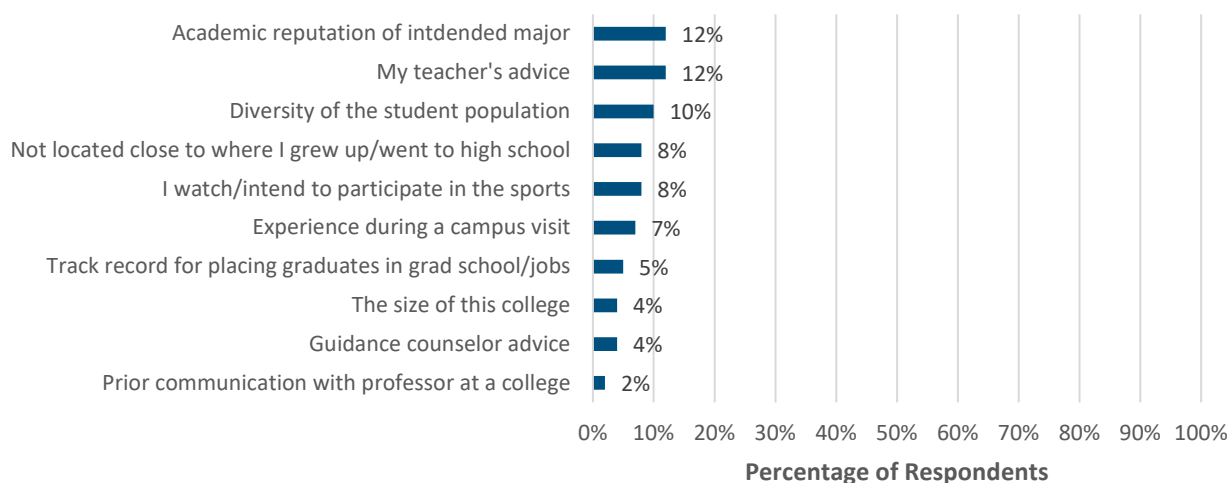
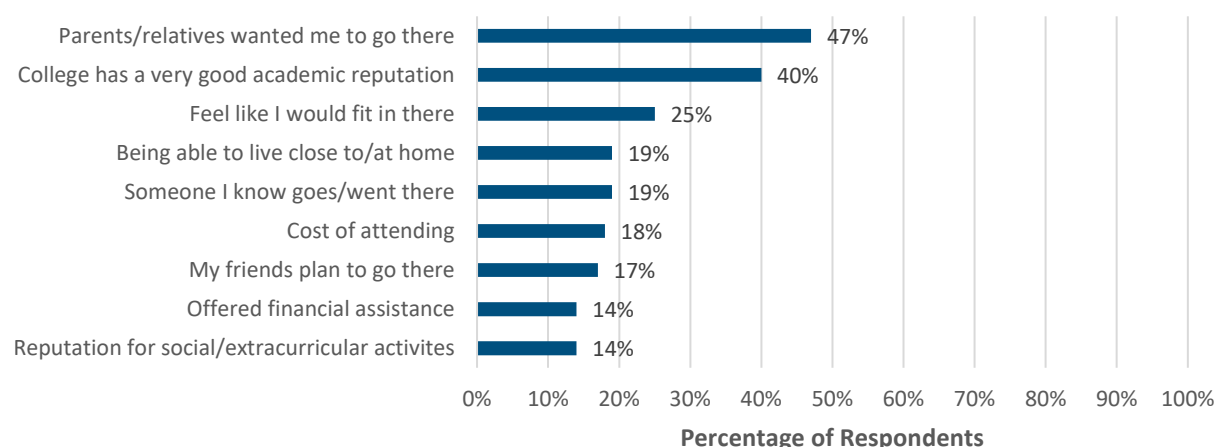


Note. A total of 1,477 survey respondents who applied to at least one college reported the number of colleges they were accepted by. Nonresponse to this question may indicate that students did not apply to and/or did not get accepted by a specific college type. From Senior Exit Survey, spring 2022.

In the Student Experience Survey, students were provided with a list of 19 factors that might have influenced their college decisions, and they were asked to rank order the top five factors that

influenced their decisions. In Exhibit C2, we illustrate the number of survey respondents who placed each of the factors as their first, second, or third choice. Nearly one third of the respondents (31%) chose not to respond to a question about the reasons that influenced their decision to attend a specific college. Of the students who did respond, the two most commonly cited “top three” reasons were “my parents/relatives wanted me to go there” (47% of respondents), followed by “the college has a very good academic reputation” (40% of respondents). Other reasons that were commonly selected included “I feel like I would fit in there” (25% of respondents), “being able to live close to/at home,” “someone I know goes/went there” (19% of respondents), and “cost of attending” (18% of respondents). On the other hand, “religious affiliation/orientation of the college” and “rankings in national magazines” were identified as the least influential factors, with less than 1% of respondents choosing them.

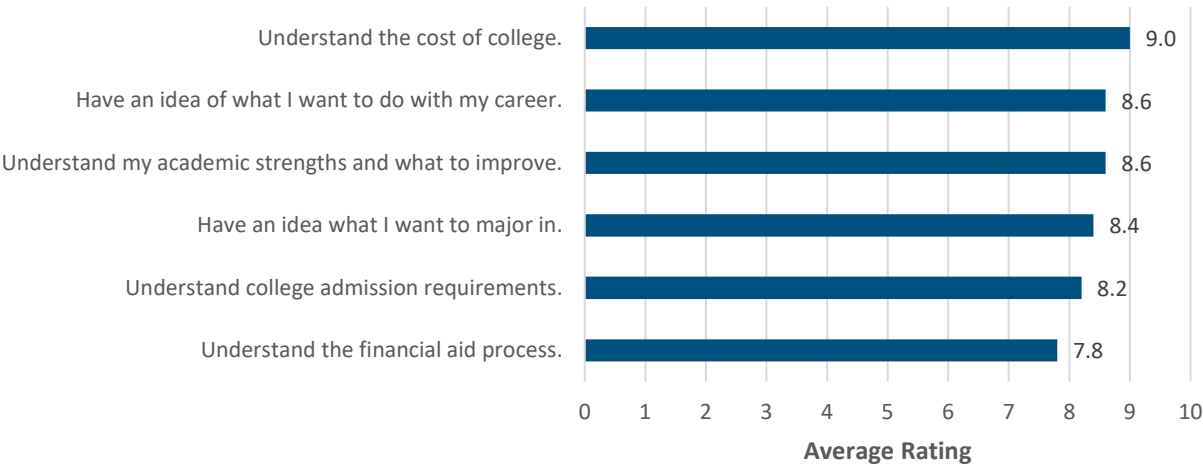
Exhibit C2. Reasons That Students Selected as the Top Three Factors That Influenced Their College Decisions



Note. Number of responses ranged from 688 to 29 across 19 items. From Student Experience Survey, spring 2022.

Students were also asked to report (on a scale of 0 to 10) how well they felt that they understood different aspects of the college application process. Across the six aspects of the college application process that the survey addressed, students felt most informed about college costs, their academic strengths, and what they want to do with their careers (see Exhibit C3). However, students reported less confidence in their knowledge of the financial aid process.

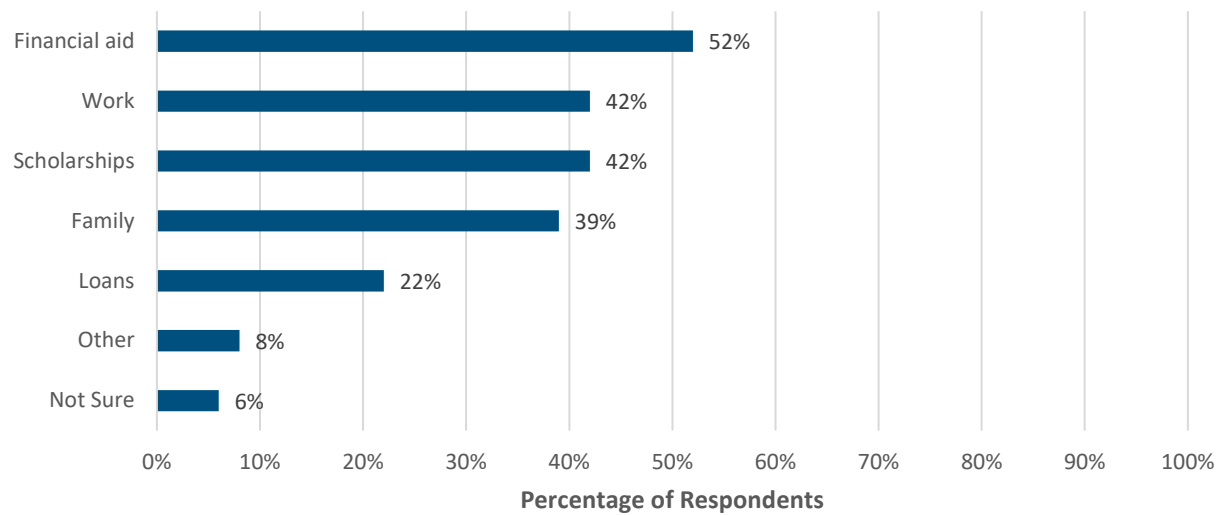
Exhibit C3. Students’ Self-Reported Knowledge of the College Application Process



Note. Number of responses ranged from 1,672 to 1,747 across six items. From Student Experience Survey, spring 2022.

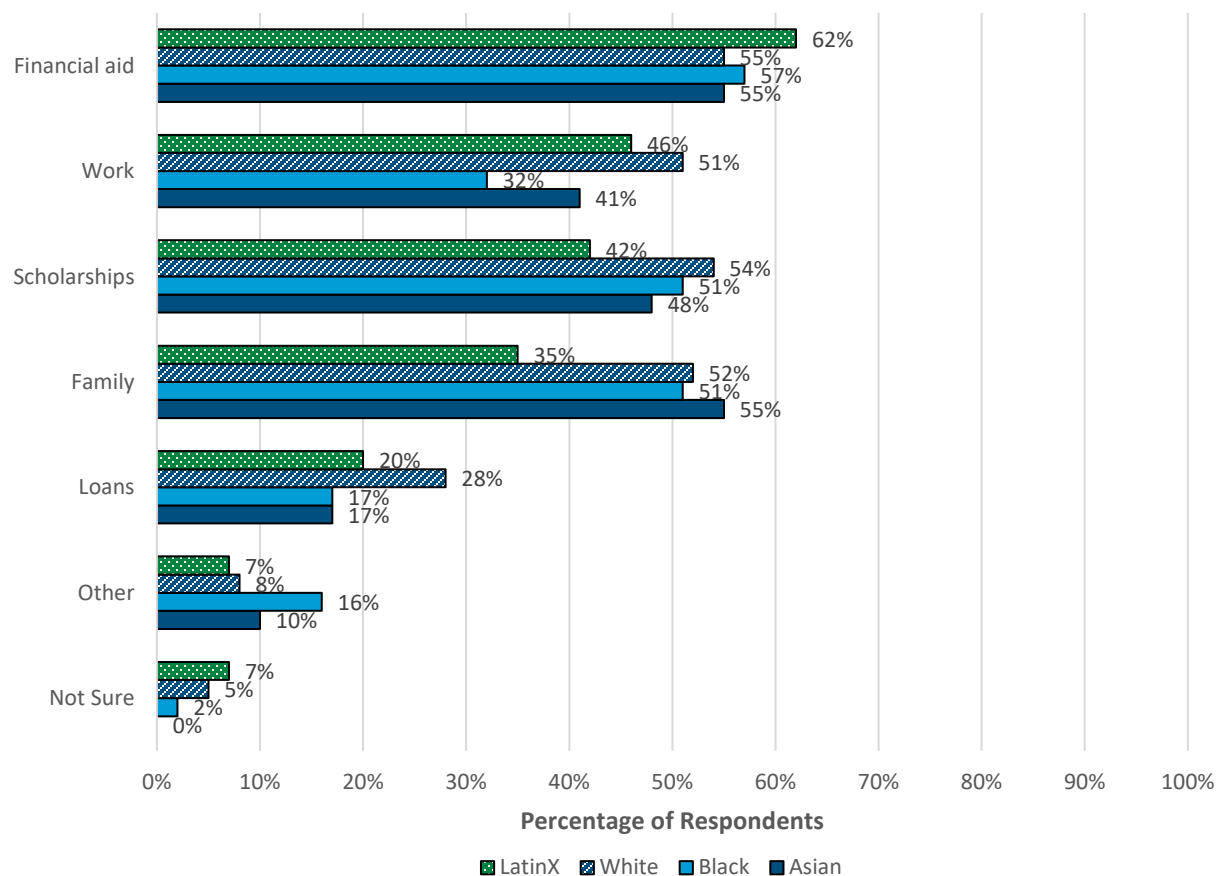
When students were asked about how they planned to pay for college, the majority selected financial aid (52%; see Exhibit C4). Family contributions (39%), scholarships (42%), and working through college (42%) were also selected by many students as sources of funding for college. However, when we look at the breakdown by race and ethnicity (see Exhibit C5), some interesting differences emerge. Among Asian, White, and Bi/Multiracial students, the largest percentage selected family contributions, while among Latinx students, the largest percentage selected financial aid to finance their education.

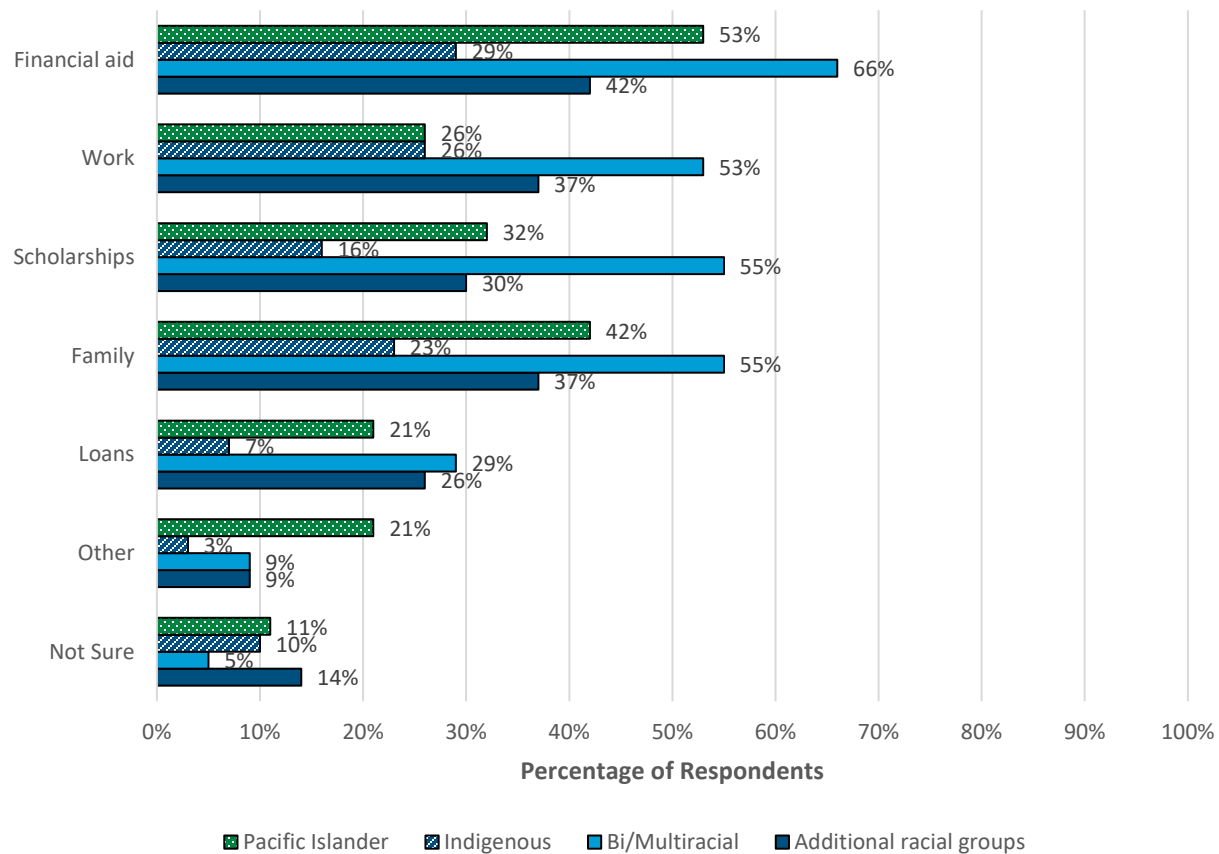
Exhibit C4. Students' Thoughts About the Way They Would Pay for College



Note. Number of responses ranged from 129 to 1,112 across seven items. Respondents could select more than one option. From Student Experience Survey, spring 2022.

Exhibit C5. Students' Thoughts About the Way They Would Pay for College, by Race/Ethnicity

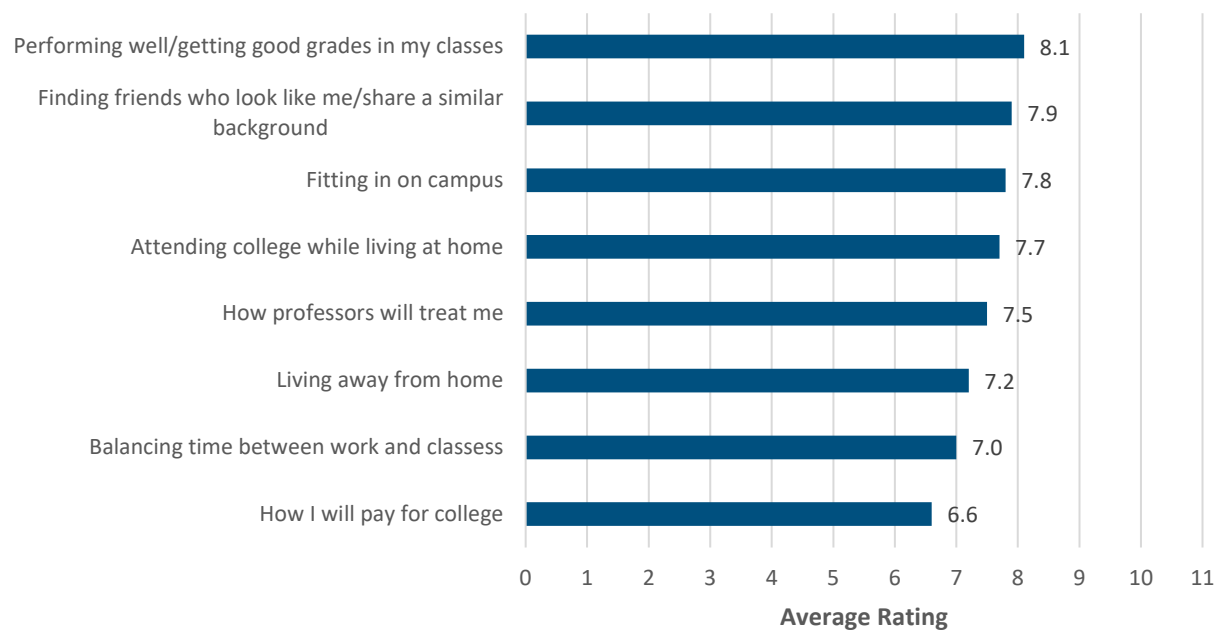




Note. Survey respondents included 792 Latinx students, 762 White students, 89 Multiracial students, 63 Black students, 31 Indigenous students, 29 Asian students, 19 Pacific Islander students, and 107 students from additional racial groups. Respondents could select more than one option. From Student Experience Survey, spring 2022.

Students were asked about the way they were feeling (on a scale of 1 to 10) about various aspects of going to college. Students reported feeling good about their academic performance in their upcoming college courses, with an average value of 8.1, followed by finding friends at college with a similar background (7.9) and living away from home (7.2; see Exhibit C6). Students reported feeling less confident about the way they would pay for college (6.6). Notably, student respondents didn't feel as confident about balancing time between work and classes (7.0), even though they felt good about getting good grades.

Exhibit C6. Students' Feelings About Going to College



Note. Number of responses ranged from 913 to 1,112 across eight items. From Student Experience Survey, spring 2022.

Appendix D. Additional Impact Study Findings

Exhibit D1. Impacts of the College Access Network: Focal Cohort Compared With Both Prior Cohorts, Prior Cohort 1 Only, and Prior Cohort 2 Only

Measure	T-C P.P. Diff.	Standard error	p-value	N treatment	Treatment mean	SD treatment	Adj. SMD	N comp.	Adj. comp. mean	SD comp.
Focal cohort vs. both prior cohorts										
High school graduation	0.074	0.029	.010	4,349	91%	0.290	0.239	7,580	83%	0.320
College enrollment in the first fall after expected high school graduation	0.020	0.029	.498	4,349	30%	0.460	0.042	7,580	28%	0.490
Persistence in college to the first spring after expected high school graduation	0.031	0.025	.210	4,349	22%	0.410	0.072	7,580	19%	0.450
Persistence in college to the second fall after expected high school graduation	0.021	0.021	.300	4,349	17%	0.370	0.053	7,580	15%	0.420
College enrollment by the first spring after expected high school graduation	0.018	0.030	.547	4,349	32%	0.470	0.037	7,580	31%	0.490
College enrollment by the second fall after expected high school graduation	0.008	0.033	.811	4,349	36%	0.480	0.016	7,580	35%	0.500
Enrollment in a 4-year college	-0.006	0.016	.736	4,349	15%	0.360	-0.014	7,580	16%	0.400
Focal cohort vs. prior cohort 1 only										
High school graduation	0.073	0.031	.020	2,912	90%	0.300	0.239	4,973	83%	0.310
College enrollment in the first fall after expected high school graduation	0.034	0.028	.230	2,912	26%	0.440	0.073	4,973	23%	0.480
Persistence in college to the first spring after expected high school graduation	0.042	0.025	.096	2,912	20%	0.400	0.098	4,973	15%	0.450
Persistence in college to the second fall after expected high school graduation	0.032	0.020	.108	2,912	15%	0.350	0.082	4,973	11%	0.410

Measure	T-C P.P. Diff.	Standard error	p-value	N treatment	Treatment mean	SD treatment	Adj. SMD	N comp.	Adj. comp. mean	SD comp.
College enrollment by the first spring after expected high school graduation	0.026	0.032	.417	2,912	28%	0.450	0.054	4,973	26%	0.490
College enrollment by the second fall after expected high school graduation	0.016	0.038	.676	2,912	31%	0.460	0.033	4,973	29%	0.490
Enrollment in a 4-year college	-0.007	0.017	.696	2,912	13%	0.330	-0.018	4,973	13%	0.390
Focal cohort vs. Prior cohort 2 only										
High school graduation	0.072	0.030	.017	2,893	90%	0.300	0.225	5,138	83%	0.330
College enrollment in the first fall after expected high school graduation	-0.009	0.040	.826	2,893	33%	0.470	-0.018	5,138	34%	0.490
Persistence in college to the first spring after expected high school graduation	0.011	0.033	.744	2,893	24%	0.430	0.024	5,138	23%	0.460
Persistence in college to the second fall after expected high school graduation	0.005	0.029	.872	2,893	18%	0.390	0.011	5,138	18%	0.420
College enrollment by the first spring after expected high school graduation	-0.007	0.038	.859	2,893	35%	0.480	-0.014	5,138	36%	0.490
College enrollment by the second fall after expected high school graduation	-0.019	0.041	.637	2,893	39%	0.490	-0.039	5,138	41%	0.500
Enrollment in a 4-year college	-0.014	0.021	.528	2,893	17%	0.370	-0.035	5,138	18%	0.400

Note. T-C P.P. Diff. = treatment—comparison percentage point difference; N = number; SD = standard deviation; Adj. = adjusted; comp. = comparison; SMD = standardized mean difference. The number of treatment group members and comparison group members is the preintervention sample. The treatment group mean is the mean for the treatment group in the pre-period; the adjusted comparison group mean is equal to the treatment group mean minus the coefficient (T-C P.P. Diff).

Exhibit D2. Impacts of the College Access Network on College Outcomes for Specific Student Groups

Measure	Treatment group mean	Adj. comp. group mean	T-C percentage point difference	p-value	Number of students
College persistence to second fall after expected high school graduation					
Male	14.7%	10.4%	4.3%	.058	6,008
Female	19.1%	21.3%	-2.2%	.470	5,921
Non-FRPL	19.6%	19.5%	0.1%	.986	4,199
FRPL	14.7%	12.4%	2.3%	.307	7,730
Non-EL	17.2%	13.6%	3.6%	.139	9,476
EL	15.6%	19.1%	-3.5%	.579	2,453
Enrollment in a 4-year college					
Male	14.0%	13.5%	0.5%	.779	6,008
Female	16.9%	21.5%	-4.6%	.138	5,921
Non-FRPL	17.6%	21.1%	-3.5%	.230	4,199
FRPL	13.7%	14.2%	-0.5%	.842	7,730
Non-EL	17.0%	17.1%	-0.1%	.959	9,476
EL	10.5%	14.0%	-3.5%	.311	2,453

Note. Adj. comp. = adjusted comparison; T-C = treatment—comparison; FRPL = free or reduced-price lunch; EL = English learner. This table shows the impact estimates produced from the differential impact analysis on *subsets* of students. Specifically, the results in each row represent the outcome from an impact model on students within that group, for example, the female results are from a regression on *only the female Latinx students*. The results in the column “T-C Percentage Point Difference” show the difference between treatment and comparison students within the corresponding student subgroup.

About the American Institutes for Research®

Established in 1946, the American Institutes for Research® (AIR®) is a nonpartisan, not-for-profit institution that conducts behavioral and social science research and delivers technical assistance both domestically and internationally in the areas of education, health, and the workforce. AIR's work is driven by its mission to generate and use rigorous evidence that contributes to a better, more equitable world. With headquarters in Arlington, Virginia, AIR has offices across the U.S. and abroad. For more information, visit [AIR.ORG](https://www.air.org).



AIR® Headquarters

1400 Crystal Drive, 10th Floor
Arlington, VA 22202-3289
+1.202.403.5000 | [AIR.ORG](https://www.air.org)

Notice of Trademark: "American Institutes for Research" and "AIR" are registered trademarks. All other brand, product, or company names are trademarks or registered trademarks of their respective owners.

Copyright © 2024 American Institutes for Research®. All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, website display, or other electronic or mechanical methods, without the prior written permission of the American Institutes for Research. For permission requests, please use the Contact Us form on [AIR.ORG](https://www.air.org).