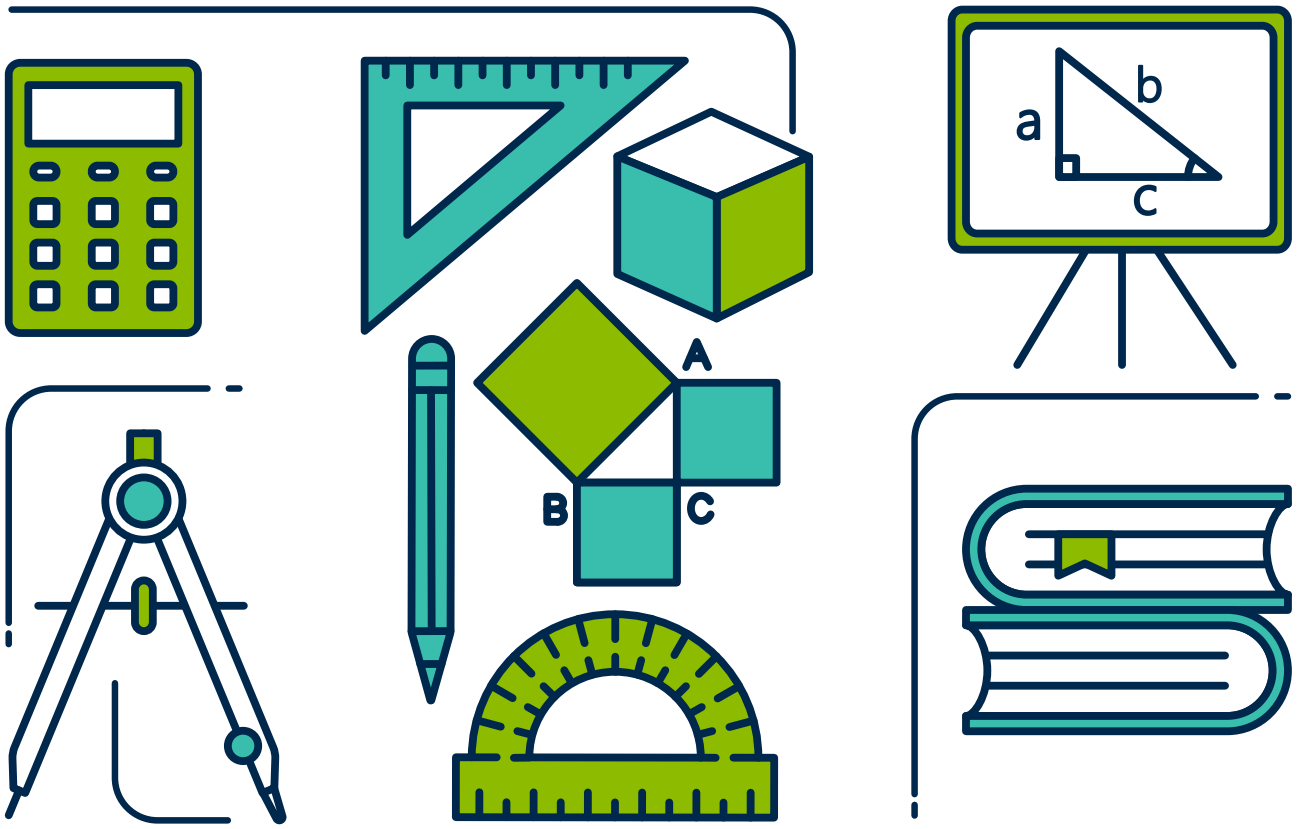


THE NEBRASKA MATH READINESS PROJECT

Metropolitan Community College Pilot Evaluation

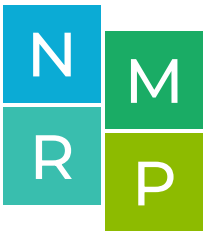
A Nebraska Statewide Workforce & Education Reporting System (NSWERS) Evaluation
Prepared for the Metropolitan Community College and the Peter Kiewit Foundation

insights.nswers.org/evaluations/nmrpmcc2026

Version 1.0
June 4, 2026

The Nebraska Statewide Workforce & Educational Reporting System, or NSWERS, is a one-of-a-kind research partnership among Nebraska's education and workforce systems designed to create a data-informed decision culture that supports pathways of learning and earning for the people of Nebraska. The NSWERS data system is the most comprehensive education-to-workforce longitudinal information source ever created in Nebraska.

CONTENTS



THE NEBRASKA MATH READINESS PROJECT

Letter from the Executive Director

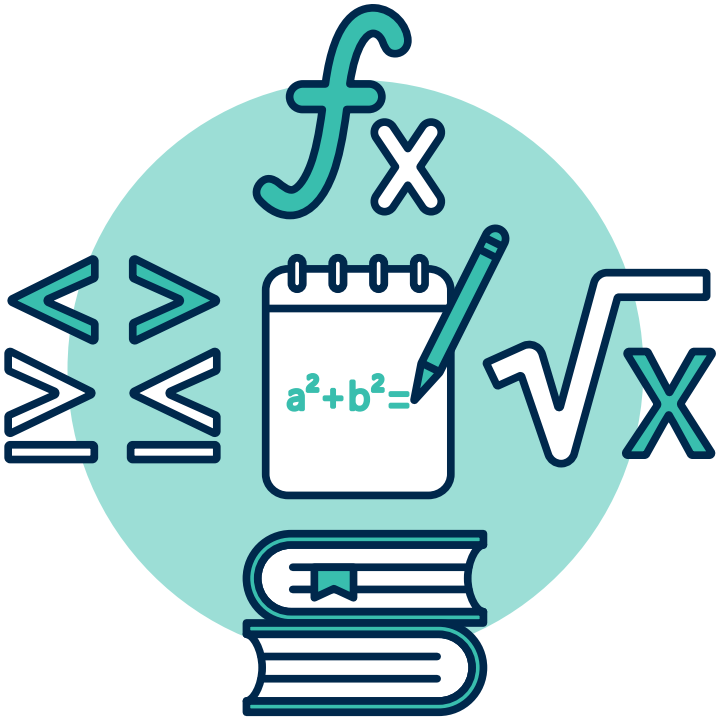
I am pleased to present this evaluation of the Nebraska Math Readiness Project (NMRP) pilot program serving students through Metropolitan Community College. This study examines the characteristics of participating students, their high school preparation, and their postsecondary outcomes to better understand the program's effectiveness in supporting college readiness.

The findings indicate that participation in NMRP is associated with meaningful improvements in students' transition to and success in college. On average, participants were more likely to enroll in college, less likely to take remedial mathematics courses, and earned more college credits with slightly higher grade point averages. The evaluation also finds increased rates of certificate and associate degree attainment among participants. The study provides a balanced assessment of outcomes where program effects were not observed, helping to inform future program development and expansion.

This evaluation was made possible through the collaboration of NSWERS partners. I extend my appreciation to Metropolitan Community College for commissioning this study and supporting efforts to strengthen math readiness and postsecondary success for Nebraska students. I also thank the Peter Kiewit Foundation and the University of Nebraska at Omaha for their support of this evaluation and for their instrumental role in implementing NMRP programming.

At NSWERS, we are committed to producing rigorous analyses that help Nebraska's education and workforce leaders make informed decisions. We hope the insights contained in this report contribute to ongoing efforts to improve student preparation for college and career success.

Matthew J. Hastings, Ph.D.
Executive Director
Nebraska Statewide Workforce & Educational Reporting System (NSWERS)



INTRODUCTION

About NMRP

The Nebraska Math Readiness Project (NMRP) is a targeted intervention designed to support Nebraska high school students who aspire to attend college but lack the foundational math skills necessary for success in college-level coursework. The program offers a year-long, hybrid curriculum that helps students build their math proficiency and aims to prepare them for college readiness by the end of their senior year. This curriculum is delivered through a sequence of dual enrollment courses that are aligned with students' current level of mathematical understanding.

The program is intended to create a pathway for students to bypass developmental or remedial math courses in college. If the program achieves its goals, participating students would be able to enroll directly in credit-bearing college math courses at Nebraska's community colleges. This pathway is designed to reduce tuition costs, allow students to begin earning college credits immediately, preserve eligibility for financial aid, and support on-time graduation. This evaluation will assess the extent to which these intended outcomes are realized.

NMRP is a collaborative initiative between Nebraska's community colleges and high schools across the state, supported by multiple philanthropic foundations. Now several years into development and implementation, the program seeks to establish a scalable, statewide solution to the persistent challenge of low college math readiness among Nebraska high school graduates.

About MCC

Metropolitan Community College (MCC) is a public community college in Nebraska and the requester of this evaluation. MCC has been a strong participant and co-leader in the project, and has worked during the last five years to support the college readiness of Nebraska high school students who have struggled in learning mathematics. MCC co-designed the curriculum with other community colleges in Nebraska and provided high school teachers offering dual enrollment NMRP courses with specialized professional development on using the NMRP hybrid learning system. Additionally, MCC assisted in setting up the courses, student enrollment, and provided ongoing support for navigating the NMRP system.

About NSWERS

The Nebraska Statewide Workforce & Educational Reporting System (NSWERS) is a collaboration among Nebraska's six community colleges, the Nebraska Department of Education, the Nebraska State College System, the University of Nebraska System, and in affiliation with the Nebraska Department of Labor to enable seamless integration of data across educational and workforce systems, provide data literacy education, and promote the use of this data to further evidence-based policy and practices across the educational systems of Nebraska.

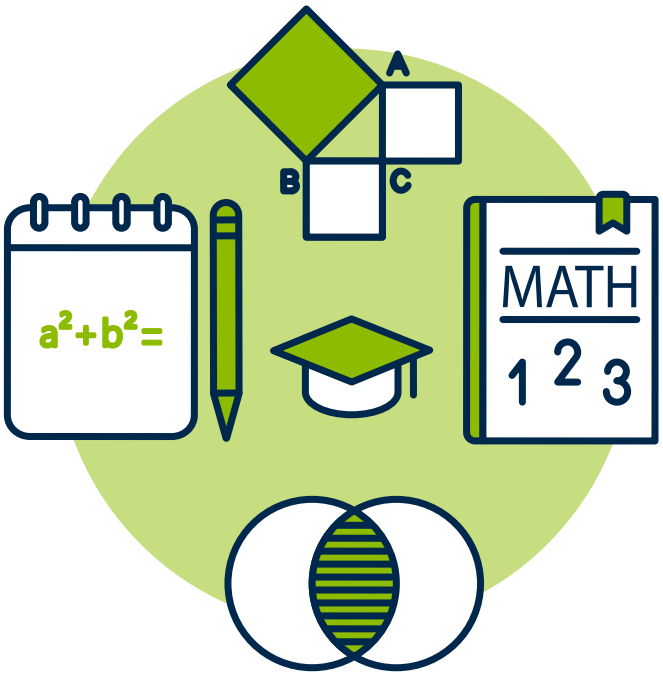
The data for this report come from the NSWERS data system, which contains student information from all public school districts and public postsecondary institutions in Nebraska. NSWERS develops and maintains the system to support research and analyses on education and workforce outcomes, and to aid decision-making in these sectors.

Scope of Evaluation

This evaluation was requested by Metropolitan Community College (MCC); therefore, this report includes only data on program participants who received the intervention through MCC. Data on participants from other NMRP-participating colleges are not included. Additionally, the report includes data on non-participants who were potentially eligible for the program, to serve as a comparison group. As a public community college, MCC serves residents of a four-county area: Dodge, Douglas, Sarpy, and Washington counties. Accordingly, eligible students were selected from public school districts within MCC's service area.

The report includes high school course-taking and academic performance data, along with demographic information for Nebraska public high school students. It also presents the benefits of the intervention for program participants across various educational outcomes, including college enrollment, persistence, and degree attainment rates; cumulative college credits earned; cumulative GPA; and remedial math course-taking. Because these outcomes require different follow-up periods, the most recent available year of data varies by outcome.

Finally, the report provides estimates of the causal effect of NMRP participation on educational outcomes. A causal effect measures how much of the observed difference in outcomes is attributable to the intervention itself, rather than to other factors. Since participants were purposefully rather than randomly selected, there may be systematic differences between participants and non-participants in terms of demographics and academic preparedness, which can contribute to differences in outcomes that are not related to program participation. If not properly addressed, these differences can bias the estimated effects. To mitigate this, statistical methods were applied to account for pre-existing differences and isolate the unique contribution of program participation. These causal findings, based on the quasi-experimental methods used in this report, reflect the program's effectiveness in improving student outcomes and can inform data-driven decisions about secondary math education in Nebraska.



KEY FINDINGS

Key Findings

Participant Profile

- NMRP participation steadily increased over time.
- NMRP participants' achievement level varied across gender and racial/ethnic groups.
- NMRP participants' curriculum track choice varied across gender and racial/ethnic groups.

High School Data of Participants

- Across all groups, NMRP participants attempted comparable amounts of high school math coursework.
- NMRP Level 2 and 3 Completers demonstrated higher levels of prior academic achievement in math compared to the comparison group.
- NMRP completers exhibited lower rates of chronic absenteeism than both Non-completers and the comparison group.
- NMRP completers were more likely to graduate from high school than both Non-completers and the comparison group.

Causal Impact of NMRP Participation on Postsecondary Outcomes

This study provides strong evidence that participation in NMRP is associated with causal changes in the following postsecondary outcomes for participants, compared to if they had not participated:

- College enrollment increased by 12 percentage points
- Remedial math enrollment decreased by 7 percentage points
- Credit-bearing math completion by 27.8 percentage points
- Cumulative college GPA increased by 0.2 points
- College persistence increased by 4 percentage points
- College graduation increased by 7 percentage points
- Two-year certificate attainment increased by 7 percentage points
- Associate degree attainment increased by 7 percentage points
- Participation in NMRP was not estimated to cause changes in the following outcomes:
    - Bachelor's or higher degree attainment
    - Cumulative earned college credits

STUDY OVERVIEW

Purpose

The primary purpose of this study is to evaluate the effectiveness of the Nebraska Math Readiness Project (NMRP) in supporting participants at Metropolitan Community College (MCC) in becoming college-ready, successfully transitioning to college, and achieving academic success once enrolled.

Additionally, the study seeks to replicate and enhance the internal evaluation MCC has conducted over the past five years. By transitioning this evaluation to the Nebraska Statewide Workforce and Education Reporting System (NSWERS), MCC aims to ensure long-term sustainability in program assessment and data sharing. NSWERS will leverage its statewide longitudinal data system to generate meaningful insights into the program's impact, which MCC will use to demonstrate outcomes, identify areas for improvement, and fulfill evaluation requirements set by the Peter Kiewit Foundation—particularly those tied to funding for students' dual enrollment fees.

Finally, this study serves as a pilot initiative to help other Nebraska higher education institutions understand the value of using the NSWERS data system for evaluating NMRP and similar student intervention programs. It will provide a model for how institutions can effectively engage with NSWERS for future data analysis and program evaluation efforts.

Background and Evaluation Rationale

A substantial proportion of students enter postsecondary education academically underprepared, particularly in mathematics, where readiness gaps are most pronounced. National evidence indicates that more than half of community college students are referred to developmental math upon entry, yet only a small fraction successfully progress through remedial sequences and complete a college-level course (*1*). This pattern reflects a persistent structural problem: developmental education, as traditionally implemented, functions less as a bridge to college success and more as a point of attrition within the postsecondary pipeline.

The challenges associated with developmental education operate along two key dimensions. First, placement systems, typically based on standardized tests, are imprecise. A significant share of students are misassigned, with many placed into remediation despite being capable of succeeding in college-level coursework. Second, the structure of remedial sequences introduces multiple exit points that reduce persistence (*2*). A large proportion of students either never enroll in assigned remedial courses or fail to progress through the full sequence, even when they successfully complete individual courses. Together, these features suggest that developmental education may systematically delay or divert students from credit-bearing pathways without consistently improving their academic readiness.

A growing body of causal research reinforces this concern. Studies using quasi-experimental designs generally find null or negative effects of remediation for students near placement cutoffs, particularly in terms of credit accumulation and degree attainment (*3*). However, effects are heterogeneous: while marginal students often experience limited or negative impacts, students with lower levels of academic preparation may benefit from more intensive remediation in certain contexts (*4*). This heterogeneity underscores the importance of both accurate placement and appropriate intervention design.

In response to these challenges, policymakers and practitioners have pursued reforms aimed at restructuring or bypassing traditional remediation. Two dominant approaches have emerged. The first involves acceleration and co-requisite models that reduce time spent in noncredit coursework by placing students directly into college-level courses with additional support. Evidence suggests that these approaches improve short-term outcomes, particularly gateway course completion (*3*), but their effects on longer-term outcomes such as persistence and degree completion remain limited. The second approach focuses on improving placement accuracy through multiple measures, such as incorporating high school performance data, which can increase access to higher-level courses without reducing success rates (*5*).

A third, increasingly prominent strategy shifts the timing of intervention earlier in the educational pipeline. Rather than addressing developmental needs after students enroll in college, high school-based transition supports aim to improve college readiness prior to matriculation. These programs typically identify students as not college-ready using standardized benchmarks and provide targeted instruction during the final year of high school. The rationale is that reducing the need for remediation can accelerate students' entry into credit-bearing coursework. In turn, this is expected to improve early academic momentum and subsequent outcomes.

Evidence on high school transition interventions is mixed. Some studies find that such programs increase enrollment in and completion of college-level courses in the first year, as well as modest gains in early credit accumulation (*6*). However, these gains often do not translate into substantial improvements in long-term outcomes such as persistence or degree completion. One explanation is that while transition interventions reduce structural barriers (e.g., delays associated with prerequisite remediation) they may not meaningfully improve underlying academic skills. Consequently, these programs may shift the timing of student progression without fundamentally altering longer-term trajectories.

This pattern demonstrates a fundamental tension in remediation: interventions that reduce time-to-credit tend to create gains in early momentum but may not consistently improve downstream attainment. This tension reflects the dual role of remediation as both an academic intervention (i.e., intended to build skills) and a structural protection (i.e., a gate keeping function that delays entry into credit bearing coursework). However, this protection may delay or divert progress. If remediation primarily imposes delays without delivering skill gains, then interventions that eliminate or bypass it may yield short-term benefits, such as preserving academic momentum, without addressing constraints on student success.

Within this context, evaluating high school-based math readiness interventions is critical. These programs represent a proactive attempt to address academic preparation before students encounter postsecondary barriers. However, with mixed evidence on similar interventions, it remains unclear whether improving readiness at the point of high school exit necessarily leads to sustained improvements in postsecondary outcomes. Given this uncertainty, it is imperative to evaluate the impact of NMRP on students' transition into and progression through postsecondary education.

Study Objectives, Hypotheses, and Research Questions

Based on the program's theory of action and prior evidence on high school transition interventions, this study evaluates whether participation in NMRP improves students' postsecondary outcomes. Specifically, we hypothesize that NMRP participation will:

- increase the likelihood of college enrollment
- reduce enrollment in remedial math coursework and increase earning of credit-bearing math
- increase early academic momentum, as measured by credit accumulation and GPA, and
- improve longer-term outcomes, including persistence and credential attainment.

To operationalize these hypotheses, this study addresses the following research questions:

1. To what extent does participation in NMRP increase the likelihood that students enroll in postsecondary education following high school graduation?
2. Does NMRP participation reduce the likelihood that students enroll in remedial or developmental math coursework upon entering college?
3. Does NMRP participation increase the likelihood that students earn credit-bearing math within the first year of starting college?
4. How does NMRP participation affect early postsecondary academic progress, including cumulative college credits earned and cumulative GPA?
5. Does participation in NMRP improve students' likelihood of persisting in college beyond the first year?
6. To what extent does NMRP participation increase the likelihood of long-term outcomes, including degree or credential attainment?
7. Do the effects of NMRP vary across student subgroups or levels of academic preparation?

Study Design

This evaluation uses a quasi-experimental design to estimate the effect of NMRP participation on postsecondary outcomes. Because participants were purposefully selected rather than randomly assigned, the primary methodological challenge is addressing systematic differences between participants and non-participants.

To address this, the study employs propensity score methods. Each student's probability of participating in NMRP is estimated using observed pre-program characteristics, including demographics (e.g., race/ethnicity, gender), prior academic achievement, and indicators of high school engagement (e.g., attendance, mobility, and program participation). These estimated probabilities are then used to balance the treatment and comparison groups. While individuals with similar propensity scores may not have identical characteristics, balancing the distribution of scores across groups improves comparability on observed covariates.

All covariates included in the propensity model were measured prior to program participation to preserve temporal ordering and avoid conditioning on post-treatment variables. The intervention of interest is participation in NMRP during high school, and the comparison group consists of students who were at or near eligibility for the program but did not participate.

The analysis estimates the Average Treatment Effect on the Treated (ATT), which represents the expected impact of NMRP participation for students who participated in the program. Results therefore generalize to participants rather than to the full population of eligible students.

Identification

Identification relies on a conditional independence assumption: after adjusting for observed pre-program characteristics, participation in NMRP is assumed independent of potential outcomes. In other words, conditional on the covariates included in the propensity score model, participants and comparison students are assumed to be comparable on factors influencing both selection into the program and subsequent outcomes.

The primary threat to validity is non-random selection into NMRP through counselor and teacher recommendations, including factors that may not be fully observed (e.g., motivation or family support). This risk is mitigated by incorporating a rich set of pre-treatment covariates into the propensity score model and evaluating covariate balance after weighting.

Overlap and Diagnostics

We assessed covariate overlap and balance after weighting, and primary estimates are based on samples with adequate common support between participants and comparison students. Figures displaying pre- and post-weighting overlap are provided in the Appendix, along with additional methodological details, including model specification and diagnostic checks.

Participants Description

The target population of the intervention consists of students who have significant learning gaps in mathematics and who: 1) are generally adequate independent learners, 2) desire to go to college, 3) have at least some middle school mathematics understanding, and 4) are seen by their teachers as well-suited for NMRP learning.

Based on these criteria, students have been purposefully selected through teacher and counselor recommendations. The students participating in the MCC NMRP program (and across the state) are generally high school seniors, while a few students (about 5 percent) have participated as juniors. In this study, juniors will still be handled within the same cohort year and treated like seniors.

In the NMRP program, participating high school students engage with three instructional levels of mathematics learning modules: Level 1 (Developmental Mathematics), Level 2 (Introductory Algebra, Business Mathematics, or Technical Mathematics), and Level 3 (Intermediate Algebra). Students who did not complete Level 1 are designated as Level 0. In this study, participants are assigned a level based on their highest achievement within the NMRP. Additionally, individuals who did not complete any level (Level 0) are categorized as 'non-completers.' These categories will be used for group comparison in the data analysis phase.

In the program, students also follow a specific curriculum track upon completion of Level 1 Module. Students choose to follow one of the tracks based on their goals of pursuing a 2- or 4-year degree: 1) Algebra Track is for students intending to earn a four-year bachelor's degree and 2) Trades Track and Business Track for students pursuing a two-year associate degree or certificates. In this report, because there were a small number of students who were enrolled in Business Track, Trades Track and Business Track are merged into Career and Technical Education Mathematics (CTE) Track. Students who did not complete Level 2 (Level 1 Completers and Non-completers) are categorized as No Track. These categories will be used for group comparison in the data analysis phase.

Each NMRP intervention with each student generally lasts one academic year, with five cohorts of intervention accomplished to date. There have been five distinct years of NMRP operations available for evaluation (representing five different independent cohorts of students, one for each year), with a total of 1,501 students participating across the five years to date for analysis. The number of students, with one cohort per year, includes the following years and sample sizes.

- Cohort/Year 1: Academic Year 2018-2019 (N=202)
- Cohort/Year 2: Academic Year 2019-2020 (N=274)
- Cohort/Year 3: Academic Year 2020-2021 (N=280)
- Cohort/Year 4: Academic Year 2021-2022 (N=405)
- Cohort/Year 5: Academic Year 2022-2023 (N=340)

Note that the Year 5 cohort does not include Omaha Public Schools students because NMRP conducted a new pilot study in OPS during Year 5, where the recruitment strategy shifted significantly from purposeful sample selection to including all eligible students without selection.

Comparison Group Description

In quasi-experimental designs, constructing an appropriate comparison group is essential for evaluating the impact of an intervention or program. The comparison group serves as a benchmark against which the outcomes of the intervention group are measured. Ideally, this group should closely resemble the intervention group to ensure that any observed differences in outcomes can be attributed to the intervention itself, rather than to pre-existing differences between the groups.

In this study, the comparison group was constructed from a sample of non-participant students who were eligible for NMRP participation. Typically, NMRP participants would not have opted to take a fourth year of high school mathematics had they not been placed in the program. Additionally, these students generally had ACT composite scores in the range of 14–19 upon high school graduation.

Based on this understanding, the comparison sample was selected using the following inclusion criteria:

1. Senior students who did not take a fourth year of high school mathematics. This includes students who did not enroll in courses classified as fourth-year high school mathematics, such as those beyond the typical Algebra I, Geometry, and Algebra II sequence. Additionally, only students who completed fewer than 4 Carnegie units of high school math were considered. The definition of a Carnegie unit is also included in the appendix.
2. Senior students with ACT composite scores between 14 and 26, to match the range of scores for recent cohorts of participants and mirror eligibility criteria. Because the ACT was not administered to Nebraska 11th graders in spring 2020, missing ACT scores were imputed using other available data, including high school GPA and student demographic characteristics. The full imputation methodology is detailed in the appendix.

Before selecting students, they were grouped by their expected high school graduation year. This approach aligns with the NMRP cohort structure, as the program targets high school seniors. The expected graduation year was used as the cohort year for non-participants.

Finally, because this study focuses on NMRP participants served by Metropolitan Community College (MCC), only students from public high schools within MCC's county service area were considered. This group is referred to as the "Comparison Group" and serves as the base population for propensity score matching in this study.

Outcome Metrics

This study focuses on program participants' transition to college and their success there. The following metrics are used to assess the progress and performance of the student groups:

- **College Going:** An indicator of whether a student attends a two- or four-year postsecondary institution within 16 months after high school graduation.
- **Remedial Math Course Taking:** An indicator of whether a student took a remedial math course at two-year colleges.
- **Cumulative College Credit Attainment:** The average of a student's course credits earned across all college coursework, including dual enrollment.
- **Cumulative College GPA:** The average of a student's grade points across all post-HS (i.e. excluding dual enrollment) college coursework.
- **College Persistence:** An indicator of whether a student maintains enrollment in any postsecondary institution 1 year following their first enrollment after high school graduation.
- **College Graduation:** An indicator of whether a student graduates from any postsecondary institution with any degree or certificate within 6 years after high school graduation.
- **College Credential Attainment:** An indicator of whether a student graduates from any postsecondary institution with a specific degree or certificate within 6 years after high school graduation.

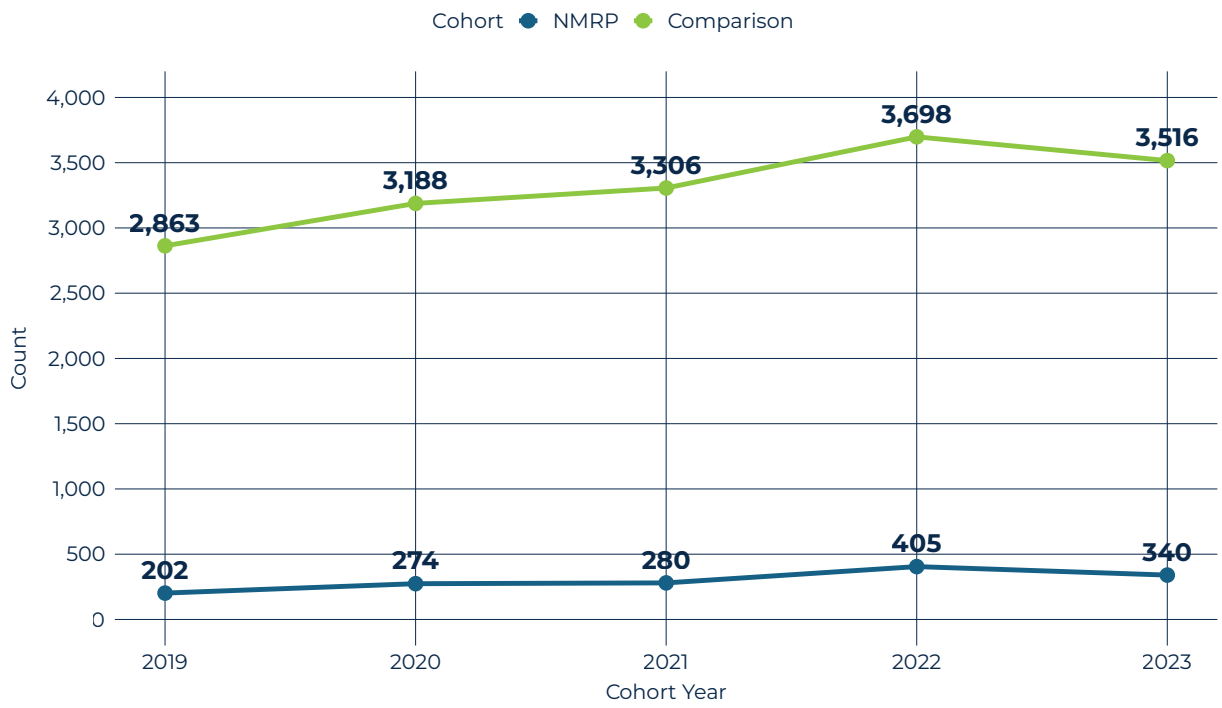
PARTICIPANT PROFILE

Number of Program Participants by Cohort

The number of program participants has been increasing over time. In 2023, the number decreased due to the exclusion of OPS participants from the analysis (N Excluded=325), as a new pilot program was implemented in OPS. If they are included, there is a significant increase in the 2023 counts. Meanwhile, the number of eligible students represented by the comparison group has grown over time, indicating a substantial number of students struggling with math who may benefit from participation.

Figure 1:

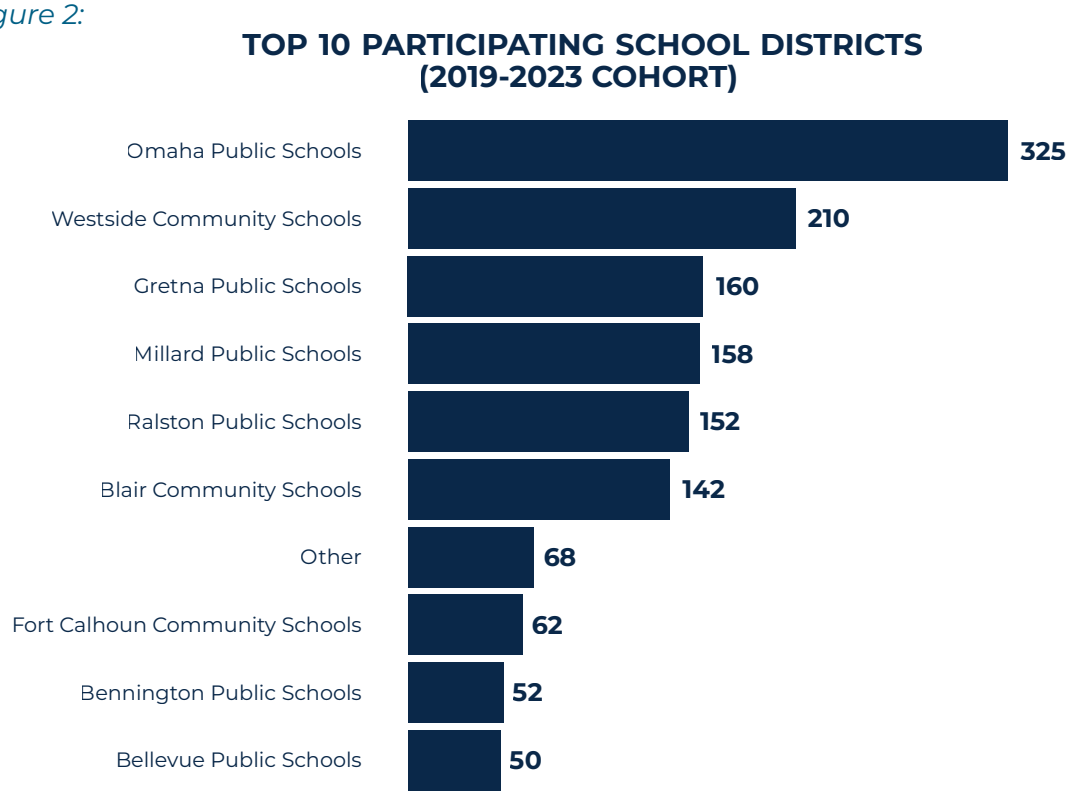
NMRP PARTICIPANTS AND COMPARISON GROUP (2019-2023 COHORT)



Number of Program Participants by School District

Westside High School had the highest number of program participants, followed by Gretna High School and Ralston High School. The chart does not include OPS participants from 2023 (N=325) due to the implementation of a new pilot program in the district. If these participants were included, the OPS total would double the current count (N = 650).

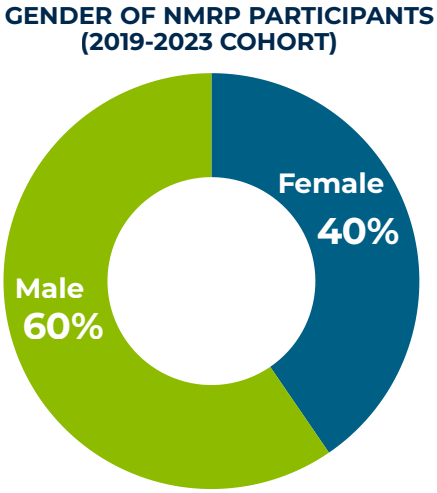
Figure 2:



Percentage of Program Participants by Gender

There are more male than female students in the program. Sixty percent of the total participants are male.

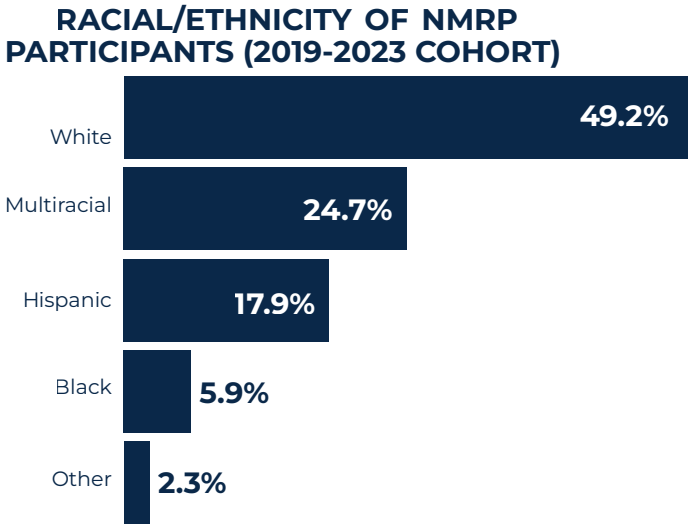
Figure 3:



Percentage of Program Participants by Race/Ethnicity

Almost half of the total program participants are White students. The multiracial group is the next largest, followed by Hispanic students.

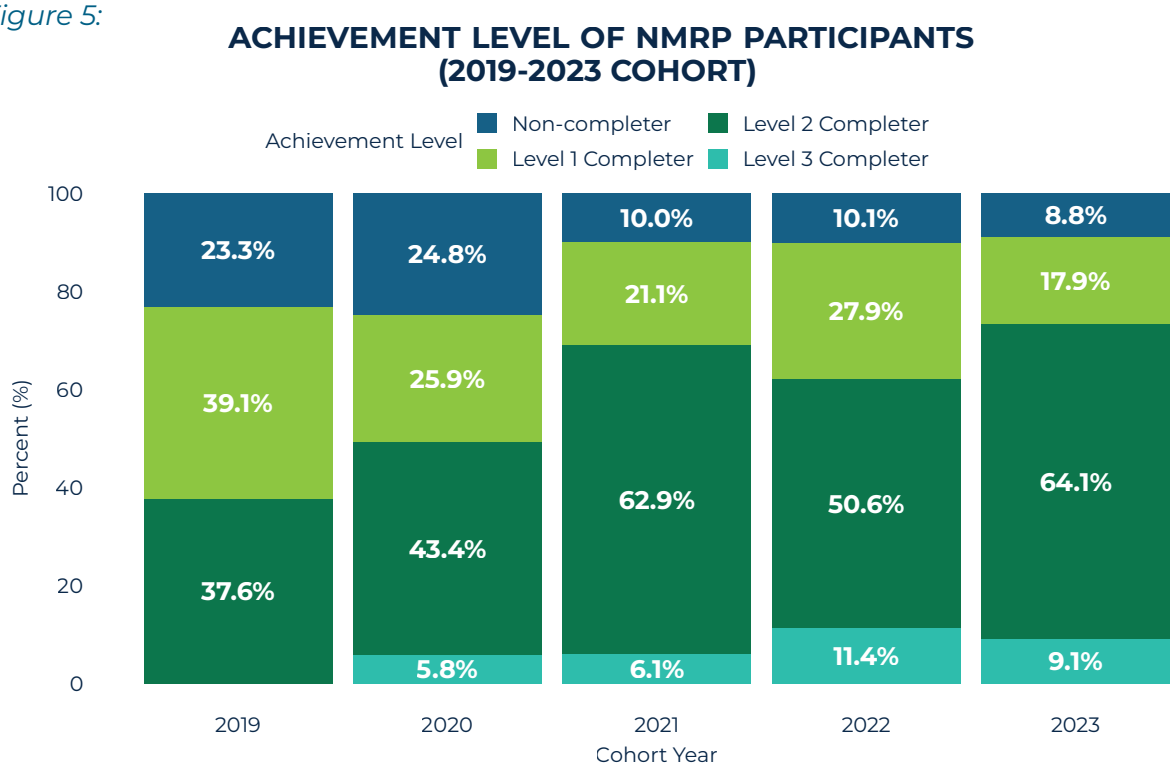
Figure 4:



Achievement Level of Program Participants

Participants' achievement levels in the program have evolved over time. Notably, the proportion of Non-completers and Level 1 Completers has generally declined, suggesting potential improvements in recruitment practices or meaningful enhancements to the curriculum. Conversely, the percentage of participants reaching Achievement Levels 2 and 3 has generally increased, indicating a positive trend in overall program outcomes. The following sections explore how these achievement levels vary across different demographic groups.

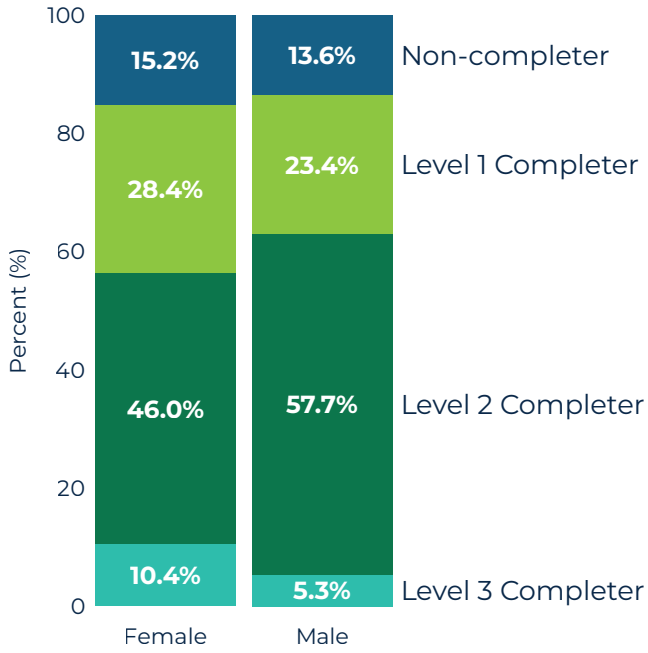
Figure 5:



Achievement patterns within NMRP vary systematically by gender. Male participants are more likely to cluster at Level 2 completion, while female participants are more evenly distributed across achievement levels. In particular, females are more likely than males to reach the highest level of the curriculum, whereas males are more likely to stop at intermediate completion. Non-completion rates are similar across genders, suggesting that observed differences are driven more by progression beyond Level 1 than by initial disengagement.

Figure 6:

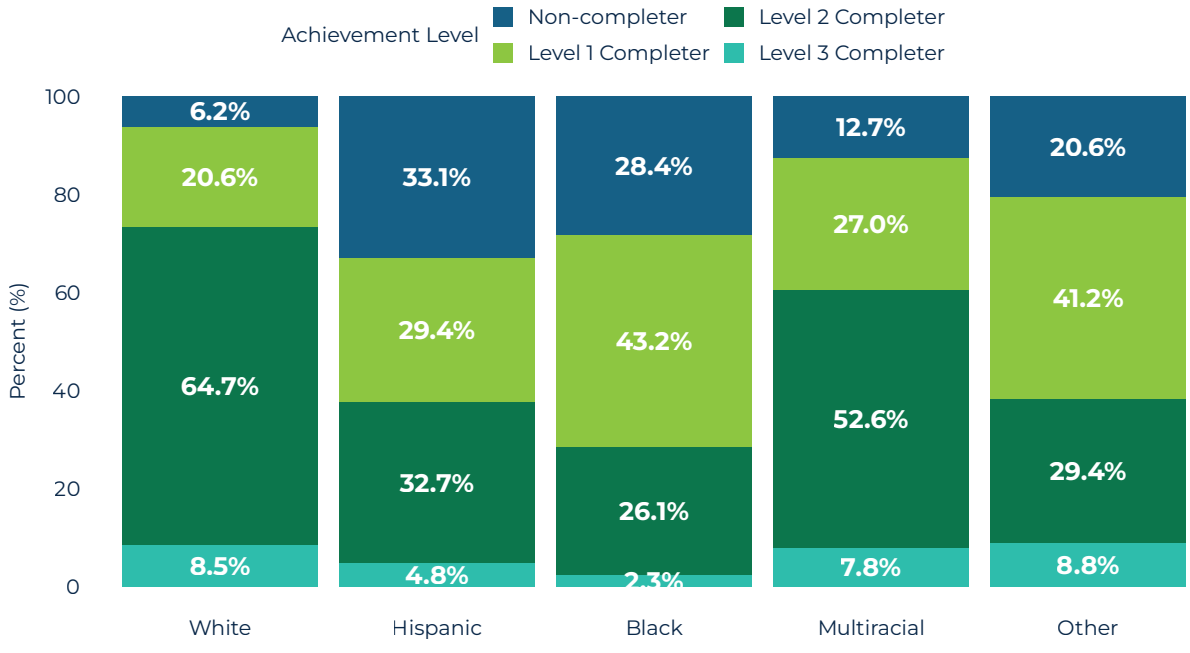
ACHIEVEMENT LEVEL OF NMRP PARTICIPANTS BY GENDER (2019-2023 COHORT)



Achievement levels also differ meaningfully across racial and ethnic groups, reflecting variation in progression through the curriculum. White and Multiracial participants are most likely to reach Level 2 or higher. In contrast, Hispanic and Black participants are more likely to be concentrated in lower achievement levels, with higher shares of non-completion and Level 1 completion.

Figure 7:

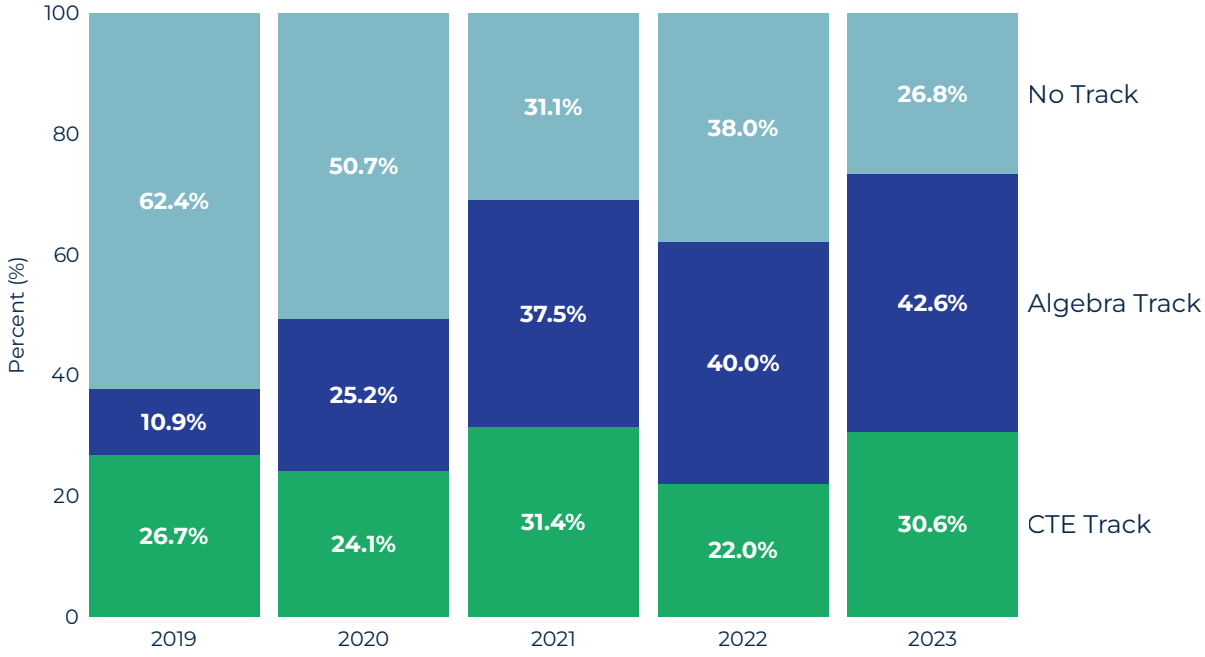
ACHIEVEMENT LEVEL OF NMRP PARTICIPANTS BY RACE/ETHNICITY (2019-2023 COHORT)



Curriculum Track of Program Participants

The distribution of participants across curriculum tracks has also shifted over time. The proportion of those categorized as “No Track” has generally declined, which is linked to the decreasing rates of Non-completers and Level 1 Completers. Participation in the Algebra Track has shown a consistent upward trend, while enrollment in the CTE Track has fluctuated from year to year. This may suggest that White and Multiracial students may be more likely than their peers to reach higher levels of achievement in math within the program.

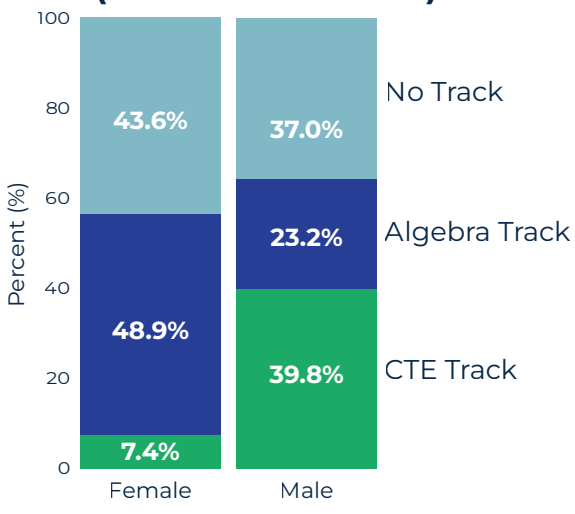
Figure 8: **CURRICULUM TRACK OF NMRP PARTICIPANTS (2019-2023 COHORT)**



Curriculum track enrollment patterns differ notably by gender. Male participants selected the CTE Track at a much higher rate (40 percent) than female participants (7 percent), while 49 percent of female participants enrolled in the Algebra Track compared to just 23 percent of males.

Figure 9:

CURRICULUM TRACK OF NMRP PARTICIPANTS BY GENDER (2019-2023 COHORT)

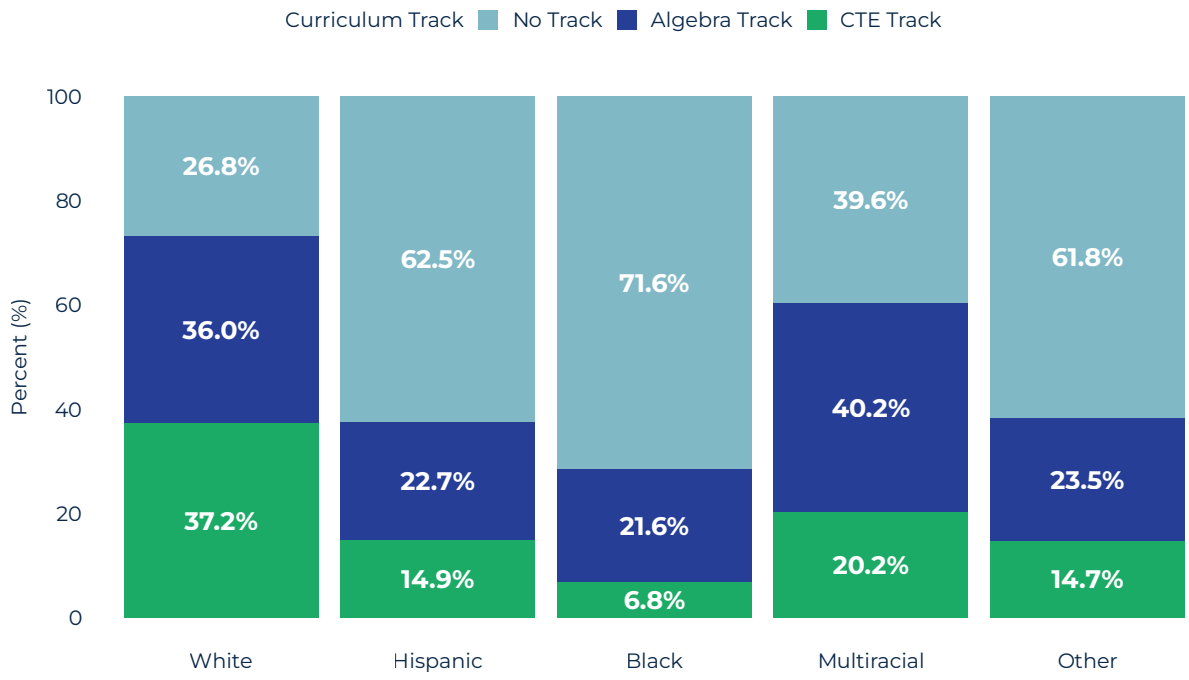


These differences may help explain the higher proportion of Level 3 Completers among female participants—not necessarily as a reflection of higher academic performance, but rather because a greater share of female students enrolled in the Algebra Track, which includes the Level 3 module. Similarly, the higher proportions of Non-completers and Level 1 Completers among female participants may also be influenced by differences in curriculum track enrollment. This pattern reflects male students' stronger preference for the CTE Track, which is aligned with two-year degree pathways, while female students may be more inclined toward four-year college preparation through the Algebra Track.

Curriculum track enrollment also differs by race/ethnicity. White students showed more even distribution between Algebra Track and CTE Track (36 percent and 37 percent). Among all other racial/ethnic groups, a relatively higher percentage of students are enrolled in the Algebra Track than in the CTE Track although at varying rates.

Figure 10:

CURRICULUM TRACK OF NMRP PARTICIPANTS BY RACE/ETHNICITY (2019-2023 COHORT)



HIGH SCHOOL DATA ANALYSIS

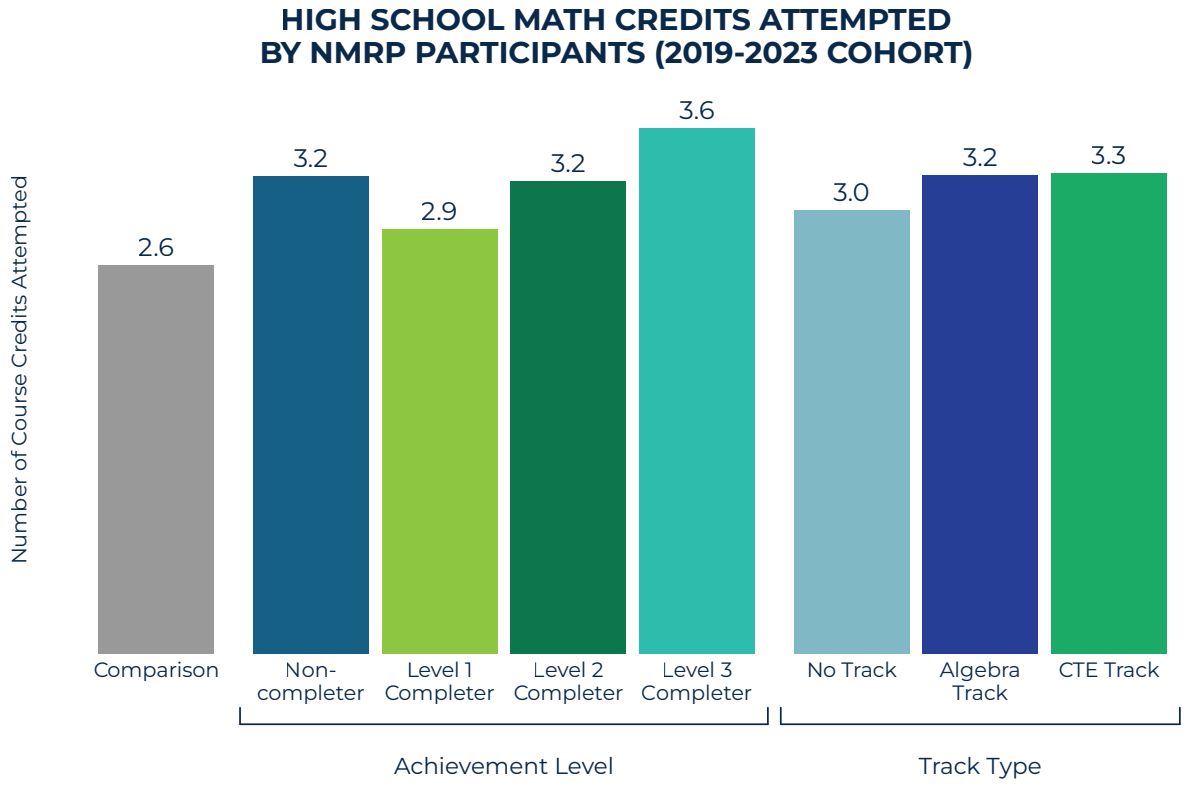
For the following sections, “Comparison Group” is included in the analysis as a reference group.

High School Math Credits Attempted by Program Participants

NMRP participants attempted a similar number of high school math credits, ranging from 2.9 to 3.6 Carnegie units, across both achievement levels and curriculum tracks. In comparison, students in the comparison group completed an average of 2.6 Carnegie units—approximately one unit fewer than NMRP participants.

The higher average Carnegie units attempted by NMRP participants likely reflects their enrollment in additional math courses made available through the program. This suggests that NMRP offers students expanded opportunities to complete a fourth year of math, which may enhance their readiness for college-level mathematics and reduce the likelihood of needing remedial math courses in college.

Figure 11:



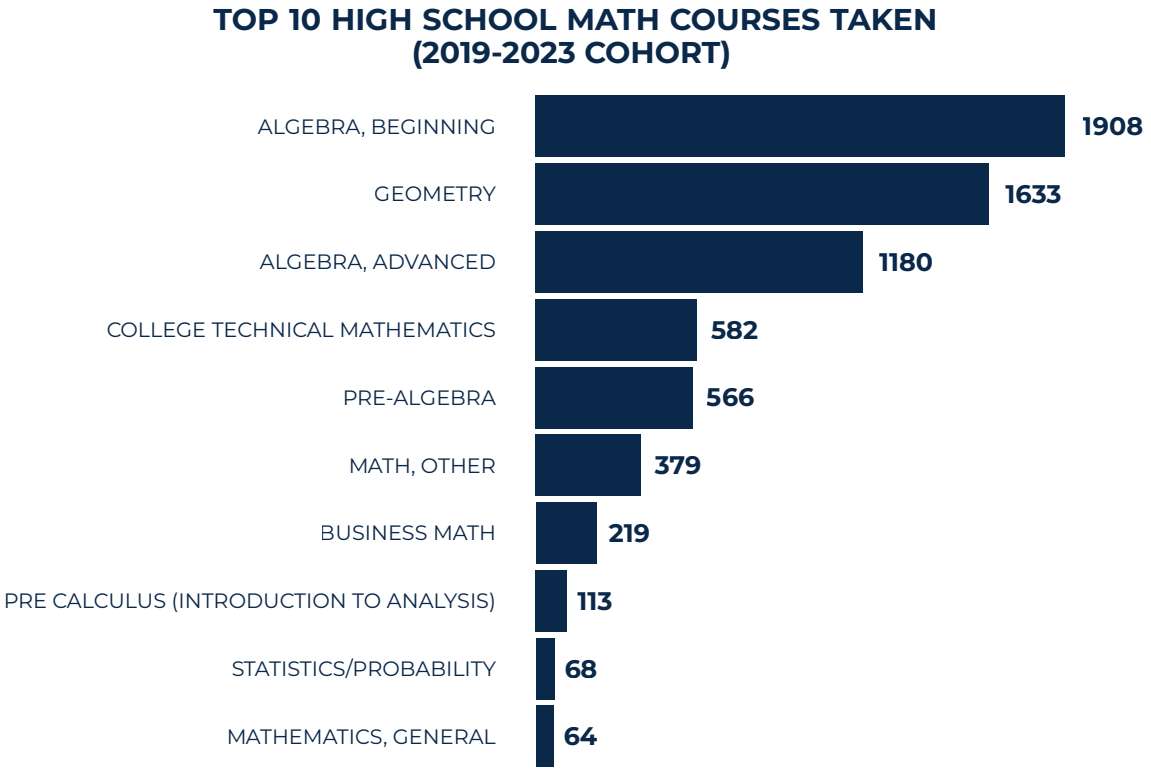
Common Math Courses Taken by Program Participants

The most common math course taken by program participants was Algebra 1 (BEGINNING ALGEBRA), followed by Geometry (GEOMETRY) and Algebra 2 (ADVANCED ALGEBRA). This pattern is expected, as these courses comprise the typical three-year high school math sequence, with Algebra 1 usually taken in the first year.

Another contributing factor is that courses taken through NMRP are recorded on high school transcripts under one of the following names—BEGINNING ALGEBRA, ADVANCED ALGEBRA, COLLEGE TECHNICAL MATHEMATICS (Technical Mathematics), PRE-ALGEBRA, etc.—depending on the instructional level.

Notably, certain courses offered through the NMRP program are dual credit, allowing students to earn both high school and college credits, thereby enhancing their potential for academic success in college. This is especially relevant to the credit-bearing math completion discussed in later sections.

Figure 12:



Mean High School Math GPA of Program Participants

There is a positive relationship between high school math GPA and achievement level among NMRP participants: students with higher achievement levels tend to have higher math GPAs.

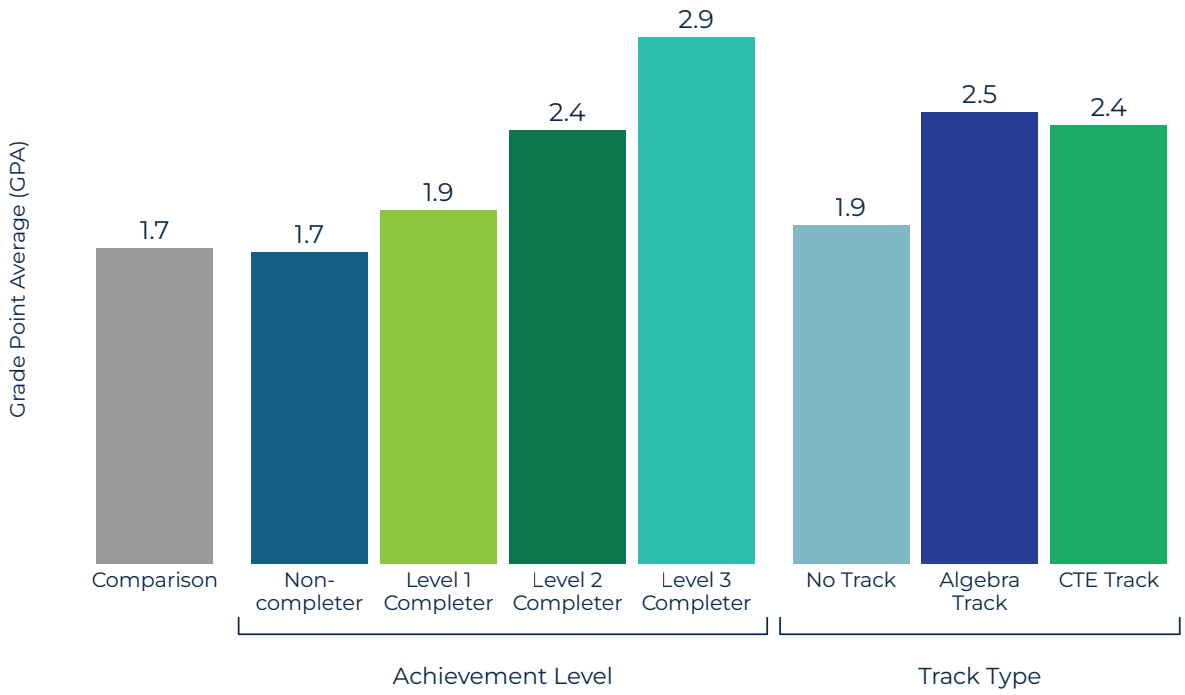
- Non-completers and Level 1 Completers had mean math GPAs of 1.7 and 1.9, respectively—both marginally higher than the comparison group average of 1.7.
- In contrast, Level 2 and Level 3 Completers had higher mean GPAs of 2.4 and 2.9, respectively, exceeding the comparison group.

When comparing curriculum tracks, students in the Algebra Track had higher math GPAs than those in the CTE Track.

These findings suggest that students with higher achievement levels are generally better prepared for college-level math. Additionally, Algebra Track students appear to be more academically prepared than CTE Track students, as reflected in their higher math GPAs.

Figure 13:

HIGH SCHOOL MATH GPA OF NMRP PARTICIPANTS (2019-2023 COHORT)



Mean ACT Math Score of Program Participants

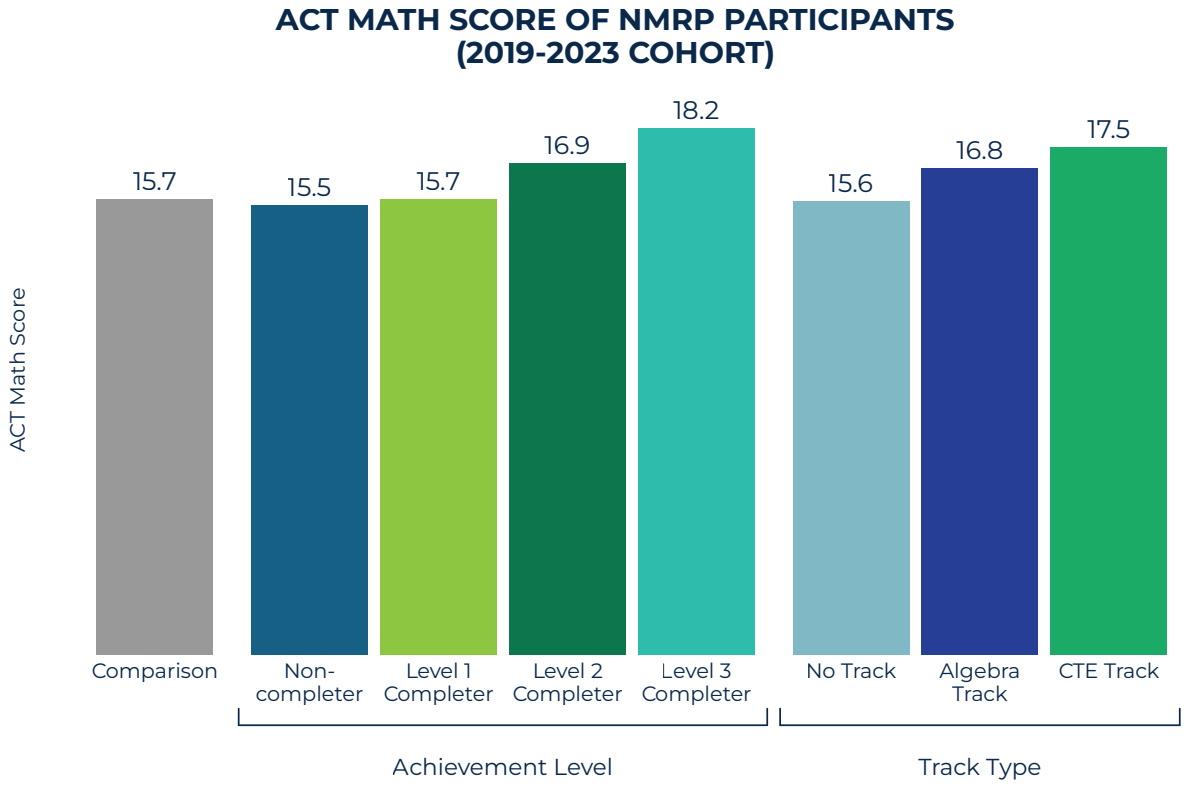
There is a positive relationship between students' ACT Math scores and their achievement level in the NMRP program: higher achievement levels are associated with higher ACT Math scores.

- Non-completers and Level 1 Completers had average ACT Math scores of 15.5 and 15.7, near the comparison group average of 15.7.
- In contrast, Level 2 and Level 3 Completers had higher average scores of 16.9 and 18.2, respectively, exceeding the comparison group.

These findings suggest that Level 2 and Level 3 Completers were better prepared for advanced coursework at the time of program participation. While the raw score differences appear modest, national percentile ranks reveal more substantial gaps: Level 3 Completers (59th percentile) outperformed Non-completers (31st percentile) by nearly 30 percentile points, a difference comparable to those observed in earlier academic indicators.

When examining curriculum tracks, students in the CTE Track demonstrated higher percentile ranks than those in the Algebra Track, even though the Algebra Track includes Level 3 Completers. This may be due to the small size of the Level 3 subgroup, which limited its impact on the overall Algebra Track average.

Figure 14:



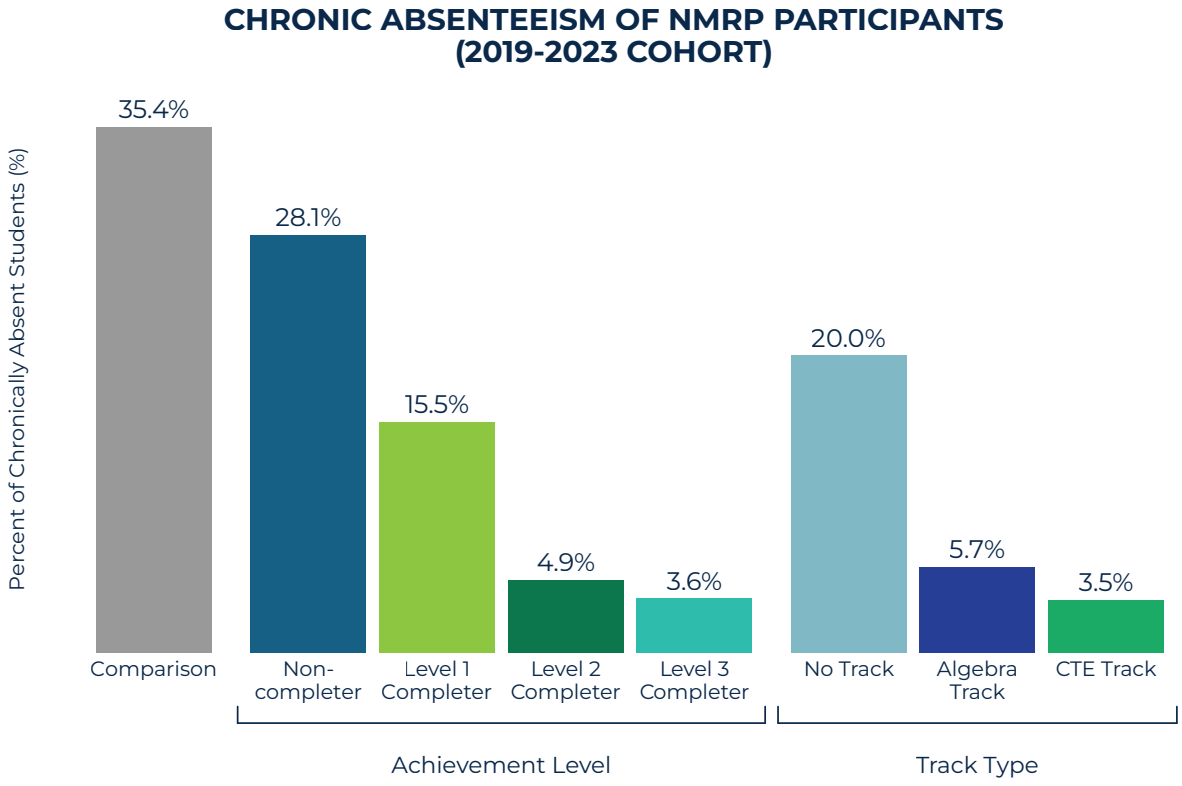
Chronic Absenteeism of Program Participants

There is a negative relationship between students' chronic absenteeism and their achievement level in the NMRP program: higher achievement levels were associated with lower rates of chronic absenteeism at baseline.

- Non-completers had a chronic absenteeism rate of 28 percent, which is more similar to the comparison group rate of 35 percent than the Level 1 group, which had a lower rate of 16 percent.
- Level 2 and Level 3 Completers had the lowest rates, at 5 percent and 4 percent, respectively.
- Additionally, students in the CTE Track had a lower percentage of chronic absenteeism (3.5 percent) than those in the Algebra Track (5.7 percent).

These findings suggest that students who ultimately progressed further in the curriculum entered the program with stronger baseline indicators of academic engagement, as reflected in lower rates of chronic absenteeism prior to participation. Because absenteeism is measured before program enrollment and included as a covariate in the causal models, these differences represent pre-existing variation in student engagement rather than effects of the intervention itself.

Figure 15:



High School Graduation of Program Participants

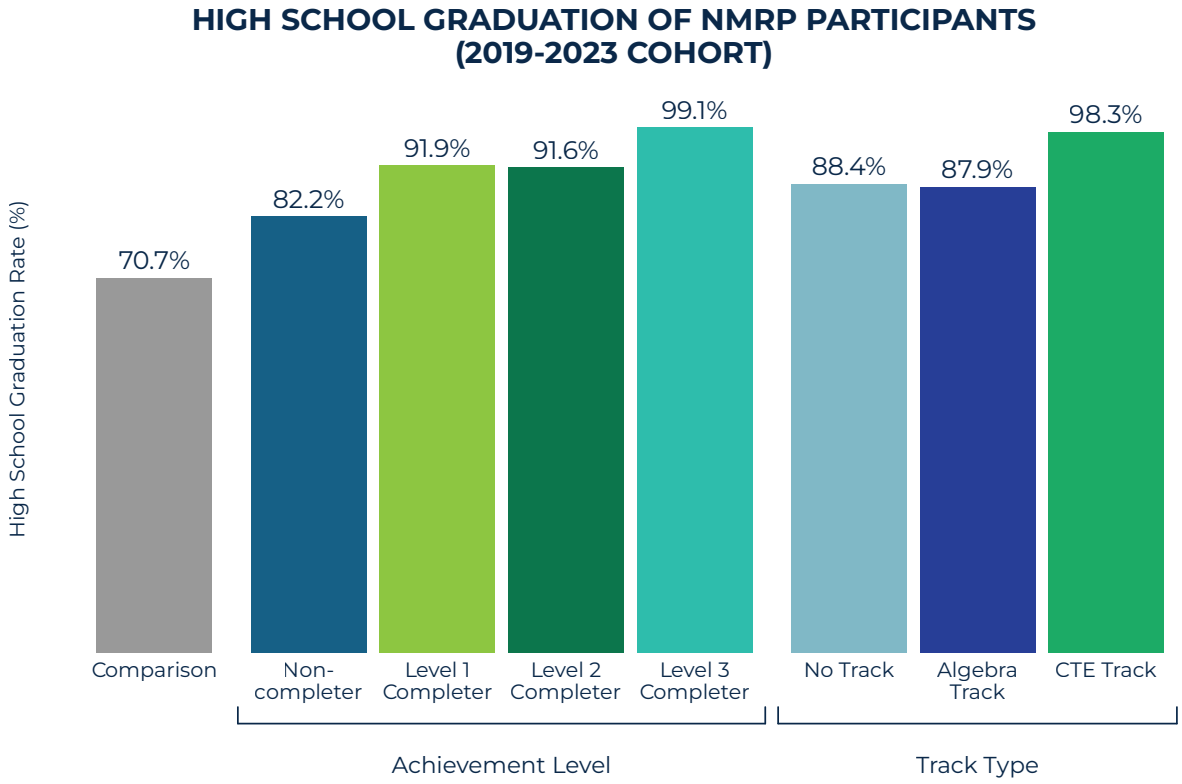
NMRP participants demonstrated higher high school graduation rates compared to the comparison group. There is a positive relationship between graduation rates and achievement level: higher achievement levels are associated with higher graduation rates.

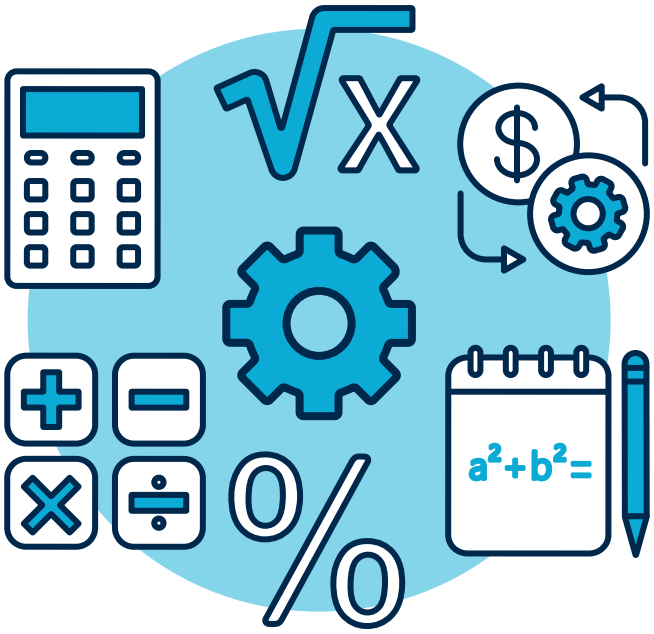
- Non-completers had a high school graduation rate of 82.2 percent, which is higher than the comparison group rate of 70.7 percent.
- The Level 1 Completers had a higher rate of 91.9 percent.
- Level 2 and Level 3 Completers had the highest rates, at 91.6 percent and 99.1 percent, respectively.

Additionally, students in the CTE Track had a higher graduation rate than those in the Algebra Track (98.3 percent versus 87.9 percent).

These results reinforce earlier findings, suggesting that students who completed more of the program (Levels 1–3) likely exhibited greater academic motivation and engagement, which may have contributed both to program completion and successful high school graduation.

Figure 16:





OUTCOME ANALYSIS

The results presented in this section estimate the effect of NMRP participation on a range of postsecondary outcomes spanning college attendance, early academic progress, and longer-term attainment. Outcomes are constructed from administrative records across institutions; additional detail on measurement considerations is provided in the limitations section. Estimates of effects regarding these outcomes are derived from adjusted comparisons between NMRP participants and a group of nonparticipants who were identified as likely eligible for the program. To support causal interpretation, statistical methods were used to account for observable differences in demographic characteristics, prior academic achievement, and high school experiences between these groups. As a result, the reported differences reflect estimated impacts of program participation under the assumption that, conditional on these observed characteristics, participants and nonparticipants are comparable.

All estimates should be interpreted as effects for students similar to those who participated in NMRP, rather than as universal effects for all students. While this approach strengthens causal inference relative to unadjusted comparisons, it does not eliminate the possibility of bias from unobserved factors (e.g., student motivation or family support) that may influence both program participation and postsecondary outcomes. Accordingly, results should be interpreted as evidence of program impact within a quasi-experimental framework rather than as definitive causal effects in the absence of all potential sources of bias.

The section is organized to reflect the progression of student outcomes over time, beginning with college enrollment, followed by measures of early academic momentum, and concluding with persistence and credential attainment. Each subsection presents estimated average effects alongside effects conditional on predicted achievement/progress levels for participants and comparison students. This allows for both relative and absolute interpretation of program impacts. Additional methodological detail, including model specification, diagnostics, and robustness checks, is provided in the Appendix.

Interpreting Outcome Estimates

The estimates in this section are causal effect estimates for NMRP participants, reported as average treatment effects on the treated (ATT). They represent the estimated difference between participants' observed outcomes and the outcomes those same participants would have experienced without NMRP, after adjusting for observed baseline differences. For binary outcomes, effects are reported as risk differences, which can be interpreted as percentage point changes in outcome probability attributable to program participation. For continuous outcomes, effects are reported as mean differences on the original outcome scale.

Because follow-up windows vary across outcomes and cohorts, estimates should be interpreted as impacts observed within the available observation period rather than as lifetime effects. Individual cohort estimates may be imprecise due to sample size and implementation variability; pooled estimates across cohorts provide the most stable summary of program impact. All estimates rely on the assumption that observed baseline covariates adequately account for selection into participation, and results should be interpreted accordingly.

Interpreting Conditional Analyses

In some figures that follow, program effects are examined separately for students with different levels of predicted readiness. These subgroup analyses are defined using baseline characteristics measured prior to program participation. Importantly, we do not condition on students' realized curriculum achievement level within NMRP, as doing so would introduce post-treatment selection bias. Instead, subgroup definitions are based on predicted likelihood of reaching higher curriculum levels using only pre-intervention information. This approach allows us to examine heterogeneous program effects while preserving the integrity of the causal design.

Interpreting the Predicted Outcomes Tables

The predicted outcomes tables report model-based estimates of each outcome under two counterfactual conditions: 1. with NMRP participation and 2. with no NMRP participation. Values are generated from the fitted model and then averaged over a specified set of students, which is what drives the "Effect" labels. Unless otherwise noted, narrative interpretations focus on ATT estimates, which reflect the effect of participation for students who actually enrolled in NMRP.

Key fields

- **Effect type** indicates *whose outcomes are being averaged* (who is included in the prediction summary). Generally, ATT rows reflect averages over NMRP participants, while ATU rows reflect averages over comparison group students.
    - **NMRP Participation (ATT):** predictions are averaged over the treated (NMRP) students.
    - **Comparison (ATU):** predictions are averaged over the comparison students.
    - **Overall** predictions are averaged over all students for that effect type.
    - **Predicted Achievement** predictions are averaged over those with a fixed estimated achievement level.
- **Est. under participation** is the average predicted outcome for that effect type and group if everyone in that set participated in NMRP.
- **Est. under no participation** is the average predicted outcome for the same effect type and group if everyone in that set did not participate.
- **Estimated difference** (or effect) is the difference between the two estimates:

$$\text{Effect} \;=\; \mathbb{E}\left[\hat{Y}(1) - \hat{Y}(0) \;\middle|\; G\right]$$

where G is the population being averaged over (for example, the treated group for ATT-style rows, the comparison group for ATU-style rows, or a subgroup defined by predicted achievement level). Where the group is not the “Overall”, these are the conditional treatment effects.

For percentage outcomes, interpret this as percentage points. For continuous outcomes (credits, GPA), interpret in the original units.

College Going

College-going is the first outcome considered in this report. If the program is functioning as intended, we should expect higher rates of postsecondary entry among participants, because improved readiness and structured dual enrollment experience can reduce barriers to taking the next step after high school. For that reason, college-going provides an early metric of whether NMRP is influencing access to postsecondary education.

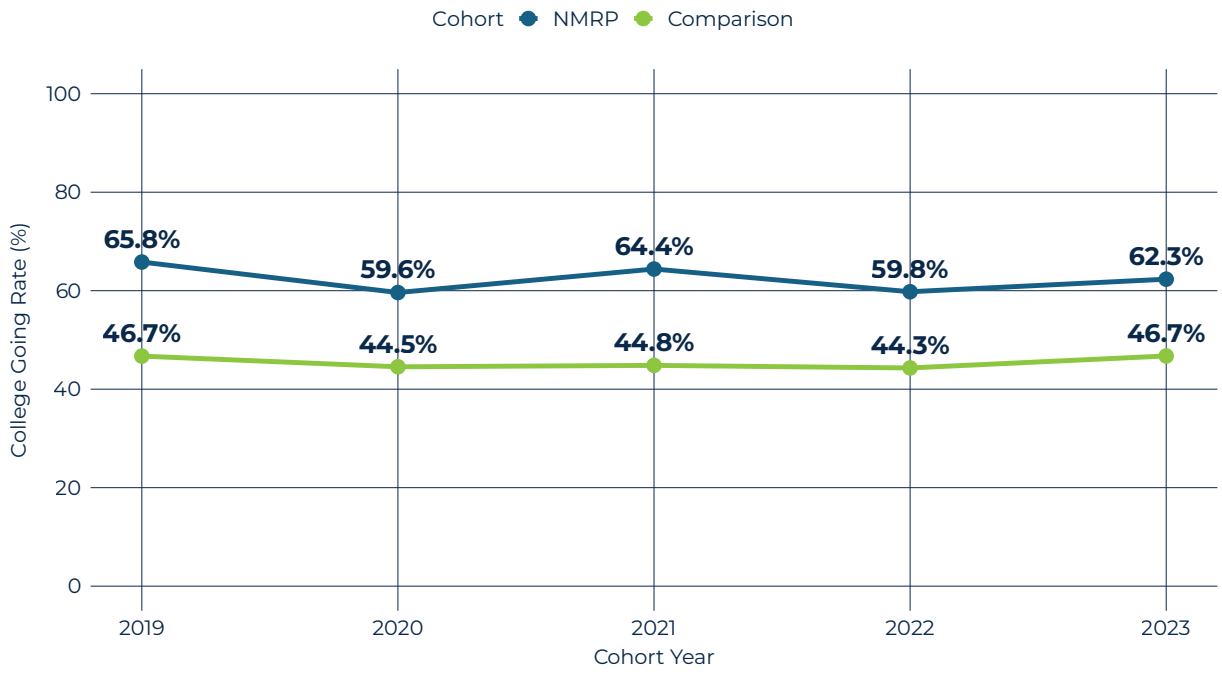
Results

Participation in the NMRP program had a statistically significant positive estimate of overall causal effect on college-going rates among students.

Over time, NMRP participants consistently demonstrated higher college enrollment rates than their peers in the comparison group. Specifically, average college-going rates among NMRP achievement levels ranged from 49.5 percent to 88.2 percent, compared to approximately 45.4 percent among non-participants.

Figure 17:

COLLEGE GOING BY NMRP PARTICIPATION: NEBRASKA PUBLIC HIGH SCHOOL GRADUATES (2019-2022 COHORT)

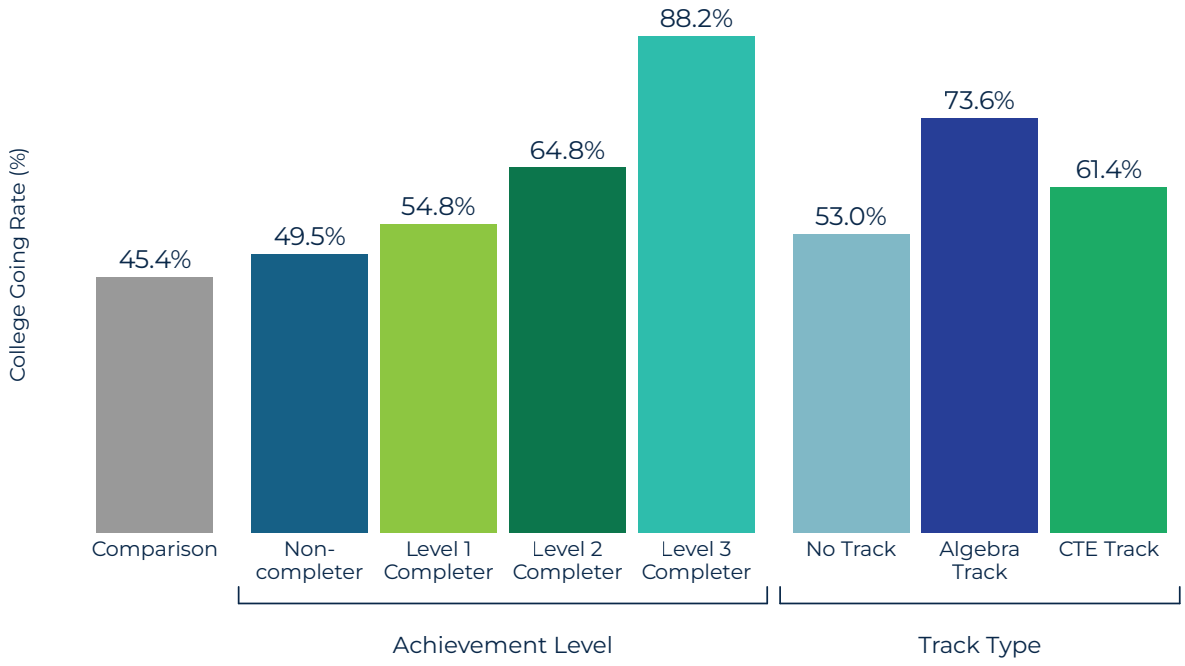


It is useful to distinguish descriptive gaps from causal estimates in this section. The descriptive trend lines show that participants enroll at higher rates than comparison students, but those raw differences reflect both program impact and pre-existing differences in student profiles. The causal estimates that follow adjust for observed baseline differences and are the primary evidence for program impact on college-going.

Observed differences in college-going rates between NMRP and comparison group students ranged from 4.1 percentage points to 42.8 percentage points.

Figure 18:

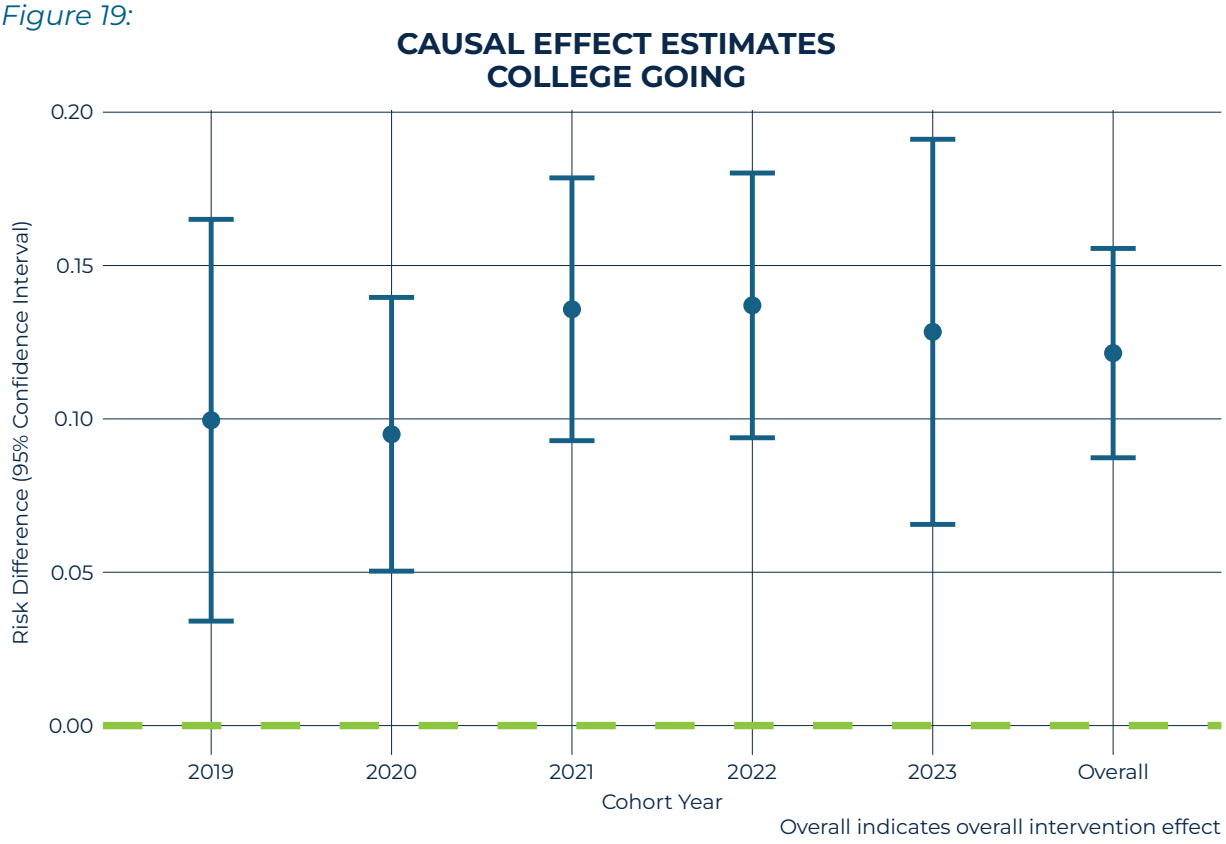
COLLEGE GOING BY NMRP PROGRESS AND TRACK: NEBRASKA PUBLIC HIGH SCHOOL GRADUATES (2019-2023 COHORT)



However, estimated causal effects were more modest, indicating that part of the observed difference may be explained by pre-existing factors such as high school GPA and other risk indicators for dropping out. These causal estimates were statistically significant in all cohort years, with varying effect sizes.

Despite year-to-year fluctuations, the pooled analysis across all cohorts revealed a statistically significant positive overall effect of NMRP participation on college going. On average, we estimate the college-going rates of NMRP participants were 12 percentage points higher than they would have been without the program.

Figure 19:



This increase in college entry is important context for later results: remedial course-taking, credit-bearing math completion, and credit accumulation are only observed among students who enroll in postsecondary education, so college-going changes both who is "at risk" for those outcomes and how quickly they can be observed.

NMRP participants have consistently enrolled in Nebraska public two-year institutions (NE/Public/2-year) at higher rates than in any other type of institution. However, over time, enrollment in Nebraska public two-year colleges has declined, while enrollment in Nebraska public four-year colleges (NE/Public/4-year) has increased, despite some yearly fluctuations. About 10.7 percent of participants in the 2019 cohort enrolled in Nebraska private institutions (NE/Private/4-year) and out-of-state institutions (OOS), and this percentage generally increased over time.

For some of the following outcomes, only data on those who enrolled in Nebraska public postsecondary institutions (Nebraska public college-goers) will be analyzed, because for certain types of data (e.g., college course credit hours and GPA), NSWERS contains information only from its partner institutions.

To assess whether NMRP's impacts differ across students with different starting profiles, we report conditional effects by baseline-predicted curriculum progression. These subgroups are defined using pre-treatment covariates only and represent students who, based on baseline information, are predicted to be more or less likely to progress to Level 2 or higher under participation. This approach allows a policy-relevant heterogeneity analysis while avoiding bias that would arise from conditioning on realized achievement within NMRP.

Figure 20:

COLLEGE GOING OF NMRP PARTICIPANTS BY COLLEGE SECTOR (2019-2023 COHORT)

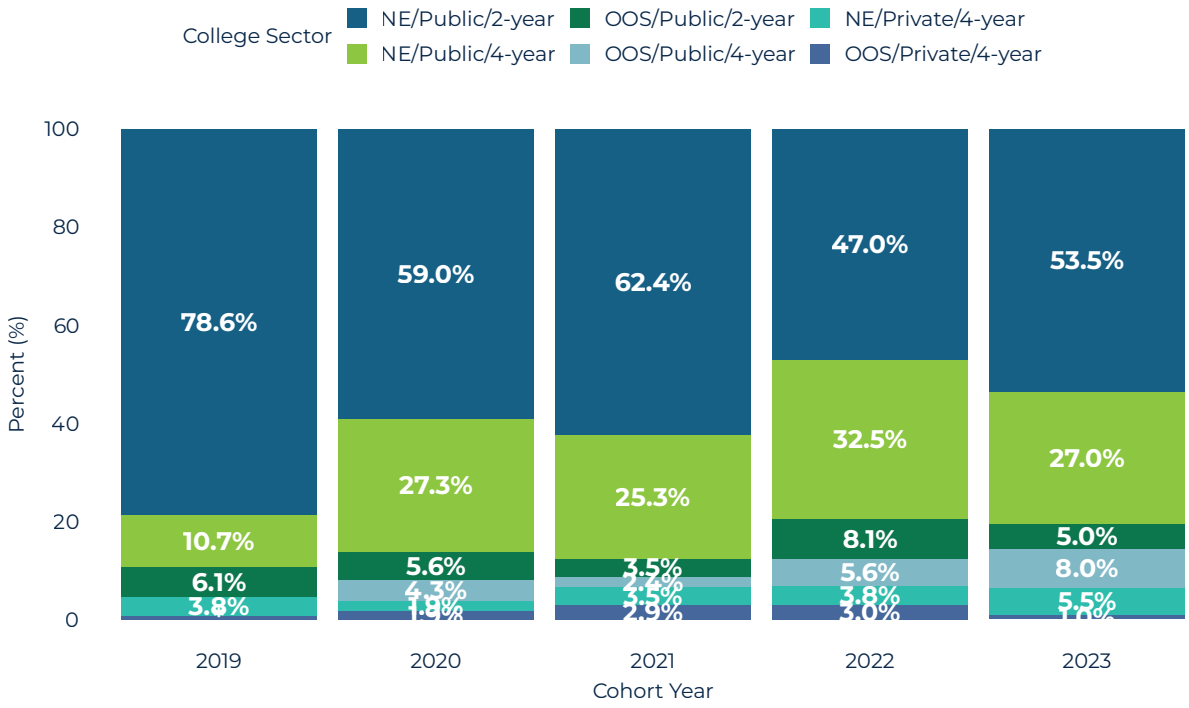
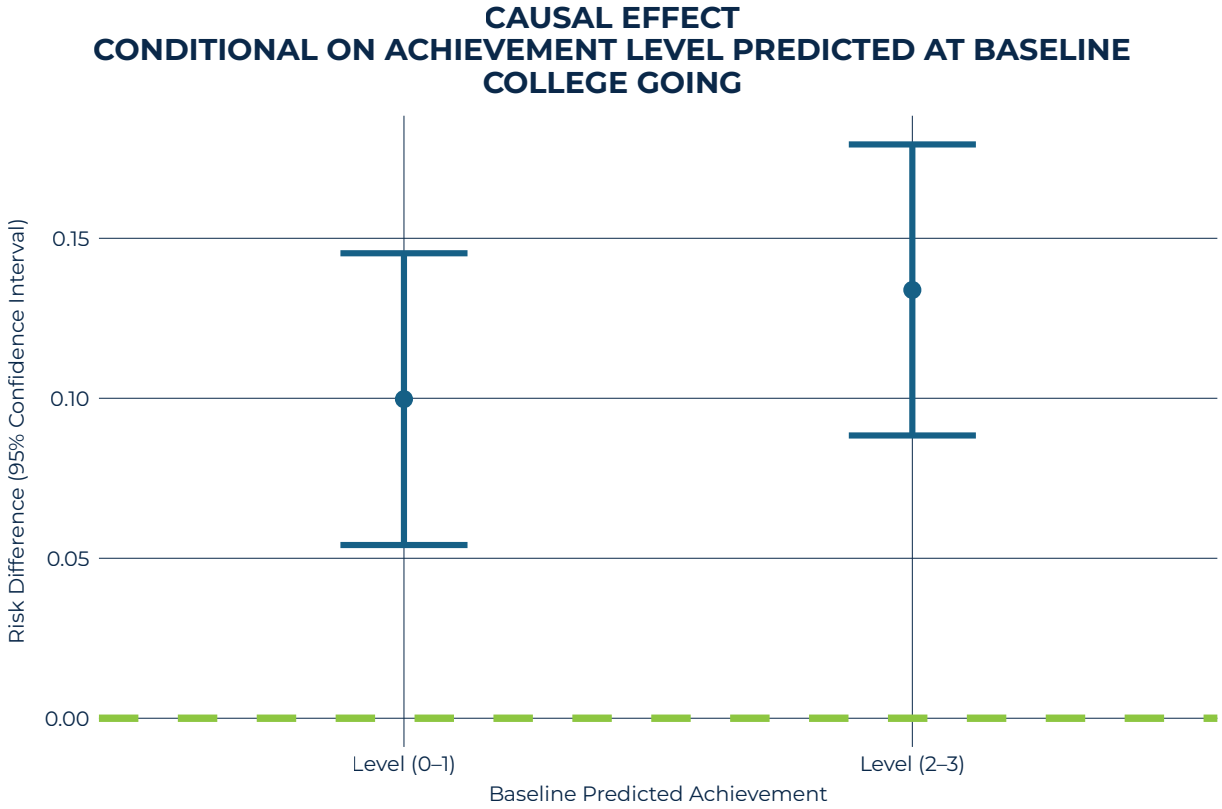


Figure 21 summarizes how the estimated effect of NMRP on college-going varies across students with different baseline profiles. “Baseline predicted achievement” refers to the predicted probability of reaching Level 2 or higher under participation, estimated using only pre-intervention covariates. This figure does not compare students by realized completion level. Instead, it assesses whether program impacts are larger for students who, based on baseline information, appear more likely to progress in the curriculum.

Two points are important when interpreting this figure. First, students with higher baseline predicted progression typically have higher predicted college-going under both participation and non-participation. Second, the estimated impact of NMRP can still be larger for students with lower baseline predicted achievement, indicating greater marginal gains for students starting from a lower expected trajectory even if absolute outcomes remain higher among higher-readiness students.

Figure 21:



Predicted Outcomes

The predicted outcomes table presents model-based estimates of the college-going rate under two counterfactual conditions: if the group participated in NMRP and if the same group did not participate. The "Estimated difference" is the ATT-style effect for the specified group and should be interpreted as a percentage point change in the probability of enrolling.

Estimated Regression Adjusted Average Outcome Rates

Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	50.5%	62.6%	+12.1pp
ATT - Pred. Ach. (Level 0/1)	48.4%	58.4%	+10.0pp
ATT - Pred. Ach. (Level 2/3)	51.6%	65.0%	+13.4pp
ATU (Overall)	45.3%	59.2%	+13.9pp
ATU - Pred. Ach. (Level 0/1)	37.6%	51.6%	+13.9pp
ATU - Pred. Ach. (Level 2/3)	54.4%	68.2%	+13.8pp

Analysis Sample

The analysis sample table summarizes which students were included in this outcome model and provides context for interpreting precision. Because each outcome requires different data availability and follow-up time, the analytic sample can differ across outcomes and across cohorts.

Sample sizes by group

Group	Years Included	Effective N	Observed N
Matched Comparison	2019 - 2023	1,395	9,959
NMRP Sample	2019 - 2023	1,356	1,356

Because the study uses a weighted matched design, the effective sample size may differ from the observed number of students. Estimates are most stable when there is strong covariate overlap between participants and comparison students and when weights are not overly concentrated in a small number of cases.

Remedial Math Enrollment

This outcome measures reducing diversion into non-credit developmental math coursework. We hypothesize NMRP should observe lower remedial enrollment among participants conditional on enrollment.

Results

Participation in the NMRP program had a statistically significant negative estimate of overall causal effect on remedial math enrollment rates.

Over time, students who participated in NMRP enrolled in remedial math courses at consistently lower rates than their peers in the comparison group. Specifically, remedial math enrollment among NMRP achievement levels ranged from 2.2 percent to 36.3 percent, compared to 25.2 percent among non-participants. However, those that reached at least Level 2 had lower remedial math rates. When examining curriculum tracks, students in the CTE Track had remedial math enrollment rates of 6.4 percent, compared to those in the Algebra Track with 12.3 percent.

As with other outcomes, it is important to distinguish descriptive differences from causal estimates. The descriptive comparisons summarize observed remedial enrollment rates across groups, but those differences reflect both program effects and pre-existing differences in academic preparation and engagement. The causal estimates that follow adjust for observed baseline differences and provide the primary evidence on whether participation reduces remedial diversion.

Over the years included in the study, observed differences in remedial math enrollment between NMRP and comparison group students ranged from 8.9 percentage points lower to 2.3 percentage points lower. After adjusting for baseline characteristics, estimated causal effects ranged from 10 percentage points lower to 4 percentage points lower. In one cohort year, these estimates were not statistically significant, as the 95% confidence intervals included zero.

Because remedial enrollment is observed over the available transcript window rather than a fixed follow-up period, earlier cohorts may have more time to appear in remedial coursework. The models account for cohort structure in estimation, but readers should still interpret year-to-year variation with the understanding that both implementation differences and observation time can contribute to differences across cohorts.

Despite these minor fluctuations, the pooled analysis across all cohorts revealed a statistically significant negative overall effect of NMRP participation on remedial math enrollment. On average, NMRP participants enrolled in remedial math courses at rates decreased by 7 percentage points versus what they would have without the program.

This result should be interpreted alongside the college-going findings. Because NMRP increases postsecondary entry, participants include more students who are exposed to the possibility of remedial placement; observing a reduction in remedial enrollment despite higher college-going strengthens the interpretation that the program is improving readiness rather than simply changing who enrolls.

Figure 22:

REMEDIAL MATH ENROLLMENT BY NMRP PARTICIPATION: NEBRASKA PUBLIC TWO-YEAR COLLEGE GOERS (2019-2023 COHORT)

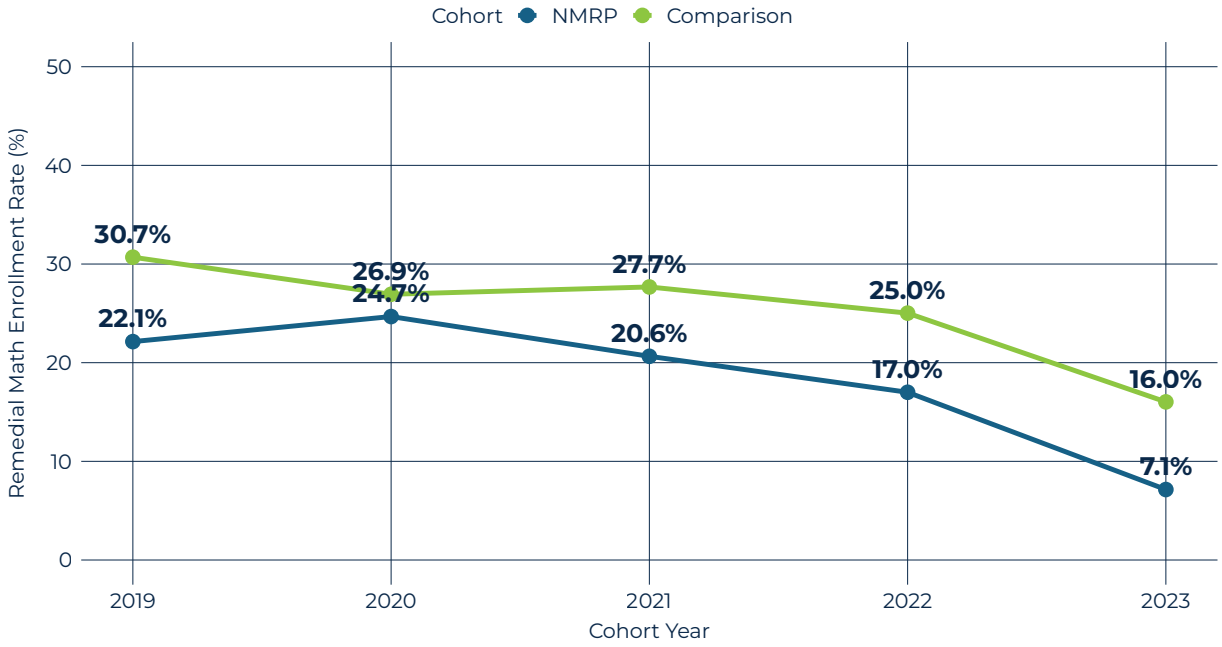


Figure 23:

REMEDIAL MATH ENROLLMENT BY NMRP PROGRESS AND TRACK: NEBRASKA PUBLIC TWO-YEAR COLLEGE GOERS (2019-2023 COHORT)

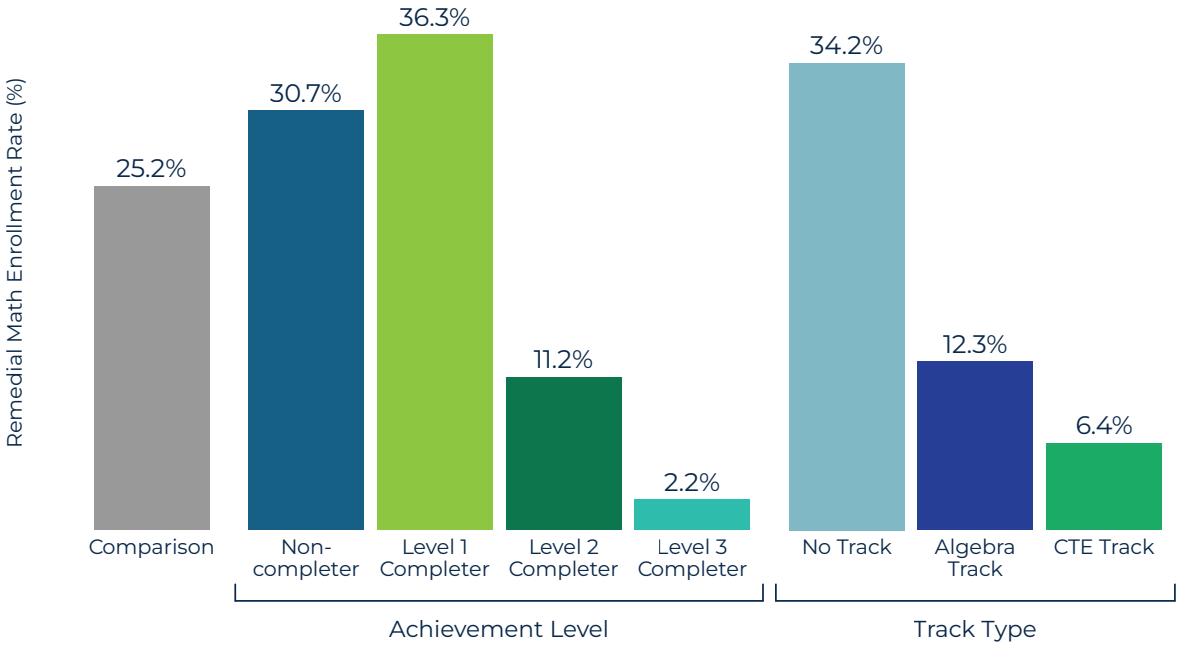
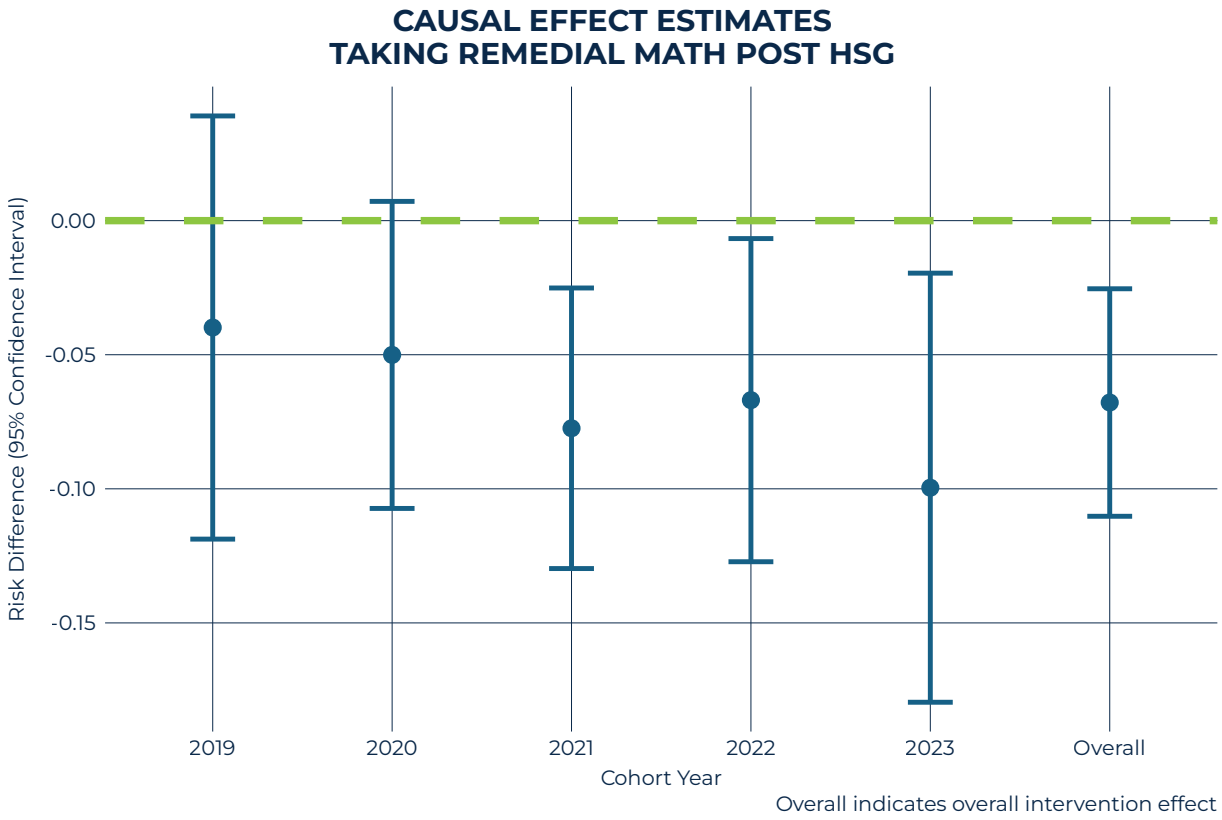


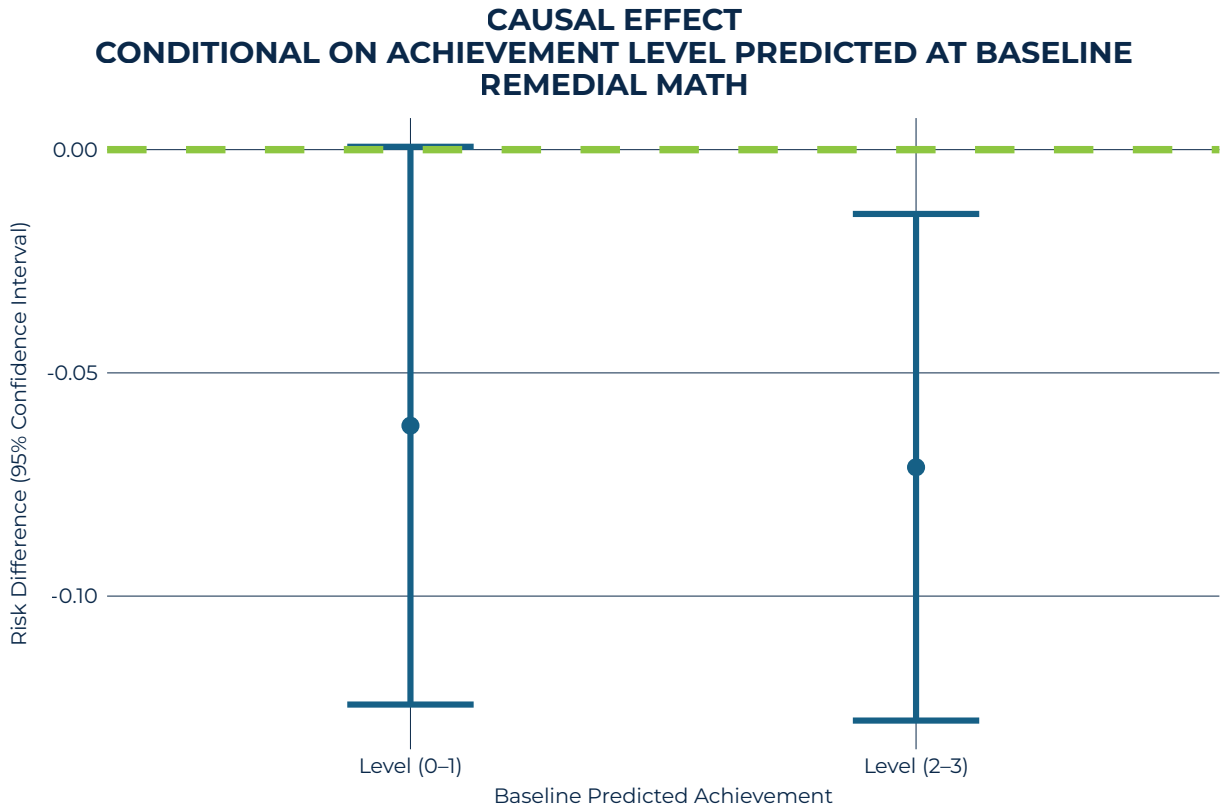
Figure 24:



To assess whether NMRP's remedial-math impacts vary across students with different starting profiles, we report conditional effects by baseline-predicted curriculum progression.

Figure 25 shows whether the estimated reduction in remedial math enrollment differs by baseline-predicted likelihood of reaching Level 2 or higher under participation. Subgroups are defined using pre-treatment covariates only. This approach avoids conditioning on post-participation achievement while still allowing us to assess whether the program's remedial-math impacts are concentrated among students with greater baseline "progress potential."

Figure 25:



When interpreting these subgroup effects, keep two points in view. Students with higher baseline predicted progression typically have lower predicted remedial enrollment under both participation and non-participation, reflecting stronger starting readiness. At the same time, the estimated reduction in remedial enrollment can be larger for students with lower baseline predicted achievement, indicating greater marginal gains for students who would otherwise be most likely to require remediation.

Predicted Outcomes

The predicted outcomes table reports model-based estimates of remedial math enrollment under two counterfactual conditions for the specified group: if the group participated in NMRP and if the same group did not participate. The "Estimated difference" is the ATT-style effect for that group and should be interpreted as a percentage point change in the probability of enrolling in remedial math.

Estimated Regression Adjusted Average Outcome Rates

Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	25.1%	18.4%	−6.8pp
ATT - Pred. Ach. (Level 0/1)	33.3%	27.1%	−6.2pp
ATT - Pred. Ach. (Level 2/3)	20.6%	13.5%	−7.1pp
ATU (Overall)	28.2%	23.8%	−4.4pp
ATU - Pred. Ach. (Level 0/1)	33.5%	30.5%	−3.0pp
ATU - Pred. Ach. (Level 2/3)	22.7%	16.8%	−5.9pp

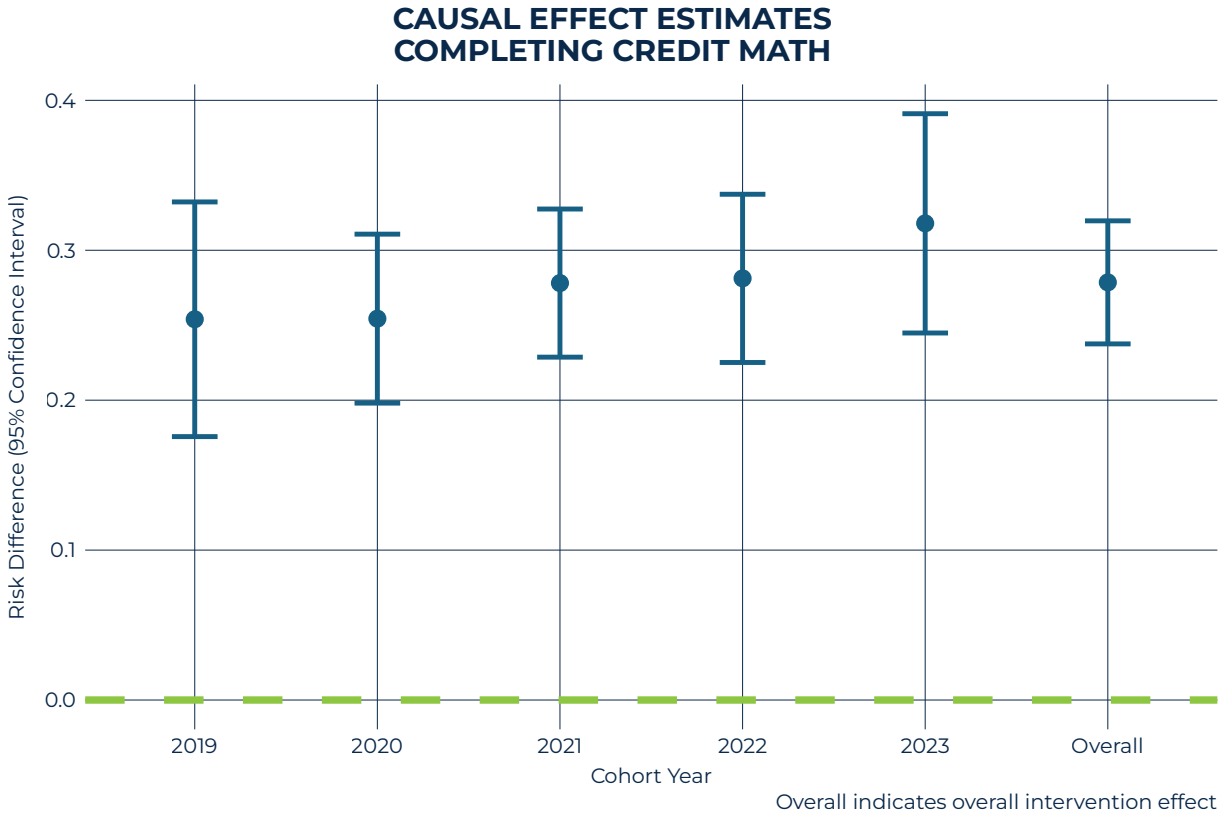
Completing Credit-bearing College Math

A central objective of the Nebraska Math Readiness Project is to enable students to transition directly into credit-bearing postsecondary coursework, rather than being diverted into remedial or foundational courses that do not contribute toward degree completion. To assess progress toward this goal, this outcome measures whether students successfully completed at least one credit-bearing postsecondary mathematics course that is applicable toward a degree or certificate program. This definition excludes remedial courses at two-year institutions and foundational mathematics courses at four-year institutions.

Across cohorts, NMRP participants were more likely than comparison group students to complete credit-bearing college mathematics. Observed differences varied by cohort year, reflecting both differences in follow-up time and evolving program implementation. In general, completion rates for credit-bearing math were higher among participants who progressed further in the NMRP curriculum, particularly those reaching Level 2 or higher.

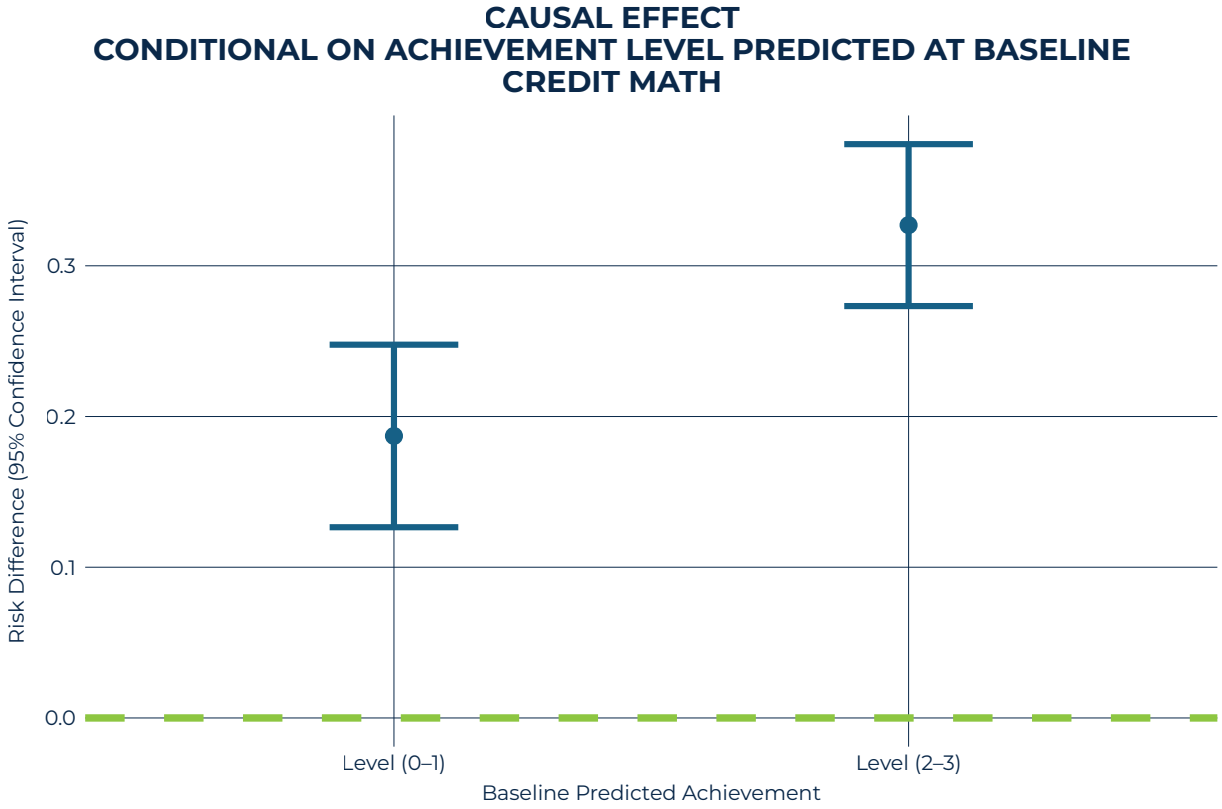
After adjusting for baseline academic preparation and demographic characteristics using propensity score methods, participation in NMRP was estimated to have a positive causal effect on the likelihood of completing credit-bearing college math. While cohort-specific estimates were imprecise in some years due to limited sample sizes, the pooled analysis across cohorts indicates that NMRP participation increased the probability of completing credit-bearing college math relative to what participants would have experienced in the absence of the program.

Figure 26:



Conditional analyses based on baseline-predicted achievement (27) suggest that these effects are concentrated among students with a higher predicted likelihood of progressing to Level 2 or higher under participation. This finding is consistent with the program's theory of action, which emphasizes building sufficient mathematical readiness during high school to support direct entry into college-level coursework.

Figure 27:



Predicted Outcomes

Estimated Regression Adjusted Average Outcome Rates

Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	27.7%	55.5%	+27.9pp
ATT - Pred. Ach. (Level 0/1)	21.0%	39.7%	+18.7pp
ATT - Pred. Ach. (Level 2/3)	31.2%	63.9%	+32.7pp
ATU (Overall)	22.4%	46.8%	+24.4pp
ATU - Pred. Ach. (Level 0/1)	17.3%	29.3%	+12.0pp
ATU - Pred. Ach. (Level 2/3)	27.2%	63.3%	+36.2pp

Cumulative College Credit Hours Earned

Cumulative college credits capture early postsecondary momentum. Unlike single-course outcomes, credit accumulation reflects a combination of enrollment intensity, persistence across terms, and successful course completion. If NMRP is improving readiness and helping students clear early math barriers, we would expect participants to accumulate credits more quickly during the available observation period. This outcome is downstream of the credit-bearing math findings: clearing a key required math course should reduce bottlenecks and support faster progress into program coursework. This should manifest as higher credit accumulation.

Results

Within the NMRP group, Level 2 Completers earned an average of approximately 44.3 credits. Level 3 Completers stood out, earning an average of 64.4 credits; however, due to the small size of this subgroup, their impact on the participants' overall average was limited. When examining curriculum tracks, students in the CTE Track had about the same earned credits (47.3 credits) as those in the Algebra Track (48.1 credits).

Observed differences in average credit accumulation between NMRP achievement levels and comparison group students ranged from 10.5 fewer to 22.8 higher credits. After adjusting for baseline characteristics, estimated causal effects ranged from NMRP participants earning 1.2 higher to 5.2 higher credits versus the matched comparison group. Despite the estimated effects for each year all being positive, the pooled analysis did not yield a significant result.

Figure 28:

COLLEGE CREDITS EARNED NMRP PROGRESS AND TRACK: NEBRASKA PUBLIC TWO-YEAR COLLEGE GOERS (2019-2023 COHORT)

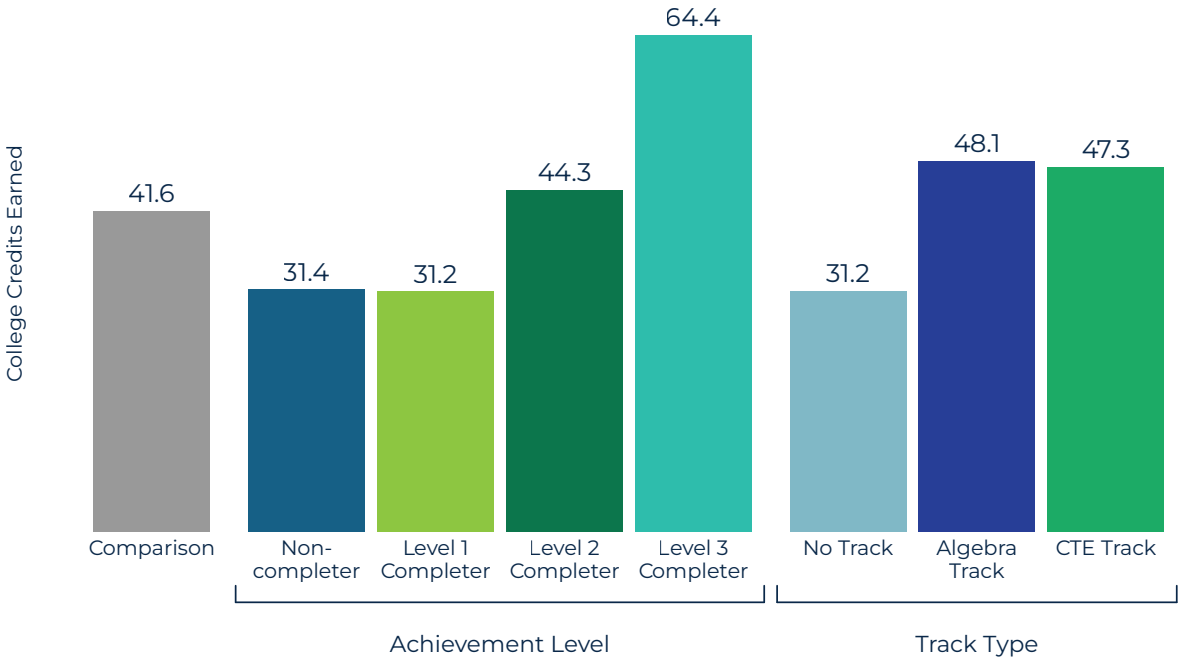


Figure 29:

CAUSAL EFFECT ESTIMATES COLLEGE CREDIT HOURS EARNED

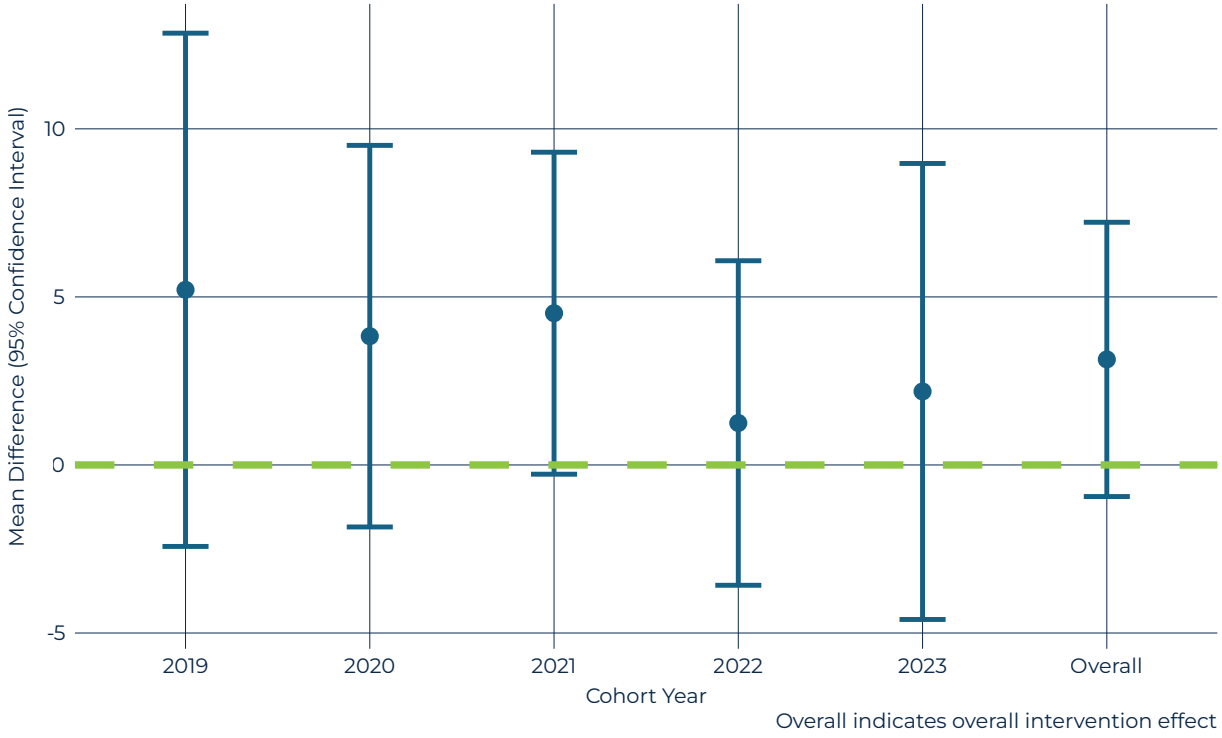


Figure 30:

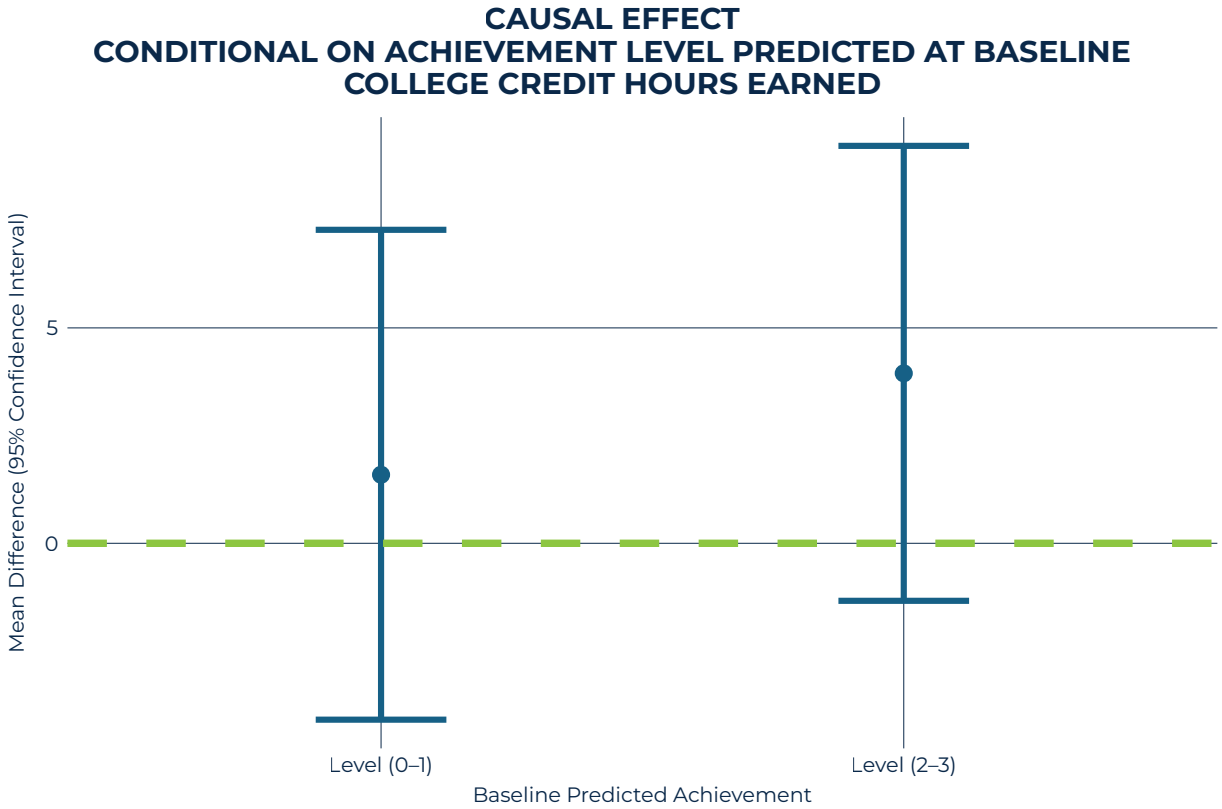


Figure 30 examines whether NMRP accelerates credit momentum differently across baseline profiles. Students with higher baseline predicted progression generally earn more credits under both scenarios, but the program's marginal contribution can be larger for lower-predicted students if NMRP helps them avoid common early-course bottlenecks.

Predicted Outcomes

Estimated Regression Adjusted Average Outcome Rates

Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	50.1	53.2	+3.1
ATT - Pred. Ach. (Level 0/1)	44.6	46.2	+1.6
ATT - Pred. Ach. (Level 2/3)	52.9	56.9	+3.9
ATU (Overall)	46.9	53.0	+6.1
ATU - Pred. Ach. (Level 0/1)	35.4	39.9	+4.4
ATU - Pred. Ach. (Level 2/3)	56.7	64.2	+7.4

Cumulative College GPA

Cumulative college GPA complements credit accumulation by capturing academic performance. This outcome is defined among students with observable postsecondary transcript data at Nebraska public institutions. While credits reflect pace and persistence, GPA reflects how well students perform in the coursework they attempt during the observed window. Assuming increased math readiness, we would expect modest improvements in GPA alongside increases in successful course completion.

Results

Participation in the NMRP program had a statistically significant and positive estimate of overall causal effect on cumulative college GPA.

Within the NMRP progress levels, cumulative GPA outcomes varied by level of program completion. Level 2 Completers had an average GPA of 2.4. Level 3 Completers achieved a higher average GPA of 2.5. When examining curriculum tracks, students in the CTE Track had a slightly higher average GPA (2.6) than those in the Algebra Track (2.3).

Observed differences in cumulative GPA between NMRP and comparison group students ranged from 0.3 fewer to 0.5 higher grade points. After adjusting for baseline characteristics, estimated causal effects ranged from an increase of 0.1 to 0.3 GPA points. In some cohort years, these estimates were not statistically significant, as the 95% confidence interval included zero. Despite year-to-year fluctuations, the pooled analysis revealed a statistically significant and positive overall effect of NMRP participation on cumulative college GPA. On average, NMRP participants earned cumulative GPAs that were increased by 0.2 over their estimates without the program.

Figure 31:

COLLEGE GPA BY NMRP PARTICIPATION: NEBRASKA PUBLIC COLLEGE GOERS (2019-2023 COHORT)

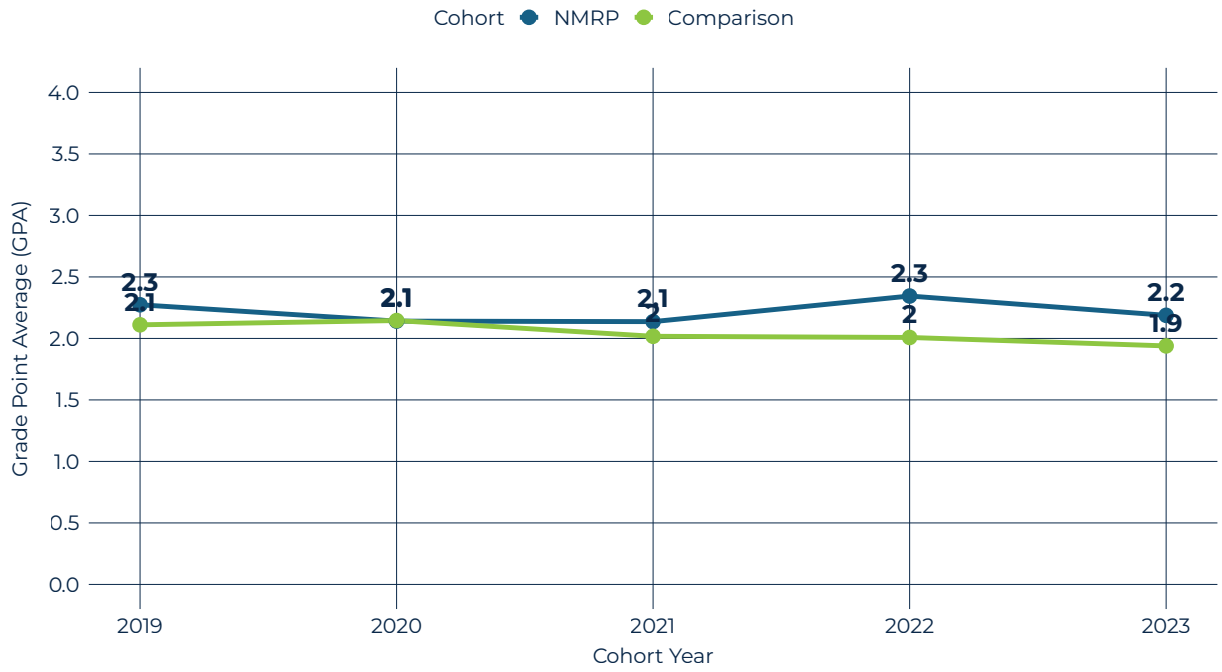


Figure 32:

COLLEGE GPA NMRP PROGRESS AND TRACK: NEBRASKA PUBLIC TWO-YEAR COLLEGE GOERS (2019-2023 COHORT)

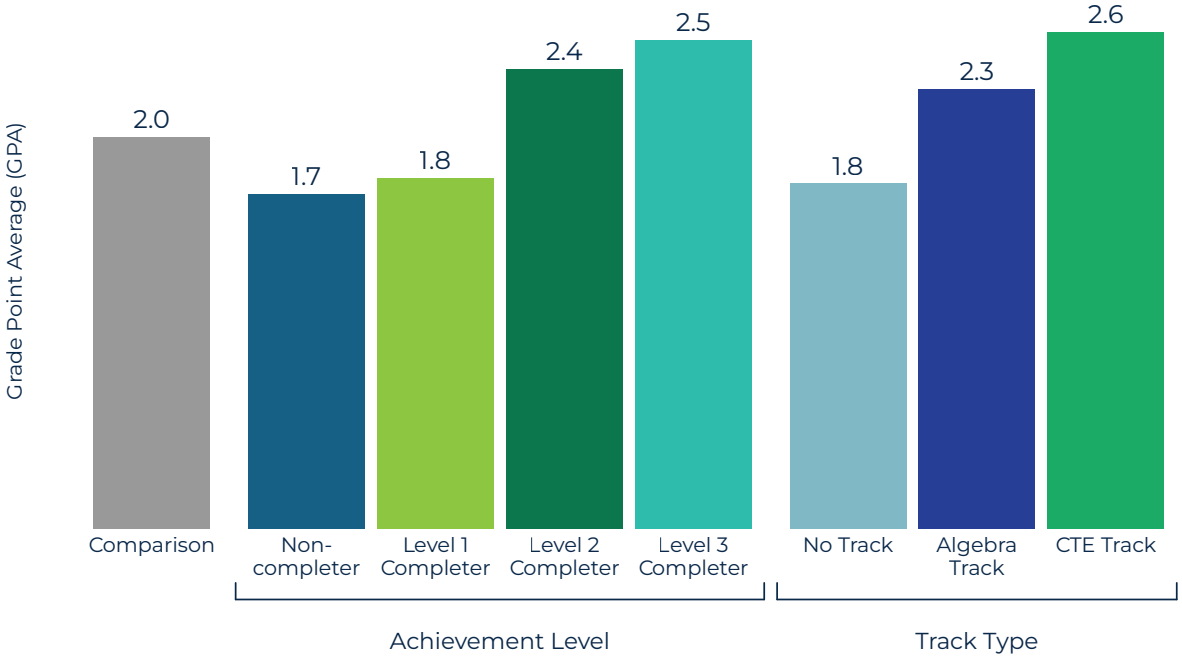


Figure 33:

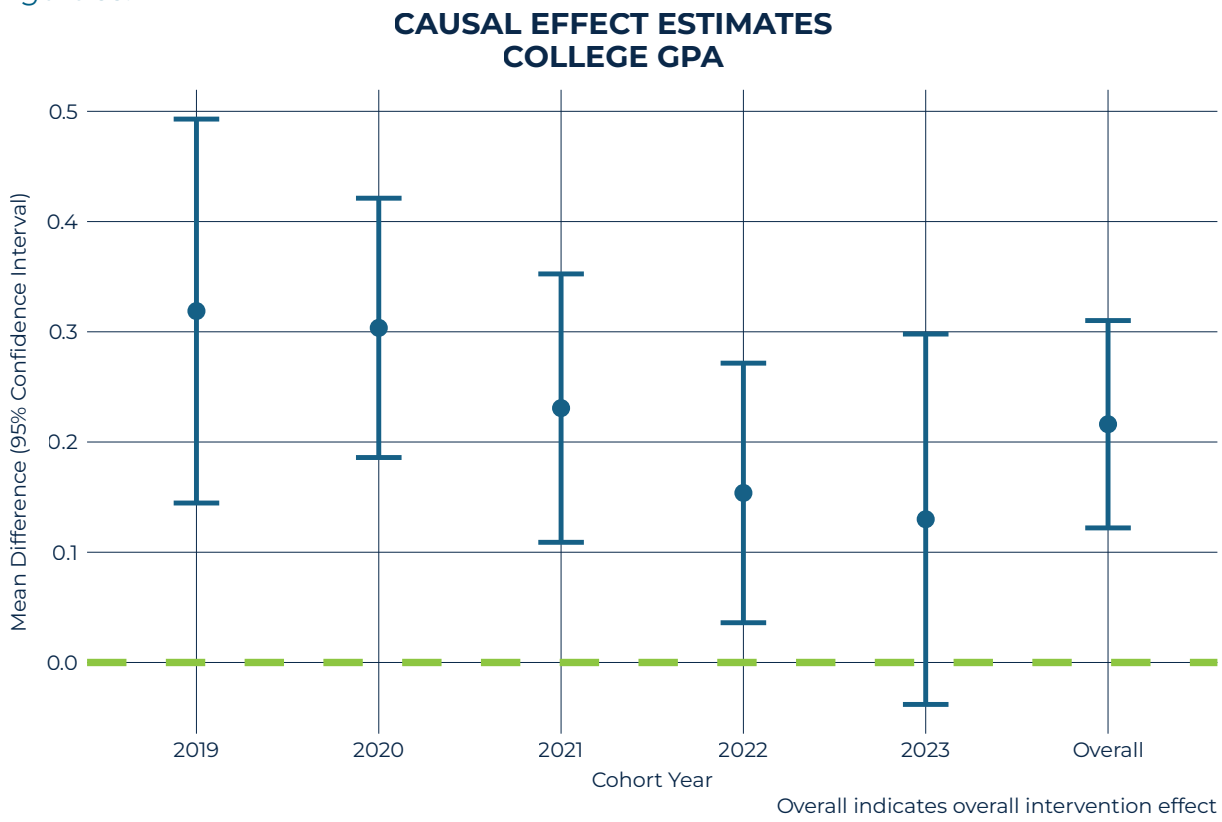
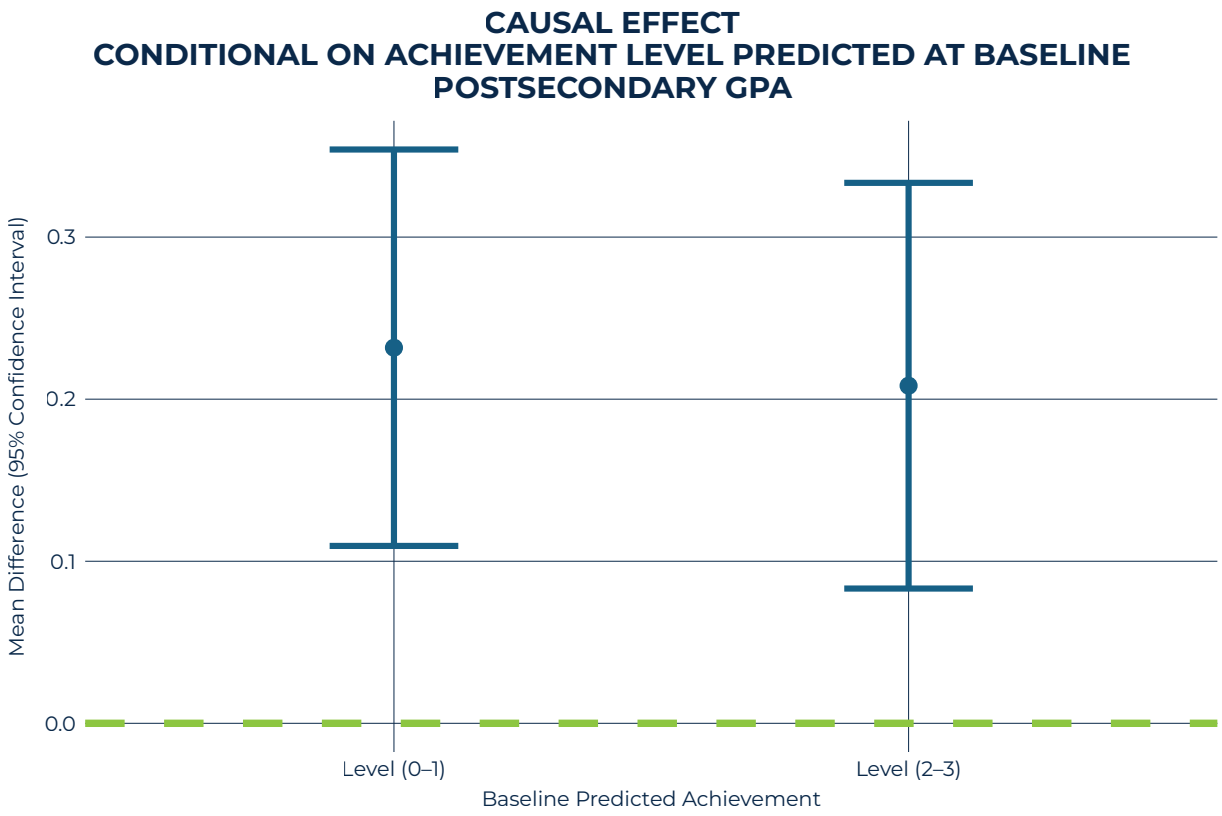


Figure 34:



Predicted Outcomes

Estimated Regression Adjusted Average Outcome Rates

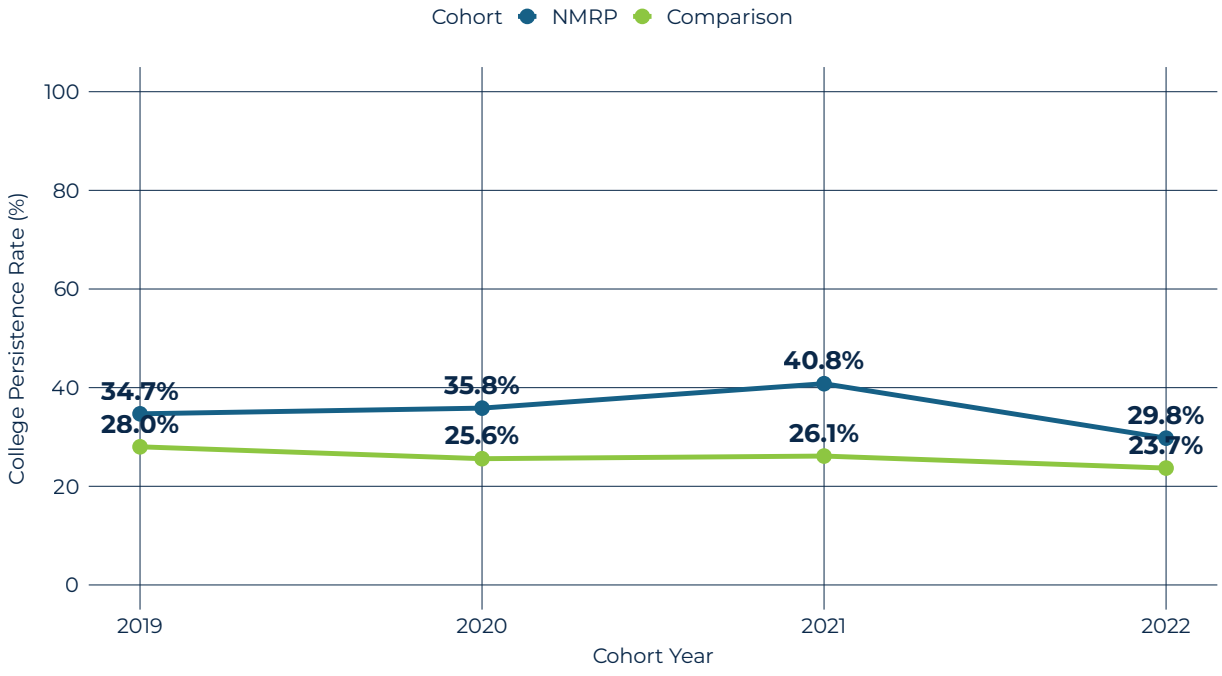
Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	2.2	2.4	+0.2
ATT - Pred. Ach. (Level 0/1)	1.9	2.2	+0.2
ATT - Pred. Ach. (Level 2/3)	2.3	2.5	+0.2
ATU (Overall)	2.0	2.3	+0.2
ATU - Pred. Ach. (Level 0/1)	1.7	1.9	+0.3
ATU - Pred. Ach. (Level 2/3)	2.3	2.5	+0.2

College Persistence

Over time, NMRP participants consistently demonstrated higher rates of college persistence than the comparison samples.

Figure 35:

COLLEGE PERSISTENCE BY NMRP PARTICIPATION: NEBRASKA PUBLIC HIGH SCHOOL GRADUATES (2019-2022 COHORT)

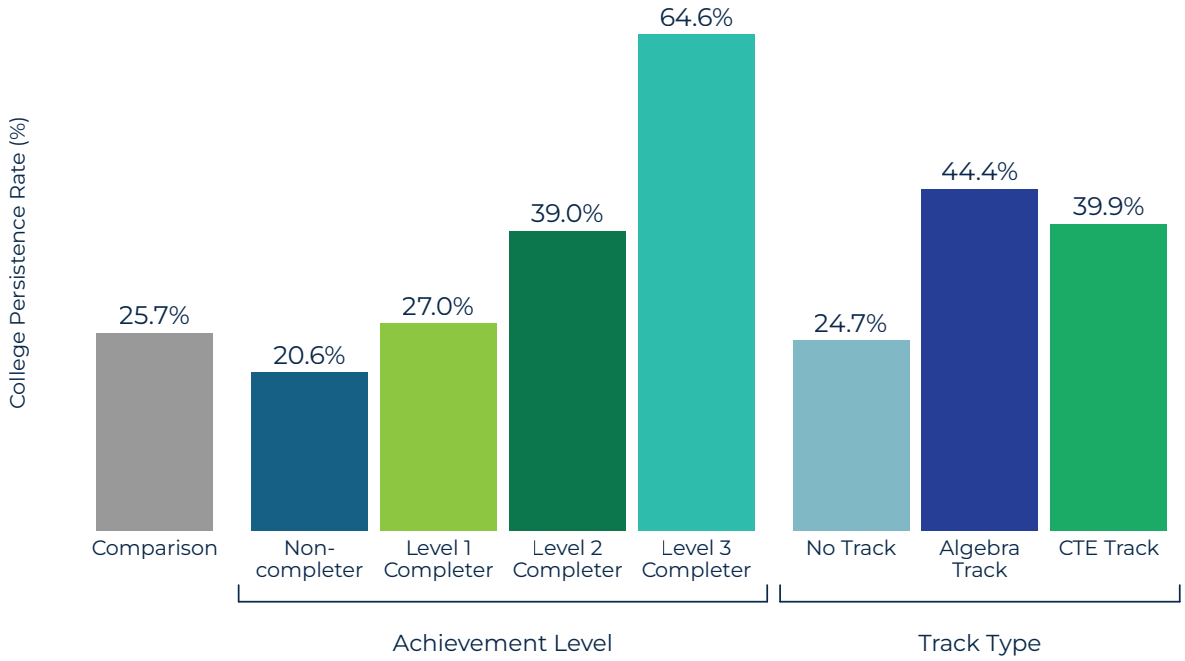


Within the NMRP group, persistence outcomes varied by level of program completion. Level 2 Completers had an average rate at 39.0 percent. Level 3 Completers exhibited a much higher rate (64.6 percent). When examining curriculum tracks, students in the CTE Track had a slightly lower rate (39.9 percent) than those in the Algebra Track (44.4 percent).

Observed differences in persistence rates between NMRP achievement levels and comparison group students ranged from 5.1 percentage points fewer to 0.4 percentage points higher. After adjusting for baseline characteristics, estimated causal effects ranged from 3 percentage points higher to 7 percentage points higher. Generally, it was observed that the estimated effects grew larger over time.

Figure 36:

COLLEGE PERSISTENCE BY NMRP PROGRESS AND TRACK: NEBRASKA PUBLIC HIGH SCHOOL GRADUATES (2019-2022 COHORT)



The pooled analysis did not have a statistically significant and positive overall effect, and although all years had positively estimated effects, none of the individual years had significant results.

Predicted Outcomes

Estimated Regression Adjusted Average Outcome Rates

Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	30.6%	34.6%	+4.1pp
ATT - Pred. Ach. (Level 0/1)	25.2%	29.7%	+4.5pp
ATT - Pred. Ach. (Level 2/3)	34.4%	38.1%	+3.8pp
ATU (Overall)	24.4%	29.5%	+5.1pp
ATU - Pred. Ach. (Level 0/1)	16.6%	19.9%	+3.3pp
ATU - Pred. Ach. (Level 2/3)	33.9%	41.4%	+7.4pp

Figure 37:

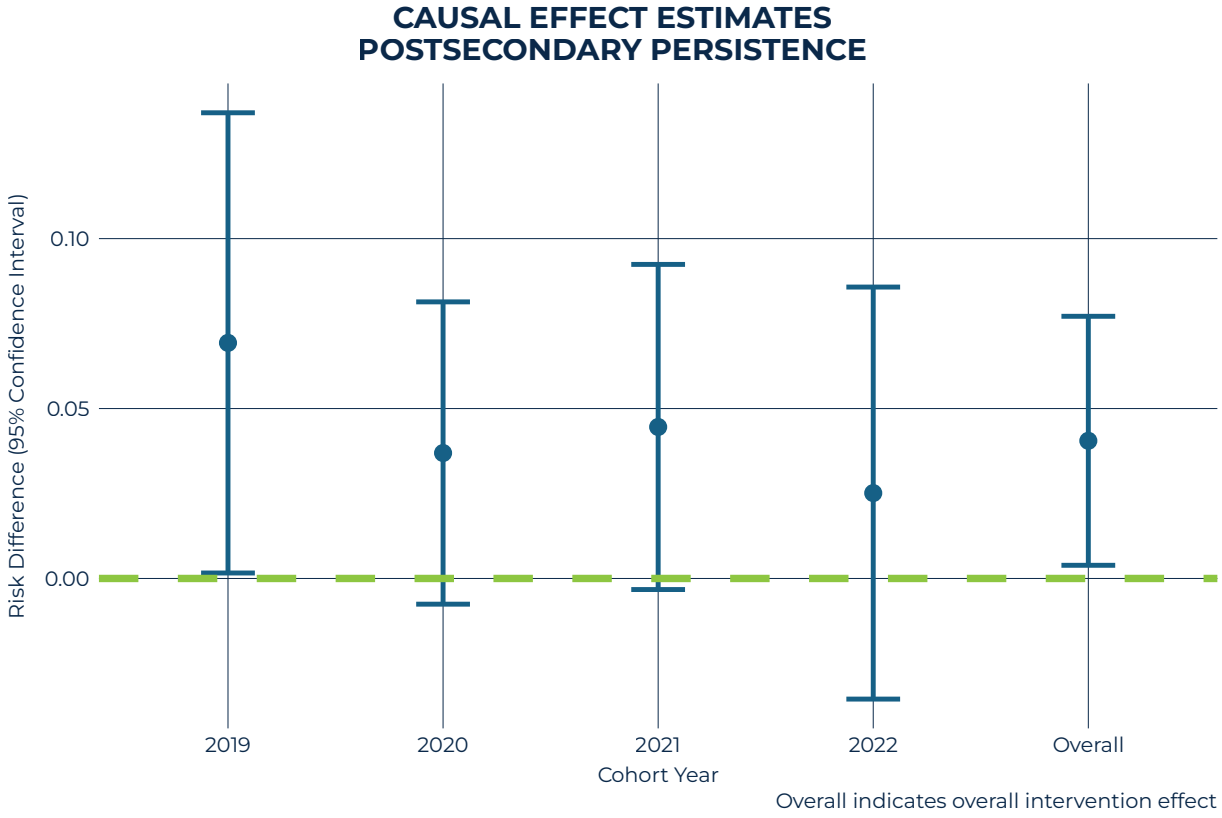
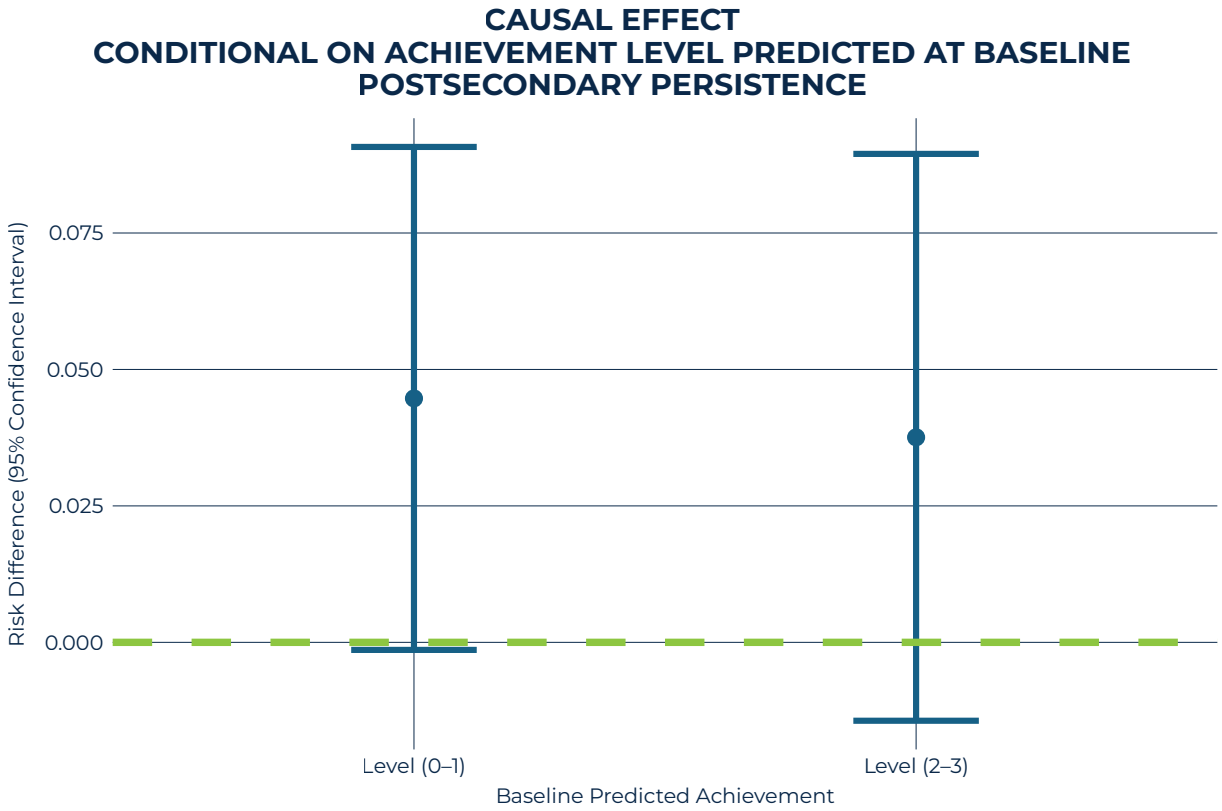


Figure 38:


CAUSAL EFFECT
CONDITIONAL ON ACHIEVEMENT LEVEL PREDICTED AT BASELINE
POSTSECONDARY PERSISTENCE
Risk Difference (95% Confidence Interval)
0.075
0.050
0.025
0.000
Level (0–1)
Level (2–3)
Baseline Predicted Achievement

College Graduation

Over time, NMRP participants exhibited higher college graduation rates than their counterparts in the comparison group. Note that these figures reflect all students in the sample, regardless of whether they enrolled in college. As such, part of the observed differences in college graduation rates are attributable to the higher college enrollment and persistence rates among NMRP participants.

The pooled analysis showed a statistically significant effect of NMRP participation on college graduation. On average, NMRP participants had their college graduation rates increased by 7 percentage points.

Figure 39:

COLLEGE GRADUATION BY NMRP PARTICIPATION: NEBRASKA PUBLIC HIGH SCHOOL GRADUATES (2019-2021 COHORT)

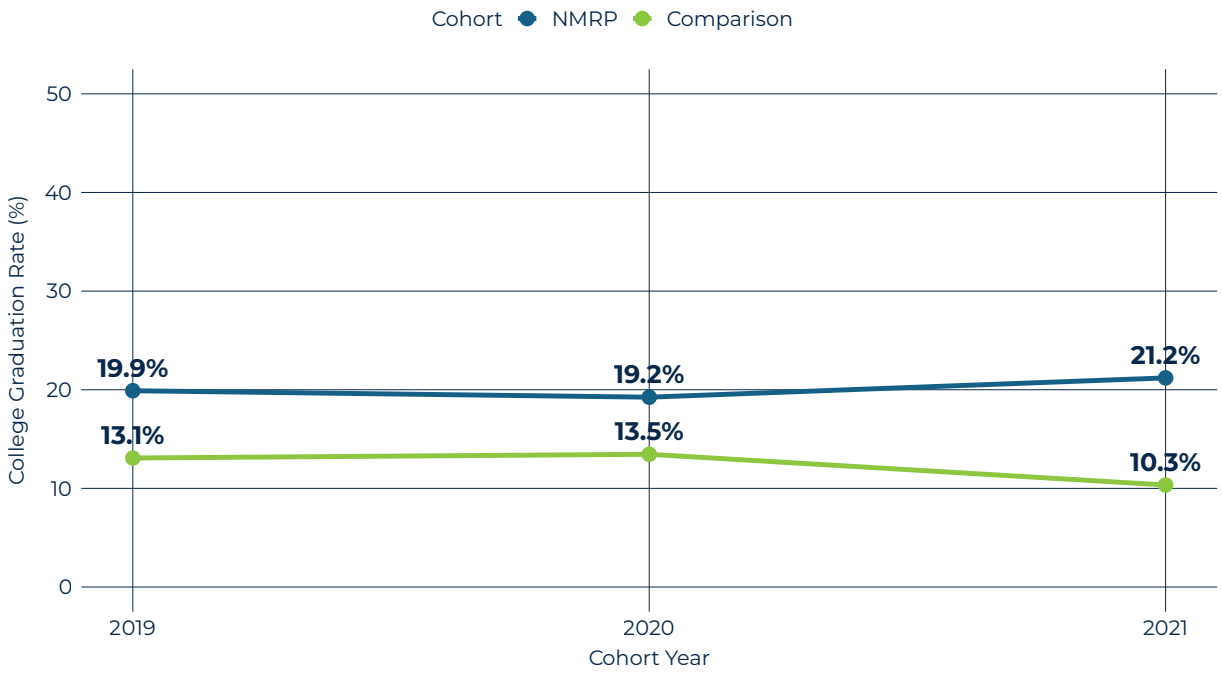


Figure 40:

COLLEGE GRADUATION BY NMRP PROGRESS AND TRACK: NEBRASKA PUBLIC HIGH SCHOOL GRADUATES (2019-2021 COHORT)

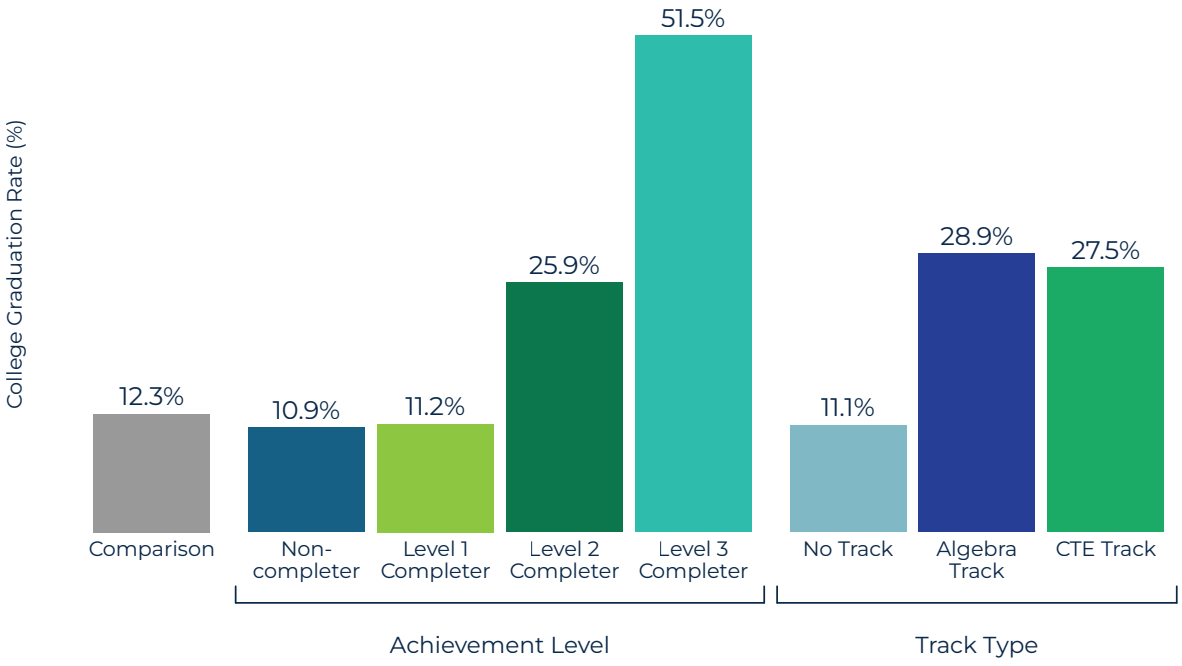


Figure 41:

CAUSAL EFFECT ESTIMATES POSTSECONDARY GRADUATION

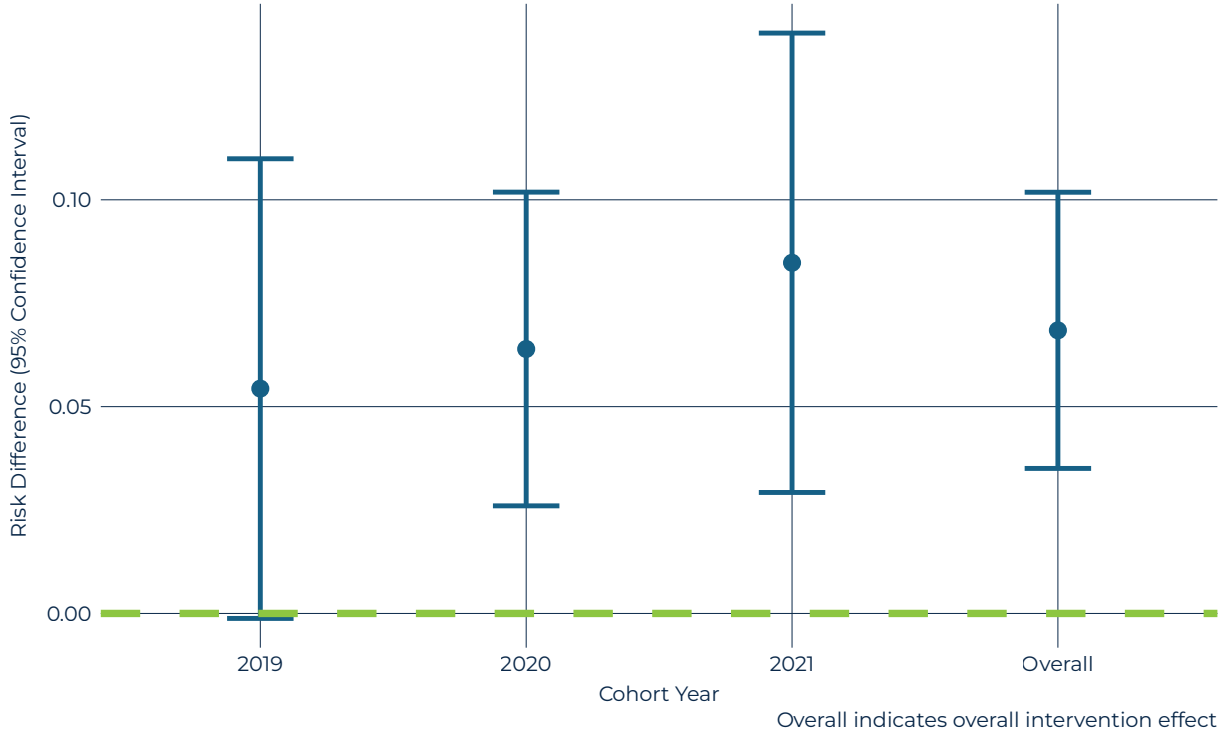
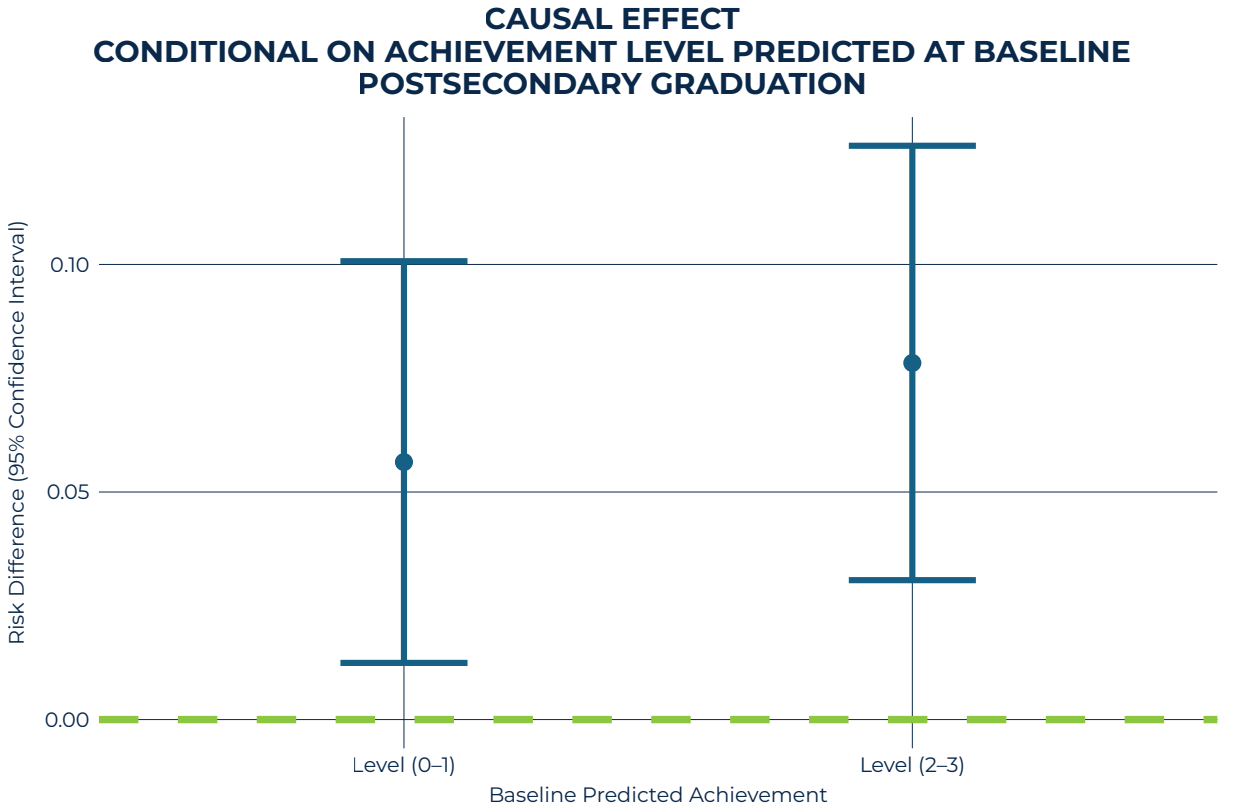


Figure 42:



Predicted Outcomes

Estimated Regression Adjusted Average Outcome Rates

Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	13.4%	20.3%	+6.8pp
ATT - Pred. Ach. (Level 0/1)	10.4%	16.0%	+5.7pp
ATT - Pred. Ach. (Level 2/3)	16.0%	23.8%	+7.8pp
ATU (Overall)	12.6%	20.2%	+7.5pp
ATU - Pred. Ach. (Level 0/1)	7.2%	11.6%	+4.5pp
ATU - Pred. Ach. (Level 2/3)	19.7%	31.2%	+11.5pp

College Credential Attainment

Over time, NMRP participants who graduated from high school demonstrated higher attainment rates for two-year certificates and associate degrees compared to their counterparts in the comparison group. On average, NMRP participants achieved attainment rates higher than those in the comparison group.

Within the NMRP achievement level, Level 2 Completers had higher attainment rates for certificates, associate degrees, and bachelor's or higher degrees than the comparison group. Level 3 Completers showed notably higher rates for associate and bachelor's degrees or higher, but due to the small size of this subgroup, their influence on the overall averages was limited.

Estimated causal effects on attainment varied by credential type and cohort year. The pooled analysis revealed a statistically significant and positive overall effect of NMRP participation on two-year certificate attainment and associate degree attainment.

Because bachelor's degree completion may require up to six years of postsecondary enrollment, and because a large proportion of students enrolling in four-year institutions remain actively enrolled during the observation period, the current follow-up horizon may be insufficient to detect longer-term effects on bachelor's attainment. As additional years of postsecondary data become available, future analyses will be better positioned to evaluate impacts on four-year degree completion.

Figure 43:

COLLEGE CREDENTIAL ATTAINMENT BY NMRP PARTICIPATION: NEBRASKA PUBLIC HIGH SCHOOL GRADUATES (2019-2021 COHORT)

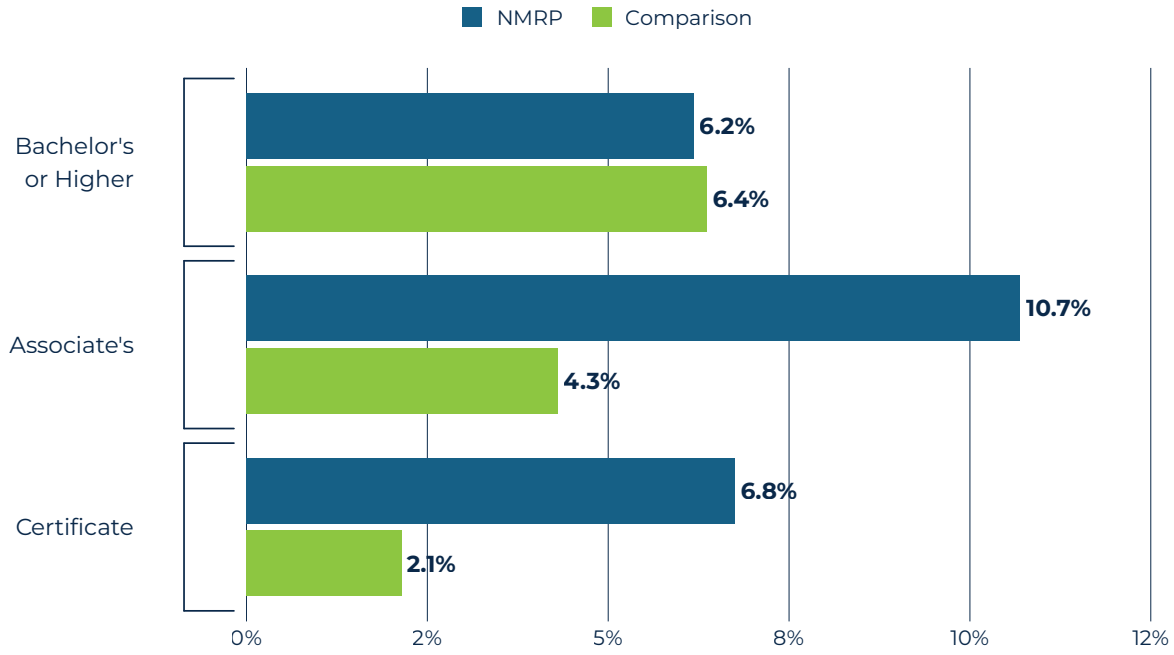


Figure 44:

COLLEGE CREDENTIAL ATTAINMENT BY NMRP PROGRESS: NEBRASKA PUBLIC HIGH SCHOOL GRADUATES (2019-2021 COHORT)

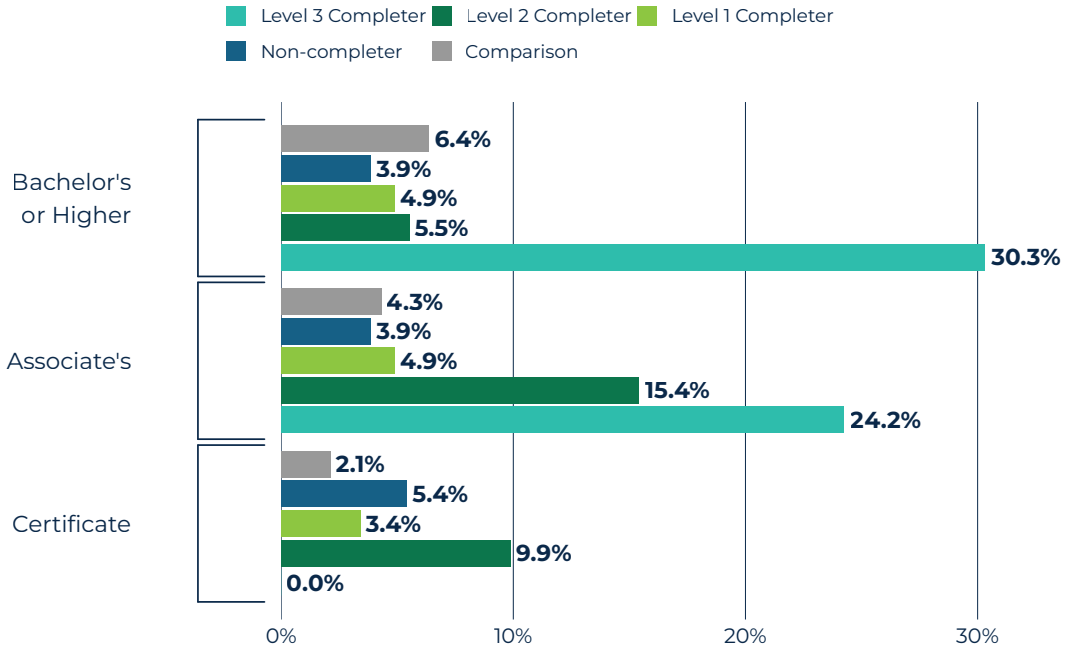
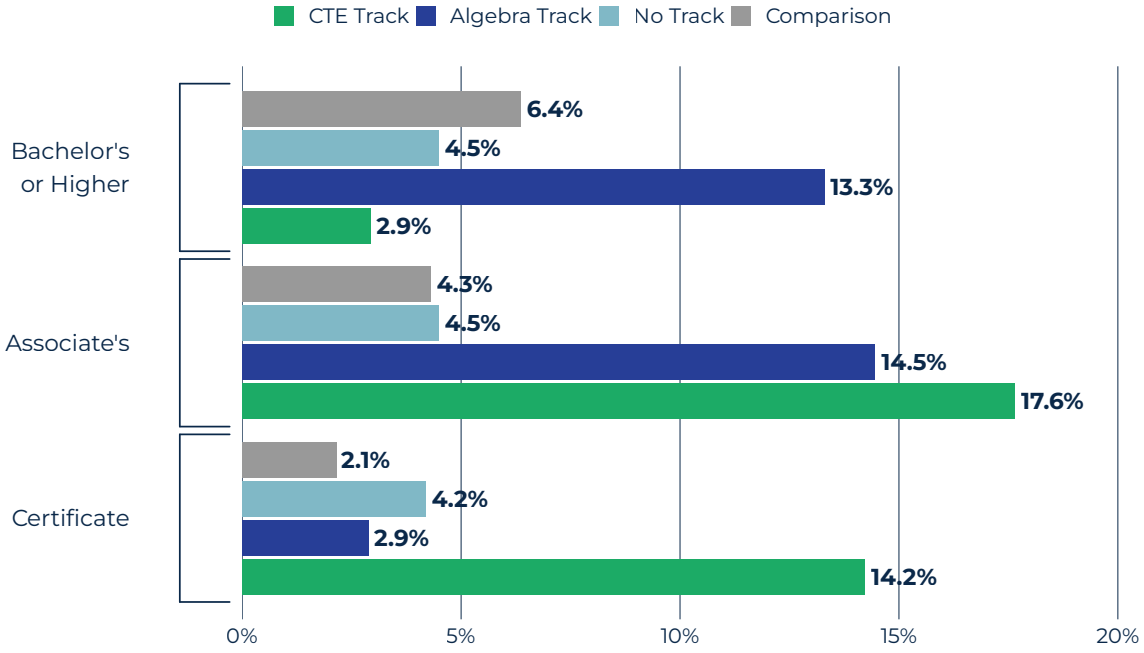


Figure 45:

COLLEGE CREDENTIAL ATTAINMENT BY NMRP TRACK: NEBRASKA PUBLIC HIGH SCHOOL GRADUATES (2019-2021 COHORT)



Certificate Attainment

Figure 46:

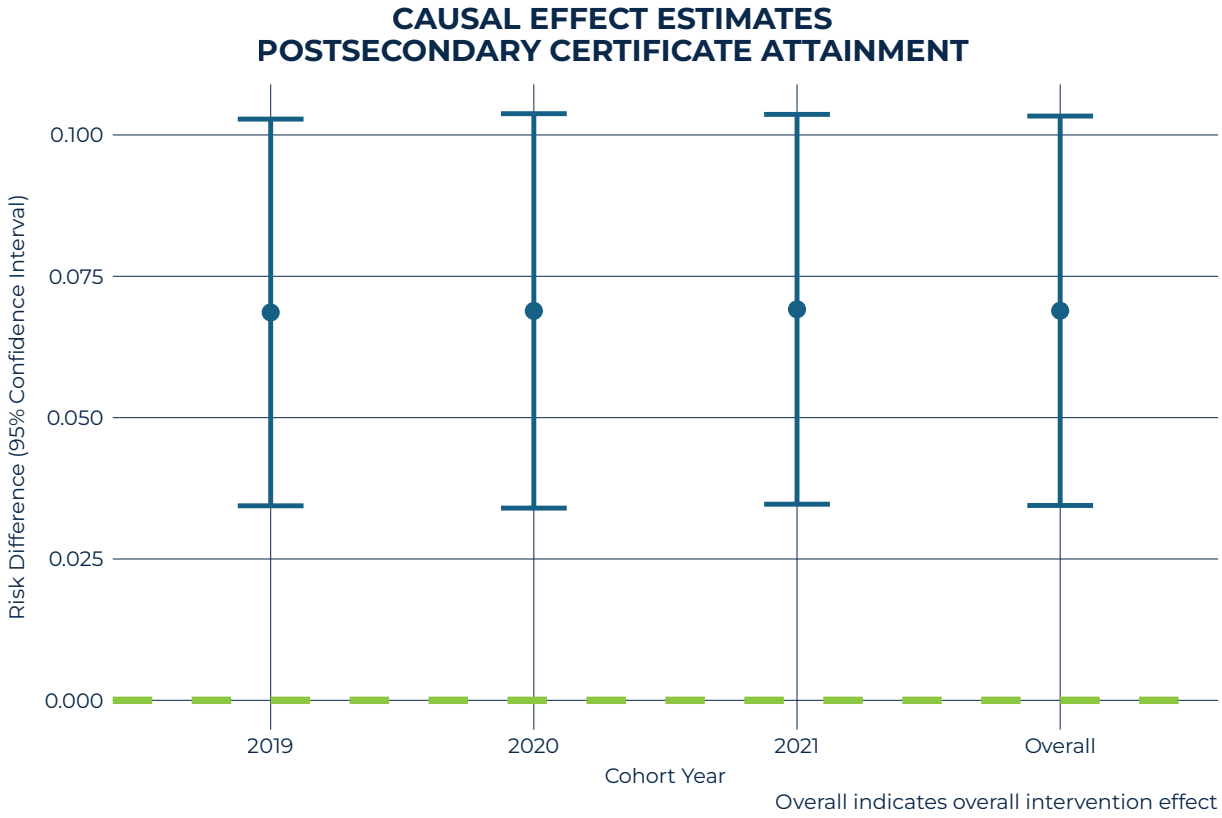
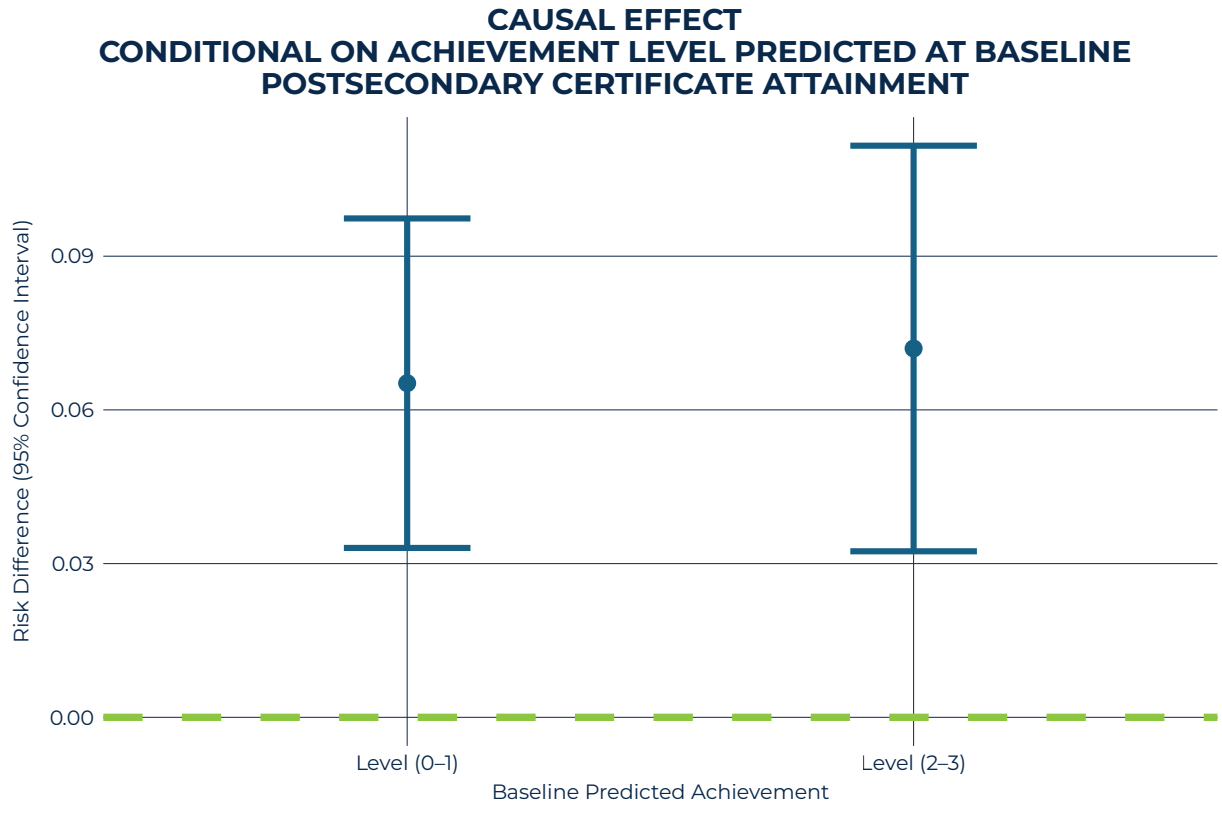


Figure 47:



Predicted Outcomes

Estimated Regression Adjusted Average Outcome Rates

Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	13.4%	20.3%	+6.9pp
ATT - Pred. Ach. (Level 0/1)	10.9%	17.4%	+6.5pp
ATT - Pred. Ach. (Level 2/3)	15.5%	22.7%	+7.2pp
ATU (Overall)	12.1%	18.3%	+6.2pp
ATU - Pred. Ach. (Level 0/1)	8.5%	14.0%	+5.6pp
ATU - Pred. Ach. (Level 2/3)	16.7%	23.7%	+7.0pp

Associates Attainment

Figure 48:

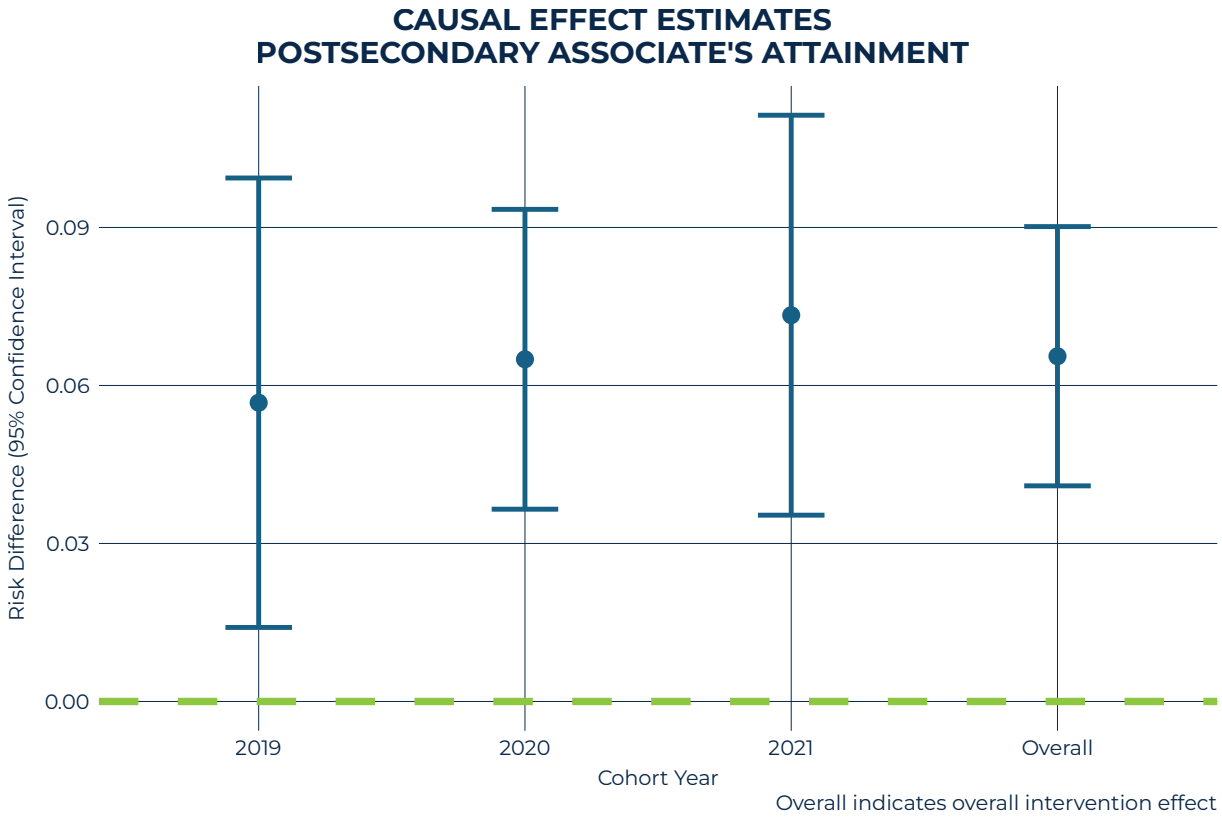
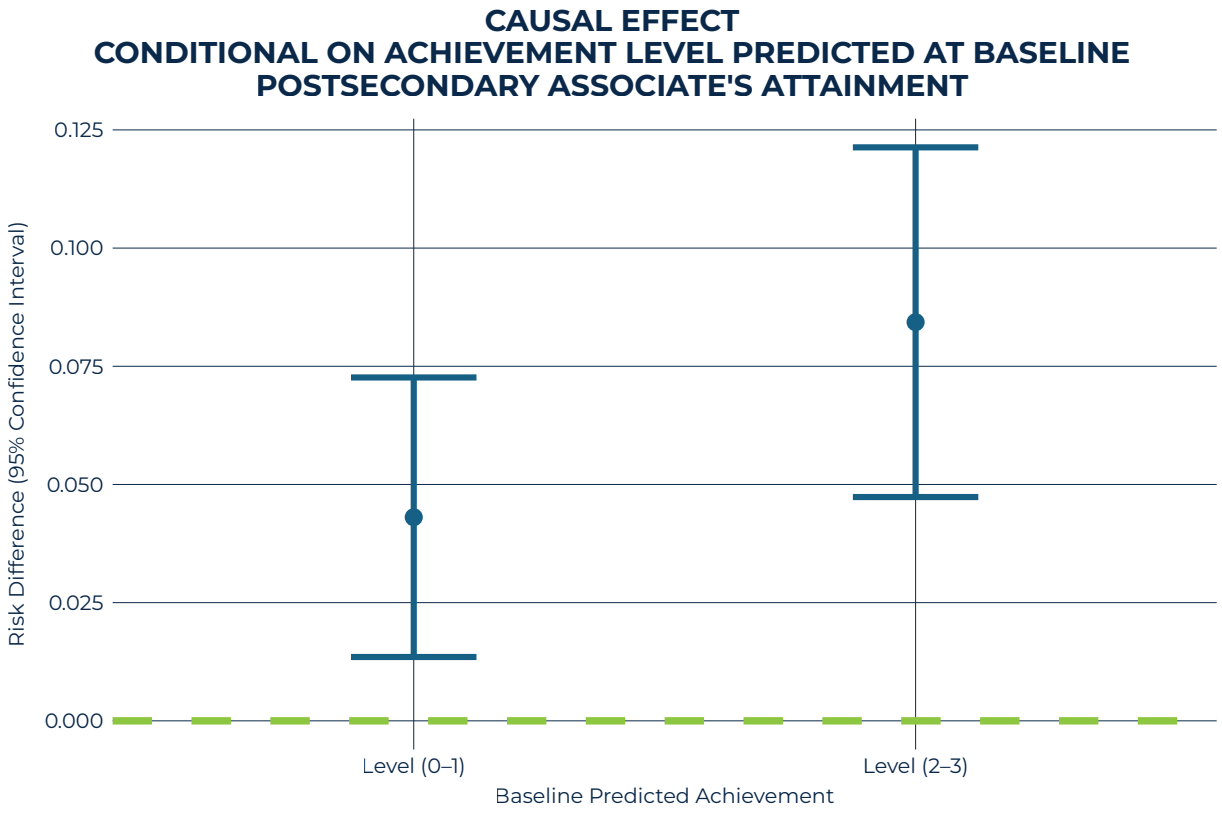


Figure 49:



Predicted Outcomes

Estimated Regression Adjusted Average Outcome Rates

Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	4.2%	10.7%	+6.6pp
ATT - Pred. Ach. (Level 0/1)	2.9%	7.2%	+4.3pp
ATT - Pred. Ach. (Level 2/3)	5.2%	13.6%	+8.4pp
ATU (Overall)	4.4%	13.5%	+9.0pp
ATU - Pred. Ach. (Level 0/1)	2.3%	7.0%	+4.8pp
ATU - Pred. Ach. (Level 2/3)	7.2%	21.8%	+14.6pp

Bachelor’s Degree or Higher Attainment

Figure 50:

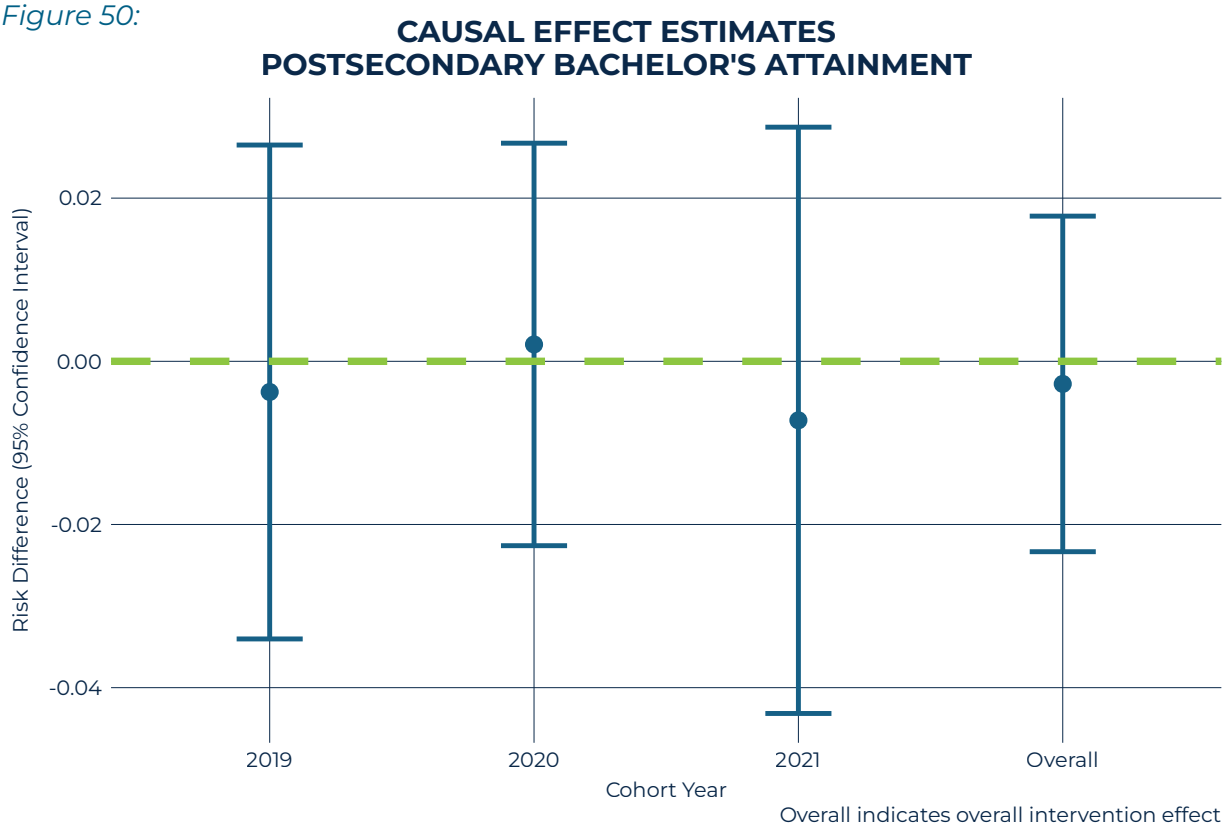
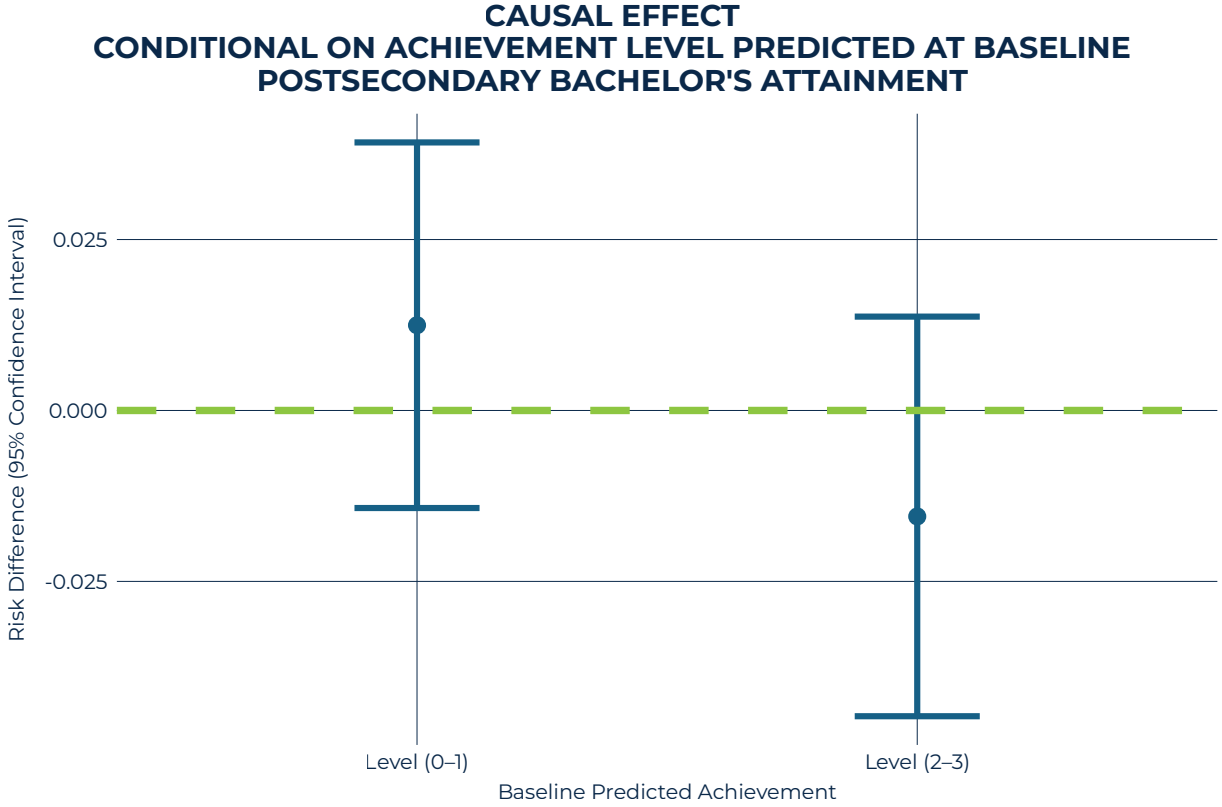


Figure 51:



Predicted Outcomes

Estimated Regression Adjusted Average Outcome Rates

Effect	Est. Under No Participation	Est. Under Participation	Difference (Participation - No Participation)
ATT (Overall)	6.5%	6.2%	−0.3pp
ATT - Pred. Ach. (Level 0/1)	4.4%	5.7%	+1.2pp
ATT - Pred. Ach. (Level 2/3)	8.2%	6.7%	−1.5pp
ATU (Overall)	6.8%	6.1%	−0.7pp
ATU - Pred. Ach. (Level 0/1)	3.3%	4.0%	+0.7pp
ATU - Pred. Ach. (Level 2/3)	11.4%	8.9%	−2.5pp

DISCUSSION AND CONCLUSION

Discussion

This evaluation provides results that align with the Nebraska Math Readiness Project's stated theory of action: strengthening math readiness in high school so that participating students can transition into postsecondary education, avoid remedial diversion, and build early academic momentum. Across outcomes, the estimated impacts form a consistent pattern: participation is associated with higher college enrollment, lower remedial math enrollment, and improved indicators of early postsecondary progress, including cumulative credits and cumulative GPA. These outcomes function as intermediate milestones that are closely linked to longer-run persistence and credential attainment, especially in community college settings.

Comparison to Prior Evidence

The pattern of results observed in this evaluation can be interpreted in the context of a broader and well-established literature on developmental education reform and high school transition interventions. Across multiple rigorous studies, interventions designed to reduce remediation and accelerate entry into credit-bearing coursework consistently produce their strongest effects on early academic milestones rather than long-term attainment.

First, the estimated increase in completion of credit-bearing mathematics in this study is notably large relative to prior evidence. In randomized and quasi-experimental studies of co-requisite remediation(*9*), improvements in gateway math completion typically range from approximately 4 to 18 percentage points. By comparison, the estimated increase of approximately 27.8 percentage points in credit-bearing math completion for NMRP participants exceeds the upper bound of most reported effects. This suggests that the program is not only reducing remedial diversion but substantially increasing successful progression through a key academic bottleneck.

Second, the estimated reduction in remedial math enrollment of approximately 7 percentage points is consistent with the magnitude of effects observed in prior high school transition interventions, which generally fall in the range of 5 to 10 percentage points (*9*). This alignment indicates that NMRP is performing at or slightly above the level of comparable programs in reducing placement into developmental coursework, while doing so in a context where overall college-going is also increasing.

Third, the estimated increase in cumulative college credits of approximately 3.1 credits falls squarely within the range documented in the acceleration and co-requisite literature, where typical gains range from approximately 1 to 6 additional credits in the first one to three years of enrollment(*10*). Likewise, the non-significant result is also consistent with the literature; ceiling effects on credit accumulation due to degree completion can limit findings on this outcome.

Finally, the estimated effects on persistence and graduation provide an important point of contrast with prior research. The observed increase in persistence of approximately 4 percentage points is consistent with the small positive short-term effects typically found in the literature, which often attenuate over time. However, the estimated increase in college graduation of approximately 6.6 to 7 percentage points is notably larger than what is commonly observed(9). Many prior studies of remediation reform and transition interventions find little to no effect on degree completion, even when early outcomes improve. The presence of a measurable graduation effect in this study therefore represents a meaningful departure from the typical pattern.

Taken together, these comparisons suggest that NMRP exhibits a pattern of effects that is both consistent with and, in several respects, stronger than the existing evidence base. Like other interventions, it improves early momentum by increasing college entry, reducing remedial diversion, and accelerating progression through required coursework. However, the magnitude of the effect on credit-bearing math completion and the presence of a positive graduation effect indicate that the program may be operating not only by reducing structural barriers, but also by meaningfully improving students' underlying readiness for college-level work.

An important implication of the results is that the program appears to influence both access and trajectory. The estimated increase in college-going suggests NMRP may be supporting students in making the transition to postsecondary education who otherwise would not have enrolled within the observed window. At the same time, the estimated reduction in remedial math enrollment indicates that among those who enroll, participants are less likely to be routed into developmental sequences that delay progress toward a credential. Remedial diversion is a well-known barrier to completion because it consumes time and financial aid eligibility while not generating credit toward awards. The combination of increased enrollment and reduced remedial enrollment is therefore substantively meaningful: it indicates NMRP may be improving the efficiency of students' entry into postsecondary pathways.

A particularly interesting result in this study is the estimated impact on completion of credit-bearing college mathematics. Completing a for-credit math course is a direct test of the NMRP's mechanism. In many community college pathways, there is only a single credit math course required to earn a credential. Timely completion of this course enables students to progress into program requirements without being delayed by prerequisite sequences. The estimated positive effect on credit-bearing math completion therefore provides especially strong substantive support for the program's theory of action.

Conditional Analysis

The conditional analyses based on baseline-predicted curriculum progression add an important nuance to the interpretation of impacts. Because these subgroup definitions are constructed using pre-treatment covariates, they allow examination of heterogeneity while avoiding post-treatment selection bias. In this study, a recurring pattern is that students with higher baseline predicted progression potential tend to have higher predicted outcomes under both participation and non-participation, reflecting their stronger starting point. However, for several outcomes, the estimated causal effect of participation is larger for students with lower baseline predicted achievement. This indicates that NMRP may be generating greater marginal gains for students who begin with lower predicted readiness, even if their absolute postsecondary outcomes remain below those of higher-readiness peers.

This distinction is key for interpretation and decision-making. A larger effect among lower-predicted students does not imply they "outperform" higher-predicted students in absolute terms. Rather, it suggests the program is effective at reducing gaps (while not completely closing them) by improving outcomes more for students who otherwise would be less likely to succeed. At the same time, smaller estimated effects among higher-predicted students may reflect a ceiling effect, where students who were already likely to enroll, avoid remediation, or progress in coursework have less room to improve. This is actionable because it links impact heterogeneity to baseline observable profiles that can be measured prior to participation, and it suggests NMRP can use these profiles to refine support strategies: preserving access for lower-readiness students who appear to benefit most, while considering whether program dosage or additional components are needed to raise absolute outcomes for that group.

Absenteeism Findings

The absenteeism results suggest that prior issues with absenteeism are a meaningful barrier to success in NMRP. Students who entered the program with higher levels of chronic absenteeism were less likely to progress through the curriculum and reach higher achievement levels, indicating that consistent attendance is closely tied to the program's ability to deliver its intended benefits. Chronic absenteeism may be functioning as a broader indicator of student engagement and stability, or it may reflect external constraints that limit students' ability to participate consistently (for example, transportation, work obligations, care giving responsibilities, or health-related challenges). Regardless of the underlying cause, the practical implication is the same: students with substantial attendance barriers are less likely to benefit from a structured, year-long sequence that depends on steady participation. For these students, it may be more effective to address attendance and engagement challenges first, or to pair NMRP participation with additional supports and monitoring designed to reduce absenteeism, rather than treating NMRP as the primary intervention.

Program Expansion Considerations

The comparison group in this evaluation provides a practical proxy for the size of the eligible population in MCC's service area because it was constructed from public high school students in Dodge, Douglas, Sarpy, and Washington counties who fit the study's NMRP eligibility logic (no fourth year of high school math and ACT composite 14–19, with imputation where needed). Across the cohorts analyzed, this comparison group includes approximately 3000 students per year, compared to the approximately 400-600 NMRP participants, indicating that the potential eligible pool in the region is much larger than current participation.

This should be treated as a planning estimate rather than a precise forecast: some students who meet these criteria may not be good candidates without additional supports (for example, attendance or scheduling barriers), and NMRP may also choose to broaden or refine eligibility in future implementation.

Summary and Implications

The overarching takeaway is that the outcomes that should move based on NMRP's program intent are in fact improved by the program. The strongest effects appear on the transition into college, avoiding remedial diversion, and completing for-credit math. At the same time, the study's design and data coverage imply natural limits on what can be concluded today. Because participation is purposefully selected and because some outcomes require longer observation windows, the most responsible interpretation is that the evidence is consistent with meaningful program effectiveness for participants, especially in the near-term milestones that matter for completion. As additional cohorts mature and more follow-up accrues, the same analytic framework can be used to test whether these early momentum gains translate into larger and more persistent impacts on credentials, and whether targeted supports for lower-readiness or high-absenteeism students can raise absolute outcomes while preserving the program's gap-reducing potential.

Study Limitations and Threats to Validity

This study employs a quasi-experimental design to estimate the effect of NMRP participation on postsecondary outcomes. While this analytic approach reduces bias from observable differences between participants and nonparticipants, several limitations remain that may affect the interpretation of results.

Selection Bias and Unobserved Confounding

Participation in NMRP is not randomly assigned. Students are selected through teacher and counselor recommendations based on criteria that likely include academic readiness, motivation, classroom behavior, and postsecondary aspirations. Although the propensity score model includes a rich set of academic and demographic covariates, important factors such as student motivation, family support, and college-going expectations are not directly observed.

If these unmeasured characteristics are positively associated with both participation and postsecondary success, estimated treatment effects may be biased upward. While the analytic approach improves comparability between groups, it cannot fully eliminate residual selection bias arising from discretionary referral processes.

Omitted Variables

Some relevant predictors of postsecondary success are not available in the NSWERS data system. In particular, family socioeconomic status (SES) is not directly observed. Prior research indicates that SES is strongly associated with postsecondary outcomes, though its effects may be partially mediated through academic preparation.

Because the model includes detailed measures of prior academic achievement and engagement, omission of SES may have a limited impact on estimates. However, if SES independently influences both participation and outcomes beyond these measures, results may still be subject to bias.

Concurrent Interventions and External Influences

The analysis does not account for participation in other interventions that may affect students' college readiness or academic outcomes. Students in both the treatment and comparison groups may have been exposed to additional supports not captured in administrative data.

To the extent that such interventions are systematically correlated with NMRP participation, estimated effects may reflect a combination of program impacts and external influences.

Measurement and Data Limitations

Outcomes and predictors are derived from administrative data across multiple institutions, which may differ in course structures, grading practices, and transcript coding. Although NSWERS standardizes these records, some residual variation in how outcomes such as GPA and credit accumulation are defined and recorded may remain.

These differences are unlikely to introduce systematic bias between NMRP participants and comparison students but may introduce modest measurement noise in estimated effects.

In addition, postsecondary data are limited to participating Nebraska public institutions. Outcomes for students attending out-of-state institutions or institutions with incomplete data coverage (e.g., Central Community College for certain cohorts) may be underrepresented, potentially leading to downward bias in measured outcomes such as credit accumulation and GPA.

Missing Data

Complete case analysis was used for primary analyses, restricting samples to students with non-missing values on all variables included in each model. This approach assumes that missingness is unrelated to outcomes after conditioning on observed variables.

If this assumption does not hold, estimates may be biased and less precise. However, missingness was generally low. The primary exception is ACT scores, which were imputed for the purpose of defining the eligibility band; details are provided in the Appendix.

Program Implementation Variability

The NSWERS data system does not capture variation in program implementation across schools or years. Differences in recruitment strategies, instructional quality, or curriculum delivery may influence outcomes but are not observable in the data.

As a result, estimated effects reflect an average impact across potentially heterogeneous program implementations and may mask important variation in program effectiveness.

Scope and Generalizability

The evaluation focuses on NMRP participants within the MCC service area and comparable students within that context. Results may not generalize to other regions, institutions, or implementation contexts where student populations, institutional practices, or program delivery differ.

Conclusion

This evaluation assessed the causal effects of the NMRP on postsecondary outcomes. The findings provide valuable insights into both the characteristics of program participants and the program's potential impact. Participation in NMRP was associated with improved outcomes across several indicators, including higher rates of college enrollment, persistence, graduation, and stronger academic performance. Although the relationship between NMRP participation and bachelor's degree attainment was mixed and not statistically significant, the overall findings suggest that the program may contribute meaningfully to enhancing college readiness and success. Based on this evidence, educators and policymakers may consider encouraging student participation in the program as part of broader efforts to improve postsecondary attainment.

These findings are notable in light of the broader literature on remediation and transition interventions, which generally shows strong effects on early academic milestones but limited impacts on degree completion. In this context, the observed improvement in both early momentum and graduation outcomes suggests that NMRP may be achieving a level of effectiveness that extends beyond typical program impacts.

APPENDIX

Data Definitions

Chronic Absenteeism

This was derived from the Nebraska public K–12 student attendance records and was determined based on the proportion of days a student was absent during high school. In this study, a student was categorized as chronically absent if he/she missed 10 percent or more of school days during high school.

Cohort Year

For NMRP participants, the cohort year is defined as the year of program participation. For comparison group students, it is defined as the expected high school graduation year. The expected graduation year is calculated as four years after a student's initial ninth-grade enrollment, following the guidelines provided by the Nebraska Department of Education (*12*). In cases where a student has more than one recorded expected graduation date, the latest value (i.e., the maximum year) was used to ensure consistency.

College Credential Attainment

An indicator of whether a student ever graduated from any postsecondary institution with a specific degree/certificate within 6 years after high school graduation. This is determined by using a student's latest postsecondary award records.

College Going

An indicator of whether a student ever attended a two-year or four-year postsecondary institution within 16 months after high school graduation. This includes summer semester enrollment and enrollment at any postsecondary institution. This is determined based on a student's high school graduation records and postsecondary enrollment records.

College Graduation

An indicator of whether a student ever graduated from any postsecondary institution with a degree/certificate within 6 years after high school graduation. This is determined by using a student's latest postsecondary award records within 6 years after high school graduation.

College Persistence

An indicator of whether a student continued to attend two-year or four-year postsecondary institution during the 12-18 month window following their first postsecondary enrollment OR earned a terminal award or certificate during this time period. This may includes summer semester enrollment and enrollment at any postsecondary institution.

Completing Credit-Bearing College Math

An indicator of whether a student successfully completed at least one credit-bearing postsecondary mathematics course within 1 year of starting postsecondary education. This outcome includes only degree- or certificate-applicable math courses and excludes remedial mathematics courses at two-year institutions and foundational mathematics courses at four-year institutions. Successful completion is determined from postsecondary transcript records and reflects earning credit (i.e., receiving a passing grade) in at least one qualifying course.

Gender

Student gender was determined using the most recent available record of a student's self-reported gender identity. Due to the low frequency for individuals with unreported gender, only records in "Male" and "Female" categories were included in the analysis.

High School Course Credit

This was calculated across all the years a student attended a Nebraska public high school. Because the NSWERS data system does not contain a direct record of credit hours for high school course records, the course credits are derived from the semester codes in Nebraska public K–12 course records and recoded into Carnegie units, a standard measure of course credit hours based on instructional time (*14*). For example, one semester (half of a full academic year) of instruction corresponds to 0.5 Carnegie units. Attempted Course Credits include credit hours from failed courses and potentially includes withdrawn courses, depending on local district record keeping.

High School GPA

This was derived from Nebraska public K-12 course records and calculated across all the years that a student attended Nebraska public high school. Due to the varying grading codes used at different schools, all course grades were converted to a 4.0 scale then averaged for each student. Specifically, all course grades were standardized to a 4.0 scale (*15*) and adjusted based on the number of Carnegie units earned in each course. Courses without a grade, like pass/fail or audited courses, were excluded from the GPA calculation. Additionally, no extra points were given for Advanced Placement, International Baccalaureate, or other honors classes.

High School Graduation

An indicator of whether a student graduated from high school. This is determined based on high school graduation records.

Postsecondary Course Credits

Postsecondary course credits were derived from Nebraska public postsecondary transcript records and calculated across all the years a student attended a Nebraska public postsecondary institution. Earned Course Credits include credit hours from courses with a passing grade and include credit hours from pass/fail courses. Dual enrollment course credits were not included in the credit calculation. There is no fixed follow-up period for this outcome. As a result, earlier cohorts may exhibit higher cumulative course credits simply due to having a longer observation window, allowing more time for college enrollment records to be captured.

Postsecondary GPA

Postsecondary GPA was derived from Nebraska public postsecondary transcript records calculated across all the years that a student attended Nebraska public postsecondary institution. Courses without a grade, like pass/fail or audited courses, were excluded from the GPA calculation. The dual enrollment course grades were not included in the GPA calculation. There is no fixed follow-up period for this outcome. As a result, earlier cohorts may exhibit higher cumulative college GPA simply due to having a longer observation window, allowing more time for college enrollment records to be captured.

Race/Ethnicity

Student race/ethnicity was determined using the most recent available record of a student's self-reported racial/ethnic identity which is in line with IPEDS reporting categories (*13*). Some of the categories are then rolled up into "Other" category due to low frequencies for some racial/ethnic groups (less than 10 students in the category). These categories potentially included: - American Indian or Alaska Native - Asian - Native Hawaiian or Other Pacific Islander

Remedial Math Enrollment

An indicator of whether a student was ever observed to have enrolled in a course remedial, developmental or other math course not indented to contribute postsecondary degree after high school graduation. This is determined based on a student's postsecondary transcript records at Nebraska public postsecondary institutions, which includes the majority of enrollments for participants. There is no fixed follow-up period for this outcome. As a result, earlier cohorts may exhibit higher remedial math enrollment rates simply due to having a longer observation window, allowing more time for college enrollment records to be captured.

Missing Data Imputation for ACT Scores

Beginning in 2017, Nebraska administered the ACT each spring to public high school 11th graders, except students designated for an alternate assessment. Spring 2020 testing was canceled due to COVID-19, and as a result the NSWERS data system does not contain ACT scores for students in the 2021 cohort.

Because ACT composite and ACT math scores were used for comparison-group sample selection, missing scores were imputed using functions from the **mice** package in R. Due to the general incompatibility of multiple imputed datasets with the propensity score and model fitting process, a single completed dataset was generated using a long Markov chain. After the imputation step, missing values in ACT composite and ACT math variables were replaced with their imputed counterparts, while observed ACT values were retained as originally reported.

Propensity Score Matching

In this study, propensity matching was used to estimate the causal effect of NMRP participation on the outcomes of interest while controlling pre-existing differences between the participant and non-participant groups which are measured by baseline covariates. The goal of matching is to produce covariate balance, that is, for the distribution of baseline covariates in the two groups to be approximately equal to each other, as they would be in a successful randomized experiment.

The choice of baseline covariates and the thresholds used to determine baseline equivalence follow the most recent What Works Clearinghouse (WWC) guidelines for analysis of Quasi-Experimental Designs (QED) (16). To satisfy baseline equivalence for QED, there must be differences of less than or equal to 0.05 standard deviations between a set of relevant covariates. These covariates must include at least:

1. A broad, approximately continuous, and standardized measure of student academic readiness, knowledge, or skills, AND
2. Baseline measures of at least two of the following for learners in the analytic sample:
    a. A measure of socioeconomic status, such as parental or caregiver level of education or eligibility for need-based assistance or financial aid
    b. Race or ethnicity
    c. Dual language or English learner student status
    d. Disability status
    e. Disciplinary measures such as frequency of suspensions or referrals
    f. Grade level, for students between kindergarten and grade 12, or else age

To meet the first requirement, the 9-10 grade GPA, 9-10 grade total course credits earned, 9-10th grade course credits earned were included as a baseline covariate. To meet the second requirement, race, homeless status (SES status), special education status (disability status), and English language learner (ELL) status was included. Additional baseline covariates included gender, whether the student was a single parent, if the student was highly mobile, immigrant status, ELL eligibility, high ability learner eligibility and participation, and the proportion of total enrolled days in which a student was absent between 9–10 grades. All covariates were measured prior to NMRP participation and therefore represent pre-treatment characteristics. 11th grade information was not used because some of the NMRP participants were in 11th grade at the program participation and their high school data could have been affected by the intervention.

Category	**Variable**
Demographics	Race/Ethnicity
	Gender
	County/District
	Immigrant status
	English language learner eligibility
	Homeless youth indicator
	Highly mobile indicator
Academic preparation	ACT composite score
	High school GPA (linear and squared terms)
	High school credit hours earned
	High school math credit hours earned
Attendance	Proportion absent (linear and quadratic terms)
Program participation	Special education participation
Cohort controls	Year indicators (relative to 2019 baseline)

Continuous variables were modeled using both linear and quadratic terms to allow for non-linear relationships with treatment assignment. To balance covariates, the MatchIt R package was used to create matched or weighted analysis data sets using propensity scores as a distance (*17*, *18*). The cohort year was used as an exact matching variable so that subsequent estimates of the causal effect of the intervention can be made specific to each cohort year. To estimate the propensity score, a series of generalized linear models with logit link was fitted. The models included the main effects of all the previously described baseline covariates on the treatment variable. The full logistic model specification was:

$$\text{logit}\left(\Pr(\mathrm{T}=1 \mid \mathrm{X})\right)=\alpha+\mathrm{X}\beta$$

- T is the treatment indicator for NMRP participation (0 or 1).
- X is the design matrix of pre-program covariates.
- α is the intercept.
- β is the vector of covariate coefficients.

Initially, nearest neighbor 1:1 matching was attempted, but did not achieve adequate balance in baseline covariates. Next, generalized full matching was used to form a weighted sample (*19*). This method uses propensity scores (PS) to form subclasses of different sizes which must contain at least one treatment and one control. The subclasses are formed to approximately minimize the largest within-subclass distance in PS. The full matching method attempts to use all treated and all control units, so no units were discarded by the matching.

This approach was successful at reducing standardized mean differences between the NMRP participant and non-participant groups to less than 0.05 standard deviations which is the threshold that satisfies WWC standards for baseline equivalence, indicating adequate balance. The baseline covariates were included in the effect estimation model as well to satisfy the baseline equivalence standard.

Because baseline equivalence must be established separately for different groups of outcomes, several distinct matched datasets were created. The matching process was designed to include the maximum number of NMRP participants possible in each sample. Plots displaying covariate balance for each matched dataset are included in the appendix, along with information about each analysis sample.

To estimate the causal effects and corresponding standard errors, a series of generalized linear models (GLMs) with a logit link were fitted for binary outcomes, while linear regression models were used for continuous outcomes. Each model included main effects and interaction terms between the NMRP participation indicator, and the covariates used in the propensity score model. Full matching weights were applied to account for the matched sample design.

Model fitting was conducted using the glm() function, and g-computation was performed using the avg_comparisons() function from the marginal effects package to estimate the average treatment effect on the treated (ATT) (*20*). Standard errors were calculated using a cluster-robust variance estimator, with matching stratum membership specified as the clustering variable. Effect sizes were reported as risk differences for binary outcomes and mean differences for continuous outcomes.

- Risk difference (RD): The risk difference is the difference in the estimated probability of success between treatment and control groups.

$$\widehat{\mathrm{RD}} = \widehat{\mathrm{P}}(\mathrm{y}=1|\mathrm{t}=1) - \widehat{\mathrm{P}}(\mathrm{y}=1|\mathrm{t}=0)$$

- Mean difference (MD): The mean difference is the difference in the mean of estimated scores between treatment and control groups.

$$\widehat{\mathrm{MD}} = \hat{\mu}_{\mathrm{y}|\mathrm{t}=1} - \hat{\mu}_{\mathrm{y}|\mathrm{t}=0}$$

Intent-To-Treat Analysis

In this study, the primary analyses were based on intent-to-treat (ITT) methodology. This approach includes all participants in the treatment group to which they were originally assigned, regardless of progress through the intervention or adherence to protocol. Generally, ITT helps minimize bias that can arise if only those who completed the program or fully engaged with the treatment were analyzed. In this context, the treatment is defined as participation in the NMRP, rather than level of achievement or completion within the program. Therefore, all students who enrolled in NMRP were included in the causal analysis, including those who did not complete any instructional level of the program (non-completers).

Conditional Effects of Achievement Level

A policy question of interest is the effect of program participation conditional on the level of curriculum attainment ultimately achieved. For example, the effect of participation among students who reach Level 2 or higher. This question is substantively appealing because attainment levels are directly tied to program design and are easily interpretable by those involved with the program. However, Curriculum attainment is a post-treatment variable that is itself affected by both participation and pre-treatment information.

Such conditioning conflates the causal effect of participation with the selection process that determines attainment, opening spurious pathways between participation and outcomes and generally leading to biased estimates. In practice, this may significantly inflate estimates as those that have higher within-program achievement would likely have also had higher than average outcome attainment (of the eligible population) if they had not participated in NMRP.

Likewise, the relevant non-participant comparison is undefined: students who did not participate do not have an observed attainment level, as the achievement level is only measured for participants. For these reasons, we do not estimate effects conditional on realized attainment and instead focus on baseline-defined subgroup analyses that approximate this policy question without conditioning on post-treatment variables.

To characterize heterogeneous program impacts without conditioning on post-treatment attainment, we define analysis subgroups using predicted curriculum progression under participation estimated from pre-treatment covariates only.

Let (L) denote baseline characteristics measured prior to program participation, including prior achievement (for example ACT math or related test scores), high school GPA, absenteeism, demographics, school district. Among program participants, the observed curriculum achievement level (L) is used to construct a binary indicator $\mathrm{L}^{2+} = \mathbf{1}\{\mathrm{L} \geq 2\}$. We then estimate a prediction model for progression to Level 2 or higher under participation:

$$\hat{\mathrm{p}}(\mathrm{X}) \equiv \Pr(\mathrm{L}^{2+} = 1 \mid \mathrm{A} = 1, \mathrm{X}),$$

and compute ($\hat{\mathrm{p}}(\mathrm{X})$) for all students in the analysis sample. This predicted probability represents "progress potential" based solely on baseline information and is therefore a deterministic function of pre-treatment covariates.

We use ($\hat{\mathrm{p}}(\mathrm{X})$) to define subgroups that proxy the counterfactual concept "would reach Level 2+ if enrolled," without conditioning on the realized post-treatment level. For example, define a high-progress subgroup ($\hat{\mathrm{S}} = \mathbf{1}\{\hat{\mathrm{p}}(\mathrm{X}) \geq \mathrm{c}\}$) for a pre-specified threshold (c) (or define quantile-based groups). Because ($\hat{\mathrm{S}}$) depends only on (X), conditioning on ($\hat{\mathrm{S}}$) is equivalent to conditioning on a function of baseline covariates and restricts introduction of post-treatment selection bias. We then estimate the causal effect of program participation (A) on the downstream outcome (Y) (for example college-going) within these baseline defined subgroups.

Formally, within any subgroup ($\mathrm{g}(\mathrm{X})$) defined by ($\hat{\mathrm{p}}(\mathrm{X})$), we estimate an average treatment effect on the risk difference scale via g-computation:

$$\Delta(\mathrm{g}) = \mathbf{E}\left[\Pr(\mathrm{Y} = 1 \mid \mathrm{A} = 1, \mathrm{X}) - \Pr(\mathrm{Y} = 1 \mid \mathrm{A} = 0, \mathrm{X}) \middle| \, \mathrm{g}(\mathrm{X}) = 1\right].$$

Operationally, we fit an outcome model for (Y) as a function of (A) and baseline covariates (X) (and, where appropriate, flexible functional forms and interactions). We then compute predicted probabilities under counterfactual participation assignments,

$$\hat{\mu}_1(\mathrm{X_i}) = \widehat{\Pr}\left(\mathrm{Y} = 1 \mid \mathrm{A} = 1, \mathrm{X_i}\right)$$

and

$$\hat{\mu}_0(\mathrm{X_i}) = \widehat{\Pr}\left(\mathrm{Y} = 1 \mid \mathrm{A} = 0, \mathrm{X_i}\right)$$

, and average the individual-level contrasts

$$\hat{\mu}_1(\mathrm{X_i}) - \hat{\mu}_0(\mathrm{X_i})$$

over the subset of students meeting the subgroup definition ($\mathrm{g}(\mathrm{X_i}) = 1$). In practice, this can be implemented either by: 1. calculating average comparisons within the subgroup-defined population, or 2. fitting an outcome model that includes an interaction between (A) and ($\hat{\mathrm{p}}(\mathrm{X})$ and reporting effects at relevant values or bins of ($\hat{\mathrm{p}}(\mathrm{X})$).

This approach yields a policy-relevant estimand: the expected program impact for students who, based on baseline profiles, are predicted to be likely to progress to Level 2+ if enrolled.

It does not require identifying principal strata defined by unobserved counterfactual attainment and avoids conditioning directly on post-treatment achievement level. Interpretation remains contingent on standard identifying assumptions for observational causal inference, namely that, conditional on ($\mathbf{X}$), there are no unmeasured confounders of the participation–outcome relationship and that the analysis sample has adequate covariate overlap between participants and nonparticipants within the subgroups defined by ($\hat{\mathrm{p}}(\mathbf{X})$).

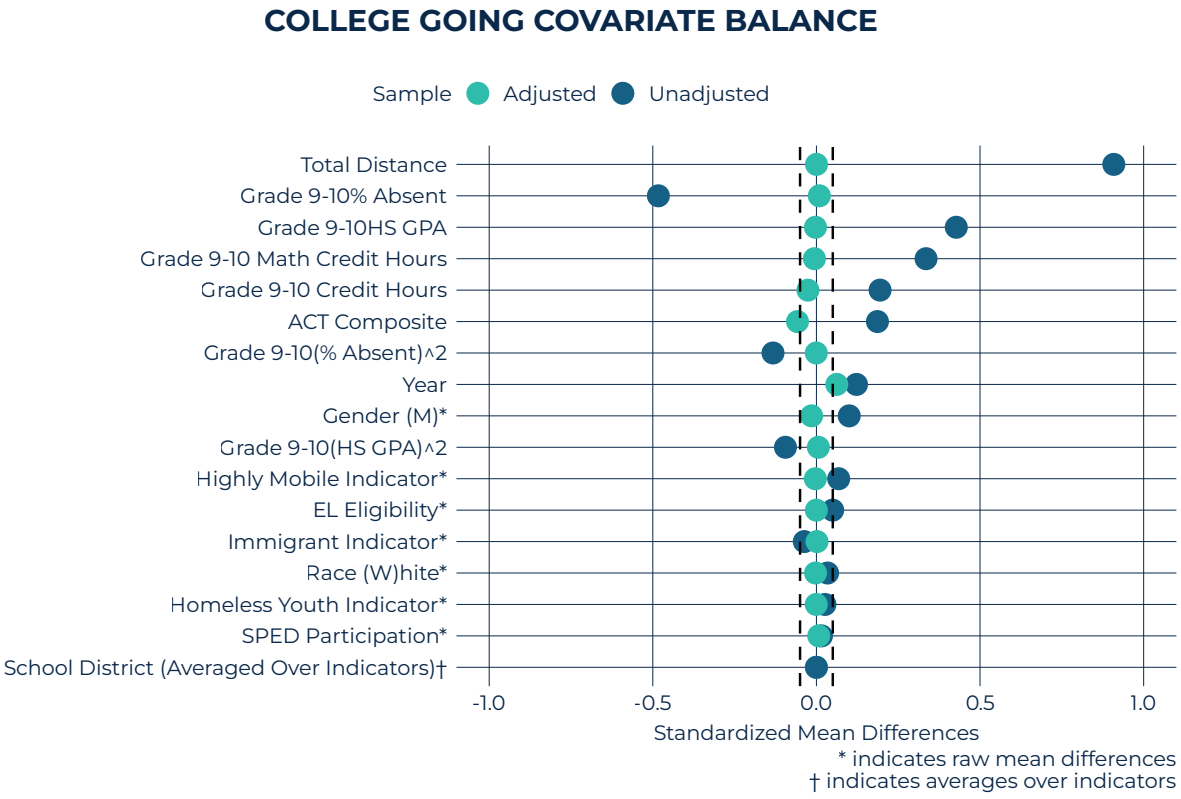
The latter assumption was evaluated using post-matching covariate balance diagnostics. Love plots were examined for each subgroup-specific matched sample to assess standardized mean differences across the full set of baseline covariates before and after matching. These diagnostics indicated that matching substantially reduced preexisting imbalance between participants and nonparticipants, with the vast majority of covariates exhibiting materially smaller standardized differences after matching and most falling within commonly used thresholds for acceptable balance. This provides evidence that, within the subgroup-defined samples, the analysis is being conducted in portions of the covariate distribution where treated and comparison students are meaningfully comparable on observed pre-treatment characteristics. Nevertheless, because balance on observed covariates does not guarantee balance on unobserved factors, the resulting subgroup estimates should still be interpreted under the standard conditional ignorability assumption.

Baseline Covariate Balance Assessment

College Going

College Going Data: This data set is based on a subset of students who have Nebraska public high school graduation records. Students from the cohort year 2019-2022 were included as the follow-up period of 16 months from high school graduation is typically needed to observe the outcome.

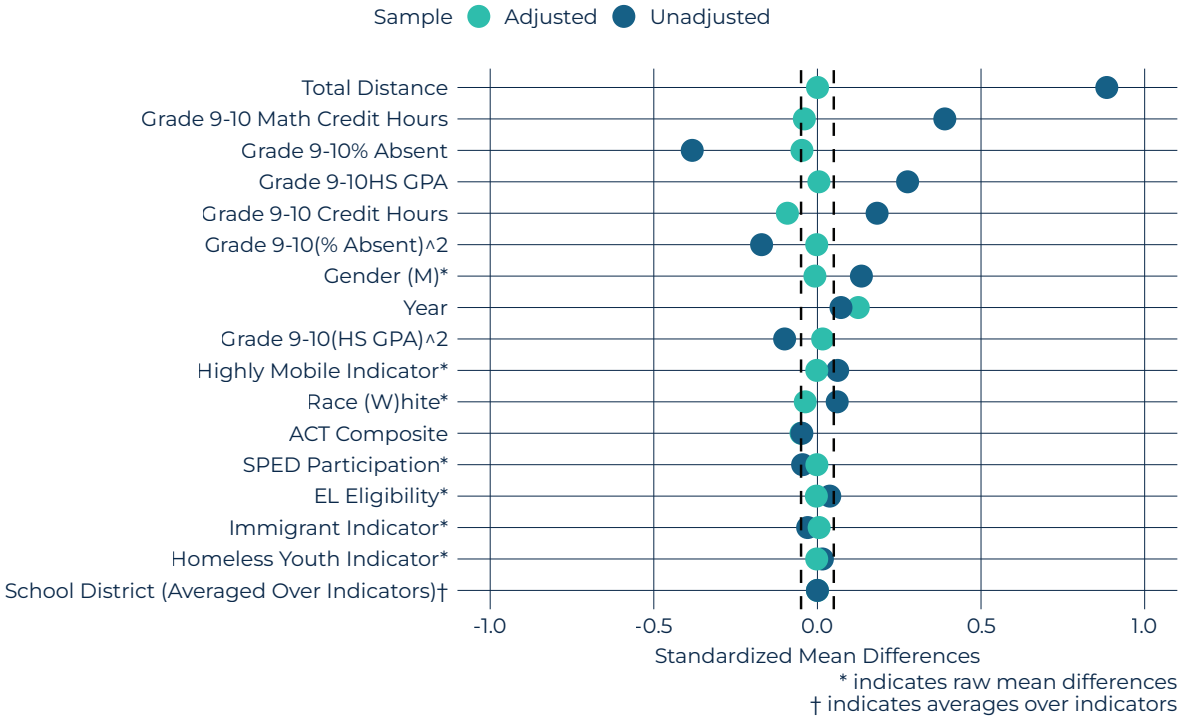
Figure 52:



Remedial Math Enrollment

Remedial Math Enrollment Data: This data set is based on a subset of students who have Nebraska public high school graduation records and enrollment records at a two-year Nebraska public postsecondary institution. Students from the cohort year 2019-2022 were included as the follow-up period of 16 months from high school graduation is typically needed to observe the outcome.

Figure 53: **REMEDIAL MATH COVARIATE BALANCE**



Analysis Sample

This table documents which students contribute to the remedial-math estimates. This outcome is restricted to students with postsecondary transcript coverage at Nebraska public institutions, so the analytic sample may differ from the college-going sample and may vary across cohorts.

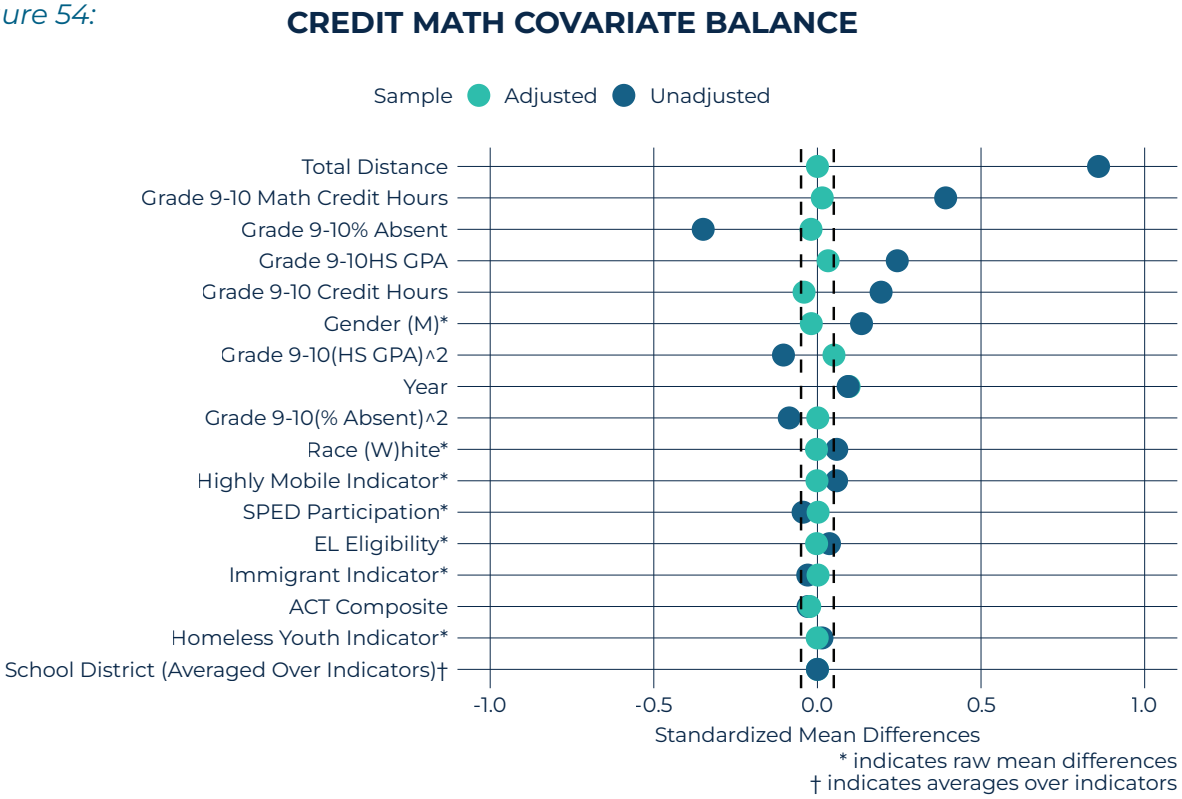
Sample sizes by group

Group	Years Included	Effective N	Observed N
Matched Comparison	2019 - 2023	564	3,700
NMRP Sample	2019 - 2023	746	746

Because estimation uses a weighted matched design, the effective sample size will typically differ from the observed number of students. Estimates are most stable when there is strong overlap between participants and comparison students and when weights are not overly concentrated among a small number of cases.

Credit-bearing College Math

Figure 54:



Analysis Sample

Sample sizes by group

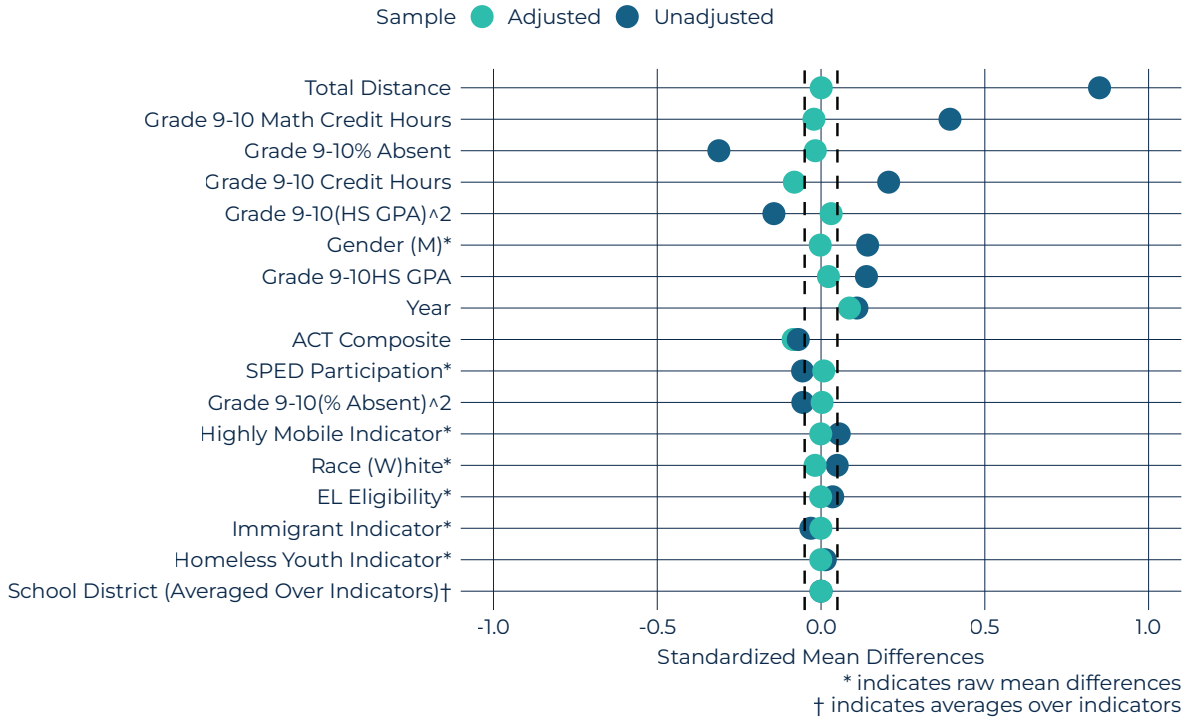
Group	Years Included	Effective N	Observed N
Matched Comparison	2019 - 2023	622	3,916
NMRP Sample	2019 - 2023	789	789

Cumulative College Course Credit & GPA

Cumulative College Credits and GPA Data: This data set is based on a subset of students who have Nebraska public high school graduation records and enrollment records at a Nebraska public postsecondary institution. Students from the cohort year 2019-2022 were included as the follow-up period of 16 months from high school graduation is typically needed to observe the outcome.

Figure 55:

PS GPA AND CREDITS COVARIATE BALANCE



Analysis Sample

Sample sizes by group

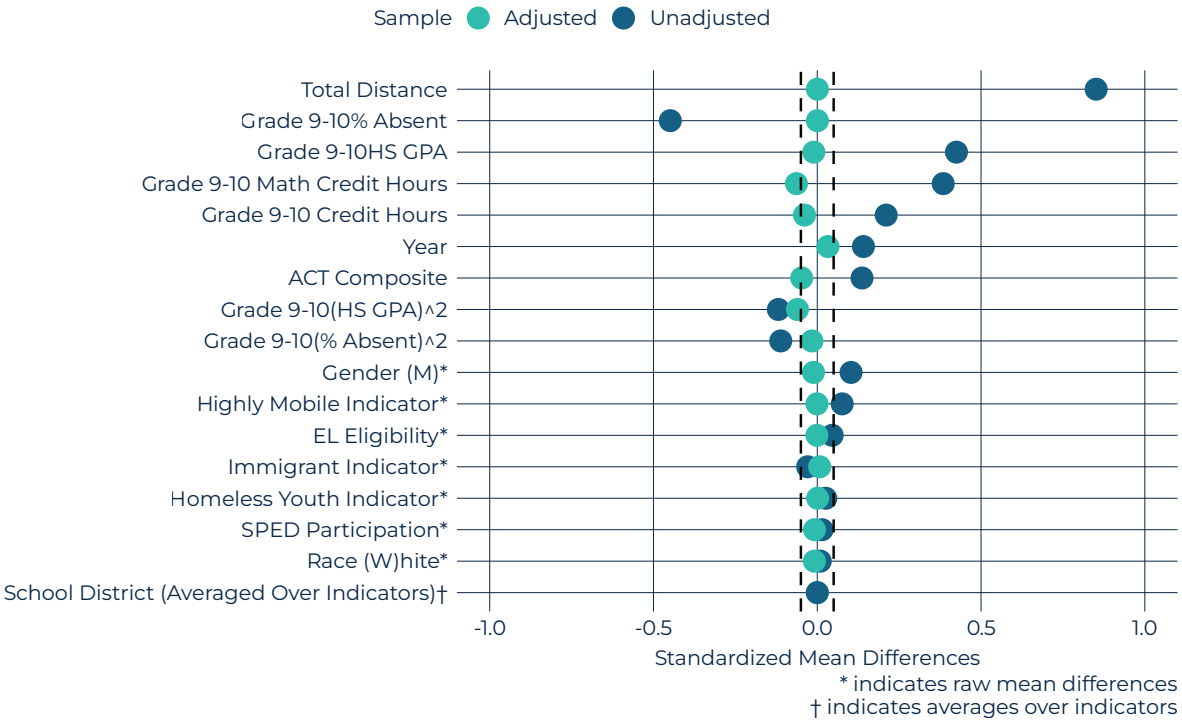
Group	Years Included	Effective N	Observed N
Matched Comparison	2019 - 2023	563	3,744
NMRP Sample	2019 - 2023	834	834

College Persistence

College Persistence Data: This data set is based on a subset of students who have Nebraska public high school graduation records and continued onto college following high school. Students from the 2023 cohort year were not included as at least 18 months of data beyond first entry is needed to observe the outcome. Students who had enrolled and earned awards prior to this follow-up period were considered to have met the criterion.

Figure 56:

POSTSECONDARY PERSISTENCE COVARIATE BALANCE



Analysis Sample

Sample sizes by group

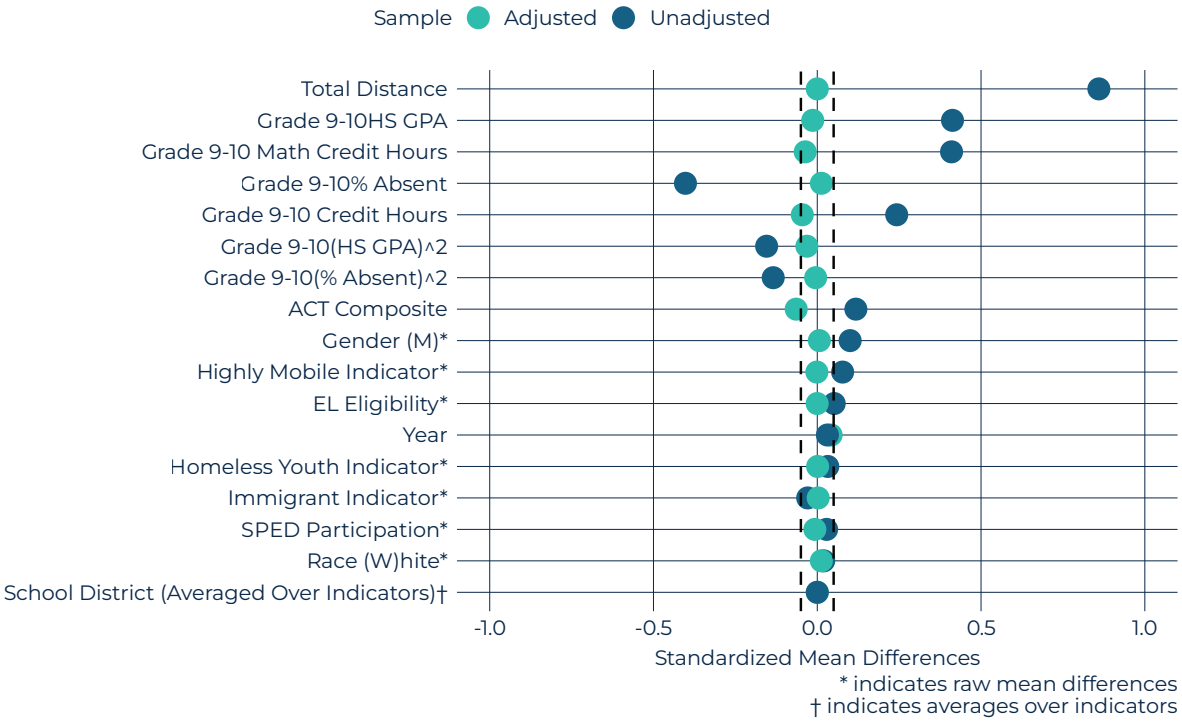
Group	Years Included	Effective N	Observed N
Matched Comparison	2019 - 2022	1,043	7,932
NMRP Sample	2019 - 2022	1,054	1,054

College Graduation

This data set is based on a subset of students who have Nebraska public high school graduation records. Students from the cohort year 2019-2020 were included because the available follow-up is sufficient to observe two-year credentials for those cohorts; longer follow-up is required to fully assess four-year degree attainment.

Figure 57:

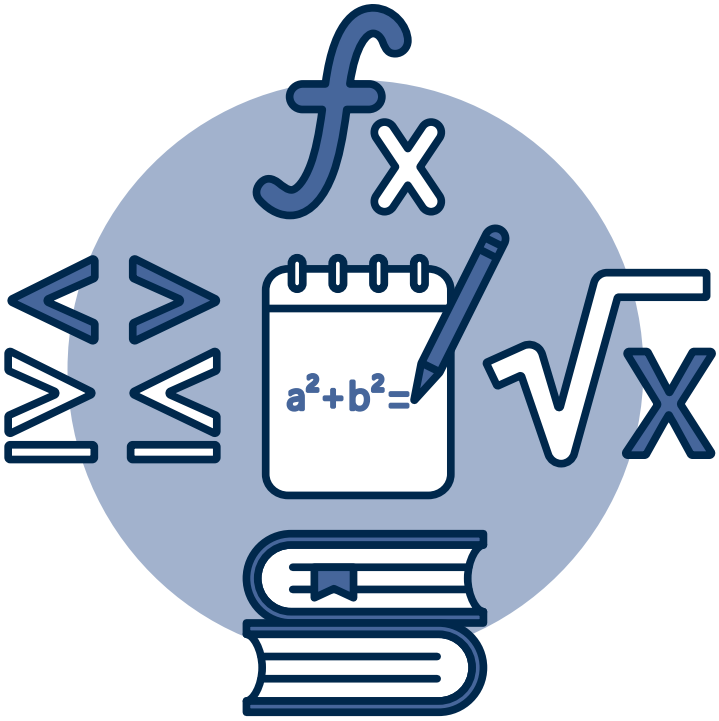
POSTSECONDARY GRADUATION COVARIATE BALANCE



Analysis Sample

Sample sizes by group

Group	Years Included	Effective N	Observed N
Matched Comparison	2019 - 2021	1,028	5,772
NMRP Sample	2019 - 2021	690	690



REFERENCES

1. T. Bailey, D. W. Jeong, S.-W. Cho, Referral, enrollment, and completion in developmental education sequences in community colleges. *Economics of Education Review* **29**, 255–270 (2010).
2. J. Scott-Clayton, P. M. Crosta, C. R. Belfield, Improving the Targeting of Treatment: Evidence From College Remediation. *Educational Evaluation and Policy Analysis* **36**, 371–393 (2014).
3. A. Y. Meiselman, L. Schudde, The impact of co-requisite math on community college student outcomes: Evidence from Texas. *Education Finance and Policy* **17**, 719–744 (2022).
4. A. Boatman, B. T. Long, Does Remediation Work for All Students? How the Effects of Postsecondary Remedial and Developmental Courses Vary by Level of Academic Preparation. *Educational Evaluation and Policy Analysis* **40**, 29–58 (2018).
5. F. Ngo, W. Kwon, Using Multiple Measures to Make Math Placement Decisions: Implications for Access and Success in Community Colleges. *Research in Higher Education* **56**, 442–470 (2015).
6. T. Kane, A. Boatman, W. Kozakowski, C. Bennett, R. Hitch, D. Weisenfeld, "College Remediation Goes Back to High School: Evidence from a Statewide Program in Tennessee" (w26133, National Bureau of Economic Research, Cambridge, MA, 2019); https://doi.org/10.3386/w26133.
7. A. W. Logue, D. Douglas, M. Watanabe-Rose, Co-requisite Mathematics Remediation: Results Over Time and in Different Contexts. *Educational Evaluation and Policy Analysis* **41**, 294–315 (2019).
8. F. X. Ran, Y. Lin, The Effects of Co-requisite Remediation: Evidence From a Statewide Reform in Tennessee. *Educational Evaluation and Policy Analysis* **44**, 458–484 (2022).
9. Z. Xu, B. Backes, D. Goldhaber, The Impact of Transition Intervention in High School on Pathways Through College. *Community College Review* **51**, 216–245 (2023).
10. S. S. Jaggars, M. Hodara, S.-W. Cho, D. Xu, Three Accelerated Developmental Education Programs: Features, Student Outcomes, and Implications. *Community College Review* **43**, 3–26 (2015).
11. J. C. Calcagno, B. T. Long, "The impact of postsecondary remediation using a regression discontinuity approach: Addressing endogenous sorting and noncompliance" (National Bureau of Economic Research, 2008).
12. Nebraska Department of Education, "NSSRS Guidance for Graduation Cohort Version 5.0.0" (2017); https://www.education.ne.gov/wp-content/uploads/2017/07/Guidance_for_Graduation_Cohort_5_0_0.pdf.
13. Integrated Postsecondary Educational Data System, Definitions for New Race and Ethnicity Categories. https://nces.ed.gov/ipeds/report-your-data/race-ethnicity-definitions.
14. Carnegie Foundation, What Is the Carnegie Unit? – Carnegie Foundation for the Advancement of Teaching. https://www.carnegiefoundation.org/about/faqs/the-carnegie-unit/.
15. National Center for Education Statistics, NAEP High School Transcript - How is Grade Point Average Calculated? (2011). https://nces.ed.gov/nationsreportcard/hsts/howgpa.aspx.

16. What Works Clearinghouse, “What Works Clearinghouse Procedures and Standards Handbook, Version 5.0” (U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation; Regional Assistance (NCEE), Washington, DC, 2022); https://ies.ed.gov/ncee/WWC/Docs/referenceresources/Final_WWC-HandbookVer5_0-0-508.pdf.
17. D. E. Ho, K. Imai, G. King, E. A. Stuart, Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference. *Political Analysis* **15**, 199–236 (2007).
18. D. E. Ho, K. Imai, G. King, E. A. Stuart, MatchIt : Nonparametric Preprocessing for Parametric Causal Inference. *Journal of Statistical Software* **42** (2011).
19. F. Sävje, M. J. Higgins, J. S. Sekhon, Generalized full matching and extrapolation of the results from a large-scale voter mobilization experiment (2017). https://doi.org/10.48550/ARXIV.1703.03882.
20. V. Arel-Bundock, N. Greifer, A. Heiss, How to Interpret Statistical Models Using marginaleffects for r and python. *Journal of Statistical Software* **111** (2024).

Nebraska Statewide Workforce & Educational Reporting System

901 N 17th, NH W 208

Lincoln, NE 68588-0524

(402) 472-5238

info@nswers.org

insights.nswers.org

nswers.org

nswers™

METROPOLITAN Community College