Student Outcomes in Health Pathways

High School and Early Postsecondary Findings from an Evaluation of Oakland Health Pathways

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Evaluation of the Oakland Health Pathways Project

This brief presents findings from the Oakland Health Pathways Project, a joint initiative of Oakland Unified School District, Alameda Health System, and Alameda County Health Care Services Agency. The initiative is designed to improve educational and long-term employment outcomes for youth of color in Oakland (Alameda County), California, while expanding and diversifying the local health care workforce. It applies Linked Learning, an approach to college and career preparation that combines classroom learning with real-world work experiences and student support services.

Funded by The Atlantic Philanthropies, a limited-life foundation, the Oakland Health Pathways Project began in 2014. SRI Education was engaged from the outset to evaluate the initiative. This brief, and the accompanying technical report, describe the high school and early postsecondary outcomes of students who participated in the OHPP.

This is the third in a series of products resulting from SRI's evaluation of the project. The first, *How Education and Industry Partner on Work-Based Learning*, distilled lessons learned on effective cross-sector partnerships and delivery of authentic work-based learning. The second, *Student Experiences in Health Pathways*, drew on interviews with pathway personnel, as well as focus groups and surveys of participating students in their senior year, to describe the experiences of being enrolled in health pathways and the perceived impact of participation on college and career readiness.

Evaluation Findings:

Student Outcomes in Health Pathways

SRI evaluators compared health pathway students' outcomes with those of students who had similar demographic characteristics and prior achievement but were in two other programs of study: 1) traditional high school programs, and 2) other career-themed pathways.

We found that health pathway students significantly outperformed traditional high school students on key indicators of success in high school and the transition to postsecondary education. We found no differences in the outcomes of students who participated in health pathways compared to those in other career-themed pathways.

High School Success

- Health pathway students significantly outperformed traditional high school students in high school course credits earned and graduation. Health pathway student performance on these indicators was no different from that of students in other career-themed pathways.
- Health pathway student outcomes were no different in high school English Language Arts and math achievement and drop-out rates when compared to students in traditional high school programs and in other career-themed pathways.

Postsecondary Transition

- Health pathway students significantly outperformed traditional high school students in number of college eligibility requirements met and college enrollment. Health pathway student performance on these indicators was no different from that of students in other career-themed pathways.
- Health pathway students were no different in completion of college eligibility requirements and, among those who enrolled in college, were no more likely to enroll in a 4-year (rather than 2-year) college when compared to students in traditional high school programs and in other career-themed pathways.

The results we report in this brief suggest that health pathways are a promising means to improving students' high school and postsecondary outcomes. The brief provides additional background on the Oakland Health Pathways Project then describes our analytic approach, the context for and limitations of this study, the characteristics of students in the study, and the outcome findings introduced above.

About the Oakland Health Pathways Project

In 2014, The Atlantic Philanthropies, a limited-life foundation, awarded two grants totaling $21 million to agencies charged with working together to support and expand health career pathways for high school students in Oakland. Oakland Unified School District (OUSD) and Alameda County Health Care Services Agency (ACHCSA) together received a grant of $11 million, and Alameda Health System (AHS) received a grant of $10 million. This initiative is known as the Oakland Health Pathways Project (OHPP).[1]

Project Partners

Oakland Unified School District serves approximately 36,000 students in district-run schools.[2] Nearly one-third of them speak a language other than English at home, and over 70% receive free or reduced-price meals.[3] Student enrollment across OUSD is approximately 24% African American, 13% Asian, 42% Hispanic or Latino, 12% white, and 7% other races or ethnicities.[4] OUSD district staff support health pathways with work-based learning coordination and provide coaching on how to integrate preparation for health careers into instruction. OUSD also worked with schools to manage their use of Atlantic grant funds.

Alameda Health System is an integrated public health care system that operates multiple regional hospitals including Highland Hospital, Alameda Hospital, and San Leandro Hospital. AHS supported the development of health pathways by opening its hospitals to local students to participate in internships and other career development programs. AHS runs HealthPATH, a workforce development initiative that prepares youth and young adults for healthcare careers.

Alameda County Health Care Services Agency is a public health agency administered by Alameda County that provides health care services through a network of public and private partnerships. ACHCSA administers the County Office of Public Health as well as school-based health centers at a number of Oakland high schools. These centers provide students access to basic health care services as well as onsite work-based learning opportunities.

LINKED LEARNING APPROACH

The OHPP health career pathways use the Linked Learning approach, which combines classroom learning with real-world work experiences. Linked Learning organizes education around industry-specific pathways and integrates four pillars—rigorous academics that meet college-ready standards; sequenced, high-quality career and technical education; work-based learning; and comprehensive support services—to help students graduate from high school ready to pursue meaningful postsecondary opportunities. Cohorts of pathway students move through their course sequences together, allowing for integrated, cross-discipline projects and work-based learning experiences specific to the industry theme of their pathway.

The OHPP follows a multi-year investment in Linked Learning in OUSD that was funded by The James Irvine Foundation. OUSD has been implementing Linked Learning since 2010, including three health pathways that pre-dated the OHPP.

High School and Early Postsecondary Outcomes of Health Pathway Students

As described in our second research brief on students' experience in health pathways, the health pathways in OUSD are designed to make academic content more relevant to students and to give them exposure to health careers through a range of work-based learning experiences. These pathways follow the Linked Learning approach, which seeks to connect classroom learning to the real world to help students understand how their high school education leads to their next academic or career steps. The core components of a Linked Learning pathway—rigorous academic coursework integrated with a sequence of career technical courses, work-based learning, and student supports—are designed to increase students' engagement in school beyond what traditional high school models can achieve. With the right set of classes and appropriate supports, engaged students should develop measurable academic knowledge and be able to graduate from high school intellectually ready for college and careers. Moreover, the 21st century skills developed through project- and work-based learning, and study skills developed through student supports and rigorous academic curriculum, should prepare students for postsecondary success in college or the workforce.

Thus, as part of the evaluation of the health pathways, it is important to examine how effective they were in increasing students' high school and early postsecondary outcomes. This brief presents estimates of the effects of health pathway participation on 11th grade standardized test scores, credits earned between 10th and 12th grade, completion of college eligibility requirements and number of requirements met, drop out, high school graduation, college enrollment, and enrollment in a 4-year versus 2-year college for students expected to graduate high school in 2018.

Analytic Approach

We used a multilevel modeling approach with propensity score weighting to compare health pathway students' outcomes with those of students in traditional high school programs who had similar demographic characteristics and prior achievement. For context, we also provide a secondary analysis comparing students in health pathways to students in other career-themed pathways (see technical report for methodological details).

Exhibit 1. Student Outcome Measures

OUTCOME	DESCRIPTION
HIGH SCHOOL ACADEMIC ACHIEVEMENT	
English Language Arts (ELA) achievement	*Student's 11th grade ELA Smarter Balanced Assessment score*
Math achievement	*Student's 11th grade Math Smarter Balanced Assessment score*
HIGH SCHOOL COURSE-TAKING	
Credits earned[a]	*Total number of course credits earned between 2015–16 and 2017–18 (10th through 12th grades if student follows expected progression)*
Completion of college eligibility course requirements[a]	*Completion of all seven a–g requirements*[5] *for University of California or California State University college eligibility as of June 2018*
Number of college eligibility course requirements met[a]	*Number of a–g requirements met as of June 2018*
HIGH SCHOOL GRADUATION AND DROP OUT	
Drop out	*Student dropped out as of or prior to June 2018*
High school graduation	*Student graduated as of or prior to June 2018 (i.e., on-time graduation)*[6]
EARLY POSTSECONDARY	
Direct college enrollment	*Enrollment in any 2- or 4-year postsecondary institution in fall 2018, conditional on completing high school*
4-year (Vs. 2-year) college enrollment	*Enrollment at a 4-year postsecondary institution the fall term following a student's anticipated high school completion date, conditional on any college enrollment*

[a] End-of-high school course outcomes calculated only for students who did not drop out

Context and Study Limitations

Oakland Unified School District implemented the OHPP initiative while simultaneously transitioning to wall-to-wall pathways, meaning they were moving toward having all high school students enrolled in a career-themed pathway. As a result, the number of students remaining in traditional high school programs who could serve as a comparison group for the health pathway students was diminishing as the number of students in pathways increased. This reality created two key study limitations. First, the analysis is limited to one early cohort of students attending a subset of health pathways, limiting the generalizability of findings. Second, the analysis is vulnerable to selection bias.

Limited cohort.

The class of 2018 was the first cohort that experienced a complete progression (10th through 12th grade) in pathways enhanced by the OHPP initiative. Because of the transition to wall-to-wall pathways, the class of 2018 was also the last cohort for whom there was a sufficient comparison group of students left in traditional high school programs. As a result, these analyses do not include the four pathways that were newly created as part of the OHPP initiative (two of which are in continuation high schools) because they did not serve the class of 2018.

The three pathways included in these analyses pre-dated the OHPP initiative but were enhanced by the additional supports and partnership opportunities afforded by the initiative. This is the same cohort surveyed in our second brief, Student Experiences in Health Pathways. These findings do not generalize to the newly created health pathways.

This study considered whether health pathways specifically had effects on student outcomes above and beyond that of pathways generally.

Selection bias.

For the class of 2018, pathway enrollment was still voluntary but students were increasingly encouraged to enroll in a Linked Learning pathway. The students who continued to choose not to enroll were increasingly likely to be different from those who did in observed and unobserved ways. This type of phenomenon is known as selection bias.[7] If students who chose health career pathways were more motivated, engaged, or had more stable home environments than students who remained in traditional high school programs (all unobserved characteristics), we would expect the bias to result in artificially large health career pathway effect sizes.

For this reason, we also examined health pathway students' outcomes in relation to students in other career-themed pathways (e.g., Engineering; Social Justice Reform; Fashion, Arts, and Design). This secondary pathway-to-pathway comparison provides some context to the focal health pathway versus traditional high school comparison in that it reduces the threat of selection bias resulting from students choosing to enroll in a pathway instead of remaining in a traditional high school program. However, students who chose a health career pathway may still differ in unobserved ways from those who chose a pathway with a different career theme. This analysis also allowed us to consider whether health pathways specifically had effects on student outcomes above and beyond that of pathways generally.

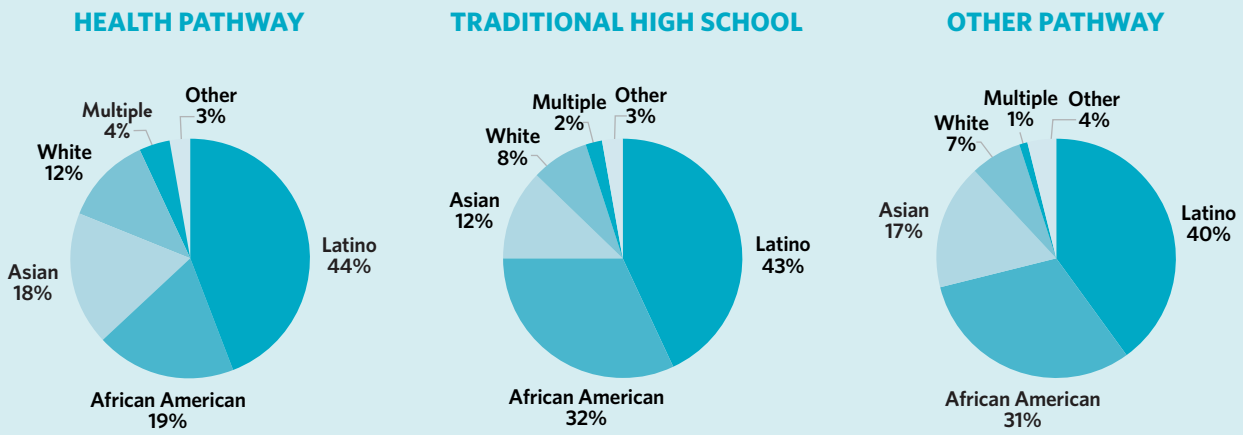
Sample Characteristics

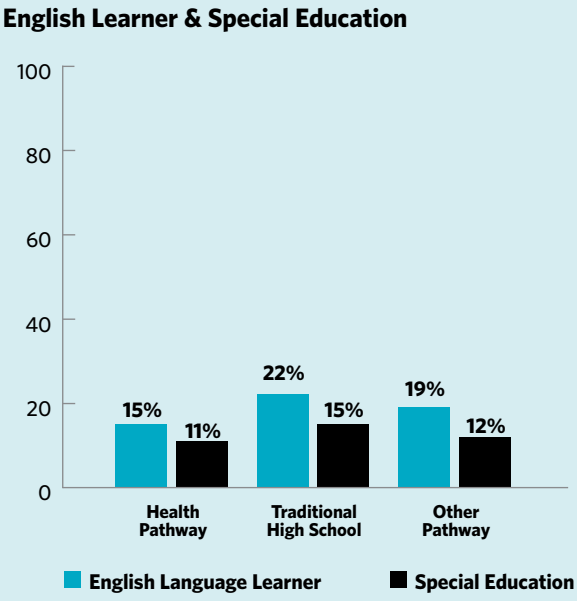
Our sample of health pathway students consisted of 220 10th graders who were enrolled in three health pathways that pre-dated but were enhanced by the OHPP. The traditional high school comparison group consisted of 870 students at eight traditional high schools who were not enrolled in any career-themed pathway. The other-pathway comparison group consisted of 1,070 students enrolled in 19 career-themed pathways at eight schools.

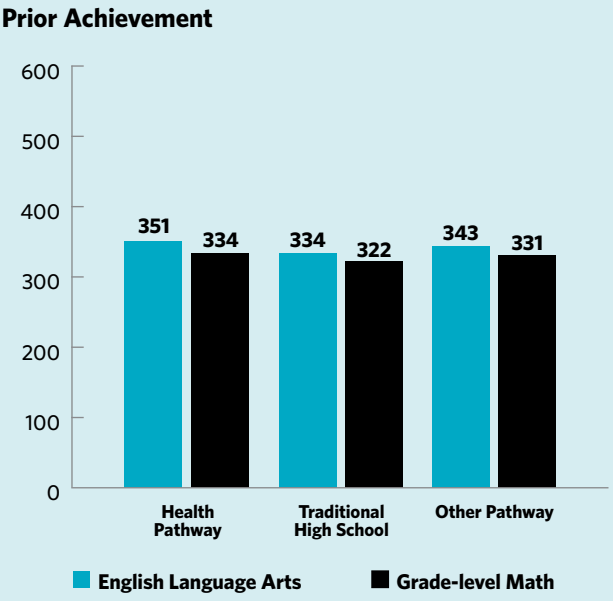
Health pathway students differed from students in traditional high school programs, as well as from students enrolled in other career-themed pathways, on both demographic characteristics and prior achievement. For example, compared to the other groups, the health pathways group had a lower percentage of African American students and a higher percentage of White students (Exhibit 2). Health pathways had fewer English Language Learners and students in special education. On average, health pathway students also had the highest 7th grade standardized test scores in English Language Arts and math. Health pathway students similarly measured higher on other achievement characteristics, such as 8th grade gifted and talented program participation and 9th grade grade-point average (GPA); these are described in the technical report that accompanies this brief.

These sample characteristics suggest that before enrolling in pathways, health pathway students were a somewhat higher achieving and lower risk group compared to students in traditional high school programs. The characteristics of students in other pathways suggest that they are, on average, less advantaged and lower achieving than students in health pathways but more advantaged and higher achieving than traditional high school students.

Exhibit 2. Composition of Health Pathway, Traditional High School, and Other Pathway Groups







Note: Race/ethnicity, English Language Learner, and special education status were measured in 9th grade. We used 7th grade California Standards Test (CST) scores from 2012–13 as measures of prior achievement because 8th grade scores were unavailable; OUSD transitioned standardized tests in 2013–14, and no single test was administered to all students that year.

Findings

We found health pathway students significantly outperformed traditional high school students in high school course credits earned, number of college eligibility requirements met, graduation, and college enrollment. The two groups did not differ in high school English Language Arts and math achievement, completion of college eligibility requirements, drop out, and enrollment in 4-year (rather than 2-year) college. We also found health pathway students did not differ from students in other career-themed pathways on any of these nine outcomes.

HIGH SCHOOL ACADEMIC ACHIEVEMENT

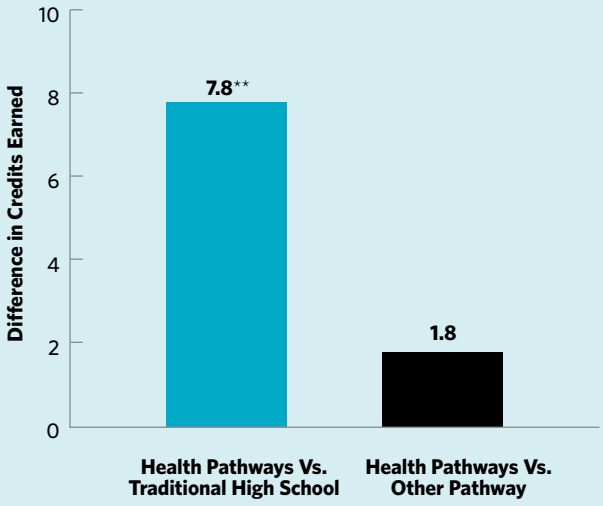
Health pathway students did not differ from traditional high school students, or from students in other pathways, on their 11th grade English Language Arts or math standardized test scores.

HIGH SCHOOL COURSE CREDITS EARNED

On average, health pathway students earned almost eight more course credits during their 10th through 12th grade years than similar peers in traditional high school programs (Exhibit 3). In California high schools, a semester-long course is typically five credits, so this difference is roughly equivalent to one and one-half semester-long courses.

There was not a statistically significant difference in the number of course credits earned by health pathway students and similar peers enrolled in other career-themed pathways.

Exhibit 3. Average Difference in 10th–12th Grade Credits Earned

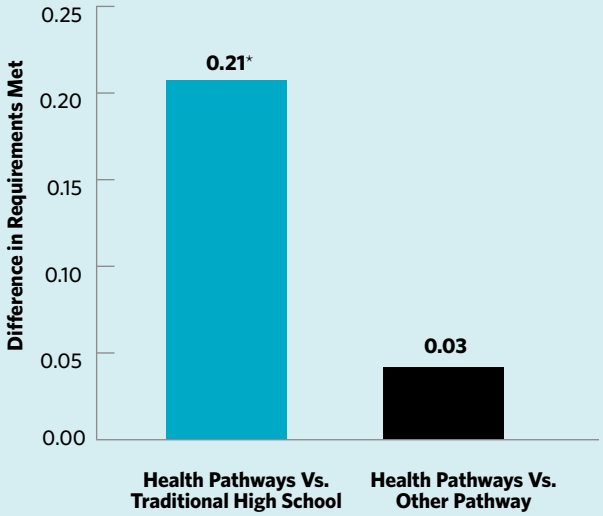


***Statistically significantly different at p < .01 level.*

HIGH SCHOOL COURSE-TAKING

We also explored the extent to which health pathway students were more likely to complete course-taking requirements in the seven subject areas necessary for enrollment eligibility in the University of California (UC) and California State University (CSU) systems. On average, health pathway students completed 0.21 more subject area requirements than similar peers in traditional high school programs (Exhibit 4); however, the two groups did not differ in their likelihood of completing the full suite of seven requirements to become UC/CSU eligible. Health pathway students did not differ significantly from students in other career-themed pathways in either the number of college eligibility requirements met or the completion of all seven requirements to become UC/CSU eligible.

Exhibit 4. Average Difference in Number of College Eligibility Requirements Met



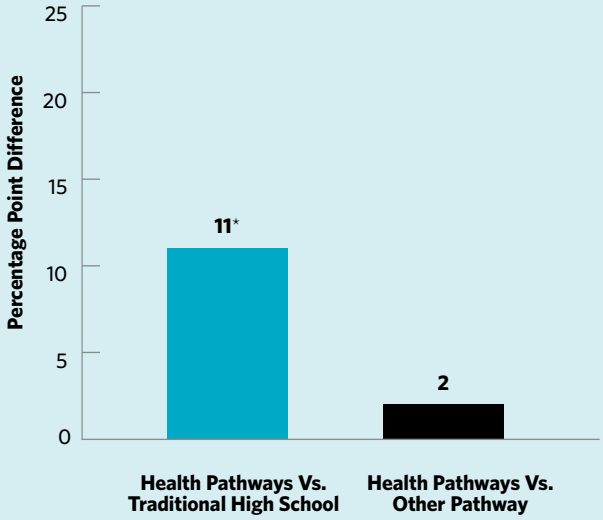
**Statistically significantly different at p < .05 level.*

HIGH SCHOOL GRADUATION AND DROP OUT

On average, health pathway students were 11 percentage points more likely to graduate from high school on time than similar peers in traditional high school programs (Exhibit 5). For context, this is equivalent to approximately four-fifths of the size of the gap in graduation rates between African American and White students in the class of 2018 in California.[8] Health pathway students and students in other career-themed pathways were equally likely to graduate high school.

Although health pathway students were more likely to graduate than traditional high school students, they were not significantly less likely to drop out. On-time graduation and drop out are not two sides of the same coin; students who fail to graduate on time may still be enrolled or may have completed high school through other means, such as receiving a special education certificate.

Exhibit 5. Average Difference in Likelihood of High School Graduation



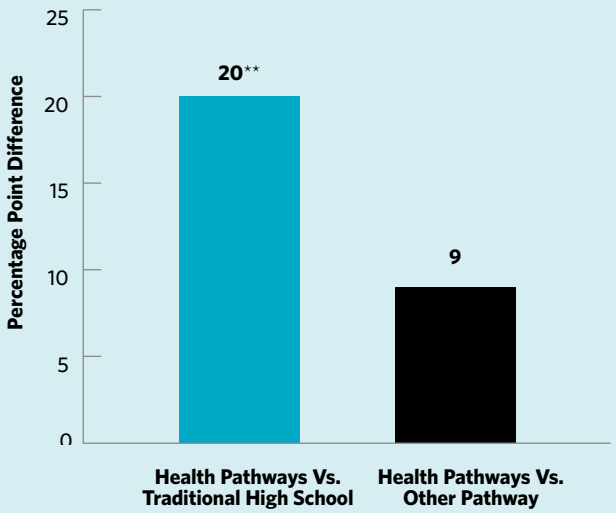
**Statistically significantly different at p < .05 level.*

EARLY POSTSECONDARY OUTCOMES

We found that among students who completed high school, health pathway students were 20 percentage points more likely to enroll in college compared to similar traditional high school students (Exhibit 6). Health pathway students and students in other career-themed pathways were equally likely to enroll in college.

Among students who enrolled in college, health pathway students were equal to similar peers in both traditional high school programs and other career-themed pathways in the likelihood of attending a 4-year rather than 2-year institution.

Exhibit 6. Average Difference in Likelihood of College Enrollment



***Statistically significantly different at p < .01 level.*

Summary

As a component of the SRI evaluation of the Oakland Health Pathways Project, we compared health pathway students' outcomes with those of students who had similar demographic characteristics and prior achievement but were in two other programs of study: 1) traditional high school programs, and 2) other career-themed pathways. We found that health pathway students significantly outperformed traditional high school students on key indicators of success in high school and the transition to postsecondary education. However, we found no differences in the outcomes of students who participated in health pathways compared to those in other career-themed pathways.

In interpreting these results, it is important to remember they are for a single cohort of students attending a subset of health pathways. Moreover, because the majority of OUSD high school students were enrolled in some type of career-themed pathway at the time of these analyses, the students who chose to remain in the district's shrinking traditional high school programs were potentially different from health pathway students in ways we could not statistically account for (e.g., lower motivation, engagement, stability of home environment). If this was the case, the effects on achievement of attending a health pathway rather than a traditional high school may be inflated.

Nonetheless, the size of the effects on credits earned, high school graduation, and college enrollment are substantial enough that even if there is some inflation present due to selection bias, it is unlikely to account for the full effects.[9]

Further, we have increased confidence in results that are consistent with student outcomes findings for the Linked Learning pathways in the nine California school districts participating in the Linked Learning District Initiative (LLDI). SRI's multi-year evaluation of the LLDI found that students who participated in certified Linked Learning pathways had decreased dropout rates, higher graduation rates, and earned more credits. Following the same pattern as the OHPP results, the LLDI evaluation also found that pathway students completed more college eligibility requirements than similar peers in traditional high school programs but were no more likely to complete the full suite of seven requirements to be UC/CSU eligible. Finally, the LLDI evaluation found that Linked Learning students who entered high school with low levels of academic preparation were more likely to enroll in college directly after high school.

Taken together, these results suggest that health pathways are a promising means to improving students' high school outcomes and increasing their likelihood of enrolling in postsecondary.

Endnotes

1. The original series of grants also included #YesWeCode, a national initiative to increase the representation of minorities in the technology industry by offering training and job opportunities to primarily Black and Latino young adults, age 18–27.

2. Enrollment and demographic data is for non-charter schools run by OUSD.

3. California Department of Education. (2019). 2018–19 Enrollment by Subgroup for Charter and Non-charter Schools: Oakland Unified Report (01-61259). Retrieved from **https://data1.cde.ca.gov/dataquest/dqcensus/EnrCharterSub.aspx?cds=0161259&agglevel=district&year=2018-19**

4. California Department of Education. (2019). 2018–19 Enrollment by Ethnicity for Charter and Non-Charter Schools: Oakland Unified Report (01-61259). Retrieved from **https://data1.cde.ca.gov/dataquest/dqcensus/EnrCharterEth.aspx?cds=0161259&agglevel=district&year=2018-19**

5. The a–g subject areas (based on University of California and California State University college eligibility requirements) are as follows: A – history/social science; B – English; C – math; D – laboratory science; E – language other than English; F – visual and performing arts; G – college preparatory elective.

6. We defined graduate using the updated 2017 state criteria found here: **https://www.cde.ca.gov/nr/ne/yr18/yr18rel50.asp**. Students who receive adult education high school diplomas or passed the California High School Proficiency Exam are no longer considered regular high school graduates, along with students who receive General Educational Development or special education certifications.

7. When using statistical models to estimate outcome differences between two groups, selection bias that is not accounted for can lead to results indicating the intervention had larger or smaller effects than it actually did. If the two groups differ in observed ways (i.e., characteristics that are tracked in an accessible data source), these differences can be adjusted for in the statistical models. However, if groups differ in unobserved ways that are also related to the outcome of interest, results may be biased. For example, students who are more motivated to work hard in school, or whose families are more stable and supportive, may be more likely to enroll in pathways. These students are also more likely to have better outcomes regardless of pathway participation.

8. California Department of Education. (2018). State Superintendent Torlakson Announces 2018 Rates for High School Graduation, Suspension and Chronic Absenteeism. Retrieved from **https://www.cde.ca.gov/nr/ne/yr18/yr18rel76.asp#Table1**

9. See technical report for a sensitivity analysis of the findings presented in this brief.

LINKED LEARNING

Linked Learning is a proven, systemic approach to education based on this simple idea: students work harder and dream bigger if their learning connects with them, and connects them to the world. Young people are introduced to career possibilities in sectors that drive their region's economy, making education relevant to their passions and inspiring them to graduate from high school with the coursework and skills they need to thrive. By integrating rigorous academics with real-world learning and strong support services, Linked Learning prepares students for success in college, career, and life.

The Linked Learning Alliance serves the coalition of educators, employers, and community organizations dedicated to advancing equity and excellence through Linked Learning. The Alliance provides a collective voice for this field, advocates for policies that support the Linked Learning approach, sets the quality standard for Linked Learning in practice, and brings diverse stakeholders together to improve outcomes for students.
www.linkedlearning.org

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