

Early College as a Force for Equity in the Post-Pandemic Era

Discussion Paper

April 2021



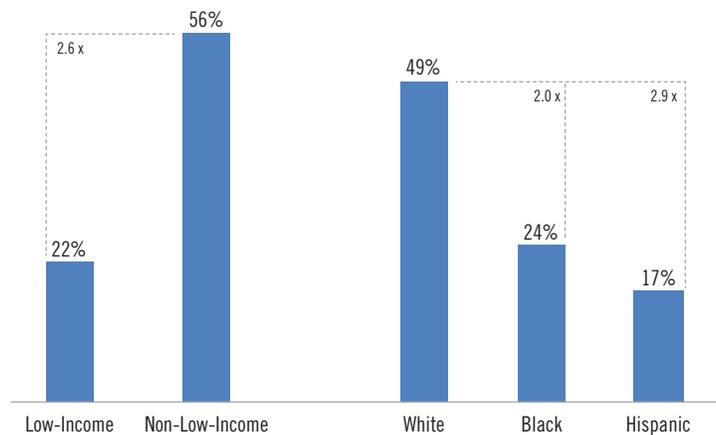
SUMMARY

- **Data tracking the first two cohorts of Early College students in Massachusetts demonstrate that we have a viable strategy to dramatically increase post-secondary success.** Early College students in Massachusetts are 38 percent more likely than their peers to enroll in college immediately after high school and 53 percent more likely to remain enrolled one year later.
- **If Massachusetts is committed to closing post-secondary completion gaps, it must implement a robust plan to expand access to Early College.** Half a decade has passed since the state established Early College as a strategic priority, yet less than 2 percent of high school students of color and just 1 percent of low-income students participate. Massachusetts should set a goal to increase Early College enrollment to 45,000 students over the next six years.
- **Increasing Early College access requires funding to cover the higher education costs.** A stable source of funding for college and universities remains the single-largest barrier to Early College expansion in Massachusetts. Leaders from state education agencies must come together with legislative leaders to establish Early College expansion as a shared priority and agree on a stable funding mechanism to cover the costs that colleges incur providing instruction to high school students without charging tuition and fees.
- **Boston and the Gateway Cities are central to success expanding access to Early College.** As both regional centers and school districts educate large concentrations of underserved students, the fate of Early College as a force for equity is contingent on leaders in a relatively small number of urban communities.

I. Introduction

Leaders in the public, private, and nonprofit sectors have unanimously come out in favor of bold change to combat structural inequality in our post-pandemic commonwealth. Any meaningful response to this call to action must target wide and growing college completion gaps. Massachusetts is a national leader in K-12 public education and our institutions of higher education are the envy of the world, yet something is clearly amiss: The most recent data show non-low-income students are two-and-a-half times more likely than those from low-income families to complete a college degree (**Figure 1**). In a Bay State economy driven by knowledge industries, this stark differential in post-secondary success fans the fires of growing inequality. Despite our enviable educational strengths, income inequality is greater in Massachusetts than all but a handful of states.¹

Figure 1: Share of students completing a post-secondary degree within six years of anticipated high school graduation, class of 2012



Source: Massachusetts Department of Elementary & Secondary Education

Since 2016, the Department of Higher Education (DHE) and the Department of Elementary and Secondary Education (DESE) have been working to tailor an Early College Initiative that creates more equitable pathways through post-secondary studies (see box p. 4). But progress increasing access to high-quality Early College programs has been slow. With billions of dollars in one-time federal recovery aid flowing into Massachusetts, and the state's Student Opportunity Act (SOA) funding to high-need districts ramping up, we have an extraordinary opportunity to advance this proven college completion strategy.

Compelling new data provide a strong case for a major effort to expand access to Early College. The figures, generated by a team of skilled researchers led by Brown University economist John Papay,

show low-income students in Massachusetts are dramatically less likely than non-low-income students to complete a four-year college degree even when they leave high school with similar academic preparation.²

While many factors explain why low-income students do not complete college at the same rate as peers with similar academic readiness, cost is an increasingly intractable barrier. A 2017 review of college affordability found that each year Massachusetts falls hundreds of millions of dollars short of meeting the financial needs for students attending public colleges and universities. According to the analysis, state and federal grants went from covering 88 percent of the financial need that families applying to college demonstrated in the 1980s to just 8 percent of these costs in 2013. Moreover, this unmet financial need calculation only counts tuition, fees, and books; living expenses, a burden that is especially difficult to shoulder in our high-cost region, are not included.³

Early College programs that provide students with opportunities to tackle a significant amount of their college coursework while they are in high school provide a particularly cost-effective strategy to address this enormous volume of unmet financial need. But Early College is not just about easing the financial barriers. From insufficient advising and inferior academic preparation to an underdeveloped sense of belonging and confidence, first-generation college students must overcome an array of thorny challenges to make it through post-secondary education. Early College directly addresses each of these problems.

The power of this comprehensive approach should have an especially large impact on the growing gap between degree production and employer needs in STEM fields, where intense “weed-out” classes present a substantial obstacle for students who lack support and resources to persevere. Study after study has pointed to this problem as a growing challenge for the Massachusetts economy.⁴

As we think deeper about equity in the post-pandemic era, it is important to consider other ways in which delivering Early College at a significant scale might provide a more disruptive force to counter deeply ingrained structural challenges. Racial and ethnic school segregation is one intractable source of inequality where Early College could make a very real difference. Massachusetts students are increasingly segregated by both race and income. By concentrating disadvantaged students in under-resourced schools and decreasing exposure to those with different experiences, segregation becomes a

self-reinforcing source of inequality. Even when districts serve diverse student populations, exam schools and course tracking produce highly segregated classrooms. This often means disadvantaged students do not receive equal educational resources, and all students miss out on opportunities to learn from peers from different backgrounds.

In a 2013 education policy blueprint, Gateway City leaders emphasized the need to expand Early College because it fell in a “sweet spot”—it could help their inclusive urban communities maintain socioeconomically integrated high schools, and at the same time, position more underserved students for college and career success.⁵ This is consistent with the data: Students of color and low-income students experience the greatest gains from Early College, but students who are white and non-low-income also see substantial benefits. Early College high schools offering rigorous college courses in integrated learning environments at no cost should have broad appeal. This is especially true after the pandemic, which taught us that children learn very differently in different settings. For far too many, the traditional high school format inhibits learning and personal growth.

 **As we think deeper about equity in the post-pandemic era, it is important to consider other ways in which delivering Early College at a significant scale might provide a more disruptive force to counter deeply ingrained structural challenges.**

In addition to confronting segregation, we must also seriously consider the disruptive potential of Early College when it comes to racial wealth gaps. A recent MassINC report found that people of color own businesses at half the rate of white residents in Massachusetts, and disparities in business ownership are both wider and widening in high-growth industries.⁶ A groundbreaking 2019 study published in the *Quarterly Journal of Economics* demonstrates that innovation is not so much a matter of intrinsic ability but rather environment and exposure.⁷ By providing STEM opportunities on college campuses outfitted with the latest technology, along with more opportunities to explore STEM careers and interact with STEM employers, Early College holds enormous promise as an intervention to recapture the “lost Einsteins.” But this only works if we provide far more student with the opportunity to participate.

To be sure, no one strategy offers a silver bullet, but Early College has a proven track record of increasing post-secondary completion and clear potential to interrupt other aspects of structural inequality in education. As with any effort promoted to advance equity, it is crucial that we do not oversell the benefits or overpromise and underdeliver on them.

In this spirit, the pages that follow provide a critical review of the state’s efforts to implement Early College. Applying an equity lens, our analysis includes an examination of promising evidence of success, progress to date increasing access to Early College, and strategies to accelerate the expansion of high-quality programs. Concluding recommendations present concrete ideas for leaders seeking to position Early College as a disruptive force for equity in post-pandemic Massachusetts.

THE GENESIS OF EARLY COLLEGE AS A FORCE FOR EQUITY

Like many innovations in education, Early College was born in Massachusetts with the founding of Simon’s Rock in 1966. A private institution located in Great Barrington, Simon’s Rock sought to demonstrate that teenagers could tackle far more demanding work than the typical high school curriculum at the time asked of them. Years later, Bard College (which acquired Simon’s Rock in the 1980s) recognized the model’s promise to help more underserved students succeed in higher education. Beginning in New York City, and expanding over time to Baltimore, Cleveland, Newark, New Orleans, and Washington, DC, Bard built a network of Early Colleges.

In the early 2000s, public education leaders adapted Bard’s model and aggressively launched Early Colleges with a heavy infusion of philanthropic support. North Carolina built 75 wall-to-wall Early College high schools serving more than 15,000 students. Texas went even bigger, designating over 200 programs educating more than 70,000 students.

Over the past two decades, educators have continuously refined the model. Today, an Early College built with an evidence-based design will generate substantial increases in post-secondary completion by targeting multiple barriers to success, including preparation, motivation, advising, and cost.

At the beginning of high school, Early Colleges present students with pathways to various careers. They set high expectations, and students receive extensive advising and tutoring to meet them. High school and college faculty also carefully align instruction so that students are prepared for the demands of college-level courses. This eliminates the need for remedial classes, which ensnare so many underserved students who follow the traditional path to college.

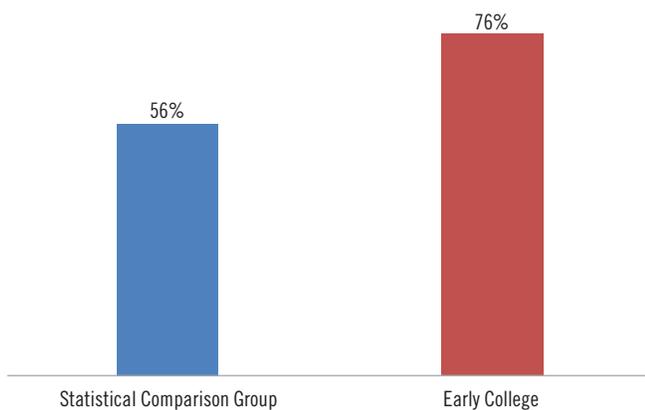
While in high school, Early College students often have internships and other career exploration opportunities in their fields. This makes the coursework more relevant and allows them to build soft skills and networking contacts. Many also gain industry certifications so they can earn higher wages immediately, which gives them more financial stability as they work their way through college. In a well-designed program, students will accumulate at least 30 college credits before graduating high school. This accelerates their progress, which makes the goal of finishing their degree less daunting and far less costly.

II. Early of Evidence of Success

From its inception, the state’s Early College initiative has demonstrated a commitment to equity by investing in performance monitoring and evaluation. To generate reliable data, DHE and DESE worked jointly to establish common reporting protocols for state-designated Early College programs. DESE hired a research fellow, who develops rigorous methodologies to evaluate the data that programs generate. This work allows us to follow the annual progress of Early College students. Below, we summarize early evidence of success from data for the class of 2019 and the class of 2020, the first two cohorts to complete high school.⁸

Early College significantly increases the likelihood that students will pursue higher education without interruption. More than three-quarters (76 percent) of Early College students in the class of 2019 enrolled in post-secondary studies within six months of high school graduation. This compares to 56 percent of students with similar demographic and socioeconomic backgrounds in the statistical comparison group (**Figure 2**).

Figure 2: Share of students from the class of 2019 enrolling in college within six months of high school graduation



Source: Massachusetts Department of Elementary & Secondary Education

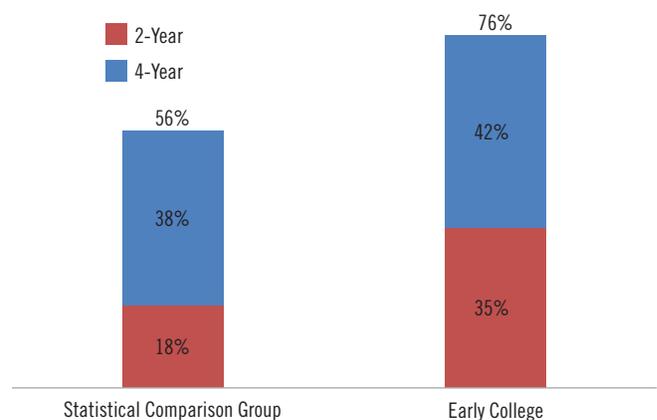
This 20 percentage-point gain provides a strong indication that Early College will produce a large increase in post-secondary completion because immediate enrollment is one of the best predictors that a student will eventually earn a college degree. A large body of research suggest maintaining “momentum” by enrolling immediately in college leads to greater degree attainment independent of other factors, including socioeconomic status and academic preparation.⁹ New longitudinal data for Massachusetts students provide

additional support: If they continue to post-secondary studies without interruption, students are five times more likely to complete a four-year degree by age 30.¹⁰

Early College students are attending four-year institutions at higher rates. Studies find the majority of students participating in Early College do so through community colleges and the largest increase in completion is among associates degrees. However, new recent research shows that students who participate in Early College are also more likely to attend four-year colleges and complete a four-year degree faster than those who do not.¹¹ Preliminary data from Massachusetts Early College students foreshadow a similar pattern.

Data from the 2019 cohort show the largest increase occurred among students matriculating to community colleges after high school, but there was also a noticeable increase in enrollment at four-year institutions relative to students in the statistical comparison group (**Figure 3**). The majority of Early College students matriculate directly to four-year institutions. This is evident with a closer look at where students enrolling in the fall of 2020 landed. Nearly one out of four were admitted to the UMass system (174), followed by Worcester State University (54), Bunker Hill Community College (38), and Fitchburg State University (36).

Figure 3: Share of students from the class of 2019 enrolling in college within six months of high school graduation by level of institution



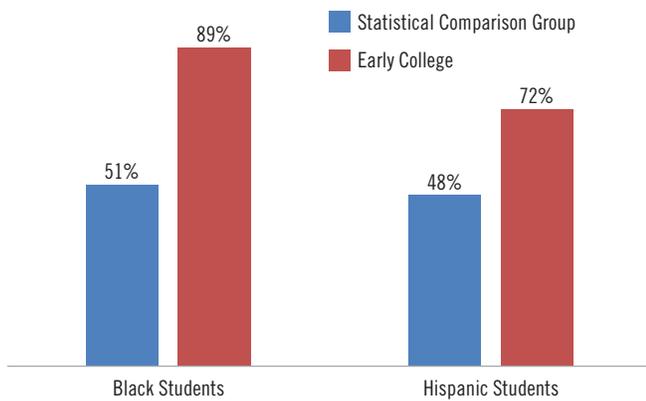
Source: Massachusetts Department of Elementary & Secondary Education

Early College produces outsized post-secondary enrollment gains for students of color. Historically,

students of color have been severely underrepresented in programs that offer high school students opportunities to take college courses.¹² Massachusetts made equitable access the first requirement for Early College designation. This has helped ensure that students of color are well represented. Approximately two-thirds of students in designated Early Colleges are Black (21 percent) or Hispanic (46 percent).

While the first cohort was considerably smaller than those that have followed, the class of 2019 included 274 Black students and 615 Hispanic students. These numbers are sufficient to disaggregate the data for these subgroups. **Figure 4** shows students of color matriculated to college within six months of high school graduation at far higher rates than their peers in the statistical comparison group. Early College increased immediate enrollment by 38 percentage points for Black students and 22 percentage points for Hispanic students.

Figure 4: Share of students from the class of 2019 enrolling in college within six months of high school graduation by race and ethnicity



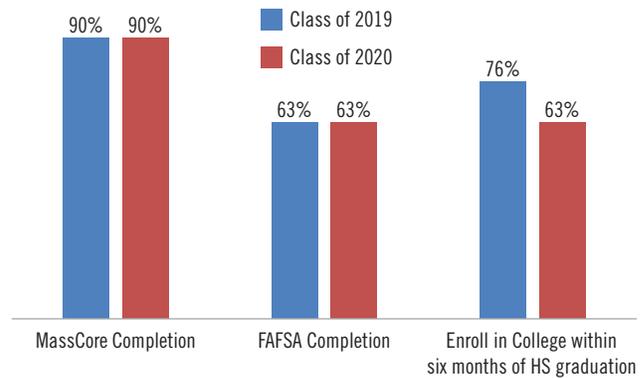
Source: Massachusetts Department of Elementary & Secondary Education

This striking evidence of outsized impact for students of color is consistent with results from the experimental study of Early College programs in multiple states conducted by the American Institutes for Research (AIR). In that study, students of color randomly assigned to Early College were dramatically more likely to complete college degrees than their peers in the control group.¹³

Early College has provided a buffer to the serious disruptions caused by the pandemic.

Post-secondary success metrics record the negative impact of the COVID-19 pandemic on last year’s senior class. Overall, completion rates fell sharply for MassCore (the more rigorous set of courses recommended by DESE for students who plan to pursue college) and many students did not complete FAFSA applications for federal financial aid. While Early College students managed to complete both MassCore and FAFSA at pre-pandemic rates, just 63 percent of Early College students from the class of 2020 enrolled in post-secondary studies within six months of high school graduation. This is a decline of 13 percentage points from the class of 2019 (**Figure 5**).

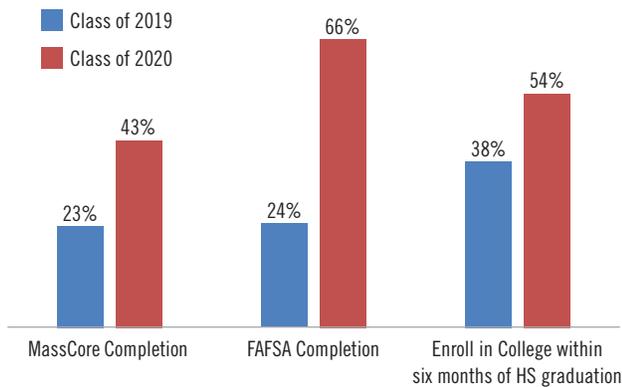
Figure 5: Share of Early College students achieving key post-secondary success milestones, 2019 and 2020



Source: Massachusetts Department of Elementary & Secondary Education

However, compared to their peers in the same high school, the probability of Early College students completing each of these milestones increased between 2019 and 2020. The largest differential was in FAFSA completion, but there is also a very notable rise in immediate post-secondary enrollment. Early College students in the class of 2019 were 38 percent more likely than other students in their schools to enroll in college in the fall; in comparison, Early College students in the class of 2020 were 54 percent more likely than their peers to continue their post-secondary studies without interruption in the pandemic (**Figure 6**).

Figure 6: Increased probability of Early College students achieving key post-secondary success milestones compared to their school peers, 2019 and 2020

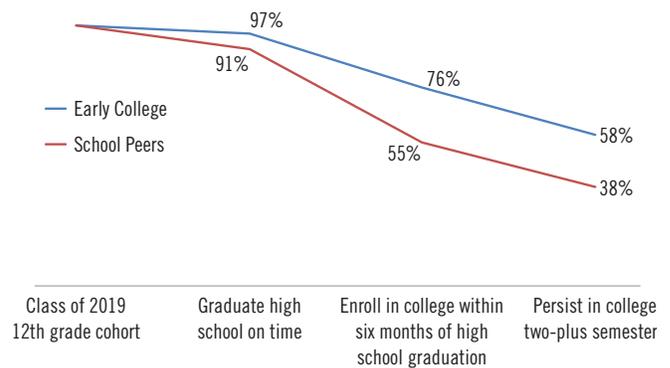


Source: Analysis of data presented by the Massachusetts Department of Elementary & Secondary Education

Through the pandemic, Early College students are persevering in college at higher rates than their peers. DESE recently presented data on second-year college persistence for the 2019 cohort. While we do not have statistical comparison group figures yet, it is possible to examine the trajectory of Early College students relative to that of other students from the same high schools (Figure 7). Early College students were slightly more likely to graduate from high school on time, but the big differences are in immediate post-secondary enrollment and continuation to the second year. At each of these milestones, there is approximately a 20 percentage-point difference between Early College students and other students from the same high schools. However, the second-year persistence gain is by far the largest in percentage terms. Relative to their high school peers, Early College students in the 2019 cohort were 38 percent more likely to enroll the immediate fall and 53 percent more likely to remain enrolled one year later.

“From its inception, the state’s Early College initiative has demonstrated a commitment to equity by investing in performance monitoring and evaluation.”

Figure 7: College trajectory of Early College students and their school peers, class of 2019



Source: Massachusetts Department of Elementary & Secondary Education

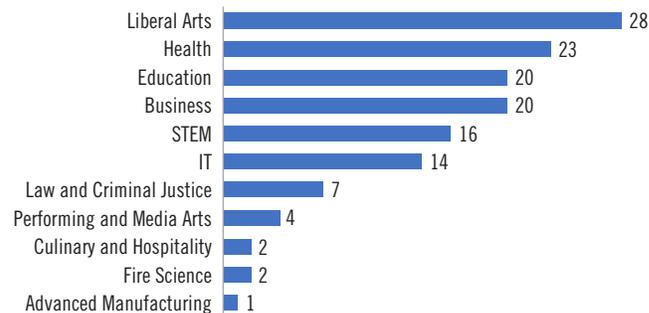
The fact that nearly 60 percent of Early College students from the class of 2019 continue to pursue their college degree despite the pandemic is promising. Based on the rate of reduction in immediate enrollment between the 2019 and 2020 cohorts, we estimate that second-year persistence for the class of 2019 would be closer to 68 percent but for the pandemic. According to recent estimates, Massachusetts students who persist to the second year of college are seven times more likely to complete it than those with an interruption in post-secondary enrollment.¹⁴

Many Early Colleges have built pathways to careers in advanced industries. Accelerated post-secondary studies can provide a particularly powerful boost for students who wish to pursue STEM fields. From computer science to nursing, a long body of research describes how introductory coursework serves to weed out students. In some cases, this is by design and in others it is simply lack of access to labs and long waiting lists to get into high-demand course sections. Regardless of the source, high exit rates in STEM majors clearly exact a heavier toll on students who have fewer resources and inferior preparation.¹⁵ Early College programs that provide students with exposure to these fields and the courses required to succeed within them can help address this challenge, which has major implications for both equity and the economy.

This issue merits far more analysis, but it is possible to get a high-level understanding of how Early College are attempting to counter the problem by examining the various pathways that they offer enrolled students (Figure 8). The vast majority of schools report giving students a choice between structured academic pathways (30 out of 34). Madison Park in Boston and Lawrence High offer the most, with seven pathways each. On average, the 34 high schools responding to our request for information provide students with 4.5 options.

Most Early College high schools offer students the option to pursue general education or a liberal arts major, such as political science. However, more than three-quarters also provide a Health, IT, or STEM track; 20 provide two out of three of these fields, and 11 give students all three options. Across the programs, there are also a handful of more specialized fields. For instance, Marlborough High has built an Advanced Manufacturing course of study.

Figure 8: Number of Early College high schools offering pathway



Source: Data provided by Early College partnerships upon request

EARLY COLLEGE AS A “GROW YOUR OWN” TEACHER PROGRAM

Studies consistently find that students of color experience significant educational benefits and other positive outcomes when they attend schools where teachers reflect the diversity of the student population. Grow Your Own teacher programs are one of the most successful strategies to bring more educators of color into the profession. By developing their own students as future teachers, school districts gain faculty who reflect the local culture. Equally important, retention is significantly higher when teachers have roots in the community.

With 20 state-designated programs offering education pathways, Massachusetts is well positioned to use Early College as a teacher workforce strategy. Throughout the country, there is a long history of precollegiate grow your-own-programs. South Carolina’s Center for Educator Recruitment, Retention, and Advancement, which launched in 1986, is one of the most well regarded. College partnerships and opportunities to earn dual-credit have long been a component of these programs. Many see an opportunity to increase their power by employing the more transformative Early College design. North Carolina recently opened the Charlotte Teacher Early College, a standalone high school devoted exclusively to preparing students for teaching careers.¹⁶

III. Progress Delivering on the Transformative Potential of Early College

To deliver on its potential to reduce structural inequality in Massachusetts, Early College must achieve significant scale. We can evaluate progress reaching underserved students across three dimensions: total enrollment in high-quality programs, progress towards degrees as demonstrated by the average number of transferable college credits students earn before graduating high school, and the pace of expansion.

Total Enrollment

There are multiple ways to assess how many students Early Colleges must serve to achieve systemic impact. One strategy is to count how many additional completions are needed to close racial and ethnic college attainment gaps. Laying a foundation for the state's Early College Initiative, this is the tact taken by the strategic plan Parthenon-EY developed on behalf of the Board of Higher Education and the Board of Elementary and Secondary Education. The plan called for growing Early College to 16,000 students annually, estimating that this would close post-secondary attainment gaps by 40 percent.¹⁷

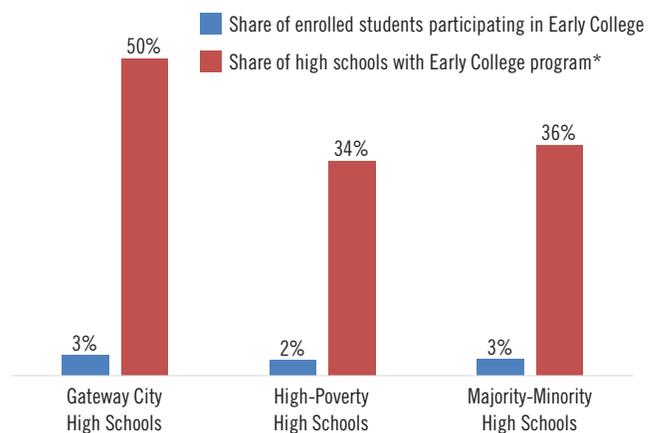
However, this figure appears to have been built on the assumption that underserved students would make up all 16,000 students enrolled in Early College. According to the most recent enrollment count, Black and Latino students make up two-thirds of those participating in Early College. If Massachusetts reached the goal of serving 16,000 students annually retaining the current racial and ethnic enrollment composition, we estimate Early College would reduce the state's Black/White and Hispanic/White completion gaps by 20 percent and 15 percent, respectively. To contribute to a 40 percent reduction in racial and ethnic disparities based on the most recent estimates, Early Colleges would need to serve approximately 23,000 Black and Hispanic students.¹⁸

A far simpler way to evaluate progress is to simply look at Early College participation among the target populations: Currently less than 2 percent of high school students of color and just 1 percent of low-income students participate.

We can also examine penetration in high schools with large concentrations of underserved students. For instance, reaching one-quarter of the students attending the 50 Gateway City high schools would require nearly 17,000 spaces. Serving

25 percent of enrollment in the state's 51 high schools where students of color form a majority would require nearly 18,000 spaces; reaching a similar share of enrollment in the state's 68 high-poverty secondary schools would require slightly more than 24,000 spaces. As **Figure 9** depicts, the state has made considerable progress launching programs in these schools; half of Gateway City high schools and roughly one-third of majority-minority and high-poverty high schools in Massachusetts now operate an Early College program. However, we are still just reaching 3 percent of students attending Gateway City and majority-minority high schools and only 2 percent of students in high-poverty high schools.

Figure 9: Early College enrollment relative to total enrollment by school characteristics



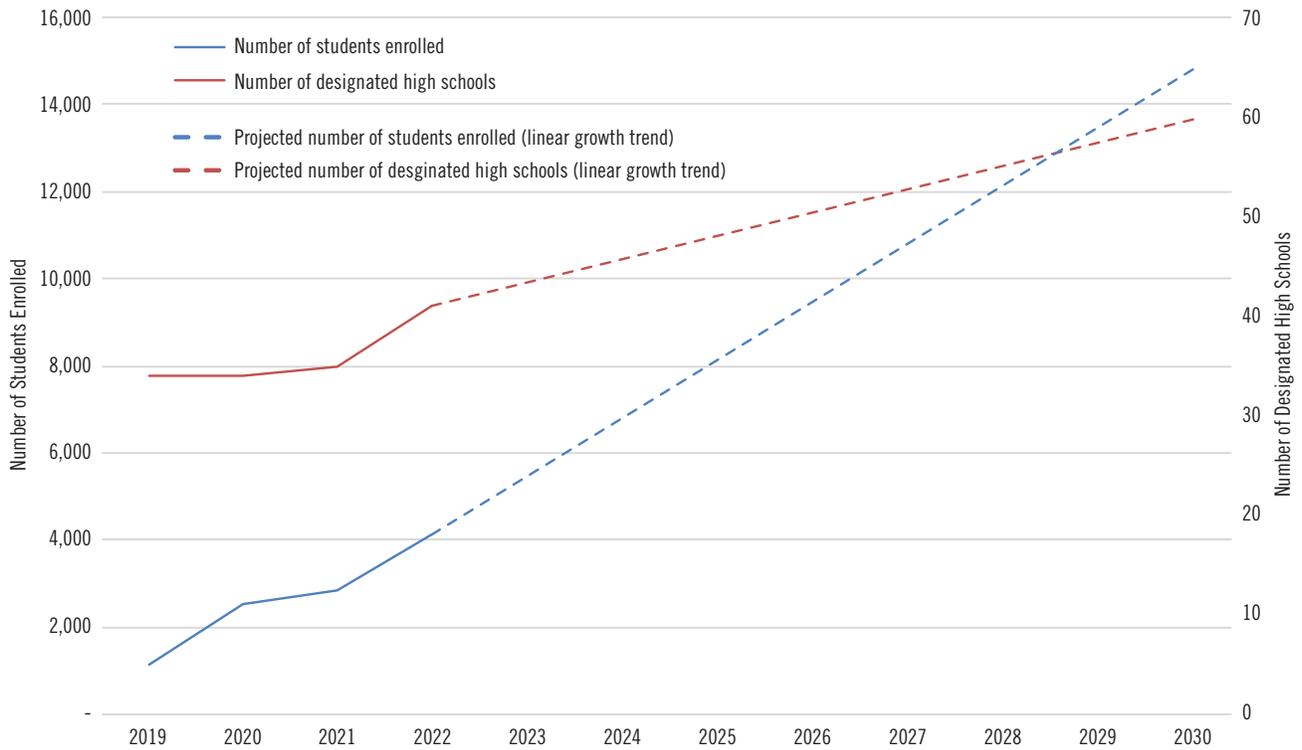
* High schools with 400 or more enrolled students

Source: Massachusetts Department of Elementary & Secondary Education

Average Credit Counts

Our understanding of the power of Early College comes from experimental studies following students who were randomly assigned to treatment and control groups. Those in the treatment group attended Early College programs, where they had the opportunity to earn up to 60 college credits while in high school. Approximately half of students in this treatment group completed at least 30 college credits before their high school graduation.¹⁹ To replicate the evidence-based model with fidelity, Early Colleges in Massachusetts must provide students with realistic opportunities to earn at least 30 college credits.

Figure 10: Projected growth in Early College enrollment and designated high schools



Source: Massachusetts Department of Elementary & Secondary Education

Currently, the state designation requires that programs make available opportunities to earn a minimum of just 12 credits. Bringing Early College up to scale means not only expanding the number of programs and their student enrollment but also working to ensure that these programs provide students with opportunities to earn far more credits.

Most programs already aim to have their students exceed the 12-credit minimum by a large margin. Data-quality issues make it difficult to accurately track the number of college credits students have completed by high school graduation, but it is possible to provide a rough indication. The state estimates 3,650 students will participate in Early College in FY 21. If these students were on pace to graduate high school with an average of 30 college credits, this would amount to 27,375 credits; the state estimates it will reimburse institutions for providing 21,000 credits in FY21. To provide another point of reference, increasing enrollment to 16,000 students graduating with an average of 30 credits would require awarding 120,000 credits annually.²⁰

The Pace of Expansion

At the current pace of expansion, it will be many years before opportunities to participate in Early College reach a scale that has significant impact in reversing the growing gaps in post-secondary completion. Setting aside the past year due to COVID-related challenges and examining growth between 2019 and 2020 and estimated increases for 2021 to 2022, designated programs have been adding roughly 1,300 students per year. This includes both growth generated by enrolling more students in existing programs and growth from opening new programs. If Massachusetts continues at this pace, Early College enrollment will be just shy of 15,000 students in 2030 (Figure 10).

Up until now, most growth has come from existing high schools, and many of these operated prior to the formal designation in one form or another. However, these high schools still have considerable opportunity to reach more students. On average, less than 10 percent of their enrolled students participate in Early College.

From an equity perspective, it is critical to provide the option to participate to underserved students, and this requires timely expansion to more schools. While only one new high school has been added since 2019, the state's projections anticipate six more high school designations over the next year. At this rate of expansion, Massachusetts would have 59 high schools with Early College programs by 2030.

Establishing a More Ambitious Goal

To achieve equity in education, policymakers cannot sugarcoat the effort and transformative changes that will be required. Those advocating for pilots and other incremental efforts must indicate when and how they propose to accelerate the work. Strategies that we put forward to achieve population-level impact must be backed by solid numbers and reasonable target dates.

At this inflection point, it is critical to provide clarity on when and how we intend to convert Early College from a pilot program to an undertaking sized with the power to provide equity in post-secondary opportunity. Basic math suggests Massachusetts should plan to serve at least 45,000 students a year in Early College programs structured to offer students opportunities to earn 30 credits before high school graduation. At this scale, one out of four students from low-income families in grades nine through 12 would have access. Equally important, two-thirds of participating students would be low-income, but programs would still have capacity to include 15,000 students who are not low-income, ensuring that Early College high schools are positioned to provide diverse learning environments.

In terms of timing, full phase in of SOA funding provides a logical milestone. At that point, which should arrive within six years, communities will have all of the resources that will be available to them to sustain these programs. It also affords the state ample time to plan for higher education costs, which will increase incrementally as more students enroll in programs.

 **To achieve equity in education, policymakers cannot sugarcoat the effort and transformative changes that will be required.**

Those advocating for pilots and other incremental efforts must indicate when and how they propose to accelerate the work.

Strategies that we put forward to achieve population-level impact must be backed by solid numbers and reasonable target dates.

HOW BIG IS THE RETURN ON INVESTMENT IN EARLY COLLEGE?

Drawing from the results of a randomized controlled trial, researchers have produced a rigorous cost-benefit analysis of Early College. They find that each dollar invested returns 15 dollars in total benefits. Students garner much of this value in the form of higher lifetime earnings and improved well-being. However, the public gains are also substantial; greater tax revenues and decreased government spending return more than six dollars in benefit for every dollar in cost. The Washington State Institute for Public Policy, a leading provider of cost-benefit analysis, has also examined the returns to Early College programs. Among the 18 evidence-based initiatives to increase college completion that they have analyzed, Early College produces the largest net benefits for taxpayers.²¹

As strong as a 15-to-1 gain appears, there is good reason to believe that this estimate is too conservative. The figure relies on a study that followed students six years after high school, which is too short a window to fully capture the impact on completion of four-year degrees. New research tracking students for 10 years finds Early College students are 24 percent more likely to earn a four-year degree (and they finish significantly faster) than peers in the control group. This is very meaningful for cost-benefit analysis because four-year degrees typically yield much larger returns than two-year degrees and credentials.

However, there are many examples of two-year degrees and credentials that do lead to very sizeable increases in earnings. Researchers have yet to determine whether Early Colleges shift students to fields that result in higher earnings, but it likely that the structured academic pathways do have this effect. To the extent that the heavy healthcare and STEM focus of Massachusetts' Early Colleges leads students to fields with larger labor market benefits, the state's investment in Early College will have an even better payoff for taxpayers.²²

When evaluating Early College investments through an equity lens, it also important to consider recent research examining the consequences of declining state spending in public higher education. Like most states, Massachusetts has significantly reduced its investment in public higher education over the past two decades. Declining public support has been offset by higher tuition and fees at institutions serving wealthier students. Community colleges, which educate large numbers of very low-income residents, do not have the same ability to pass costs on to students. A recent study using a novel data set quantified the implications of declining state investment in community colleges. For each \$1,000 increase in the per-student state appropriation, students are 15 percent more likely to transfer to a four-year college, 20 percent more likely to obtain at least a BA, and 41 percent more likely to earn a graduate degree.

IV. Accelerating the Expansion of High-Quality Programs

Massachusetts needs a robust strategy to rapidly expand Early College from a promising pilot to an initiative with the ability to generate meaningful reductions in post-secondary completion gaps by race, ethnicity, and income. This strategy must reach large numbers of underserved students as efficiently as possible. At the same time, care is required to ensure that those who could benefit most from Early College are able to access the opportunity regardless of their zip code. Below we outline a variety of tactics to achieve this scale and increase the geographic reach of Early College high schools. For each approach, we examine both opportunities and challenges from the perspective of equity and inclusion.

A. Growth in High Schools with Existing Programs

Reaching more students in schools with existing programs is one of the most efficient ways to increase the scale of Early College. As noted in the previous section, most existing Early Colleges programs are located in schools with large concentrations of underserved students. However, only a small percentage of their students currently participate in the Early College program. If these programs grew to 25 percent of each designated high school's total enrollment, Massachusetts would have 7,200 more students in Early College. Equally important, the average Early College program would enroll nearly 300 students. Achieving this level of growth will allow the high schools to sustainably hire the dedicated staff that Early College programs require to operate effectively.

While the educators leading these programs believe reaching one-quarter of enrolled students is achievable, we do not yet have many models in Massachusetts of schools operating within comprehensive high schools at this scale. In addition, there are several unanswered questions about what it would take to get to this level of penetration, and how it might impact the broader school climate, including what the long-term consequences might be, positive or negative, for students who do not participate in Early College.

Growing programs to one-quarter of enrollment will undoubtedly mean engaging more male students. While evidence to date suggests the benefits of Early College are as large or larger for male students, they are not participating at

nearly the same rate as female students; currently, males make up just one-third of Early College students in Massachusetts' designated programs.

Qualitative research suggests it might be more difficult to convince male students to reduce involvement in sports or part-time work, sacrifices that many students must make to succeed in Early College. However, this research also reveals an opening to engage male students by emphasizing exposure to the career opportunities and job training embedded in Early College programs; clear inroads to employment can provide a particularly powerful motivator for male students.²³

Serving a larger portion of the study body will also call for strategies that allow more English Language Learners (ELLs) to participate. ELLs account for nearly 20 percent of enrollment in the 35 state-designated high schools. Creating opportunities for ELLs can be more challenging for logistical reasons. For example, students who require English language support in some classes often have less scheduling flexibility. Structuring programs to reach more ELLs will require care. The two randomized controlled trials that provide the strongest evidence base for Early College did not include significant numbers of ELLs. However, a recent study of ELL students participating in Early College in a large urban district in California found no increase in immediate post-secondary enrollment and a significant reduction in the probability of attending a four-year institution.²⁴

While this research underscores the need to proceed with caution, the results do not diminish the opportunity Early College presents to improve outcomes for ELLs.²⁵ Studies consistently tie lower post-secondary completion rates for this population to lack of opportunities to tackle rigorous coursework in high school. ELLs may not have equal access to challenging classes for a variety of reasons, including lack of opportunity in the schools they attend and inappropriate tracking into lower-level courses in both middle and high school. Early College programs designed to support ELLs could provide a powerful antidote to these problems.²⁶

B. Growth in Wall-to-Wall Early College High Schools

In many states, Early College is predominately offered in high schools where every enrolled student participates. This was the model tested in the two randomized controlled trials. A purpose-built school allows leaders to fashion the curriculum, schedule, and school culture around the concept. As a result, these schools are especially equipped to help students accumulate a large number of post-secondary credits.

Creating a wall-to-wall Early College high school often requires more resources at startup. However, operating these schools is far more efficient because there are significant economies of scale in program administration and overhead. Many wall-to-wall schools eliminate added transportation costs, one of the largest categories of extra expense, by locating directly on the college campus.

Wall-to-wall designs present both opportunities and challenges for equity. On the positive side, they can act as magnet schools increasing racial and economic integration. Conversely, any school format that involves active choice may lead to underrepresentation of those with the least resources. To mitigate this risk, it is critical that wall-to-wall schools have structured partnerships with feeder middle schools. As the MetroWest Scholars Program demonstrates, programs can increase equity by reaching out to underserved students in seventh and eighth grade to ensure that they are equally aware of the opportunity (see case study, p. 19).

Massachusetts currently has very few wall-to-wall Early College high schools. This is likely the result of the absence of a stable funding mechanism to cover higher education costs at scale. With a demonstrated commitment to funding stability, the wall-to-wall model could provide a catalyst for expansion in a manner that is significantly more cost-effective in terms of both operations and outcomes.

C. Growth in Regional Programs

Building regional partnerships that serve students from multiple high schools is another approach to efficiently increase access to Early College. While perhaps not as cost-effective as a single wall-to-wall program, high schools that share a college partner and work together to create alignment on curriculum and scheduling can gain some economies of scale. With a larger number of high school students taking classes, this scale will also allow colleges to offer more course sections, giving students and programs additional scheduling flexibility. Regional programs can also gain more visibility through their scale, which they can parlay into a richer set of community partners and champions, including business, economic development, and workforce leaders.

In the past, transportation costs presented a serious barrier to serving high schools that were not proximate to campus. Building on experience and capacity developed during the pandemic, programs are now much better positioned to utilize a blend of online and in-person instruction to significantly reduce transportation costs.

Regional Early Colleges that serve both urban and suburban schools could also contribute significantly to overcoming the challenge of residential segregation. In addition to the educational benefits of integrated learning experiences, the building of relationships across communities through Early College could also produce social capital with considerable long-term value for regional economic development. Previous MassINC research has demonstrated how Massachusetts residents are increasingly geographically divided both politically and socioeconomically. This division is particularly problematic in Gateway City regions, where increasingly sharp divides between residents of the cities and surrounding towns inhibit regional collaboration.²⁷

D. Growth in Private College Partnerships

With more than 80 private colleges operating in Massachusetts, there is untapped opportunity to create new partnerships that give more high school students opportunities to attend Early College. So far just three privates—Cambridge College, Merrimack College, and Wentworth Institute of Technology (see case studies, p. 19 and p. 21)—serve as partners in state-designated programs.

Expansion through private college is particularly compelling because of the geographic alignment: Boston is home to both an outsized share of private colleges and universities and an outsized share of high schools with large concentrations of underserved students.²⁸ With easy accessibility by service, private colleges could play a particularly powerful role helping the city build wall-to-wall magnet schools that lead to more racial and economic integration for secondary school students in the Boston area.

While there are many advantages to leveraging private colleges for expansion, there are also substantial equity concerns to consider. Transferability is one challenging issue. The power of Early College is vested in the ability to make progress toward a degree or credential while in high school. Post-secondary completion gains will be most pronounced when credits transfer and count toward progress in a field of study. While progress has been made through the development of articulation agreements, transferring credits is still a major challenge, particularly when students matriculate at private colleges.²⁹

Funding presents another potential equity challenge. To be sure, wealthy private colleges can advance educational equity and make a meaningful contribution to their host communities by covering the costs. However, many small private colleges that would make great partners are in a weak financial position to subsidize tuition and fees for low-income high school students. By placing more students in their regions on a steady path to post-secondary studies, Early College could grow the college-going population to the benefit of these institutions. But strong guardrails are required to ensure that Early College broadens the choices students have for future post-secondary studies, rather than narrowing them to the partner institution. If there is some level of tuition reimbursement for private institutions with limited financial capacity, the state will be in a far stronger position to align incentives and insist on protections to ensure student choice.

E. Boston and the Gateway Cities as Anchors

Combined, Boston and the Gateway Cities educate nearly half of all low-income high school students in Massachusetts. As described above, these urban communities are particularly well positioned to serve as anchors for regional partnership that extend participation to more low-income students, as well as suburban students who are looking for an opportunity to get an earlier start on college, while learning alongside peers from diverse backgrounds. Given their centrality, the state's success deploying Early College as a strategy for transformative change is largely contingent on local action in these communities.

For Gateway Cities, the challenge is largely executing on a strategy to aggressively scale existing programs; Massachusetts could serve 6,000 more Early College students by simply growing enrollment to 25 percent of the student body in each of these schools. In contrast, Boston must commit to creating far more Early College programs. The city should have both the advantages and the motivation it needs to act forcefully. Boston surely has the magnetism to draw a growing number of educators with deep experience building and operating Early Colleges. The city also has more urgency than any other community in the state. The flaws and inequity in Boston's current portfolio of high schools have long been evident. Early College is a particularly compelling strategy to counter this systemic challenge.

 **Massachusetts needs a robust strategy to rapidly expand Early College from a promising pilot to an initiative with the ability to generate meaningful reductions in post-secondary completion gaps by race, ethnicity, and income.**

V. Advancing Equity through Early College Expansion

Massachusetts has an unprecedented opportunity to close growing gaps in post-secondary completion by building and sustaining high-quality Early College programs. Over \$2 billion in federal recovery aid is flowing into the state's high-need districts. While these are one-time funds, full phase-in of the Student Opportunity Act should soon provide communities with \$1.5 billion in net new state aid annually.

These new resources are increasing optimism that our most under-funded schools will finally be in a position to address longstanding opportunity gaps, but there is also a very real concern that efforts to deploy these funds will be too numerous, too disorganized, and too diffuse to have a transformative impact for students. Early College can provide a major hedge against this risk. Massachusetts has put significant forethought into designing a framework for scaling up high-quality Early Colleges. At this opportune time, we must make a concerted effort to build on this foundation with a thoughtful strategy to put Early College expansion into high gear. Toward this end, we offer the following near-term policy recommendations:

1. Develop a clear funding mechanism to cover the higher education costs. With the Student Opportunity Act, Massachusetts is poised to take a lead position among states on equitable funding for K–12 education. However, state support for higher education in Massachusetts lags considerably, which has serious consequences for both equity and long-term economic growth. Early College is not a complete solution to this problem, but it does provide a very strong remedy at a cost that should not undermine our efforts to support low-income children and families in a variety of other important ways.

To significantly expand access to Early College, programs need a predictable financial foundation to cover the higher education costs. For the past few years, the Baker administration and the legislature have creatively cobbled together resources to provide as much funding to colleges and universities as possible, but this has been challenging, and higher education partners have seen the level of funding per course offered fall as the number of students participating in Early College has grown. In FY 2019, DHE reimbursed colleges at \$183 per credit, which amounts to the typical tuition and

fees for a community college class. The FY 21 reimbursement was just \$135 per credit, a 26 percent reduction.

For FY 2022, DHE estimates that it will require \$6.4 million to reimburse programs at this reduced rate. This is a \$4.4 million increase from the current fiscal year because the state has designated new programs and existing programs continue to grow as they mature. We must anticipate this cost growth as we continue to expand access to Early College and develop a detailed financial plan to accommodate similar increases in future years.

At 45,000 students each graduating with an average of 30 credits—a scale that would represent a major advancement for equity along with a sizeable jolt to the Massachusetts economy—the annual higher education costs would rise to \$62 million at the full reimbursement rate. While this represents a significant commitment of state resources, budget makers can steadily phase it in over several years. More importantly, this is a modest sum relative to both the equity impact and demonstrable return on taxpayer investment that it will generate.

2. Increase the size of the startup grant. In recent years, the state has decreased grants for schools launching new programs from \$120,000 to just \$30,000. The size of the state's seed funding sends important signals about both our commitment to expansion and the intensity of the planning effort required. To fashion a high-quality initiative, schools must devote a seasoned administrator to the effort full-time for at least one year in advance of receiving students. In most instances, these program leaders will need to issue contracts for outside consulting services as they work to develop equitable recruitment and admission policies, curriculum, course sequences, bell schedules, student support systems, and MOUs with higher education institutions and community-based partners. Building a program within a comprehensive high school often involves more complexity than creating a new school from scratch.

To put the size of the current startup grant into perspective, DESE has typically provided charter schools with a \$500,000 base startup grant, and significantly more dollars for charters that take on complex designs, such as serving a high percentage of English Language Learners.

As programs at the 35 high schools with current designations scale up and SOA phases in more fully, the state should repurpose more than \$1.2 million from the Early College Programs line item that has been spread thinly across existing programs to help them cover operating costs. These dollars will have much greater impact helping a small number of programs get off to a strong start each year. When awarding sizeable design grants, the state should prioritize proposals that give a large number of students opportunities to earn a minimum of 30 credits and present a viable plan for achieving this scale within a short time span.³⁰ Going forward, this “go big from the start” approach must be core to the state’s expansion strategy.

3. Provide challenge grants to help existing programs deepen their work. The state can also reappropriate some of the limited operating support currently provided from the Early College program line item to offer modest grants to programs that are working to refine an existing early college partnership.

Funding for the development of college and career pathways is one clear area of need. As Early Colleges mature and develop focused academic pathways, many seek to integrate career exploration opportunities so that students can gain a stronger understanding of the job opportunities they can pursue with post-secondary education and training within their field of study. Building partnerships with workforce development agencies and business organizations to create these opportunities for students requires considerable effort. With modest grants, the state can help facilitate this work and increase integration with other initiatives, such as Connecting Activities and YouthWorks.

Similarly, to help overcome the challenges described in the previous section, the state could provide grant opportunities for Early Colleges testing new models to serve English Language Learners, engage more male students, and experiment with online courses and blended learning.

4. Ensure that all credits transfer. Research demonstrating the equity implications of credit loss when students transfer between institutions has spurred vigorous efforts to address this problem. The most common approach is articulation agreements. These structures have been built

to facilitate student transfers from two- to four-year public institutions, and to a lesser extent, transfers from two-year publics to four-year privates.³¹

In recent years, Massachusetts has built the MassTransfer program, which guarantees admission to state universities and UMass for students who graduate from community colleges with at least a B. A core component of this transfer guarantee is a 34-credit block of general education courses that can be transferred to and from any public institution in Massachusetts. DHE has also developed the A2B program, which allows credits to fulfill course requirements for popular majors. Massachusetts also has the Independent College Transfer Guarantee. Similar to the MassTransfer for public institutions, students with a GPA of 2.5 or higher are guaranteed admission and junior status at the 21 private colleges participating.

Early College programs have built on top of these agreements to help ensure that students will be able to transfer their credits to meet both general education requirements and requirements for their chosen majors. As an increasing number of students graduate high school with a significant number of college credits obtained from both public and private institutions, considerable effort will be required to maintain these agreements and increase the number of private institutions participating in them.

Focus should be placed on ensuring transferability in majors that align with pathways that are most common among Early College programs. DHE should maintain a list of these pathways and update the Early College Joint Committee regularly on progress folding them into the A2B program. Leaders should also encourage more selective private colleges to participate in the Independent College Transfer Guarantee. At present, these institutions are conspicuously absent from the list of signatories. Private institutions can do their part to help address systemic inequity in higher education by allowing Early College students to benefit from post-secondary credits that they have earned.

5. Conduct qualitative research. In previous reports, we described the need to link sustainable funding with strong accountability mechanisms to ensure that public investment produces gains in college enrollment, persistence, completion, and employment. To a degree, accountability has been built into the state’s Early College designation. Each program has a five-year performance contract. To renew the designation and continue to receive state funding, each must meet clearly stated goals.

However, advancing equity demands a deeper approach to evaluation. In recent years, education policymakers have learned many hard lessons about how data-driven accountability can skew incentives in ways that undermine our goals for improvement in student learning. To mitigate this concern, it is critical to conduct qualitative reviews that allow program evaluators to develop a fuller understanding of the experience for students and families. DHE's equity action plan acknowledges this specific need by pledging to "value students' experiences through qualitative research."

In particular, we must consider not just the gains Early College students experience relative to their peers but also how schools with large Early College efforts perform as a whole. Many of these high schools have complementary redesign initiatives occurring simultaneously. These efforts mostly focus on making career development a stronger component of the high school experience, notably, the state's Innovation Pathways program and efforts to give students attending comprehensive high schools greater access to Chapter 74 vocational technical education programs. We need to understand how the totality of this work influences post-secondary outcomes, including but not limited to college completion. In the interest of ensuring that we are indeed making progress advancing equity and inclusion, DESE and DHE should redouble their effort to produce qualitative research examining the experiences of administrators, educators, and students from multiple vantage points.

Understanding the impact a transformative model like Early College is having on education is also an excellent opportunity to leverage teacher leadership. Teachers can play a particularly valuable role leading equity audits and other forms of participatory action research, providing more diverse perspectives as programs work to evaluate their impact on students and families with cultural competency.³²

 Understanding the impact a transformative model like Early College is having on education is also an excellent opportunity to leverage teacher leadership.

Teachers can play a particularly valuable role leading equity audits and other forms of participatory action research, providing more diverse perspectives as programs work to evaluate their impact on students and families with cultural competency.

Framingham and Milford Demonstrate the Benefits of Early College Pathways that Begin in Middle School

Framingham and Milford are part of a unique Early College partnership established by the MetroWest College Planning Collaborative. Through an intense effort to help students prepare for college beginning in middle school, these increasingly diverse communities aim to give students a more equitable opportunity to build the skills the region's top employers require.

Unequal Opportunity in a Vibrant Regional Economy

MetroWest is home to a top-tier knowledge economy with strong clusters in information technology and analytics, biopharmaceuticals, and medical devices. The region's employers pay a premium for skilled workers. With plenty of money circulating in local economies, thousands of service workers have migrated to the area in search of opportunity. Framingham and Milford have welcomed these families.

Framingham is now home to one of the state's most diverse high schools. Slightly more than half of Framingham High's 2,300 students are white (56 percent), followed by Hispanic (28 percent), Black (7 percent), and Asian (5 percent) students. One out of every six is an English Language Learner (ELL) and approximately one-third are low-income. Milford High is smaller with 1,200 students, but the school is home to similarly large shares of ELL (14 percent), Hispanic (29 percent), and low-income (35 percent) students.

Like most diverse high schools in Massachusetts, Framingham and Milford struggle with large socioeconomic disparities in post-secondary completion. Most notably, only 30 percent of low-income students in Framingham High's class of 2012 completed a post-secondary degree or

credential by 2019; this compares to 69 percent of non-low-income students. The six-year post-secondary completion rates for Milford High's class of 2012 also show yawning gaps (27 percent of low-income students vs. 60 percent of non-low-income students).

K-12 and higher education leaders in the region understand that these figures undermine the premise that the American Dream is alive and well in their communities. Eager to find strategies to give low-income students and students of color more equitable access to higher education, Framingham State and Mass Bay Community College came together to create the MetroWest College Planning Collaborative in 2014.

Together, the colleges experimented with a variety of approaches to provide outreach, mentoring, and advising services to underrepresented students and their families. Colleen Coffey, director of the collaborative, says nothing they tried during the first few years showed the same breakthrough potential as Early College. Then they took a hard look at the model and asked: What would it take to implement the approach in a way that could truly close equity gaps? "When you tweak something two inches to the left, and all of a sudden you're hitting gold, our design did that."

(continued)

Achieving Equitable Outcomes by Starting Earlier

The two inches to the left to which Coffey refers is beginning in middle school. While many Early Colleges start with seniors and expand down to lower grades, the MetroWest partners want to ensure that all students who enter the program have time to establish a strong foundation for success.

To plant the seed, the program initiates conversations with students in the seventh grade. This outreach focuses on ensuring that all undeserved students know that they can do college in high school—outreach isn't based on grades or teacher recommendations—while beginning in middle school allows the program to provide the opportunity to everyone.

The program will enroll any student, but the leaders want students and families to understand that they are looking for a true partnership. During eighth grade, they meet with students and families in the evenings and on weekends in community spaces. To overcome language barriers, they have translators available (Spanish, Portuguese, Haitian Creole, and Vietnamese). These recruitment sessions include thorough conversations about the college process, how Early College works, and the unique opportunity the program provides to reduce the obstacles to college completion that frequently get in the way of underrepresented students. They also make sure that both students and families are fully aware of the sacrifices successful participation in Early College demands.

In the spring of eighth grade, students and families are asked to make a commitment. The taking of college courses begins right away with an interdisciplinary studies class the summer before ninth grade. During ninth grade, all students take a cultural anthropology class. The course's design provides a large number of reading and writing assignments, helping students build the higher-level writing abilities that future college coursework will require.

To ensure that students have places they can turn to for assistance persevering through difficult college courses, program partners have built a community of support with multiple layers. Both high schools have coaches and advisors available to meet with students at least three days each week. The program also has its own tutors, who can assist students during free periods built into the schedule. There is a weekly enrichment meeting, which brings Early College students together as a community within the school. They also partner with a counseling agency to increase access to social-emotional support.

A Recipe for Success

The MetroWest Scholars Program launched in the spring of 2019 immediately after receiving a state designation. So far, 170 students have joined the program (110 at Framingham High and 60 at Milford High). These students are now in grades nine and 10 and already accumulating significant post-secondary credits. Last fall, 50 percent earned at least four credits, a handful earned eight credits, and one even earned 12. By beginning early, students are on a clear course to complete 15–30 credits before high school graduation.

Coffey believes one of the subtle benefits of getting students focused on Early College before high school is the supportive peer group it fosters. Students come to see college completion as a real possibility and not so distant. As friends, they appreciate what they each need to do together in high school to earn their college degrees. This observation is strongly supported by qualitative research on Early College, which consistently cites the bonds students develop with one another as they confront challenges together as both motivational and critical to overcoming adversity they experience along the way.³³

Emerging Early College Model for Dearborn 6-12 STEM Academy Students

Located in Roxbury's historic Nubian Square, the Dearborn 6-12 STEM Academy is the first state-designated Early College in Boston to partner with both a public and a private university. While the school's Early College effort is relatively young, it offers a promising example of how we can better position students for successful careers in the region's high-opportunity fields.

Rebuilding with an Ambitious Plan to Bridge the Divide

The Dearborn sits just over a mile from the Longwood Medical Area, one of the most advanced life science clusters in the world. Despite their proximity, Roxbury residents are largely disconnected from this economic engine; nearly one-quarter live on incomes below the poverty line.

For years, Boston Public Schools (BPS) have struggled to offer the educational foundation students need to take full advantage of the city's thriving knowledge economy. Concerned by the Dearborn's especially low performance, DESE placed the school in Level 4 turnaround status in 2010. As required under state law, the district developed an accelerated three-year improvement plan. But the Dearborn still struggled to make progress.

In 2014, BPS narrowly avoided a state takeover by granting the Boston Plan for Excellence (BPE) full control of the Dearborn. A well-respected nonprofit that specializes in preparing Boston's future teachers, BPE went to work on a complete redesign. The opportunity to rethink the school was coupled with a gleaming new building, including state-of-the-art science labs.

Equally game-changing, the new Dearborn would no longer be a standalone middle school. BPE added grades 9 through 12, providing new possibilities for educators to establish seamless pathways to

the advanced industries flourishing nearby. Jesse Solomon, executive director of BPE, says, "We have a goal of supporting our grads to be employed at a family-sustaining wage six years after they graduate high school. There are lots of ways to get there. We try to make the default to have a pathway."

Early College as a Pathway to College and Career Success

BPE wanted Dearborn students to understand the high-tech work that was happening all around them and the academic pathways that provide entry to these careers. They saw Early College as a compelling opportunity because local colleges and universities have connections with employers in these industries and they provide a range of options to prepare students for these careers. To build a strong Early College program, BPE sought out Kristen Almquist-Cevallos.

Almquist-Cevallos led the development of one of the state's largest Early College programs as an assistant principal at Chelsea High. She immediately set about creating similar opportunities for Dearborn students, drawing on relationships that she had built with Bunker Hill Community College while at Chelsea High. She also fostered a connection with the Wentworth Institute of Technology. Wentworth had been allowing Boston students

(continued)

to take free courses since 2011, but there was very little structure around the arrangement. As a neighbor to the Dearborn with a similar STEM focus, Wentworth could offer a more intentional Early College partnership, providing an opportunity to get more impact from the valuable resources Wentworth made available to BPS.

Wentworth was also drawn by the Dearborn's integrated middle school. The middle school ensures equitable access (admission to the Dearborn is granted to all students attending one of the feeder elementary schools in the surrounding neighborhood). Equally important, the middle grades provide a long runway, allowing educators to sequence curriculum and help students build the skills required to tackle college-level STEM courses in high school.

Students entering the Dearborn in sixth grade learn immediately that they will be able to complete a significant amount of college for free while in high school. To help students and families understand this opportunity, they provide a number of "college bootcamps." Almquist sees these conversations as central to the school's STEM mission, especially at a time when technology can appear inaccessible. "Most people don't know what STEM is... what are the fields, what are the jobs? There's basic knowledge that we all need."

The Early College provides a powerful vehicle to give students a real feel for the career opportunities available to them. Erik Miller, Director of the

Center for Community and Learning Partnerships at Wentworth, gives an example of how students benefit not just from the knowledge of faculty, but also hand-on exposure to the technology. The "first classes in construction management are actually pouring concrete, so students can better understand what's on the other end of all of this theory."

Rising to the Challenge

In the first year (2018-2019) of the program, Dearborn students enrolled in 38 college courses but earned passing grades in less than half of their attempts. The second year, they took 64 college classes and the passing rate rose to nearly three-quarters. These numbers speak to the rigor of the coursework. As Miller says, "Our goal is not to treat them any differently. We put them in a college class with other college students and we tell faculty to provide them with the same support that you would provide anybody else."

The considerable progress between first-year and second-year completion rates suggests the Early College partners are finding ways to help Dearborn students succeed. As we follow them into college, college majors, and careers, we will learn far more about how this model expands opportunity in our state's advanced industries.

Notes

- 1 Estelle Sommeiller. "Income Inequality in the U.S. by State, Metropolitan Area, and County." (Washington, DC: Economic Policy Institute, 2016); Andy Sum and others. "Recapturing the American Dream: Meeting the Challenges of the Bay State's Lost Decade." (Boston, MA: MassINC, 2011).
- 2 John Papay and others. "Lifting All Boats? Accomplishments and Challenges from 20 Years of Education Reform in Massachusetts." (Providence, RI: Brown University, 2020).
- 3 Bridget Terry Long and Monica Chan. "The Massachusetts Student Financial Aid Study." (Cambridge, MA: Harvard University, 2017).
- 4 For example, see: "See Yourself in Stem." (Boston, MA: Commonwealth Corporation, 2019); and "Developing a National STEM Workforce Strategy." (Washington, DC: National Academies Press, 2016).
- 5 Benjamin Forman and others. "The Gateway Cities Vision for Dynamic Community-Wide Learning Systems." (Boston, MA: MassINC, 2013).
- 6 "Unleashing the Potential of Entrepreneurs of Color in Massachusetts: A Blueprint for Economic Growth and Equitable Recovery." (Boston, MA: MassINC, 2021).
- 7 Alex Bell and others. "Who Becomes an Inventor in America? The Importance of Exposure to Innovation." *The Quarterly Journal of Economics* 134.2 (2019).
- 8 Students are matched according to race and ethnicity, English language ability, and income. While this quasi-experimental technique is not as strong as random assignment to treatment and control groups, comparing students in this manner helps mitigate the impact of potential selection bias.
- 9 See: Clifford Adelman. "Answers in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment." (Washington, DC: US Department of Education, 1999); Paul Attewell and others. "What is Academic Momentum? And Does it Matter?" *Educational Evaluation and Policy Analysis* 34.1 (2012); William Doyle. "Effect of Increased Academic Momentum on Transfer Rates: An Application of the Generalized Propensity Score." *Economics of Education Review* 30.1 (2011); and Xueli Wang. "Toward a Holistic Theoretical Model of Momentum for Community College Student Success." *Higher Education: Handbook of Theory and Research*. Springer, Cham, 2017.
- 10 Figures contained in slides presented at the Early College Joint Committee Meeting, February 18, 2021.
- 11 Kristina Zeiser and others. "The Impact of Early Colleges on Students' Postsecondary Education Trajectories: Can Early Colleges Overcome the (Supposedly) Diversionary Role of Community Colleges?" *Research in Higher Education* (2020).
- 12 For example, see: Luis Rivera and others. "Access to Dual Enrollment in the United States: Implications for Equity and Stratification." *Texas Education Review* (2019).
- 13 Andrea Berger and others. "Early College, Continued Success: Early College High School Initiative Impact Study." (Washington, DC: American Institutes for Research, 2014).
- 14 Figures contained in slides presented at the Early College Joint Committee Meeting, February 18, 2021.
- 15 For example, see: Timothy Weston and others. "Weed-Out Classes and their Consequences." *Talking about Leaving Revisited*. (New York, NY: Springer, 2019); Deborah Faye Carter and others. "Critical Examination of the Role of STEM in Propagating and Maintaining Race and Gender Disparities." *Higher Education: Handbook of Theory and Research* (2019); and Dorian McCoy and others. "Encouraged or Weeded Out: Perspectives of Students of Color in the STEM Disciplines on Faculty Interactions." *Journal of College Student Development* 58.5 (2017).
- 16 For example, see: Heather Coffey and others. "Growing them Early: Recruiting and Preparing Future Urban Teachers through an Early College Collaboration between a College of Education and an Urban School District." *Teacher Education Quarterly* 46.1 (2019); and Angela Valenzuela. "Grow Your Own Educator Programs: A Review of the Literature with an Emphasis on Equity-Based Approaches." (San Antonio, TX: Equity Assistance Center Region II, 2017).
- 17 The Parthenon report indicates approximately 10,000 additional completions were needed to meet the goal of 60 percent of Massachusetts residents ages 25 to 35 holding a post-secondary degree, with 3,500 additional completions among underserved students doubling completion rates. The report estimates Early Colleges serving 16,000 students would help the state reach 20 percent of the workforce goal and 40 percent of the opportunity gap. See: "The Degree Gap: Honing In on College Access, Affordability, & Completion in Massachusetts." (Boston, MA: Massachusetts Department of Higher Education, 2016); and Kasia Lundy and Chris Librizzi. "Breaking Down Silos to Put Students on the Path to Success: The Promise of Early College in Massachusetts." (Boston, MA: Parthenon-EY, 2016).
- 18 This estimate assumes Early College produces 20 percentage-point gains in post-secondary completion relative to the 2012 cohort averages for Black and Hispanic students. Consistent with the evidence-based Early College design, this figure also assumes that all programs enroll students in grades nine through 12.
- 19 Clarisse Haxton and others. "Longitudinal Findings from the Early College High School Initiative Impact Study." *Educational Evaluation and Policy Analysis* 38.2 (2016).
- 20 This analysis slightly overstates how close programs are to providing students with an average of 30 credits because juniors and seniors makeup a very disproportionate share of enrollment. With the current grade mix, programs would need to award close to 29,000 credits annually to graduate students with an average of 30 credits. Our estimate of 120,000 credits for 16,000 students simply assumes 4,000 students per grade with each student completing an average of 7.5 credits annually to graduate with an average of 30.
- 21 Drew Atchison and others. "The Costs and Benefits of Early College High Schools." *Education Finance and Policy* (2019).
- 22 Rajashri Chakrabarti and others. "State Investment in Higher Education: Effects on Human Capital Formation, Student Debt, and Long-Term Financial Outcomes of Students." *Working Paper 27885*. (Cambridge, MA: National Bureau of Economic Research, 2020).
- 23 Tempestt and others. "That's the Point of Going': A Qualitative Inquiry into the Experiences of Black Males at an Early College High School." *Journal of Advanced Academics* 31.1 (2020).
- 24 Angela Johnson and Diana Mercado-Garcia. "The Effects of Early College Opportunities on English Learners." EdWorkingPaper No. 20-232. (Providence, RI: Brown University, 2020).
- 25 ELLs are a very diverse group with varying linguistic and cultural backgrounds, educational histories, and socio-emotional needs. Particularly care should be taken when extrapolating from this study since it examined the experience of students in just one community.
- 26 For a review of this research, see: Anne-Marie Núñez and others. "English Learners and their Transition to Postsecondary Education." *Higher Education: Handbook of Theory and Research* (2016).
- 27 Peter Levine and others. "MassForward: Advancing Democratic Innovation and Electoral Reform in Massachusetts." (Boston, MA: MassINC, 2019).
- 28 This count of Boston high schools includes only those with at least 400 students total. Boston has a total of 29 majority-minority high schools without an Early College partnership. They enroll a total of 12,500 students.
- 29 Sean Anthony Simone. "Transferability of Postsecondary Credit Following Student Transfer or Coenrollment. Statistical Analysis Report. NCES 2014-163." *National Center for Education Statistics* (2014).
- 30 Funded at approximately \$2.5 million for the past two fiscal years, the Early College Programs (7009-6600) line item provides resources for program administration at both the state and high school level, as well as startup grants. Note that this line item is not utilized for higher education reimbursements. DHE draws from the Dual Enrollment Grants and Subsidies (7066-0019) line item to cover these expenses.
- 31 For example, see: Meagan Wilson. "Transfer Pathways to Independent Colleges." (New York, NY: ITHAKA S+R, 2020); and "Transfer and Articulation - All State Profiles." (Denver, CO: Education Commission of the States, 2020).
- 32 Auxiliadora Sales and others. "Participatory Action Research: A Case Study on the School Democratisation Process." *Research Papers in Education* (2020); Jenice View and others. "Equity Audit: A Teacher Leadership Tool for Nurturing Teacher Research." *The Educational Forum* 80.4 (2016).
- 33 Kennedy O. Ongaga. "Students' Learning Experiences in an Early College High School." *Peabody Journal of Education* 85.3 (2010).

MassINC

11 Beacon Street, Suite 500
Boston, MA 02108
massinc.org | massincpolling.com
@massinc | @massincpolling

AUTHORS

Benjamin Forman
Simone Ngongi-Lukula

ACKNOWLEDGEMENTS

We would like to express our gratitude to the State Street Foundation for providing generous financial support to make this nonpartisan research possible. We are also very grateful to Kristen Almquist-Cevallos, Erik Miller, Jesse Solomon, and Colleen Coffey for participating in interviews and sharing program data. Finally, we are deeply indebted to Pierre Lucien. This analysis draws heavily on the research and data he has expertly prepared for the Massachusetts Department of Elementary and Secondary Education.

ABOUT MASSINC

Founded in 1996, MassINC's mission is to provide the people of Massachusetts with the information they need to participate fully in our democracy. We are a nonpartisan 501c3 and achieve impact through independent research, nonprofit journalism, and civic engagement.