

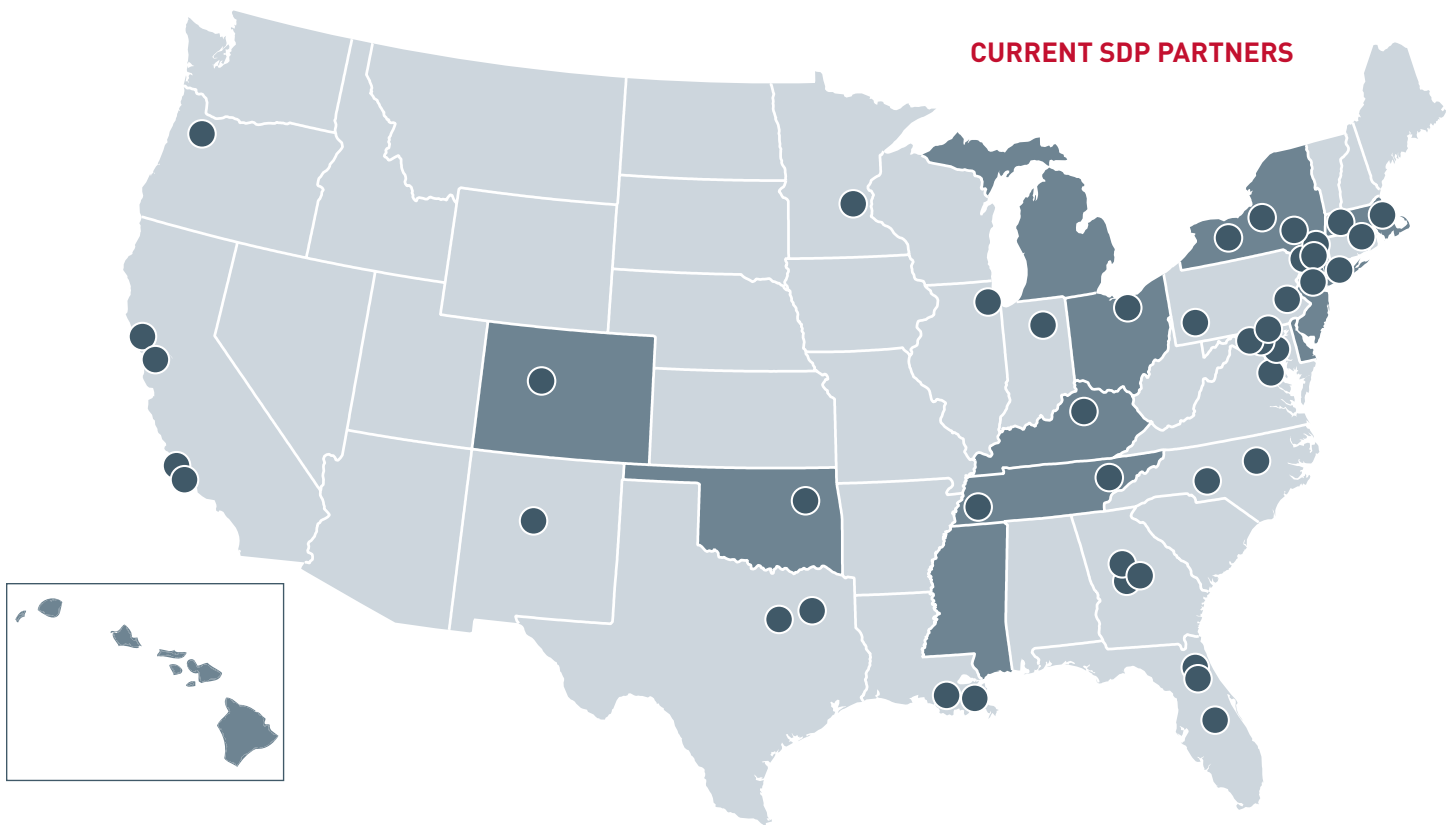
STRATEGIC **DATA** PROJECT

SDP COLLEGE-GOING DIAGNOSTIC

Massachusetts Department of Elementary
and Secondary Education

June 2014





THE STRATEGIC DATA PROJECT (SDP)

Since 2008, SDP has partnered with 56 school districts, charter school networks, state agencies, and nonprofit organizations to bring high-quality research methods and data analysis to bear on strategic management and policy decisions. Our mission is to transform the use of data in education to improve student achievement.

Part of the Center for Education Policy Research at Harvard University, SDP was formed on two fundamental premises:

1. Policy and management decisions can directly influence schools' and teachers' ability to improve student achievement.
2. Valid and reliable data analysis significantly improves the quality of decision making.

SDP's theory of action is that if we are able to bring together the right people, assemble the right data, and perform the right analysis, we can help leaders make better decisions—ultimately improving student achievement significantly.

To make this happen, SDP pursues three strategies:

1. Building a network of top-notch data strategists who serve as fellows for two years with our partners (e.g., school district, charter management organization, nonprofit, or state education agency).
2. Conducting rigorous diagnostic analyses of teacher effectiveness and college-going success using agency data.
3. Disseminating our tools, methods, and lessons learned to the education sector broadly.

The project is supported by the Bill & Melinda Gates Foundation.

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Introduction and Background

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A few generations ago, a high school diploma opened the door to skilled jobs and middle-class earnings. Today, a college diploma is just as essential. Postsecondary education, whether in the form of a two- or four-year college or a technical program, has become a critical step to achieving stable employment and financial security. These trends, coupled with the fact that an individual with a bachelor's degree will earn approximately \$844,000 more, on average, over his or her lifetime than a high school graduate, underscore the importance of preparing students to graduate from high school with the knowledge and skills to successfully complete higher education (U.S. Census Bureau, 2009).

Given these patterns, we at the Strategic Data Project (SDP) designed a set of analyses called the SDP College-Going Diagnostic as a means to:

1. better inform leaders of school districts and state education agencies about the college-going outcomes of their students, and
2. identify potential areas for action to increase students' levels of academic achievement, preparedness for college, and postsecondary educational attainment.

The SDP College-Going Diagnostic, summarized in this report, is part of a partnership between the Strategic Data Project at the Center for Education Policy Research (CEPR) and the Massachusetts Department of Elementary

and Secondary Education that aims to use data and analysis to inform policy and management decisions. It is neither an exhaustive set of analyses nor a set of specific recommendations for the state to implement. Rather, the diagnostic is a collection of analyses that can help high schools, districts, and the state better understand their current performance, set future goals, and plan responses strategically. Additionally, the diagnostic is meant to demonstrate more broadly how education agencies can capitalize on existing data to inform decision making.

To conduct the diagnostic analyses, researchers connected individual student data, such as school enrollment and demographic characteristics, to college enrollment records, allowing student outcomes to be tracked beyond high school and into college. This report examines key findings related to students' college enrollment and college persistence patterns, and compares these patterns across a variety of student characteristics and academic experiences. The report highlights results primarily at the state level and, for illustrative purposes, for a handful of school districts and high schools. The state's newly designed District Analysis and Review Tool (DART) Detail: Success After High School¹ includes findings from some of these analyses for individual high schools as well as student cohorts. The DART also allows users to disaggregate results by student subgroups, such as race/ethnicity, low-income status, and English language learner status, and to display results for a given school, its comparable schools, and for the state as a whole. This setup enables education leaders not only to examine student performance over time and for specific student groups but also to compare trends and outcomes in their own organization with those in similar organizations across the state.

The report is organized as follows: Section I provides an overview of student educational attainment in Massachusetts across the entire college-going pathway—from entering ninth grade through persisting to the second year of college. Section II examines college enrollment across the state as well as discrepancies between students' stated plans to attend college at the time of high school graduation and their actual college enrollment outcomes. The last section of the report highlights results related to college persistence.

The analyses were completed by members of the research team at the Center for Education Policy Research at Harvard University with the support of staff and SDP Fellows at the Massachusetts Department of Elementary and Secondary Education.

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Key Findings

Section I. Student Progression From Ninth Grade Into College

- Just under half of all ninth graders at Massachusetts public high schools complete high school within five years, seamlessly enroll in college, and persist to their second year of college.
- High school graduation, college enrollment, and second-year college persistence vary widely both across school districts and across student subgroups.
- Low-income students are far less likely to enroll and persist in college than their peers from higher-income families.

Section II. College Enrollment

- Of high school graduates, 67% enroll in college the first fall after graduation. Another 5% delay enrollment until the second fall.
- Low-income graduates are more likely to enroll at a two-year college, but less than half as likely to enroll at a four-year college as graduates from higher-income families.
- More than one fifth of high school graduates planning to attend college fail to enroll anywhere in the fall.
- For low-income students, the summer after high school graduation poses a formidable barrier: More than one third of low-income college-intending graduates do not enroll anywhere in the fall.

Section III. College Persistence

- Students at four-year colleges are considerably more likely to persist to the second year of college: On average, 92% persist to their second fall in college, compared with 65% of students enrolled at two-year colleges.
- Persistence rates of four-year college-goers are higher than those of two-year college-goers among both low-income students and students from higher-income families.
- Students who enroll in college seamlessly after high school graduation are more likely to persist than students who delay college enrollment, regardless of low-income status.

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Analyses: Student Progression From Ninth Grade Into College

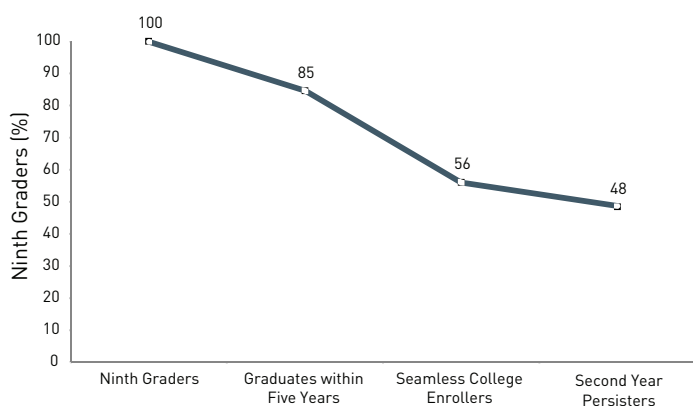
The analyses in this section provide an overview of student performance in Massachusetts across the entire college-going pathway—from entering ninth grade through persisting to the second year of college. These analyses focus on individual cohorts of first-time ninth graders and track the percentage of these ninth graders who complete high school within five years, enroll in college seamlessly (that is, the first fall after high school graduation), and persist to the second year of college. We find that while the rates of high school graduation, college enrollment, and college persistence in Massachusetts are higher than the national average rates, there is considerable disparity across districts, high schools, and student subgroups.

Overall, for every 100 first-time ninth graders who enrolled in a public high school in the state of Massachusetts in 2006–07, 85 completed high school within five years, 56 seamlessly transitioned to college, and 48 persisted to the second year of their postsecondary studies (Figure 1). In comparison, for every 100 ninth graders nationwide, roughly 78 graduate high school within four years, 53 immediately enroll in college, and 35 persist to their second year (U.S. Department of Education, National Center for Education Statistics, 2012a,b,c).² (National high school graduation outcomes are reported only as of four-year graduation rates; for comparison, the corresponding four-year high school graduation rate in Massachusetts is 82%.)

Just under half of all ninth graders at Massachusetts public high schools complete high school within five years, seamlessly enroll in college, and persist to their second year of college.

Additional analyses indicate that, at the state level, the average rates of high school graduation, college enrollment, and college persistence are very stable across the ninth-grade cohorts of 2004–05, 2005–06, and 2006–07. In all cases, the between-cohort differences in these rates are smaller than one percentage point. In addition, the “DART Detail: Success After High School” provides findings from this analysis updated for the most recent cohort of ninth graders for whom data are available—students who entered high school in 2007–08.

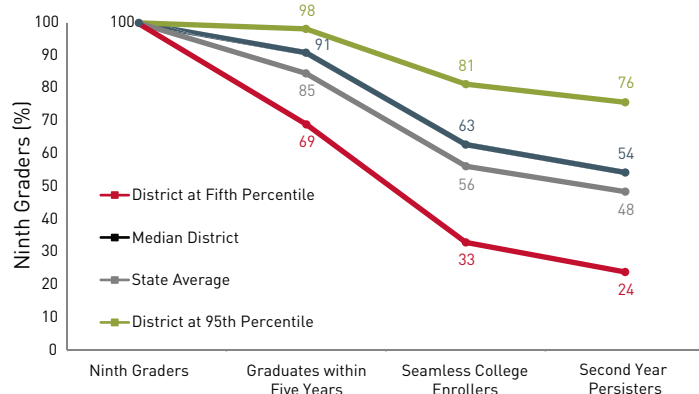
Figure 1. Student Progression from Ninth Grade into College, State Average Rates



Note: The sample includes 76,345 2006–07 first-time ninth graders in Massachusetts (28,929 low-income students and 47,416 not-low-income students).

College enrollment and second-year college persistence vary widely across school districts in the state.

Figure 2. Student Progression From Ninth Grade Into College, by School District



Note: The sample includes 76,345 2006–07 first-time ninth graders in Massachusetts (28,929 low-income students and 47,416 not-low-income students).

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Analyses: Student Progression From Ninth Grade Into College

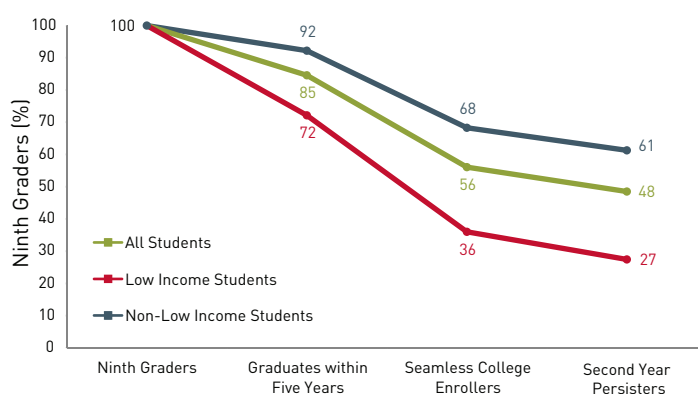
While the average rates of high school graduation, college enrollment, and college persistence in Massachusetts are all higher than the respective national rates, these outcomes are far from uniform across the state. Students from different school districts often progress along the educational pipeline at vastly different rates. To illustrate the vast cross-district variation in the shares of students reaching each stage of the college-going pathway, in Figure 2 we show the average rates of ninth graders who successfully attain each outcome (high school graduation, college enrollment, and college persistence) for three districts: the district in which the percentage of students attaining a given outcome, such as high school graduation, is higher than the corresponding percentages in only 5% of the other districts in the state (i.e., the 5th-percentile district); the district in which the percentage of students attaining a given outcome is higher than those in half of all remaining districts (the median district); and the district in which the percentage of students attaining a given outcome is higher than those in 95% of the other districts (the 95th-percentile district).

The gap between low-performing and high-performing districts in the percentages of ninth graders who successfully navigate the college-going pathway is already sizable at high school graduation and continues to increase for college enrollment and college persistence. For example, in the high-performing school district (i.e., the 95th-percentile district), nearly all ninth graders graduate from high school within five years, compared with seven out of ten of their peers in the low-performing 5th-percentile district. Furthermore, more than three quarters of ninth graders in districts at the 95th percentile not only enroll in college seamlessly but also persist to the second year of college. In contrast, at the 5th-percentile district, only one third of ninth graders enroll in college upon high school graduation, and one quarter return to college the second year.

Student success through high school graduation and beyond is influenced by a multitude of factors, including students' demographic and socioeconomic characteristics, such as family income. Therefore, using student eligibility for free or reduced-price lunch (FRPL) as a measure of family income, in Figure 3 we examine the success of students with different family income levels in navigating major milestones along the college-going trajectory. We find that, on average, across the state, economically disadvantaged students—those eligible for FRPL—are considerably less likely to complete high school within five years, to enroll in college, and to persist in college than their peers from higher-income families. In fact, low-income students enroll and persist in college at less than half the rates of students who do not qualify for FRPL. For example, only 27% of low-income ninth graders persist to their second year of college, compared with 61% of ninth graders from higher-income families.

Low-income students are far less likely to enroll and persist in college than students from higher-income families.

Figure 3. Student Progression From Ninth Grade Into College in Massachusetts, by Student Low-Income Status



Note. The sample includes 76,345 2006–07 first-time ninth graders in Massachusetts (28,929 low-income students and 47,416 not-low-income students).

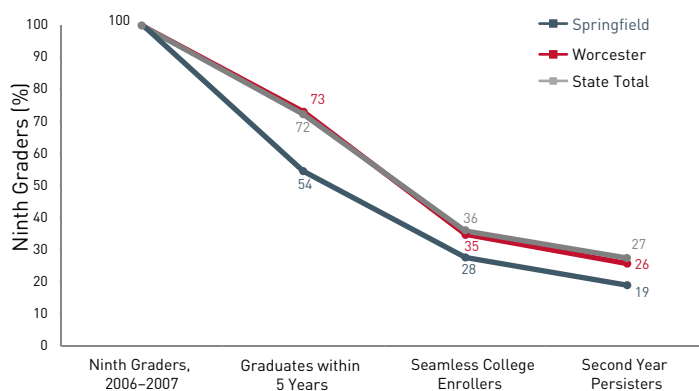
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Analyses: Student Progression From Ninth Grade Into College

Even among low-income students, performance along the college-going pathway may vary considerably across the state. For example, in Figure 4 we show results for low-income students from two of the largest school districts in the state: Worcester and Springfield. The two districts enroll similar numbers of students—about 25,000 students and about 1,900 ninth graders each. A quarter of their ninth graders have disabilities, and the vast majority come from low-income families: 78% of ninth graders in Worcester and 82% in Springfield are eligible for FRPL.

As Figure 4 shows, however, low-income ninth graders in the two districts navigate the college-going pathway with different levels of success. Low-income ninth graders in Worcester Public Schools graduate from high school, enroll in college, and persist in college at rates very similar to their low-income peers statewide. Meanwhile, low-income ninth graders in Springfield Public Schools are more likely to struggle with each stage of the pathway. Just over half of low-income ninth graders in Springfield graduate from high school in five years, compared with nearly three quarters in Worcester. Furthermore, 28% of low-income ninth graders in Springfield enroll in college and only 19% persist to the second year of college, compared with 35% and 26%, respectively, among their low-income peers in Worcester.

Figure 4. Student Progression From Ninth Grade Into College, Among Low-Income Students: Worcester Public Schools, Springfield Public Schools, and Statewide



Note. This sample includes 76,345 2006-07 first-time ninth graders in Massachusetts, 1,916 2006-07 first-time ninth graders at Worcester Public Schools, and 1,922 2006-07 first-time ninth graders at Springfield Public Schools.

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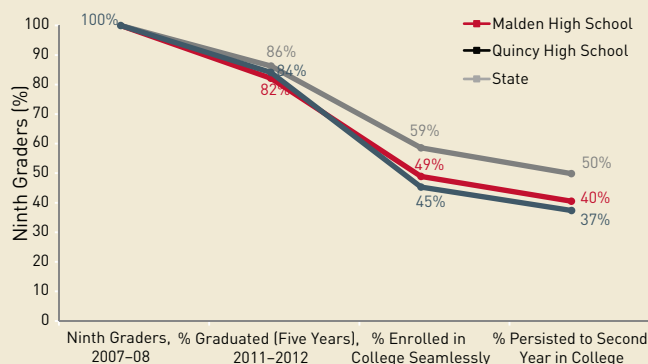
Analyses: Student Progression From Ninth Grade Into College

DIG DEEPER: DART SCHOOL COMPARISON

Aggregating results even at the district level may obscure differences in the performance of students from similar family income backgrounds who attend different high schools. The “DART Detail: Success After High School” therefore allows education leaders to dig deeper and examine school-level differences in outcomes—and potentially identify other schools with promising practices that may drive improved outcomes among students similar to those at their own schools. The DART disaggregates results by student subgroups and allows state averages and results for comparable schools to be displayed side by side. Furthermore, it suggests schools that are considered “comparable” based on an algorithm that incorporates student enrollment counts and demographic characteristics. Users may select to compare results for a suggested comparable school or at another school of their choice.

To illustrate, in Figures 5A and 5B below we show results for two high schools suggested as comparable by the DART—Malden High School and Quincy High School. Both schools are located in the Greater Boston area. Malden High School enrolls 1,800 students, of whom 59% come from low-income backgrounds. Quincy High School serves nearly 1,700 students, and just over half of its students are low income.

Figure 5A. Student Progression From Ninth Grade Into College: Malden High School, Quincy High School, and Statewide

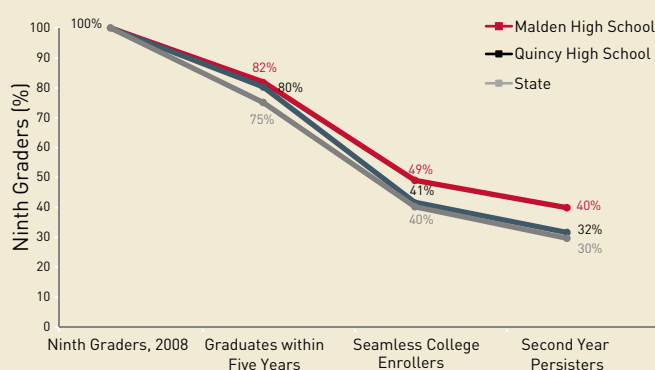


Source: “DART Detail: Success After High School.”
 Note. This sample includes 74,307 2007-08 first-time ninth graders in Massachusetts, 504 2007-08 first-time ninth graders at Malden High School, and 366 2007-08 first-time ninth graders at Quincy High School.

As Figure 5A shows, ninth graders at both schools are less successful in navigating the college-going pathway than their average peer across the state. For example, half of all ninth graders who entered Massachusetts public high schools in 2007-08 graduated within five years, enrolled in college, and persisted to the second year of their postsecondary studies. However, only 40% of their peers at Malden High School and 37% at Quincy High School did so.

At the same time, the performance of these two schools relative to the state and to each other looks quite different if we focus on low-income students (see Figure 5B). At Quincy High School—as well as in the state as a whole—low-income students graduate high school, and enroll and persist in college at rates lower than the average rates of the school and the state, respectively. At Malden High School, however, there are no differences in the success with which low-income students, on one hand, and all students, on the other, navigate each milestone of the college-going pathway. Low-income ninth graders at Malden High School graduate from high school and enroll and persist in college at rates identical to the overall school average rates.

Figure 5B. Student Progression From Ninth Grade Into College, Among Low-Income Students: Malden High School, Quincy High School, and Statewide



Source: “DART Detail: Success After High School.”
 Note. This sample includes 74,307 2007-08 first-time ninth graders in Massachusetts, 504 2007-08 first-time ninth graders at Malden High School, and 366 2007-08 first-time ninth graders at Quincy High School.

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Analyses: College Enrollment

Given the substantial economic and social benefits of a college degree, understanding patterns in student performance in terms of college enrollment across Massachusetts is essential. The first half of this section therefore highlights key findings from the diagnostic analyses of students' college enrollment outcomes in the state. We examine college enrollment separately by type of postsecondary institution (two-year and four-year) and by timing of initial enrollment (seamless and delayed).

For many high school graduates, however, college acceptance is just the first of many hurdles on the road to postsecondary success. Considerable shares of college-intending high school graduates actually fail to matriculate to college in the fall, particularly among low-income students. The second half of this section thus makes use of the state's detailed data on high school graduates' plans as of the end of their senior year to investigate the extent to which this attrition, also known as summer melt, occurs across the state.

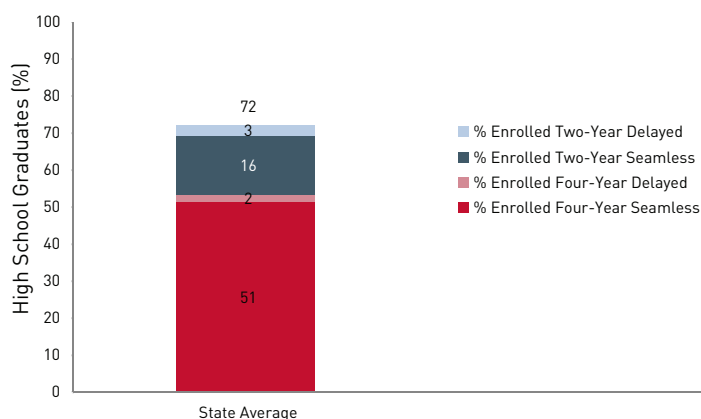
Finally, as with the analyses of student progression along the college-going pathway in Section I, the "DART Detail: Success After High School" provides detailed findings of college enrollment at the state level as well as for individual high schools and cohorts. In the DART, college enrollment rates are reported separately by type of postsecondary institution; they capture any enrollment over the span of 16 months from students' high school graduation instead of as of the first fall. Due to this and other definitional differences, the results discussed in this brief may diverge slightly from those reported in the DART.

Part 1. Overall College Enrollment Outcomes

In Figure 6, we show college enrollment rates at the state level for students who completed high school in 2009–10.³ (Unlike the analyses discussed in Section I, all college enrollment analyses in this section focus only on students who have graduated from high school; students who dropped out are excluded.) In Figure 6, the percentages of high school graduates who enrolled at four-year colleges are shown in red; the percentages of graduates opting for two-year college enrollment are shown in blue. In addition, four-year college enrollment and two-year college enrollment are shaded differently to reflect differences in the timing of initial enrollment. The percentages of students who enrolled at four-year colleges and at two-year colleges seamlessly—that is, the first fall after high school graduation—are displayed in darker shades of red and blue, respectively. The shares of their classmates who enrolled at the same types of colleges but who delayed

Sixty-seven percent of high school graduates enroll in college the first fall after graduation. Another 5% delay enrollment until the second fall.

Figure 6. State Average College Enrollment Rates for 2009–10 High School Graduates



Note. This sample includes 64,614 2009–10 high school graduates in Massachusetts (20,887 low-income graduates and 43,727 not-low-income graduates). Only students who graduated high school within five years are included.

enrollment by a year are shown in pale red and pale blue.

On average, two thirds (67%) of high school graduates in the state enroll in college seamlessly: 51% enroll seamlessly at four-year colleges, and 16% enroll seamlessly at two-year colleges. The share of graduates who delay enrollment in any type of college by a year is considerably lower: 2% percent of students are delayed enrollers at four-year colleges, and 3% are delayed enrollers at two-year colleges. Overall, 72% of high school graduates in the state enroll in some type of college within two years of high school graduation.

Consistent with the findings highlighted in Section I, high school graduates' college enrollment outcomes are not uniform across the state. For example, they vary dramatically depending on students' family income backgrounds. On average, 58% of low-income students enroll at some type of college by the second fall, compared with 79% of their classmates from higher-income families (Figure 7). Furthermore, low-income students who do enroll in college appear to make different college choices than their classmates from more privileged backgrounds. They are more likely to enroll seamlessly at a two-year

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Analyses: College Enrollment

college but less than half as likely to enroll at a four-year college compared with their peers who are not low income. Low-income students are also more likely to postpone college enrollment until the second fall after their high school graduation.

Part 2. High School Completion Plans and Actual College Enrollment

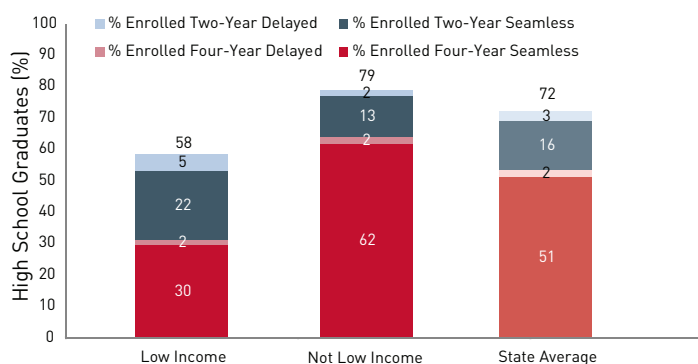
Sizeable attrition among college-bound high school graduates, also known as summer melt, tends to occur during the summer months after high school graduation, particularly among low-income students.⁴ The summer between high school and college is typically a crucial period when students who have been admitted to college encounter an array of logistical and administrative steps necessary for college matriculation, such as securing housing, completing financial aid paperwork, paying a term bill, and registering for courses. No longer benefiting from the help of their high school counselors and often coming from families with no prior experience with the college-going process, college-bound graduates may struggle to complete these tasks, which, come the fall, often derails their plans to attend college.

The remainder of this section makes use of the state's detailed data on high school graduates' plans, collected as part of its SIMS data collection process. To investigate the extent to which students who are noted in the data as intending to attend college actually matriculate in the fall, we linked the data on post-high-school plans to actual college enrollment records from the National Student Clearinghouse. Below we highlight broadly the extent to which we observe summer melt across the state and among students with different family income backgrounds.

Figure 8 shows state-level findings on the discrepancies that exist between high school graduates' college enrollment plans and their actual college matriculation outcomes in the fall. In the figure, we plot actual college enrollment outcomes (enrollment at four-year colleges, enrollment at two-year colleges, and no enrollment at any college) for three groups of students: students planning to attend two-year colleges (right bar), students planning to attend four-year colleges (middle bar), and students planning to attend any type of college—a category that combines four-year-college-bound and two-year-college-bound students (left bar).

Low-income high school graduates are more likely to enroll at a two-year college, but less than half as likely to enroll at a four-year college as their peers from higher-income families.

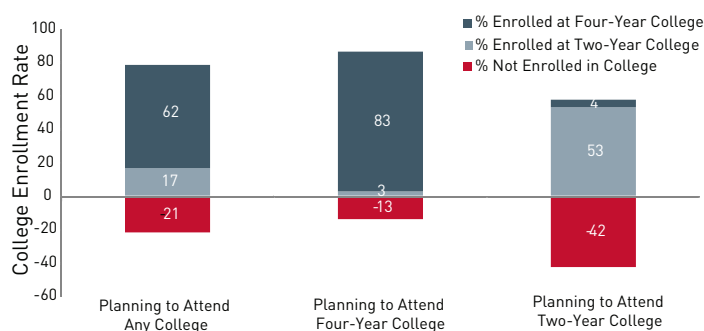
Figure 7. State Average Enrollment Rates for 2009–09 High School Graduates, by Student Low-Income Status



Note. This sample includes 64,614 2009–10 high school graduates in Massachusetts (20,887 low-income graduates and 43,727 not-low-income graduates). Only students who graduated high school within five years are included.

Four out of 10 high school graduates planning to attend a two-year college fail to enroll anywhere in the fall.

Figure 8. College Enrollment Outcomes for 2009–10 High School Graduates in Massachusetts, by Plans to Attend College at High School Completion



Note. This sample includes 52,768 2009–10 high school graduates with high school completion plans stating intention to enroll in college (15,005 low-income students and 37,763 not-low-income students). Only students who graduated high school within five years are included.

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Analyses: College Enrollment

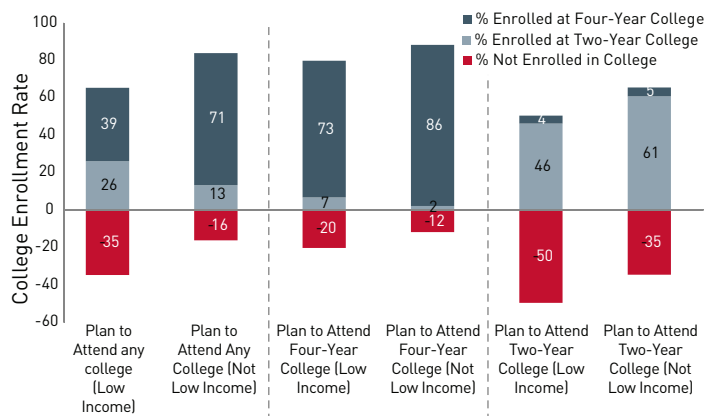
Overall, we find that more than 21% of all high school graduates who at the end of their senior year were identified as planning to enroll in some type of college fail to do so (left bar). This is comparable to the rates of summer melt that research conducted by CEPR has uncovered in other parts of the country: Using data from three large school districts and from a national longitudinal survey, CEPR researchers estimate summer melt rates ranging from 10% to 40% of college-intending students (Castleman, Page, & Snowden, 2013; Castleman & Page, 2013; Matthews, Schooley, & Vosler, 2011; Daugherty, 2012).

As Figure 8 also shows—and again consistent with previous CEPR research findings—Massachusetts high school graduates who planned to enroll at two-year colleges are considerably more likely to experience summer melt than their classmates bound for four-year colleges: 42% of graduates planning to enroll at two-year colleges fail to matriculate anywhere in the fall, compared with 13% of their peers who planned to enroll at four-year colleges.

Tackling summer-time tasks essential for college enrollment may be particularly daunting for students whose families have little experience with or knowledge

For low-income students, the summer after high school graduation poses a formidable barrier to college matriculation.

Figure 9. College Enrollment Outcomes for 2009–10 High School Graduates in Massachusetts, by Plans to Attend College at High School Completion and by Student Low-Income Status



Note. This sample includes 52,768 2009–10 high school graduates with high school completion plans stating intention to enroll in college (15,005 low-income students and 37,763 not-low-income students). Only students who graduated high school within five years are included.

of the college-going process—such as students from low-income backgrounds or students who are the first in their families to pursue higher education. In Figure 9, we examine whether students from different family income backgrounds experience different rates of summer melt. Using a setup similar to that of Figure 8, in Figure 9 we show actual college enrollment outcomes by the type of postsecondary institution that students are planning to attend, but here we also separate results by students’ low-income status.

Overall, regardless of the type of college that high school graduates plan to attend, low-income students are considerably more likely to fall through the cracks: More than one third of all low-income students noted as intending to pursue higher education did not enroll anywhere—a share twice as high as the summer melt rate among their higher-income peers. Similar patterns are evident when we disaggregate results by type of college. Among students bound for two-year colleges, for example, half of low-income students do not matriculate anywhere in the fall, compared with just over one third of their peers from higher-income families. Among graduates with intentions to pursue four-year college enrollment, 20% of low-income students fail to enroll anywhere, compared with 12% of their classmates from more privileged backgrounds.

While the current version of the “DART Detail: Success After High School” does not include summer melt analyses, we encourage district and school officials to examine college enrollment rates in the DART in conjunction with district- and school-level summaries of high school graduate plans⁵ published separately by the Massachusetts Department of Elementary and Secondary Education. Deeper investigations into the discrepancy between students’ college intentions and their actual college enrollment may shed light on the degree to which summer melt is prevalent in a given agency and present valuable opportunities for district and school officials to uncover and adopt strategies to help their students translate college enrollment plans into reality. Strategies that promote college matriculation and support students in navigating informational and administrative barriers span a wide array of policies and practices—from intensive and proactive personal outreach efforts to “light-touch” digital media campaigns—and can be modified and adopted to suite the context and resources of individual agencies.

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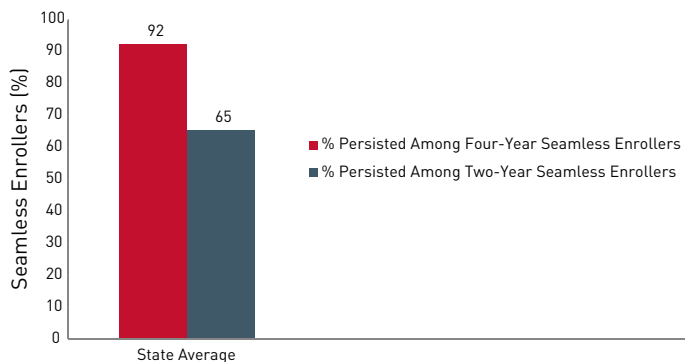
Analyses: College Persistence

In the final section of this report, we focus on the extent to which Massachusetts high school graduates are experiencing successful college careers beyond their initial enrollment at a postsecondary institution. Our main indicator of college success beyond initial enrollment is college persistence—that is, the rate at which high school graduates who enroll in college continue to attend college for a second consecutive year. Patterns of persistence to the second year of college may provide valuable and early indicators of student progress towards college degree attainment. As with college enrollment, we examine persistence outcomes across the state separately by type of college, by timing of initial enrollment, and by student low-income status. The “DART Detail: Success After High School” also reports college persistence findings at the state level and for individual high schools and cohorts but does not disaggregate results by type of postsecondary institution or by timing of enrollment. Due to such analytical as well as definitional differences, persistence rates in this brief may differ from those reported in the DART.

In Figure 10, we show the state average college persistence rates for seamlessly enrolled students separately by the type of postsecondary institution in which students initially matriculate. Persistence rates are displayed in red for four-year-college-goers and in blue

Students at four-year colleges are considerably more likely to persist to the second year of college than students at two-year colleges.

Figure 10. College Persistence Rates for 2009–10 High School Graduates in Massachusetts, by College Type of Initial Enrollment



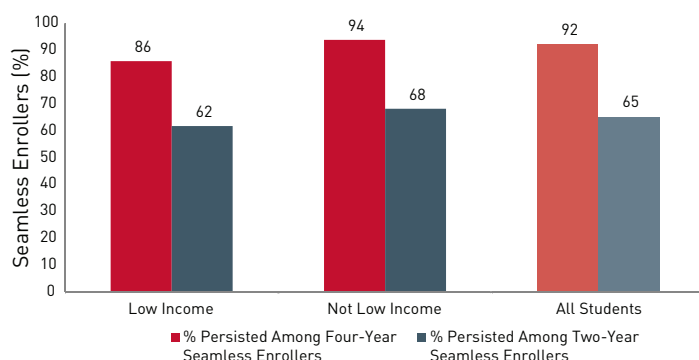
Note. This sample includes 43,371 2009–10 high school graduates who are seamless enrollers at four-year colleges (33,172) or at two-year colleges (10,199). Only students who graduated high school within five years are included.

for two-year-college-goers. These persistence rates are not contingent on students maintaining enrollment at the same institution or the same type of institution from one year to the next; we consider students to have persisted to the second year if we observe them enrolled at any college over the course of two subsequent years.

Across the state, college persistence rates for students who seamlessly enroll at four-year colleges are considerably higher than for their peers enrolled at two-year colleges. On average, 92% of students at four-year colleges persist to their second fall in college, compared with 65% of those enrolled at two-year colleges—a 27-percentage-point difference. At the same time, students who enroll in two-year colleges tend to have different characteristics that are also related to college persistence—for example, they are more likely to come from low-income families and less likely to have done well in school than their classmates pursuing four-year colleges. Analyses that account for such differences in socioeconomic background and prior academic achievement yield a diminished, albeit still considerable persistence gap of 23 percentage points between four-year- and two-year-college-goers (not shown).

Persistence rates of four-year-college-goers are higher than those of two-year-college-goers among both low-income students and students from higher-income families.

Figure 11. College Persistence Rates for 2009–10 High School Graduates in Massachusetts, by Low-Income Status and College Type of Initial Enrollment



Note. This sample includes 43,371 2009–10 high school graduates who are seamless enrollers at four-year colleges (33,172) or at two-year colleges (10,199). Only students who graduated high school within five years are included.

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Analyses: College Persistence

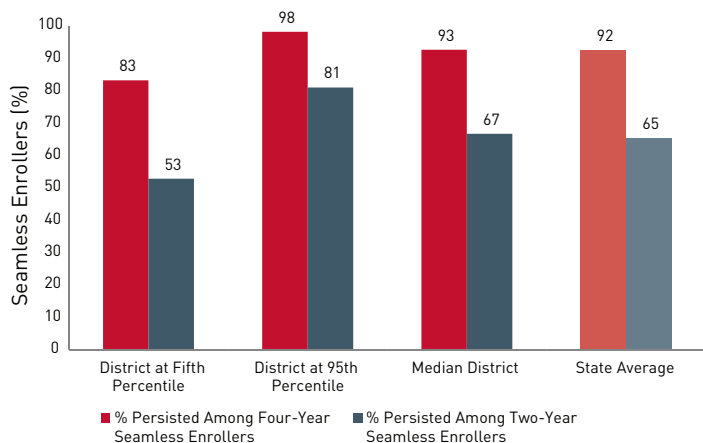
As with college enrollment, the state average college persistence rate may mask differences in persistence between students with different characteristics as well as across districts in the state. In Figure 11, we show persistence rates for seamless enrollers by college type separately for students with different family income levels. Among both low-income and higher-income students, those enrolled at four-year colleges are more likely to persist than their peers enrolled at two-year postsecondary institutions. For example, 86% of low-income four-year-college-goers and 94% of four-year-college-goers from higher-income families return to college for the second fall. In contrast, students at two-year colleges persist at considerably lower rates, regardless of their family income status: On average, 62% of low-income students and 68% of higher-income students enrolled at two-year colleges persist to a second year in college.

To highlight variability of college persistence rates across school districts in Massachusetts, in Figure 12 we show the average persistence rates of college-goers in school districts at the 5th percentile, at the median, and at the 95th percentile of all districts with at least 20 students enrolled in each type of college. The persistence rates among students seamlessly enrolled in college vary across the state for both two-year colleges and four-year colleges. At the same time, however, these rates vary to a lesser degree than the vast cross-district differences in persistence displayed in Figure 2 (where the focus of analysis was the ninth-grade cohort). As Figure 12 demonstrates, 83% of college students at four-year institutions who graduated from the 5th-percentile district persisted to the second year of college, compared with 98% of their peers from the 95th-percentile district. Among students enrolled at two-year institutions, this gap is larger: About five out of 10 (53%) two-year-college-goers from the 5th-percentile district persist to the second year, compared with about eight in 10 (81%) college-goers from the 95th-percentile district.

College persistence rates vary across school districts in the state for both students at four-year colleges and students at two-year colleges.

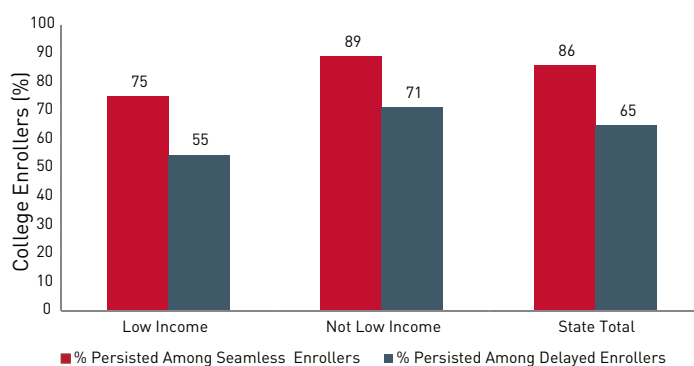
Students who enroll in college seamlessly after high school graduation are more likely to persist than students who delay college enrollment, regardless of low-income status.

Figure 12. College Persistence Rates for 2009–10 High School Graduates in Massachusetts, by School District and College Type of Initial Enrollment



Note. This sample includes 43,371 2009–10 high school graduates who are seamless enrollers at four-year colleges (33,172) or at two-year colleges (10,199). Only students who graduated high school within five years are included.

Figure 13. College Persistence Rates for 2008–09 High School Graduates in Massachusetts, by Low-Income Status and Timing of Initial College Enrollment



Note. This sample includes 46,512 2008–09 high school graduates who are either seamless college enrollers (43,231) or delayed college enrollers (3,281). Only students who graduated high school within five years are included.

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Analyses: College Persistence

In Figure 13, we display college persistence rates for students enrolled in any type of college (two-year or four-year), separately by the timing of their initial college enrollment. Persistence rates for students who enroll in college seamlessly (that is, the first fall following their high school graduation) are displayed in dark red. Persistence rates for students who delay college enrollment until the second fall are shown in green. As in previous figures, persistence rates are not dependent on students maintaining enrollment at the same postsecondary institution or the same type of institution from one year to the next.

Across Massachusetts, on average, persistence rates are substantially higher among seamless enrollers than among their classmates who delay enrollment to the second fall after high school graduation. Overall, 86% of seamless enrollers persist to their second year of college; in contrast, only 65% of delayed enrollers return for a second year of college—a difference of 21 percentage points. Accounting for differences in student socioeconomic status and academic achievement reduces seamless enrollers' "advantage" in persistence rates to 17 percentage points (not shown). Delayed enrollers are also considerably more likely to enroll at two-year colleges than their peers who go to college seamlessly: More than half of delayed enrollers opt for two-year colleges, compared with one quarter of seamless college-goers (not shown).

Finally, while low-income college-goers persist at generally lower rates than their higher-income peers, within both groups seamless enrollers are more likely to persist than students who delay enrollment. For example, 75% of low-income seamless college enrollers persist to their second year of college, compared with 55% of their low-income classmates who delayed enrollment. Similarly, 89% of seamless enrollers from higher-income families persist, compared with 71% of delayed college-goers from higher-income backgrounds.

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Appendix I. Data Sources

Which Students are Included in These Analyses?

Most analyses in the Massachusetts College-Going Diagnostic were conducted separately for either three consecutive cohorts of first-time ninth graders or three cohorts of high school graduates from Massachusetts public high schools. Because results change little across cohorts, at least at the state level, in this report we highlight results from each analysis for only one cohort.

Section I reports findings for the cohort of ninth-grade students who entered high school in 2006–07. The analyses of college enrollment and persistence in Sections II and III focus primarily on the cohort of high school graduates who completed high school in 2009–10. Note that for the purposes of these analyses, high school graduate cohorts include only students who completed high school within five years; high school graduates who took longer than five years to graduate are excluded from the analyses. In contrast, the “DART” includes all students who graduated high school in a given year, regardless of how long they took to graduate.

How Does the Strategic Data Project Know About the College Enrollment of High School Graduates in Massachusetts?

In partnership with the Massachusetts Department of Elementary and Secondary Education, we obtained college enrollment data by linking the state’s administrative student records to postsecondary enrollment data from the National Student Clearinghouse (NSC). NSC is a national nonprofit organization that provides postsecondary enrollment verification for colleges and universities. It maintains student enrollment records for over 3,500 institutions of higher education throughout the United States, including career and technical training institutes, as well as two- and four-year colleges and universities. Presently, NSC data covers institutions serving 96% of all postsecondary students nationwide and 94% of students enrolled at postsecondary institutions in Massachusetts.⁷ However, given that not all institutions are covered and that in a number of instances students may change names or request privacy blocks on their records, some students who attend college may be either not be matched with NSC enrollment records or not disclosed in student-level NSC records. Thus, actual enrollment rates are likely to be slightly higher than those shown in this report.

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Appendix II. SDP Definitions

High School Completion Rate

To calculate high school completion rates, we use the same cohort-based formula used by the Massachusetts Department of Elementary and Secondary Education. The formula is similar to the “compact rate” used by the National Governors Association and required for graduation-rate accountability by the No Child Left Behind Act.⁸ It divides the number of high school completers (students earning standard diplomas) by the number of first-time ninth graders four years earlier. To identify the number of first-time ninth graders four years earlier, we add together two groups of students: 1) students enrolled in ninth grade in a public high school in the state, and 2) students enrolled in ninth grade elsewhere who transfer into the Massachusetts public school system at some point during high school. We exclude from the calculation students who transfer out of the state between ninth and 12th grade.

College Enrollment Rate

We report on two college enrollment outcomes for students who earn high school diplomas: 1) enrollment in college the first fall following high school graduation (seamless enrollers) and 2) enrollment in college the second fall following high school graduation but not the first (delayed enrollers). To calculate seamless enrollment, we determine whether a student is enrolled in college as of October 1 of his or her high school graduation year. To calculate delayed enrollment rates, we determine whether a student is enrolled in college as of October 1 of the year following the calendar year of his or her high school graduation but is not enrolled as of October 1 of his or her high school graduation year.

The current edition of the “DART Detail: Success After High School” calculates the college enrollment rate as the share of high school graduates who enroll in postsecondary education within 16 months of graduating high school. As a result, findings highlighted in this brief may differ from those reported in the “DART.”

College Persistence Rate

We examine persistence rates in college for high school graduates who enroll in college. To calculate persistence rates, we determine whether a student remains enrolled in any college on October 1 one year following his or her initial enrollment date. Research suggests that students who seamlessly transition from high school to college are more likely to complete a degree than delayed college-goers. Thus, in some analyses we calculate rates separately for seamless college enrollers and delayed college enrollers (Adelman, 2006; Bozick & DeLuca, 2005; Horn, Cataldi, & Sikora, 2005).

The current edition of the “DART Detail: Success After High School” calculates college persistence rates as the share of high school graduates who enrolled in postsecondary education within 16 months of graduating high school and returned the next year (at the same institution or any other public, private, or out-of-state institution). As a result, findings highlighted in this brief may differ from those reported in the “DART.”

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Endnotes

¹ <http://www.doe.mass.edu/apa/dart/>

² The national high school graduation rate estimate is for 2009–10 and is reported by the U.S. Department of Education’s National Center for Education Statistics (NCES). The national average college enrollment and college persistence rates of ninth graders are calculated by the authors based on college enrollment (for 2009–10) and persistence (for 2010–11) data reported by the NCES. Because NCES’s data collection, methodology, and analysis approach differ from ours, we encourage caution when comparing Philadelphia-specific rates to these national estimates. [See U.S. Department of Education, National Center for Education Statistics, 2012a,b,c.

³ Note that for the purposes of these analyses, high school graduate cohorts include only students who completed high school within five years; high school graduates who took longer than five years to graduate are excluded from the analyses.

⁴ In this report, we define “summer melt” the same way as Castleman, Page, & Snowdon, 2013.

⁵ http://profiles.doe.mass.edu/state_report/plansofhsgrads.aspx

⁶ The SDP Summer Melt Handbook, recently published by Center for Education Policy Research at Harvard University, outlines a number of concrete strategies that district and school administrators can implement to examine and address summer melt problems in their organizations. To learn more about the summer melt phenomenon and to download the Handbook, please visit the SDP Summer Melt Handbook webpage: <http://www.gse.harvard.edu/sdp/resources/summer-melt/index.php>. (Castleman et al., 2013).

⁷ The national coverage rate is reported by the National Student Clearinghouse. The regional rate is calculated by comparing postsecondary institutions in the National Student Clearinghouse with the universe of postsecondary institutions in Massachusetts as reported in the Integrated Postsecondary Education Data System (IPEDS). See NSC, 2013; U.S. DOE, 2013.

⁶ The National Governors Association “compact rate” is a four-year, adjusted cohort graduation rate used to determine the percentage of on-time high school graduates from a given four-year student cohort. It is widely considered a valid and reliable formula and has been adopted by more than half of the states to improve the consistency and accuracy of graduation rate reporting. For more information on the compact rate, see National Governors Association, 2005, 2010.

⁷ This persistence outcome is not dependent on maintaining enrollment at the same institution from one year to the next. Therefore, we consider a student to have persisted to the second year if we observe that student enrolled at any college over the course of two subsequent years.

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