MassINC

RESEARCH BRIEF
JUNE 2022

SIZING UP MASSACHUSETTS' LOOMING SKILLED-WORKER SHORTAGE

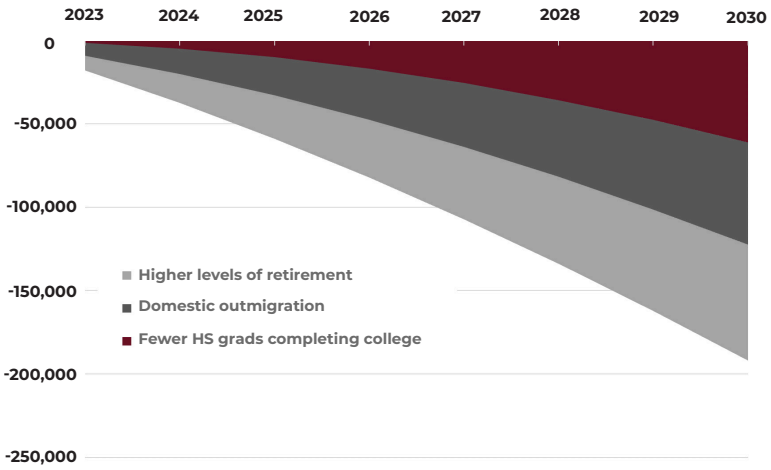
New data shows the loss in college-educated workers could be far worse than expected

Decades ago, demographers warned Massachusetts to prepare especially well for the painful challenge that the retirement of baby boom workers would present. This admonition came before the Great Recession and pandemic took their tolls, not to mention growth in inequality and concentrated poverty, and runaway housing costs. New data shows that the loss of college-educated workers that Massachusetts confronts could be far worse than indicated by previous projections, including those produced by MassINC. [1]

To help illustrate the severity of the looming skilled workforce problem, this research brief forecasts declines in Massachusetts' working-age, college-educated labor force through 2030; places the projected loss of college-educated workers in context; and considers how the toll of the pandemic may lead to even steeper reductions in the state's college-educated labor force in future years. [2]

1. DECLINES IN THE WORKING-AGE, COLLEGE-EDUCATED POPULATION

Figure 1: Projected Change in Massachusetts' Working-Age, College-Educated Labor Force



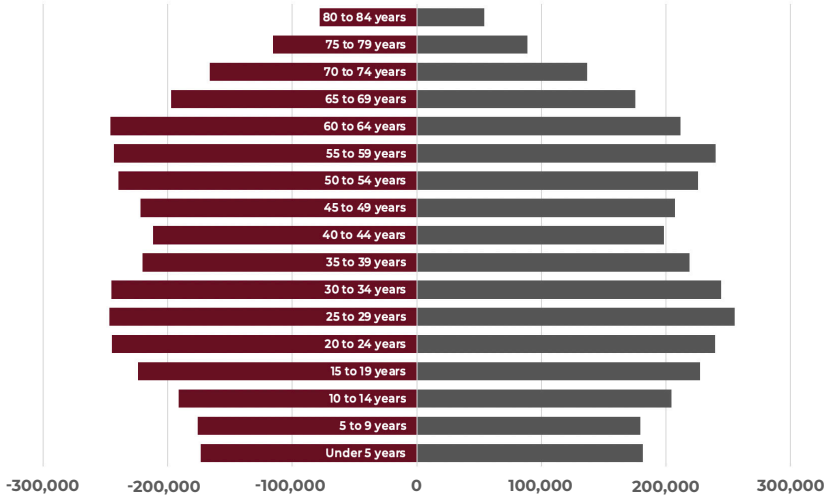
The Great Recession pushed steadily declining birthrates down even further, leading to a much smaller generation entering high schools today. Students of color, a large majority of whom have spent their formative years in severely underfunded, high-poverty school districts, make up a much larger share of this cohort than in past generations in Massachusetts. In addition, immigration has slowed considerably, and domestic outmigration is accelerating.

Combining the impact of all of these forces, we estimate the state's working-age, college-educated population will fall by approximately 192,000 residents by 2030 **(Figure 1).** The math breaks down as follows: [3]

FALLING BIRTHRATES

The population problem that Massachusetts faces is evident when looking at the base of the age pyramid from the 2020 census, displayed in **Figure 2**. The 15-to-19 cohort is smaller by 33,000 residents than the group that preceded it. The next age band is 89,000 fewer, and the 5-to-9 group, which will begin to enter the labor market at the end of the decade, is 129,000 residents short of the 20-to-24 cohort that is now entering the labor force. All told, there will be around 250,000 fewer students moving through Massachusetts high schools between the class of 2020 and the class of 2030.

Figure 2: Massachusetts population by age, 2020



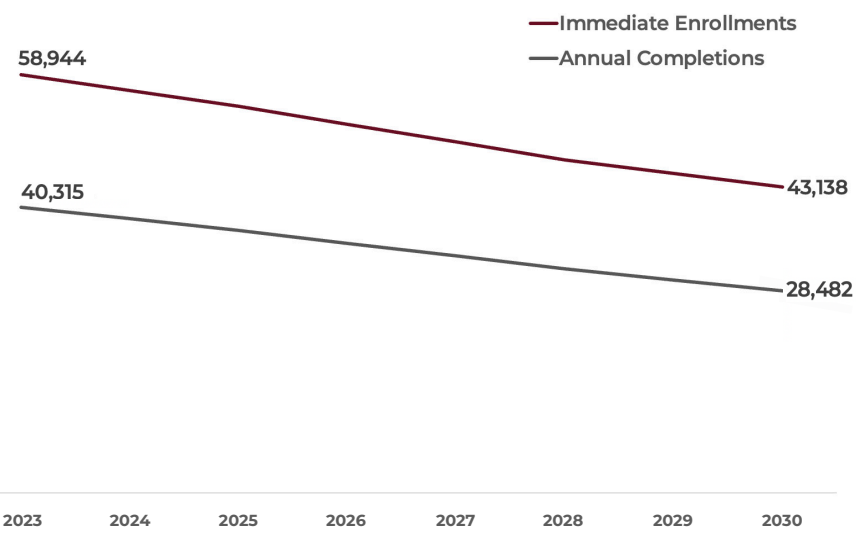
Source: 2020 U.S. census

MORE DIVERSE STUDENTS WITH LOWER COLLEGE COMPLETION RATES

Compared to Massachusetts workers entering retirement, students in high school today are far more diverse (40 percent of Generation Z is non-White versus 20 percent of boomers). And students of color are less than half as likely as White students to obtain a college degree in Massachusetts. [4]

With much smaller and far more diverse cohorts, the number of students enrolling in college after high school and completing degrees will decrease by about 30 percent by the end of the decade. This will mean approximately 16,000 fewer immediate college enrollments and 12,000 fewer completions annually by 2030 **(Figure 3)**. [5]

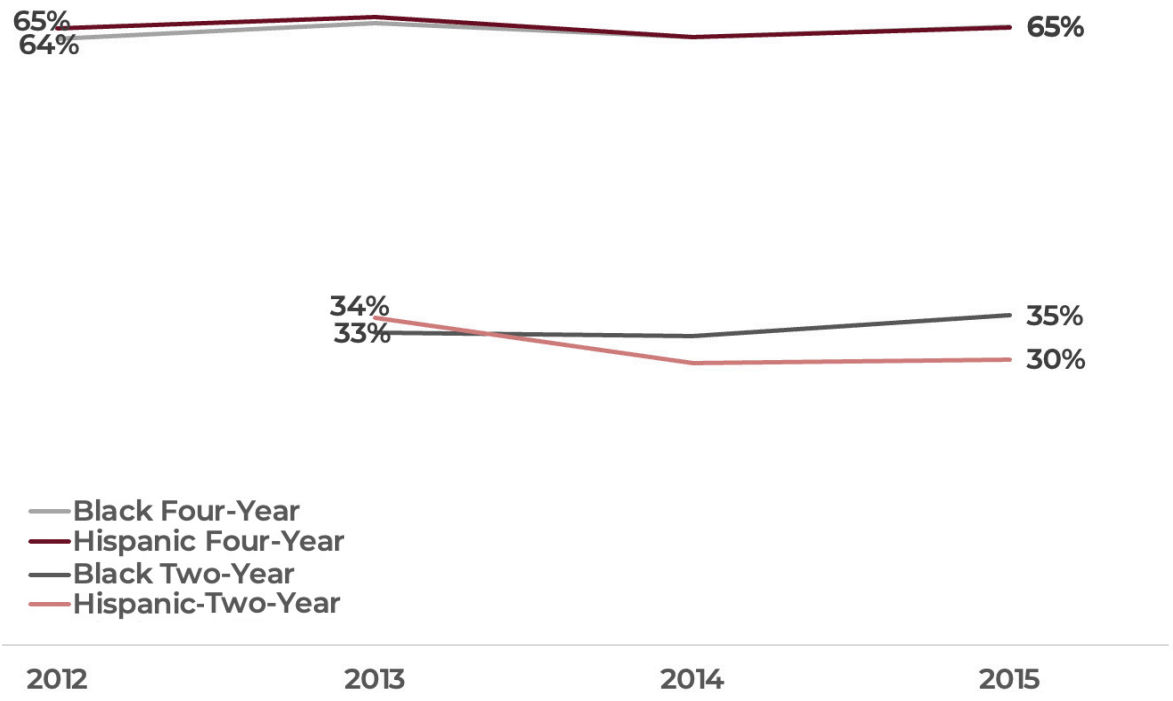
Figure 3 : Estimated number of Massachusetts high school graduates enrolling immediately in college and completing a postsecondary degree within six years



Source: Authors' estimates from 2015-2019 ACS PUMS and Massachusetts Department of Elementary and Secondary Education

A 2014 MassINC-UMass Donahue Institute analysis indicated the state could keep the number of college graduates in our labor force level through 2030 by boosting college completion rates for students of color to the state average. However, data from the National Student Clearinghouse shows that college completion rates for Black and Hispanic students attending public college in Massachusetts (where a large majority of these residents enroll) have not budged in recent years **(Figure 4)**. [6]

Figure 4: Share of first-time undergrads at Massachusetts public colleges and universities completing a degree within six years



Source: National Student Clearinghouse Research Center

BOOMERS EXITING THE LABOR FORCE

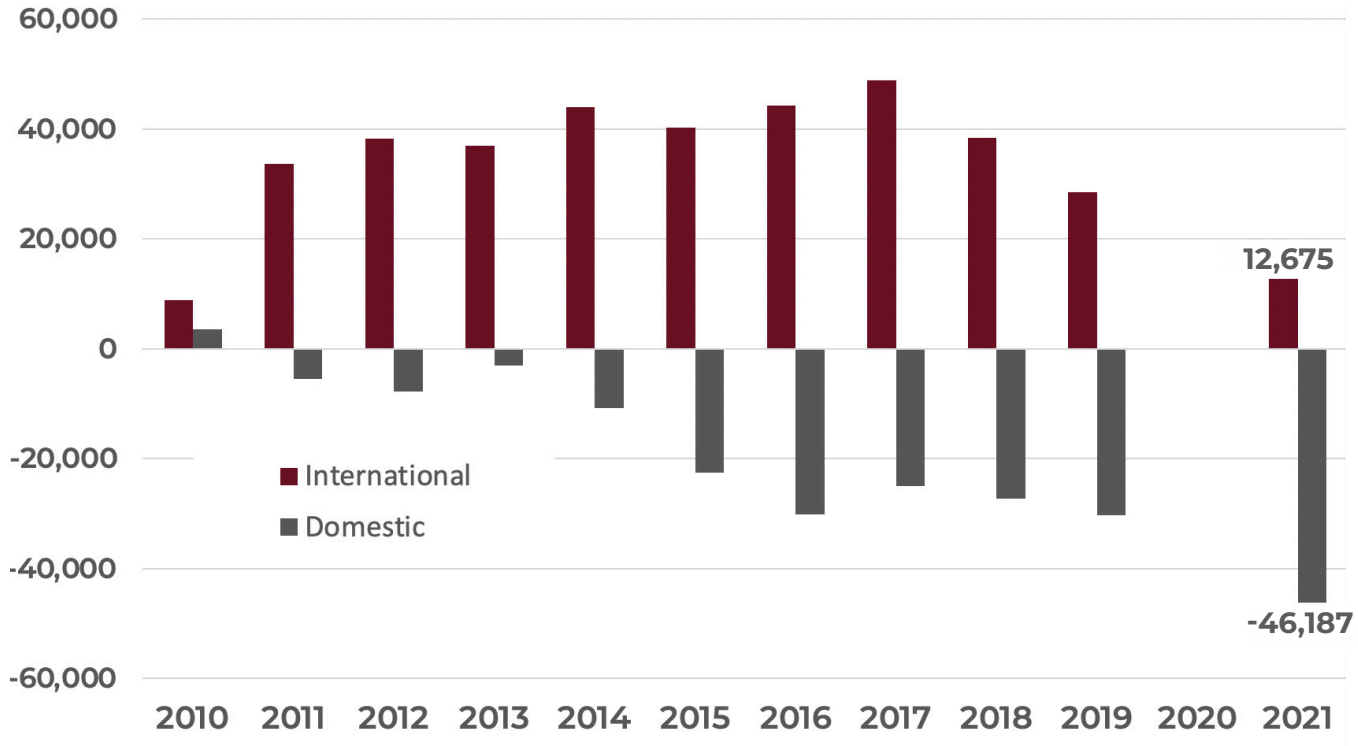
Near the top of the Figure 2 age pyramid, there is a sharp peak where the youngest of the boomers outnumber those born just after World War II. Comparing census data from 2010 to 2019 shows the number of college-educated Massachusetts residents exiting their working-age years will be 30 percent larger in the 2020s than during the 2010s. As a result, Massachusetts' working-age, college-educated labor force will drop by approximately 87,000 residents between now and 2030. [7]

LOWER IMMIGRATION AND MORE OUTMIGRATION

Between 1990 and 2010, domestic and international migration combined for more than half of the state's total increase in bachelor's degrees.[8] However, more recent data suggests the tides have turned. Since 2016, international migration has fallen steadily, and domestic migration has become a drain on Massachusetts' population **(Figure 5)**.

We lack sufficient data to estimate the impact of net international migration on the working-age, college-educated labor force. However, it is clear that the overall trend is a steady drop in positive net international migration. This means it is unlikely that these flows can significantly offset growing negative net outmigration to other U.S. states. Between 2016 and 2019, Massachusetts lost 7,600 working-age, college-educated residents to outmigration each year, on average.[9] If losses continue at this pre-pandemic rate between now and 2030, domestic outmigration will strip another 60,000 skilled workers from the state's labor force.

Figure 5: Net domestic and international migration, 2010-2021

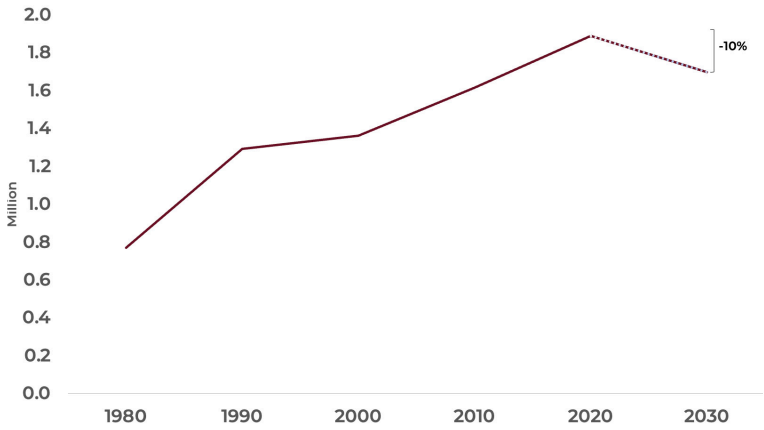


Source: U.S. Cencus Bureau
Note: Census has not released data for 2020.

2. THE STATE'S DECLINING COLLEGE-EDUCATED LABOR FORCE IN CONTEXT

The projected loss of 192,000 college-educated residents in the state's labor force represents a 10 percent reduction from current levels. Over the past 40 years, Massachusetts has averaged a roughly 25 percent increase in college-educated workers per decade. This dramatic shift from healthy increases to a significant loss is troublesome **(Figure 6)**.

Figure 6: Number of Working-Age, College-Educated Residents in the Massachusetts Labor Force



Source: Current Population Survey

While trend lines show the most severe demographic challenges are still a few years away, the state's labor markets are already incredibly tight. According to the most recent figures, Massachusetts has 110,000 more job openings than unemployed workers (286,000 openings versus 176,000 unemployed workers).[10]

More detailed data from the Current Population Survey indicates Massachusetts had fewer than 30,000 working-age adults with college degrees seeking jobs in the first quarter of 2022, with unemployment rates for this group hovering below 2 percent. And labor force participation rates for the state's working-age, college-educated population are now at about 90 percent, higher than in the months just prior to the onset of the pandemic. This means reductions in the prevalence of severe COVID-19 and greater availability of childcare are unlikely to bring significantly more skilled residents into the ranks of those seeking employment, as many have speculated. [11]

3. THE LONG-TERM IMPACT OF THE PANDEMIC DISRUPTION

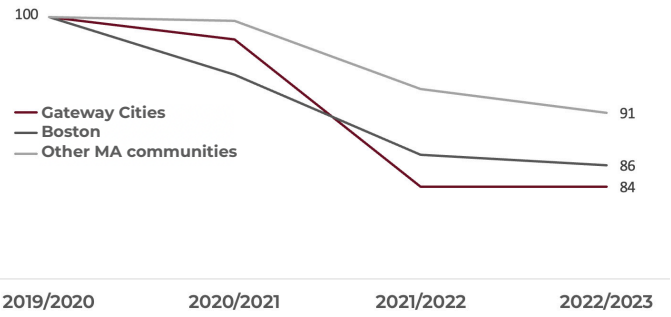
The pandemic disruption will cause further stress on the state's pipeline of college-educated workers beyond what our projection reflects. However, it is difficult to gauge the full impact, with so much uncertainty. The biggest unknown is migration. As the trend in Figure 5 shows, the pandemic significantly increased domestic outmigration. Only time will tell whether this persists and for how long. Early on, it looked like the pandemic would also spur more boomers to exit the labor force earlier than they planned. Now it seems like less of a problem, especially with declines in the stock market eroding retirement savings.

A bigger concern is the impact of the pandemic on college completions. To date, most attention has been placed on the sharp decline in immediate postsecondary enrollment following high school. This is for good reason. Controlling for college readiness and socioeconomic status, students who delay entry to college by one year or more are significantly less likely to attend.[12] Furthermore, the reduced likelihood of postsecondary enrollment among students who do not go on to college after high school is generally not because they are landing good jobs without postsecondary studies. All else equal, students who delay college have significantly lower earnings by their mid-20s, and the gap continues to grow wider into their 30s. [13]

Survey data collected by the Census Bureau shows that Massachusetts households with annual incomes below $50,000 were more than twice as likely as those earning over $100,000 to have a member who put college on hold during the pandemic. Steeper enrollment reductions across institutions that serve economically disadvantaged students reinforce the disparate impact of the pandemic disruption.[14] For instance, first-time enrollment at community colleges fell by 24 percent between fall 2019 and fall 2020, while first-time undergraduate enrollment at the four UMass campuses held steady.

FAFSA completion figures by community through January 31 of this year suggest enrollment declines among low-income students will likely persist next year **(Figure 7)**. Applications for federal financial aid from Gateway City high schools for the 2021-2022 academic year fell by 16 percent from pre-pandemic levels and remain at that lower volume for the coming academic year. In Boston, FAFSA filings fell 13 percent last year and this year they ticked down further, to 14 percent below previous levels.

Figure 7: Relative change in number of FAFSA applications submitted by January 31



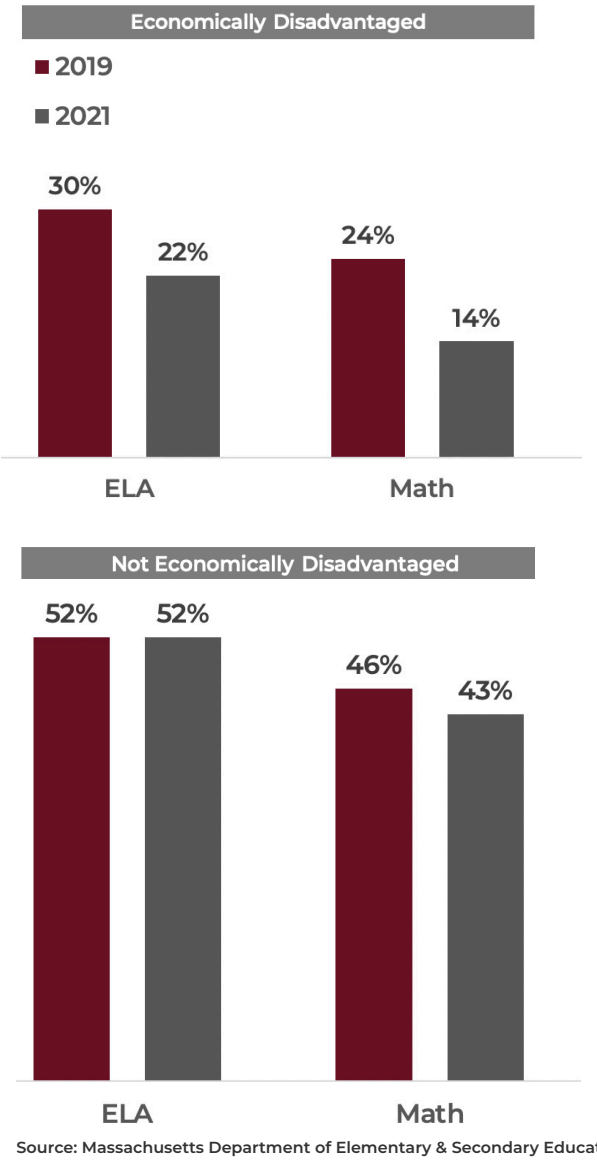
Source: U.S. Department of Education

Still, these initial enrollment disruptions will likely have a modest impact on the state's college-educated labor force. Combining the classes entering in the fall 2019 and fall 2020, approximately 8,100 potential students were missing from the state's universities and community colleges. If this reduces by one-third the probability that these students eventually enroll and complete postsecondary studies, a figure in line with pre-pandemic estimates of the impact of delayed entry to college, Massachusetts would have roughly 1,200 fewer college graduates than these two high school classes would have produced if it weren't for the pandemic.[15] While this count does not include the small percentage of underserved students who go to private colleges and who postponed their studies, evidence suggests that the enrollment declines have been heavily concentrated among students with the least likelihood of completing. If this is true, the impact of the initial enrollment disruption could be significantly lower than 1,200 graduates.

In comparison to these figures, pandemic learning loss that significantly reduces college readiness and success among future low-income high school graduates could pose a more significant threat to the state's college-educated labor force. This is evident in declining MCAS scores, which predict college success. [16] The share of economically disadvantaged eighth grade students meeting expectations fell from 30 percent to 22 percent in ELA and from 24 percent to 14 percent in math **(Figure 8)**.[17]

While policymakers cannot put too much weight on tests administered when students were just transitioning back to classrooms after a year of remote instruction, these sharp declines are just one signal among many that suggest the pandemic will have long-term consequences for student well-being and college readiness.[18]

Figure 8: Share of Eighth Grade Students Meeting or Exceeding Expectations



Source: Massachusetts Department of Elementary & Secondary Education

CONFRONTING THE CHALLENGE

The projected decline in the state's college-educated labor force is troublesome, particularly when considering the significant downside risk. Given the serious implications for the state's economy, these trends merit closer investigation with a more sophisticated model than we were able to employ for this research brief. They also suggest that the state should pursue efforts to improve cross-agency longitudinal data systems with greater urgency. Policymakers will need real-time data to gauge how education and workforce investments are performing and how many skilled workers they will yield.

Massachusetts has never built an effective intervention at the scale now required to fortify its talent pipeline, but there are hopeful signs that the state is moving in the right direction. For the second consecutive year, budget-makers are substantially increasing investment in Early College. If the state can aggressively grow high-quality programs, it will make a meaningful difference. This approach is particularly attractive because it reduces inequality at the same time as it helps to address the state's skilled worker shortage.

It is also possible that Massachusetts could retain more graduates from its institutions of higher education, if remote work options allow them to settle in less expensive communities outside of Greater Boston and they find this option attractive. Seizing this opportunity to geographically rebalance growth will require rethinking how the state invests in housing, transportation, and community development as it allocates billions of dollars from the federal recovery and infrastructure bills.

NOTES

1. A 2014 MassINC-UMass Donahue Institute study estimated the number of working-age residents with four-year college degrees would fall by 46,000 between 2020 and 2030. See: Mark Melnik and others. "At the Apex: The 2030 Educational Attainment Forecast and Implications for Bay State Policy Makers." (Boston, MA: MassINC, 2014).

2. Throughout this report, "college-educated" refers to residents with an associate degree or higher, and "working-age" refers to residents ages 25 to 64.

3. This estimate assumes negative net migration among college-educated residents will continue at the same pace observed in the five-year ACS PUMS samples between 2016 and 2019, approximately 7,600 residents per year.

4. The most recent data is for students from the high school class of 2012. Forty-nine percent of White students in this cohort completed a postsecondary degree within six years, compared to 24 percent of Black students and 17 percent of White students.

5. For each high school graduating class, these estimates are the number of expected enrollments the following fall and the number of postsecondary completions within six years of high school graduation. In this regard, the estimate of degree reductions by 2030 is slightly aggressive, as we would not expect the latest cohorts to filter into the college labor market until a few years later.

6. See: https://nscresearchcenter.org/completing-college/

7. Census figures show there were approximately 294,000 college-educated residents ages 55 to 65 in the labor force in 2010, compared to 381,000 in 2019.

8. Melnik and others (2014).

9. Our analysis of 2015-2019 ACS PUMS data shows 73 percent of working age immigrants to Massachusetts had an associate degree or higher versus 69 percent of outmigrants from the state.

10. See: https://www.bls.gov/news.release/jltst.t01.htm

11. Authors' analysis of monthly Current Population Survey data for November 2021 through February 2022 combined to increase sample size.

12. Sunny Niu and Marta Tienda. "Delayed Enrollment and College Plans: Is There a Postponement Penalty?" *The Journal of Higher Education 84*.1 (2013).

13. Yuxin Lin and Vivian Yuen Ting Liu. "Timing Matters: How Delaying College Enrollment Affects Earnings Trajectories." (New York, NY: Community College Research Center, 2019).

14. Authors' estimates from Census Household Pulse Survey, Waves 2 and 3.

15. According to the National Student Clearinghouse, pre-pandemic graduation rates for two- and four-year public colleges in Massachusetts were 39 percent and 73 percent, respectively. Applying these rates to the reduced enrollments at community colleges and state universities suggests 3,880 would have graduated but for the disruption. If we expect these 8,100 students will now enroll and complete at one-third the pre-pandemic rate, that yields 2,600 graduates. The difference between the pre-pandemic rate and the disrupted rate is approximately 1,280 completions total.

16. John Papay and others. “Lifting All Boats: Accomplishments and Challenges from 20 Years of Education Reform in Massachusetts.” (Providence, RI: Brown University, 2020).

17. These figures may underestimate the true impact, given low MCAS participation rates last year and the likelihood that the most underserved students are concentrated among those who did not test.

18. Megan Kuhfeld and others. "Test Score Patterns Across Three COVID-19-Impacted School Years." EdWorkingPaper: 22-521 (Providence, RI: Brown University, 2022); Grace George and others. "Potential Socioeconomic Effects of the COVID-19 Pandemic on Neural Development, Mental Health, and K-12 Educational Achievement." *Policy Insights from the Behavioral and Brain Sciences 8*.2 (2021).