

DEGREES OF URGENCY

Why Massachusetts
Needs More
College Graduates

Now



More employers require
college degrees, study finds

The middle-class lifestyle is moving increasingly out of reach for the two-thirds of American workers who are not college graduates, as more employers demand bachelor's degrees from applicants, according

Boston labor analytics firm Burning Glass Technologies finds that positions that have not historically required a degree, such as those in executive administrative support, are now commonly posted with such a requirement. Fewer than 20 percent

DEGREES OF URGENCY

Third Annual Report on the Vision Project
to the People of Massachusetts from the
Massachusetts Department of Higher Education
October 2014



We will produce the best-educated citizenry and workforce in the nation.

We will be national leaders in research that drives economic development.

MASSACHUSETTS PUBLIC HIGHER EDUCATION

- 29 CAMPUSES
 - 15 COMMUNITY COLLEGES
 - 9 STATE UNIVERSITIES
 - 5 UNIVERSITY OF MASSACHUSETTS CAMPUSES
- 300,000 STUDENTS
- 40,000 FACULTY AND STAFF
- 40,000 NEW COLLEGE-EDUCATED CITIZENS & WORKERS ANNUALLY
- \$600 MILLION IN ANNUAL RESEARCH EXPENDITURES

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UPDATE FROM THE COMMISSIONER

First, the good news.

This third Vision Project annual report begins with a message of optimism. For the first time in three years **we can report signs of progress** on the road to becoming a national leader among state systems of public higher education.

It has been four years since the **Massachusetts Board of Higher Education** (BHE) approved the ambitious agenda for the state's public colleges and universities that we are calling the Vision Project. By affirming this initiative, the BHE embraced a new way of thinking about “state schools”—the idea that achieving national leadership in public higher education should be a priority for Massachusetts and that the system should hold itself accountable to taxpayers for achieving this stature.

The BHE's action represented a departure from conventional wisdom, long held in the Commonwealth, namely that, with some of the world's most prestigious private academic institutions in our midst, there was little need to invest in a premier public system. Access and affordability were well understood and acceptable goals; true academic excellence—and state investment to achieve it—not so much.

As the first two Vision Project annual reports have shown, our public colleges and universities have performed well within the constraints of the resources they have been given, but we do not yet rank among the top systems in the nation. On the key measures of educational performance, we are about average. But in this third Vision Project annual report, there are signs of progress toward the excellence to which we aspire and the support we need to get there.



RESULTS—SUPPORT



State Funding. The joint efforts of the **Patrick Administration** and the **Massachusetts Legislature** have resulted in **significant new dollars for public higher education** in the last two years. These investments followed passage in FY2008 of the Governor's sweeping \$2.2 billion higher education bond bill, a measure that resulted in construction of at least one new building, including new state-of-the-art science facilities, on every public campus.

This fall a legislatively mandated **Higher Education Finance Commission** comprised of business and higher education leaders urged state officials to sustain such investments, **recommending that public colleges and universities receive significant additional funding over the next five years** to establish Massachusetts as a Top 10 state with regard to both state support and, within five more years, academic performance.

It is especially gratifying to hear an external body echo the BHE's call to make national leadership in public higher education an urgent priority for the Commonwealth. (For more on the Commission's recommendations, see page 10.)

RESULTS—PERFORMANCE



College Completion. In the past five years, graduation and student success rates have inched up modestly but consistently at our public campuses. One third are now **meeting or exceeding the Vision Project goal** of 1 percentage point per year for improvement in six-year success rates*—increases that are well above the national and leading states' averages:

- Berkshire Community College
- Cape Cod Community College
- Middlesex Community College
- Mt. Wachusett Community College
- North Shore Community College
- Bridgewater State University
- Framingham State University
- Salem State University
- Worcester State University
- UMass Boston
- UMass Lowell

If we can scale these results across all our public campuses and sustain them over the next decade, we will be a national leader in college completion.

*For community colleges, analysis compared single-year success rates from the entering cohort of fall 2003 through the entering cohort of fall 2006. For state universities and UMass, analysis compared six successive rolling averages from the entering cohorts of fall 2000–2002 through the entering cohorts of fall 2005–2007. Rolling averages were used where available to moderate the impact of any inconsistent one-year spikes or dips in the data.

RESULTS—PERFORMANCE



Workforce Alignment. The Vision Project's emphasis on system-wide, industry-specific workforce planning in high-growth fields is beginning to reap benefits for the Commonwealth. A strategic plan for nursing developed in collaboration with health care industry leaders and public and private colleges, which identified a looming shortage of nurses with Bachelor of Science in Nursing (BSN) degrees, has resulted in a **34 percent increase in BSN graduates** from 2010 to 2013. This includes an **81 percent increase** in the number of employed, licensed nurses progressing to the baccalaureate level during that period.

RESULTS—PERFORMANCE



Closing Achievement Gaps. We also see indications that efforts to close achievement gaps are beginning to pay off. At the community colleges, where the developmental (remedial) need is greatest, remedial course enrollment is **decreasing among Latino/a students**, a sign that collaborative work with our partners in K–12 to align curriculum and close gaps is working. At UMass and state university campuses, the six-year graduation rate gap between White and Latino/a students is also **showing the first signs of shrinking**.

But we need to pick up the pace of progress.

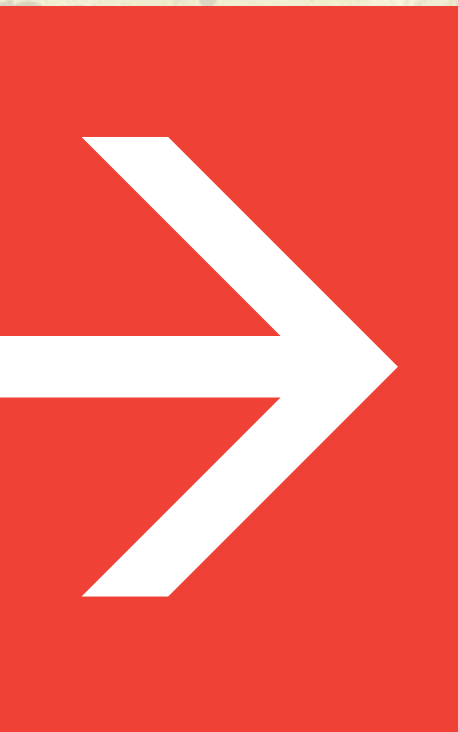
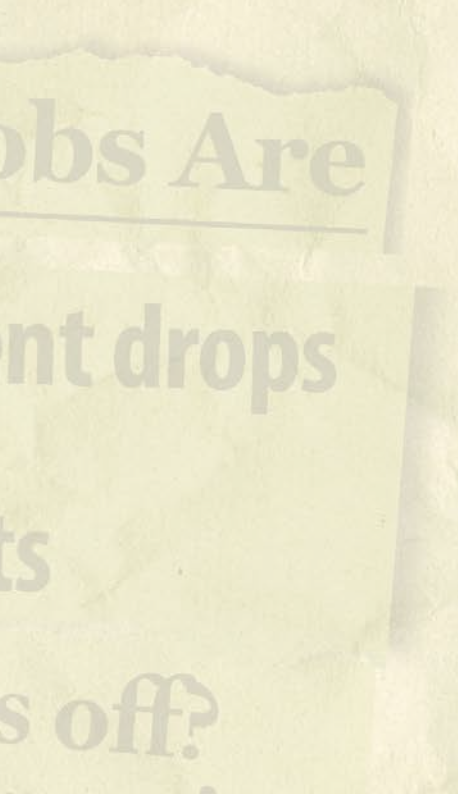
The good news reported in these pages is evidence that, with sustained and focused efforts by both state government and public higher education, we can get to where we need to be.

This determination is even more important today, as **Massachusetts is facing new challenges that make achieving national leadership for our public colleges and universities even more urgent** than it was when the Vision Project was established. Turn the page to learn more. ■

MEMO to Massachusetts:

Check the Economic Forecast.

A “perfect storm” of factors—our economy’s need for more college graduates, projected declines in the number of high school graduates, and the cumulative impact of historic underfunding of public higher education—threatens our ability to attract and retain knowledge-based industries that drive economic prosperity.



It's time to heed the forecast and do what we can to grow the Commonwealth's single best asset in the global competition for jobs, investment and talent: **our pool of high-skilled college graduates.** *Degrees of Urgency* documents the potential impact of a newly projected shortfall of college graduates fueled by the three factors identified at left. This report also details our plan to ramp up college completion numbers by 2025 in order to meet the Commonwealth's workforce needs and the Vision Project goal of producing **"the best-educated citizenry and workforce in the nation."**

IT'S A TALL ORDER, BUT ONE THAT WE MUST FILL—WITH ECONOMIC CONSEQUENCES FOR MASSACHUSETTS IF WE DO NOT. →

#Memo2MA In Brief →

While Massachusetts public higher education enrollments have recently been at historic highs, enrollment declines are expected to spread across the system in the next few years. Producing more graduates with degrees and competencies needed for high-demand jobs in knowledge-based industries will require public campuses to:

- **Intensify and focus efforts** to support a rapidly changing population of students who face significant barriers to success.
- **Mount aggressive recruitment strategies** to enroll more students from underserved groups and communities within our state's population.
- **Provide a top-quality education** while working collaboratively to reduce costs and maximize operational efficiencies.

And will require the state's political leaders to:

- **Sustain and grow investments** in public higher education so that public campuses have sufficient resources to help students succeed and meet industry demand for high-skilled talent.
- **Significantly expand state financial aid programs** so that an affordable college education is within reach of every citizen willing to work toward a post-secondary degree or certificate.

MEMO TO MASSACHUSETTS: WE ARE ON THE CASE.

P.S. @MassDHE and the campuses are using social media to send a "Memo to Massachusetts." Please join the conversation on Twitter and other social networks with **#Memo2MA**.

← FROM PAGE 5

Rising Need for College-Educated Workers

Throughout his two terms in office, **Governor Deval Patrick** has focused relentlessly on the growing importance of the state's public higher education system in meeting the "skills gap." With capital investments at every campus, budget increases that bucked national trends, and repeated reminders of the talent demands of our innovation sectors, he has raised expectations for a public system that now educates 70 percent of residents who remain in Massachusetts to attend college¹.

Business leaders are also looking to public colleges and universities to fill the talent pipeline—and are making no secret of the challenges they face in finding high-skilled job applicants. In a 2013 survey by the **Massachusetts Business Alliance for Education**, 69 percent of business leaders in the state said they found it difficult to find people with the right skills for the positions they need to fill. Meanwhile, other leading technology states—New York, Pennsylvania, Ohio, Illinois, Minnesota, and in some industry sectors, Texas and California—outperform Massachusetts when it comes to producing enough high-skilled graduates to fill jobs².

In Massachusetts today there are an estimated six job openings for every college graduate holding an associate's degree or certificate in computer science or IT—and over 17 such openings for every graduate

5:1

Current ratio of **Massachusetts health care job openings** to recent graduates holding related associate's and bachelor's degrees²



with a bachelor's degree². Put another way: Massachusetts needs more than 5,000 computer science and information technology graduates *right now*.

"A major roadblock to expansion of the high-tech sector in Massachusetts is the talent shortage," says **Tom Hopcroft**, member of the **Massachusetts Board of Higher Education** and president & CEO of the **Massachusetts Technology Leadership Council**. "We have the jobs to fill, but not the people to fill them. We need to align our public higher education curriculum with the needs of the innovation economy by fostering more graduates in the computing and information technology fields."

Public Higher Ed's Heightened Importance

In every major business and industry sector that drives economic growth, Massachusetts will need to expand our talent pipeline or risk losing our competitive edge.

But the dominant role that Massachusetts public colleges and universities will play in educating the Commonwealth's future entrepreneurs, IT managers, medical researchers and preschool teachers is not yet fully understood. With many private college and university graduates leaving Massachusetts to make their lives elsewhere, nine of every ten public college and university students remain in state, working or furthering their studies, one year after graduation³. →

6:1

Current ratio of **Massachusetts information technology & computer science job openings** to recent graduates holding related associate's degrees and certificates²

17:1

Current ratio of **Massachusetts information technology & computer science job openings** to recent graduates holding related bachelor's degrees²

See page 31 for more data from our labor market analysis made possible by Help Wanted Online, a real-time labor market information tool.

72%

Percentage of **Massachusetts jobs** that will require some college education by 2020⁴

“If we hope to reap the economic dividends that come from being an educational leader, Massachusetts must make academic excellence for its public colleges and universities **AN EVEN HIGHER PRIORITY** than it is right now.”

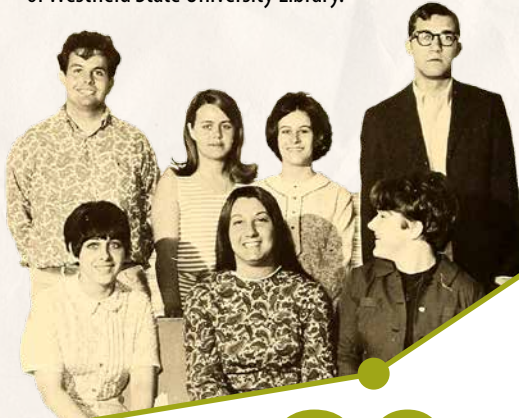
—**CHARLES F. DESMOND, CHAIRMAN,**
MASSACHUSETTS BOARD OF HIGHER EDUCATION



Massasoit Community College students, 2014.
Photo courtesy of James Lynch/Massasoit.



Westfield State students, 1967. Photo courtesy
of Westfield State University Library.



30%

Mass. public higher ed
share of all Mass.
undergrads **in 1967**⁵

52%

Mass. public higher ed
share of all Mass.
undergrads **in 2013**⁶

70%

Mass. public higher ed
share of Mass. high
school graduates
enrolled in Mass. colleges
as first-time, degree-
seeking students **in 2013**¹

← FROM PAGE 7

They deserve—and Massachusetts needs them to have—an education that is not just affordable but also truly outstanding.

“If we hope to reap the economic dividends that come from being an educational leader,” says **Charles F. Desmond**, chair of the Massachusetts Board of Higher Education, “Massachusetts must make academic excellence for its public colleges and universities an even higher priority than it is right now.”

Through the Vision Project, the Commonwealth’s public campuses have been engaged in a multi-year, multi-pronged effort to improve performance with the goal of becoming a national leader among state systems of higher education. Our work to reach the ranks of the nation’s Top 10 systems—and our no-holds-barred reporting of data on how much progress still needs to be made to reach that goal—were included in the first two Vision Project annual reports.

These reports—as well as this year’s analysis—highlight progress but also make clear that, when it comes to graduation rates, Massachusetts’ system of public higher education remains at or slightly above average in comparison with other state systems. Recent demographic

and workforce analyses reviewed or conducted by the Department of Higher Education (DHE) show that the system is currently not on track to produce enough degree-holders to fill jobs in technology, health care, and other high-demand fields within the next decade.

Based on current degree production rates and future enrollment projections, we believe that, by 2025, Massachusetts’ public higher education system will fall short of meeting the state’s need for new associate’s and bachelor’s degrees by a minimum of 55,000 to 65,000⁸. Without a course correction, those missing degrees will translate into thousands of lost opportunities, as employers struggle to find talent for high-skilled, good-paying jobs and students attempting to compete for jobs in the best-paying and most rapidly growing sectors of the economy discover that they lack the credentials to compete.

Helping tens of thousands of additional college students reach graduation day with diplomas and certificates in hand won’t be easy and might even be dismissed as an impossible task. The challenge we have set for ourselves—as academic policy experts and labor economists can attest—is HUGE. To reach our goals within the next decade, Massachusetts public colleges and universities will need to graduate more students who have greater academic and economic challenges, and must do so in less time and with more efficient use of state dollars than ever before.

+31%

Increase in Massachusetts high school students graduating annually **between 1997 and 2008**⁷

CONSIDER THIS: If African-American and Latino/a adults possessed college degrees at the same rate as White adults (60%), Massachusetts would easily meet its need for more college graduates by 2025⁹.

-9%

Projected drop in Massachusetts high school students graduating annually **between 2009 and 2020**⁷

55-65k

Projected shortfall of associate's and bachelor's degrees to be awarded by Massachusetts public colleges and universities **2015-2025**, compared with projected need⁸

Understanding the Degree Shortfall

Within six years, Massachusetts will see its total pool of high school graduates shrink by 9 percent⁷. This represents a big turnaround from the previous decade. Between 1996-97 and 2007-08, the state saw a 31 percent increase in high school graduates⁷; college application numbers soared, and admissions standards tightened. Although enrollments at a number of campuses remain robust, this fall overall enrollment for the entire system declined slightly for the first time in a decade. This trend is forecasted to continue, accelerate and spread across the system, which will compromise efforts to produce enough graduates to fill jobs in the Commonwealth's flagship industries, including technology and health care.

Further, by 2020, the number of White high school graduates (whose overall college participation and completion rates are significantly higher than those for students of color) will decline by 15 percent⁷. While the ranks of Asian/Pacific-Islander and Latino/a students continue to grow, their numbers aren't increasing fast enough to offset this decline.

Getting more students into college and through to graduation—particularly African-American and Latino/a students—isn't just a matter of social justice. It's also an economic imperative for the state. Consider this: If African-American and Latino/a adults possessed college degrees at the same rate as White adults (60%), the state would easily meet its need for more college graduates by 2025⁹. →

“A major roadblock to expansion of the high-tech sector in Massachusetts is the

TALENT SHORTAGE.

We have the jobs to fill, but not the people to fill them.”

—TOM HOPCROFT, PRESIDENT & CEO, MASSACHUSETTS TECHNOLOGY LEADERSHIP COUNCIL, AND MEMBER, MASSACHUSETTS BOARD OF HIGHER EDUCATION



Massachusetts must build

ONE OF THE TOP 10 PUBLIC SYSTEMS

in the nation with regard to both overall performance and state investments in order to provide an affordable as well as high-quality education for all students.”

—HIGHER EDUCATION FINANCE COMMISSION

MORE INFORMATION AT WWW.MASS.EDU/HEFC

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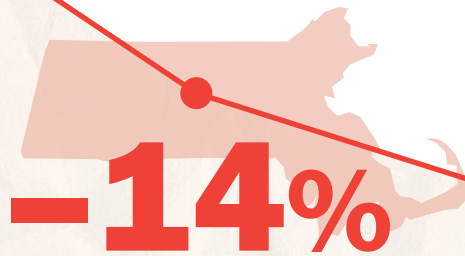
The Impact of Historic Underfunding

For the past two years under the leadership of Governor Patrick, Massachusetts has been among the vanguard of states that have bucked national trends and increased funding for public colleges and universities.

The Governor was a strong proponent of strategic investments in the state’s higher education system, advocating for substantial increases in appropriations in FY14 and FY15. But the relatively good budgets still leave Massachusetts trailing other states in appropriation per full-time enrolled student (FTE).

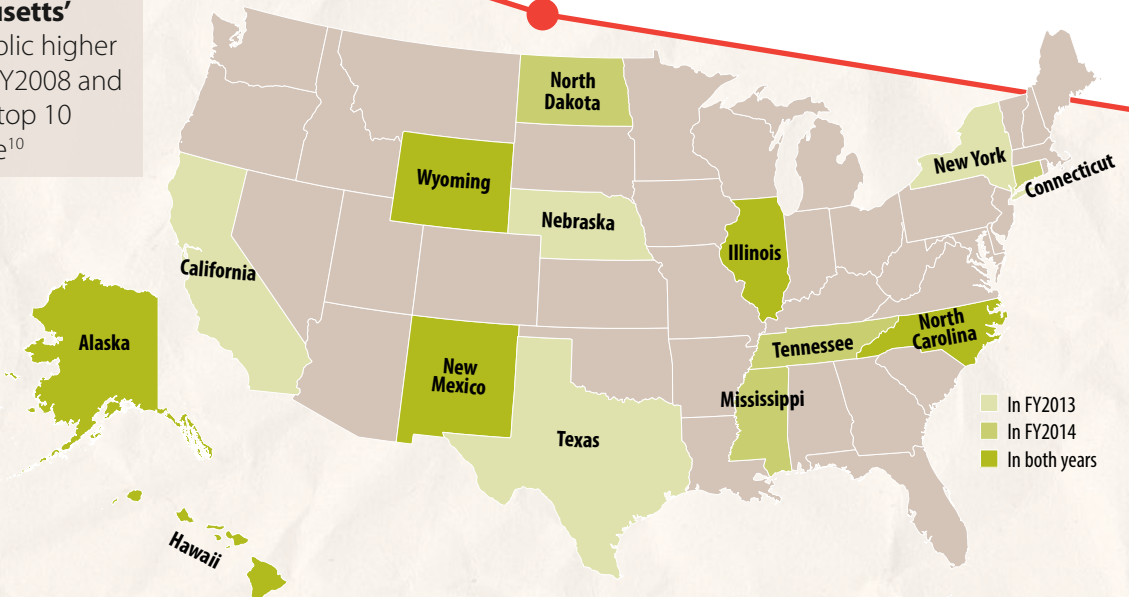
From FY08 to FY14, during the recession and recovery, Massachusetts cut funding for its public higher education system at twice the rate of the ten best-funded state systems in the country¹⁰.

The neediest students are hardest hit; their financial struggles only lengthen the time it takes to complete certificates and degrees. While the value of the state’s MASSGrant financial aid program has dropped to less than 10 percent of the average cost of attending a public college or university, the average loan debt carried by public college and university students has risen sharply, up 27 percent in just the last three years¹¹. “Being average with regard to overall system performance and below average in state support per student and state investment in financial aid is unacceptable in the Commonwealth where the brainpower of our citizens



Decline in Massachusetts’ appropriations for public higher ed per FTE between FY2008 and FY2014—double the top 10 states’ average decline¹⁰

Top 10 States in Public Higher Ed Appropriations per FTE in FY2013 & 2014¹⁰



is our primary economic resource,” members of a **Higher Education Finance Commission** created by the Legislature concluded recently.

“Massachusetts must build one of the top 10 public systems in the country with regard to both overall performance and state investments in order to provide an affordable as well as high-quality education for all students,” the Commission concluded in its final report accepted by Governor Patrick, noting the cost shift from state to student and the impact on college completion rates as a result of “historic underinvestment.”

An aggressive effort to help more students earn degrees and certificates costs money. Yet in most states, the disconnect between the need to produce more graduates and the additional state investment needed to meet these attainment goals is striking. “While policy makers at all levels are jumping on the (college degree) attainment bandwagon, they are not attending to a key corresponding issue: how the successful pursuit of these goals is to be funded,” wrote **Dennis Jones**, president of the non-profit **National Center for Higher Education Management Systems** in a recent issue of *Change Magazine*. “What combination of financial strategies can be implemented to provide sufficient resources to accommodate more (and harder-to-serve) students while maintaining affordability for both families and taxpayers? Failure to provide a credible response to this question has the potential to derail the bandwagon.”

At the same time, Jones stated that public colleges and universities must be willing to have funding tied to the number of graduates they deliver, not just to the number of students they enroll. (Massachusetts community colleges are at present the only segment of public higher education to embrace a performance-based funding model. Read more about the formula’s impact on page 24.) ■

A line graph with a red line and two data points. The first point is at \$10.8k and the second is at \$6.5k. The line slopes downward from left to right.

\$10.8k

Top 10 states' average funding per FTE in FY2014¹⁰

\$6.5k

Massachusetts' funding per FTE in FY2014¹⁰

“MEMO TO MASSACHUSETTS” SOURCES

¹ U.S. Department of Education (IPEDS), Fall 2012. Calculations by Massachusetts Department of Higher Education (MDHE).

² Wanted Analytics, May–July 2014; U.S. Department of Education (IPEDS), 2010–2012 (three-year average). Calculations by MDHE.

³ MDHE; Massachusetts Department of Career Services; National Student Clearinghouse. Calculations by MDHE.

⁴ Georgetown University: Center on Education and the Workforce, *Recovery: Job Growth and Education Requirements Through 2020*, June 2013.

⁵ U.S. Department of Education (IPEDS/HEGIS), Fall 1967.

⁶ U.S. Department of Education (IPEDS), Fall 2013.

⁷ Western Interstate Commission for Higher Education, *Knocking at the College Door: Projections of High School Graduates*, December 2012.

⁸ MDHE; University of Massachusetts Donahue Institute Demographic Projections; Georgetown University: Center on Education and the Workforce, *Recovery: Job Growth and Education Requirements Through 2020*, June 2013; New England Economic Partnership: Massachusetts Forecast. Calculations by MDHE.

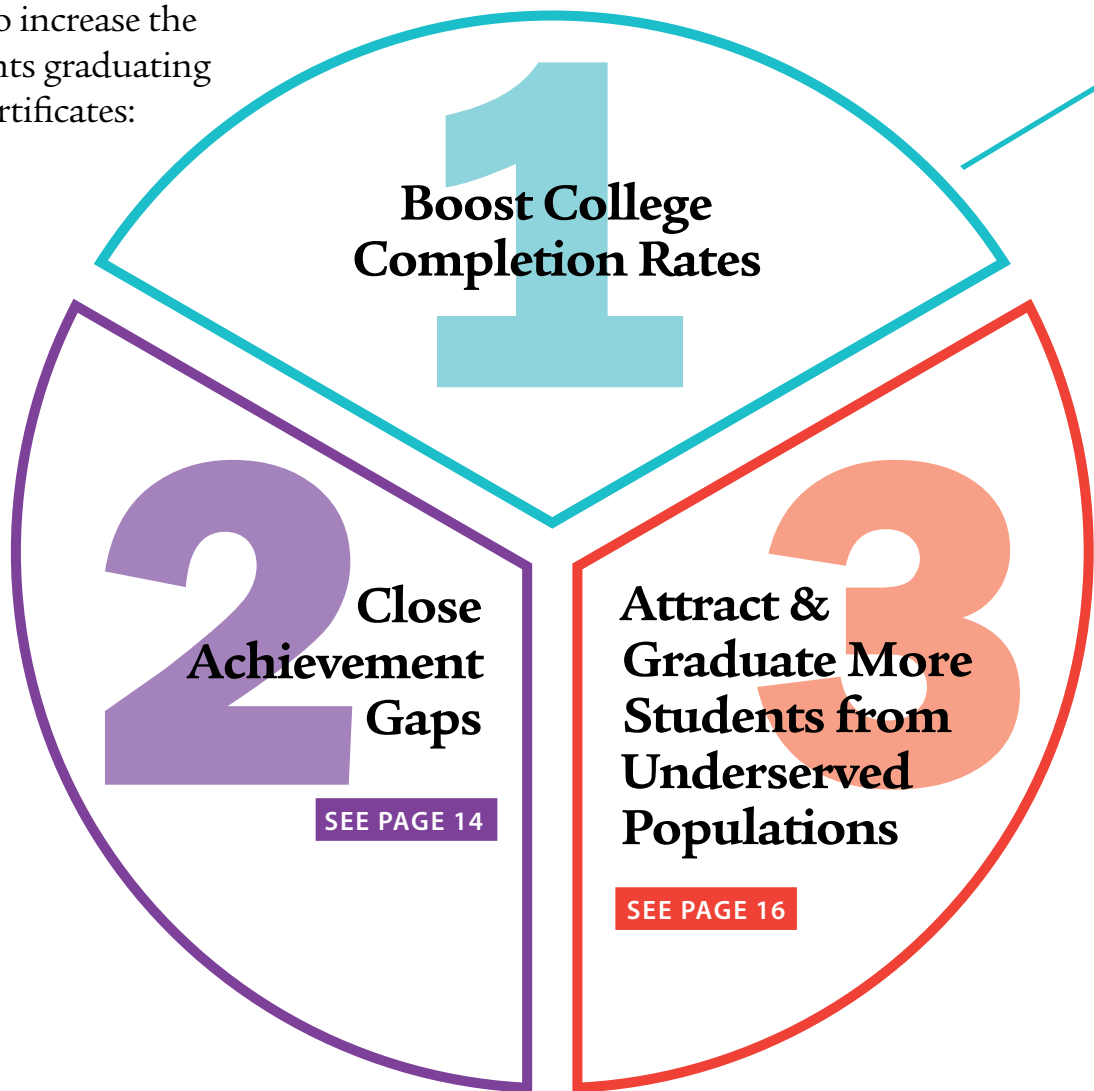
⁹ U.S. Census Bureau, American Community Survey, 2010–2012. IPUMS-USA, University of Minnesota, www.ipums.org.

¹⁰ Primary Data Source: State Higher Education Executive Officers (SHEEO), *State Higher Education Finance (SHEF)—FY2013* (<http://www.sheeo.org/resources/publications/shef-%E2%80%94state-higher-education-finance-fy13>). Note: FY2014 figures on state support for higher education represent initial allocations and estimates reported by states from September through December 2013 and are subject to change (see *SHEF FY2013* report for additional explanation). FY2014 FTE is estimated for non-MA states based on Current Term Enrollment Report data from the National Student Clearinghouse and FY2013 FTE data reported in the *SHEF FY2013* report. Both FY2008 and FY2013 total state support per FTE calculations include cost of living and enrollment mix adjustments provided in the *SHEF FY2013* report.

¹¹ MDHE.

The “Big Three” Completion Plan

Three strategies to increase the number of students graduating with degrees & certificates:



The Science of Better Learning



Vandana Singh. Photo courtesy of Framingham State University.

Vandana Singh, assistant professor of physics at **Framingham State University**, is changing the culture of her classroom along with the way her students absorb content.



The shift away from a “teacher-knows-all” classroom environment to, as she puts it, “a culture where students aren’t afraid to speak up” is one approach Singh and FSU colleagues have taken to redesign STEM gateway courses—first-level courses for those majors—at the university. The STEM Gateway Redesign,

funded with a Vision Project Performance Incentive Fund grant, works to develop student interest, access and achievement—ultimately improving STEM student outcomes and increasing the attractiveness of those majors.

Singh asks students to examine why people make mistakes and how they can be eliminated, especially in medicine and engineering, assigning extra reading of books like Atul Gawande’s *The Checklist Manifesto*. And in order to promote deep learning—true mastery of the material versus surface learning for a passing grade—Singh insists on

1 Boost College Completion Rates

Especially at Community Colleges & in STEM Fields

WHERE WE STAND TODAY

- While 70 percent of high school graduates who attend college in state choose to “Go Public” at a community college, state university or UMass campus¹, not enough of them finish their studies and earn college degrees or certificates—exacerbating the degree shortfall facing the Commonwealth.
- Too many students—62 percent—still arrive at our community colleges unprepared for college-level work and must take non-credit developmental (remedial) courses, which slows and often derails their progress to commencement². (See page 38 for more specific data.)
- On the positive front, the number of STEM and Health Care-related bachelor’s degrees earned by students at MA public universities increased by 61 percent from 2007 to 2013, double the overall rate of growth in bachelor’s degrees awarded during that same period³.

MOVING FORWARD

- One-third of public campuses are now meeting Vision Project graduation rate goals. It’s time to implement their winning strategies across the entire system.
- We need to intensify efforts to graduate more students in STEM degree and certificate programs. Currently, only 27 percent of MA public university graduates receive bachelor’s degrees in STEM and Health Care-related fields³.
- Eight public campuses are collaborating on **Complete College America’s** Guided Pathways for Success (GPS) initiative, with all 15 community colleges lined up to adopt this national model which is producing dramatic improvements in completion rates.
- Nine state universities have agreed to scale up a plan developed by **Massachusetts College of Liberal Arts** (MCLA) to improve student retention and college completion rates in STEM disciplines.
- A new BHE policy based on impressive national research is allowing campuses to conduct pilot studies using high school GPA in lieu of placement exams as a measure of student readiness for college-level math, an effort to reduce the number of students assigned to developmental (remedial) coursework. They are also creating new academic “pathways” for math instruction that align more closely with different areas of study. (See page 25 for more.) →

problem sets done by hand, demonstrating each algebraic step with clear diagrams. If students get the right answer but their work fails to show logical progression to that answer, they still earn a zero.

To help students achieve the needed level of mastery, Singh has increased her availability for extra help, at times doubling typical office hours. And she emphasizes application of the material to everyday life, asking students to share examples of physics in the world around them.

Her attempt at these changes, Singh says, was at first “an interesting failure”—as science sometimes is. “Many students thought at first that they shouldn’t have to work so hard for a course that wasn’t necessarily part of their major,” she says.

But by the end of the redesigned courses, students did better than expected—exam pass rates improved from 56 to 78 percent—and surveys reflected increased interest in physics and STEM majors. According to FSU administrators, the number of students requiring remediation in math has also been cut in half

through work with partner high schools, another aspect of the STEM Gateway Redesign Project.

For Singh, the most important change has been in showing students how they can be better learners. “Right from grade school, our education system encourages students to simply and blindly plug numbers in a formula and churn out an answer,” she says. “They couldn’t do that in my class—they had to find new ways of thinking.” ■

Close Achievement Gaps

WHERE WE STAND TODAY

- The gap between the college participation rates of African-American and White young adults has narrowed from 18 to 6 percentage points in five years⁴.
- At some public colleges and universities achievement gaps between White and Latino/a students are starting to close, but those between White and African-American students remain largely entrenched. (See pages 46–49 for the latest data.)

MOVING FORWARD

- STEM Starter Academies at Massachusetts community colleges are stimulating student interest in STEM, with particular benefit to low-income and minority students. (See page 28 for more on the impact of the Academies' inaugural year.)
- DHE will continue to advocate for expanded funding for the Commonwealth Dual Enrollment Partnership, which gives underrepresented students a chance, while still in high school, to take college courses for free or at reduced cost. Dual enrollment is a proven strategy for increasing college attendance and success.
- The Department of Higher Education, in partnership with the Departments of Early Education & Care and Elementary & Secondary Education, is launching The Massachusetts Consortium for Male Student Success to develop and implement local, regional, and systemic strategies to support low-income males and males of color. Six campuses have already launched initiatives to increase support for this population of students. →

Massasoit Board Chair Tackles Gaps at Alma Mater



Pamerson Ifill. Photo courtesy of Massasoit Community College.

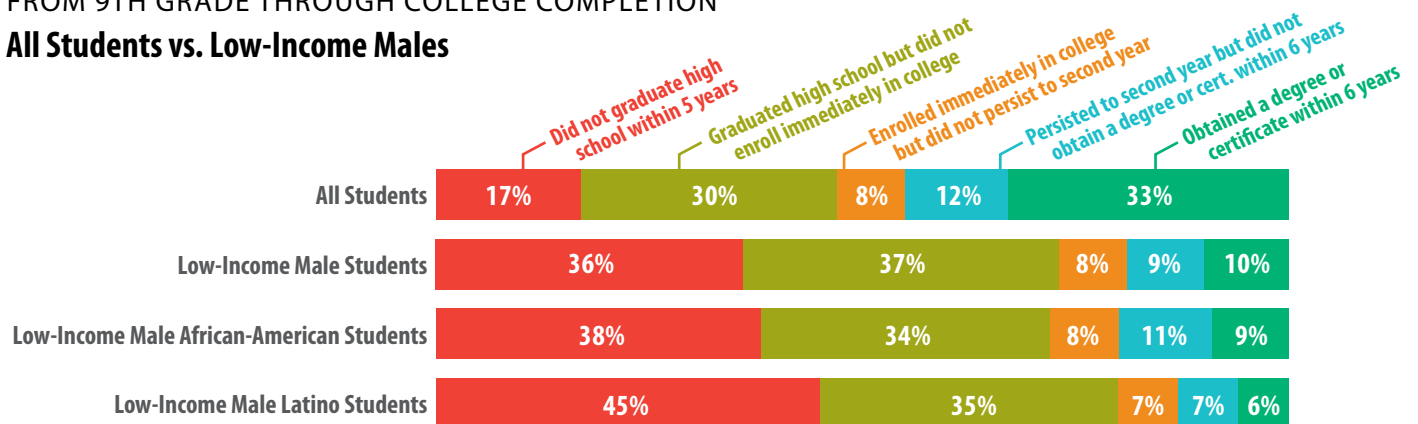
Helping Fellow Students Finish



Manny Monteiro. Photo courtesy of UMass Boston.

MASSACHUSETTS' EDUCATIONAL PIPELINE FROM 9TH GRADE THROUGH COLLEGE COMPLETION

All Students vs. Low-Income Males



At his first commencement as a member of the Board of Trustees at **Massasoit Community College**, Pamerson Ifill felt uneasy as the graduates' names were read. While he noticed plenty of diversity, most names reflected an international student population, with fewer African-American students.

Indeed, come graduation day, U.S.-born male students of color, along with low-income White male students, are underrepresented at Massasoit. Ifill, a Massasoit graduate originally from Barbados, felt compelled to address the shortfall, and provide the same opportunities he had as a student in the 1980s. "Massasoit has been integral to my life—it gave me a foundation," says Ifill, now board chair. "We need to fix this issue to help more students succeed."

Ifill's epiphany, encouraged by the broader Vision Project graduation

goals, has inspired the creation of a new Minority Male Mentorship Program at Massasoit. The groundwork for the program, which will augment existing support programs at the college, will be built this academic year. Its goal is to increase graduation and transfer by five percent among male students of color and low-income White male students in its first full year of implementation.

"Many of these students come from backgrounds in which day-to-day existence is a struggle. They think they can't do college work," says Ifill, who is also regional supervisor of probation services for the Massachusetts Trial Court system. "This is about offering enough support so they can."

In addition to better linking underserved male students with existing resources at the college, the new program will develop an "early alert"

process to identify struggling students and engage them with extra mentoring. The program will emphasize the importance of supporting students in their first year to reduce their risk of dropping out, and help them use remedial courses as an opportunity to reach where they need to be. Working with the **Mass Mentoring Partnership**, Massasoit will identify and train volunteers to establish a network of mentors for male students.

The college is hiring two full-time employees to run this new initiative, a demonstration of Massasoit's commitment to the program and its underlying Vision Project goals.

"Closing the achievement gap is something we're taking seriously," says Massasoit President **Charles Wall**. "This program will help us broaden our reach and show young men that this is a place where they can find opportunity." ■

What do conversations about masculinity, fatherhood and the role of women in young men's lives have to do with graduation from college? To **Manny Monteiro**, a senior at **UMass Boston**, offering young men an outlet to deal with those issues, and more, is half the battle when it comes to helping them make it to college graduation day.

Monteiro, a Boston native majoring in Africana studies, co-founded a young men's forum called AMEND (Ambitious Men Engaged in Necessary Dialogue) on UMass Boston's campus. The forum evolved through the university's partnership with Success Boston, an initiative supported by the **Boston Foundation** aimed at increasing college completion and workforce readiness among Boston Public School students. Success Boston has helped current students achieve an 85 percent persistence rate, as measured by year-to-year

retention. Monteiro co-founded AMEND in 2012 to augment Success Boston's academic-focused programs.

"Academic preparation for college is one thing, but a lot of male students who drop out are overwhelmed by other aspects of their lives," says Monteiro. "This is about showing them there are people who've worked through those challenges and graduated."

AMEND, which is open to any male UMass Boston student, was launched with three primary goals in mind: to build a brotherhood by sharing common struggles; to give back to the communities its students come from; and, ultimately, to help members complete their college degree. The group hosts an average of 13–14 meetings per year, encouraging dialogue on a range of social, emotional, personal and economic topics aimed at helping its 45 members think about pressing issues in new ways.

"When you provide young men with a group experiencing similar challenges, they can share strategies they use to navigate them," says **Liliana Mickle**, UMass' special assistant to the provost, academic support services and undergraduate studies, who serves as a campus liaison for Success Boston. "That has an impact on graduation. They say, 'I'll register next semester.'"

Monteiro says that talking through issues is often all it takes to refocus a floundering student on the ultimate goal: graduation day.

"The biggest reason people drop out of school is the perception they may not belong there; they can't see themselves as graduates," Monteiro says. "Personally, if Success Boston and AMEND hadn't shown me my own options, I would have dropped out." ■

At left: Cohort: Massachusetts public high school students who were first-time 9th graders in 2002–03 academic year and/or who graduated high school in 2006. Source: Massachusetts Department of Elementary & Secondary Education, End-of-Year SIMS and Edwin Analytics (National Student Clearinghouse Data).

Attract & Graduate More Students from Underserved Populations

WHERE WE STAND TODAY

- **Adult students:** Seventeen percent of all Massachusetts residents aged 25–65 have some college credits but no degree⁴. Most of these individuals are not currently enrolled in college. Many other adults aspire to jobs that require a college degree or certificate but are not yet ready for college-level work. Once enrolled or re-enrolled, adult students persist in their studies and earn degrees at lower rates than younger students, most likely due to competing family and job-related pressures³.
- **Military veterans:** While the overall student vet population is soaring, the share of this population attending Massachusetts public colleges and universities declined 5 percent in the past two years⁵.
- **High school graduates heading to out-of-state colleges:** Thirty-three percent of college-going Massachusetts high school graduates choose to enroll out of state¹. Massachusetts ranks 29th in the U.S. in its retention of high school graduates, which translates into an annual loss of 20,000 potential students⁶. If that trend were reversed, it would more than compensate for the projected decline in the high school population—and ease the state’s looming shortage of graduates.

Salute to Student Veterans



Michael Lewis. Photo courtesy of Greenfield Community College.

Greenfield Community College student **Michael Lewis** was on top of the world in the spring of 2013. A non-traditional student in his early 50s, Lewis was getting married and about to graduate from college. GCC had chosen him to be student speaker at commencement; family members were traveling from out of state to help him celebrate. After bouts of homelessness, financial stress and PTSD, the U.S. Marine Corps veteran thought he’d conquered all.

Instead, Lewis was told he’d failed a math class and couldn’t graduate. “It was humbling to fall short,” he reflects. “I had to start all over.”



What made the difference for Lewis was GCC’s Math Studio, a pleasant, light-filled space lined with couches and computers, staffed daily by math faculty and peer tutors. The relaxed environment helped ease Lewis’ math anxieties.

“The Math Studio is precious,” he says. “It’s a hang-out spot. A lot of times I’d be in there and a student who was more advanced would help me.”

Three-quarters of all GCC students who take math have visited the Math Studio at least once. The two-year developmental math success rate for 2013 was 40 percent, double the state average. The college attributes that success in part to the “community of learners” developed in the Math Studio.

Lewis not only passed his math course, he earned an A. GCC invited him to speak at the 2014 commencement—and this time, Lewis had a lot to say. ■

MOVING FORWARD

- We need to focus on the needs of two specific and important populations of adult students: those who have earned some college credit but remain short of obtaining an actual degree, and those who lack the basic literacy and numeracy skills to succeed at a community college. (See page 21 for more on initiatives to promote the success of adult students.)
- Although the Veterans Administration eliminated funding used to promote Post-9/11 GI Bill benefits, we must step up our outreach to the veterans' community by building greater awareness of public college and university degree and certificate programs, especially those offered online. We must also engage veterans at military base education offices, demobilization events and through local Veterans Service Officers and the **Massachusetts Department of Veterans Services**.
- We must implement new enrollment and outreach strategies to encourage prospective students to remain in state, including expansion of dual enrollment and early college programs, financial aid and scholarship incentives. Meanwhile, DHE's "Go Public!" campaign continues to promote awareness of public higher education reaches thousands of potential students at high school events each year. ■

"THE 'BIG THREE' COMPLETION PLAN" SOURCES

¹ U.S. Department of Education (IPEDS), Fall 2012. Calculations by Massachusetts Department of Higher Education (MDHE).

² MDHE, Fall 2013.

³ MDHE.

⁴ U.S. Census Bureau, American Community Survey, 2010–2012. IPUMS-USA, University of Minnesota, www.ipums.org.

⁵ Veterans Administration RCS report, April 2012

⁶ U.S. Department of Education, National Center for Educational Statistics, Common Core of Data.



Bryan Sanderson. Photo courtesy of Mount Wachusett Community College.

After learning that many community college students struggle to stay in school for one reason or another, Marine Corps veteran and **Mount Wachusett Community College** student **Bryan Sanderson** crafted a success plan for himself. He then made it his mission to establish MWCC's Students Serving Our Students office (Students SOS) to help others stay on track.

"In the military, you're always looking out for the person next to you," says Sanderson, who served in the 1990–1991 Gulf War. "You're always taught to have your battle buddy. You had to trust the guy next to you to look out for you, and you had to look out for him. And that's what we do in the SOS office. Students come to us with an issue or several issues. We're not counselors, but we put on a counselor hat because we want to help them figure out the root problem that is keeping them from being successful."

During its first semester, nearly 450 students tapped into the SOS office's resources and support. Student mentors in the office provide peers with information, referrals, and hands-on assistance with life issues that are posing barriers to their academic success, such as childcare, transportation issues, financial assistance, food assistance, housing and heating oil assistance, as well as guidance for on-campus tutoring and other support services. In the first three semesters of the program, students who sought assistance were retained (or completed their degrees) at a rate of 88 percent.

Bryan made the President's List and Dean's List for his academic achievements at the Mount and transferred this fall to Clark University. ■

VISION PROJECT PROGRESS

Campus & System Highlights

The goals of the Vision Project are informed by the data but driven by work underway at the campuses, in state government, and with collaborators around the state and the nation.

The following section details examples of this work that have the potential to move the needle in our pursuit of academic excellence and national leadership among state systems of public higher education. It is organized by the seven key outcomes identified in the Vision Project, listed at right, in which Massachusetts needs to be a leader among state systems of higher education.

Vision Project Performance Incentive Fund



Look for the VP-PIF icon throughout these pages for examples of these grants.

The **Vision Project Performance Incentive Fund** (VP-PIF) created by the Legislature has delivered \$21 million in competitive grants to UMass, state universities and community colleges since FY2012. These funds help campuses advance the Vision Project goal of becoming a Top 10 system of public higher education—and also support their collaborative efforts to operate with maximum efficiency.

“The VP-PIF grant allowed us to ramp up our First Year Success (FYS) program, a case management system designed to scale up the number of students that an individual advisor can successfully mentor toward graduation. The fall-to-fall retention rate for the 154 students served was 25 percent higher than the college’s overall retention rate.”

—**JOHN COX, PRESIDENT, CAPE COD COMMUNITY COLLEGE**

“Our VP-PIF grant made possible our implementation of the MAP-Works early alert system to help identify and support at-risk students. We have already seen an increase of nearly 4 percent in our persistence rate for students who utilize the system.”

—**PATRICIA MESERVEY, PRESIDENT, SALEM STATE UNIVERSITY**

Vision Project Key Outcome Areas

1 COLLEGE PARTICIPATION

Increasing the percentage of high school graduates who are going to college—and the readiness of these students for college-level work.

2 COLLEGE COMPLETION

Increasing the percentage of students who earn certificates & degrees to meet the state’s need for a highly educated citizenry & workforce.

3 STUDENT LEARNING

Improving teaching and learning through better assessment, plus documenting our results for the public.

4 WORKFORCE ALIGNMENT

Aligning occupationally oriented certificate & degree programs with the needs of statewide, regional and local employers.

5 PREPARING CITIZENS

Providing students with the knowledge & skills to be engaged, informed citizens.

6 CLOSING ACHIEVEMENT GAPS

Closing achievement gaps among students from different ethnic, racial and income groups in all areas of educational progress.

As this goal is woven into all other key outcome areas, look for the Closing Achievement Gaps icon throughout these pages for examples of this work.

7 RESEARCH

Conducting research that drives economic development.


Taking the Leap

“A Program that Helped Me Gain Confidence in Myself”



The New Class. Leap for Education students on one of eight college campus visits. Photo courtesy of Salem State University.

“100 percent of ... students pass MCAS, graduate from high school and enroll in college.”

Leap for Education (formerly known as Salem CyberSpace) has some winning numbers: 100 percent of the college access program’s students pass MCAS, graduate from high school and enroll in college, while an impressive 85 percent are on track to graduate or already have earned college diplomas. The program, funded with a federal College Access Challenge Grant (CACG) administered by the **Department of Higher Education** (DHE), delivers high-intensity advising, tutoring and old-fashioned nurturing to 110 economically disadvantaged high school students in Salem, Peabody and Gloucester, supporting them from junior year through college graduation. Ninety percent of the students come from homes where English is not spoken; 80 percent attend **North Shore Community College** or **Salem State University**. 

“My Leap for Education counselors checked on me every week for the two years I was at North Shore Community College,” recalls student **Johanna Rodriguez**, now a student at Northeastern University. “They always made sure I was doing well in my classes and seeking out teachers if I needed help.”

“We are proud of our success,” says Leap for Education director **Linda Saris**. “We believe our program could be a model for other communities across the Commonwealth.” ■



Go Public! Scenes from a DHE Go Public! college and STEM fair at **North High School** in Worcester: (top) student speakers from five public campuses; (bottom left) **Governor Patrick** addressing North High students during the auditorium program; (bottom right) North High students browsing the offerings of Massachusetts public colleges and universities, including interactive exhibits showcasing STEM majors.

MORE INFO AT WWW.MASS.EDU/GOPUBLIC

Dual Enrollment: “A Crucial Tool”

The **DHE’s Commonwealth Dual Enrollment Partnership (CDEP)** allows 2,300 high school students to earn college credit while shaving hundreds or even thousands of dollars off the cost of a future degree. For first-generation students, dual enrollment is “a crucial tool, not only for getting them into college, but retaining and graduating them as well,” says **Carlos Santiago**, DHE Senior Deputy Commissioner for Academic Affairs.

Bunker Hill Community College (BHCC) operates a dual enrollment satellite campus at **Malden High School** where 89 percent of students who took one of more of BHCC’s 58 class offerings enrolled in college the fall after they graduated, compared to 68 percent of the overall Malden High population. ■

MORE INFO AT WWW.MASS.EDU/DUALENROLLMENT

Campus Highlights



■ **We’re #1!** **Holyoke Community College’s** Gateway to College program gives high school dropouts a second chance by allowing them to earn both high school diplomas and college credit. Holyoke’s program is ranked first in the nation among the 43 Gateway programs for both its fall-to-fall persistence rate (87%) and graduation rate (80%). The numbers far exceed the Gateway network averages of 53% for retention and 27% for graduation. *Photo courtesy of Holyoke Community College.*

■ **Building Bridges:** With critical support from the state **Legislature**, the **DHE** has launched a new “Bridges to College” program to provide low-income and entry-level adult workers with academic skills and other support services needed to make a successful transition to community college. All three of the funded programs obtained impressive results; the Bridges program run by **Jewish Vocation Services (JVS)** in partnership with **MassBay Community College** laid the groundwork for expansion of JVS’ adult learning model into the Framingham/MetroWest area. Its program completion rate surpassed 90%, with 88% enrolling in college, and 45% placing into college-level math.

■ **University Without Walls (UWW):** **UMass Amherst** is serving another, equally important segment of the adult student population: those who have completed some college but have no degree. UWW offers online-only and blended degree programs for adults seeking their first bachelor’s degree. UWW is graduating more than twice as many students as a decade ago; its 71% graduation rate is 25–30% higher than the top-ranked online programs in the U.S. (as ranked by *U.S. News & World Report*). The program is now expanding to Springfield.

■ **Rx for Diversity:** The **UMass Medical School (UMMS)** has launched a new effort to help disadvantaged and underrepresented students earn a place in medical school. In 2013–14 UMMS launched the Health Sciences Preparation Program (HSPP) with a small cohort of students who took six credits of core curriculum and six credits of professional development activities at UMMS to boost their chance of admission. All four HSPP students were admitted to UMMS upon completion of the program, an achievement given that only 10.5% of last year’s 1,188 applicants were accepted.





To the Finish Line

More Students Completing Degrees, Certificates



The Picture of Success. These new graduates are all smiles at **UMass Boston's** 46th commencement exercises in May 2014. Photo courtesy of John Gillooly/UMass Boston.

Raising the Rates



UMass Boston, through its graduation rates improvement plan and with support from the Vision Project Performance Incentive Fund and philanthropic gifts, is building a new system and culture to keep students on track to timely graduation. The University is using professional advisors to augment faculty advisors, grouping freshmen into learning communities, using early alert systems to track student performance, and increasing experiential learning opportunities through internships and undergraduate research.

These efforts are paying off. UMB's six-year graduation rate for first-time, full-time freshmen is up six percentage points over the previous year. Meanwhile, UMB's College of Science and Mathematics is graduating 70 percent more students with bachelor's degrees in STEM disciplines than it did five years ago. The four-year graduation rate for the first cohort of CSM Freshman Success Community students is 41 percent—double the national four-year graduation rate for STEM majors.

Narrowing the Gaps



Bridgewater State University's six-year graduation rate has increased 8.2 percent for students of color, compared to a 6.6 percent increase for White students in the last five years. Bridgewater has also narrowed the six-year graduation rate gap between Latino/a and White students, from an all-time high of 23 percentage points to just five points (based on three-year rolling averages).

For students with a GPA higher than 2.0, **UMass Lowell** has closed or significantly narrowed the retention gaps between African-American, Asian, Latino/a and White students. Meanwhile, the percentage increase in degrees granted to students of color is rising fast—up 156 percent for Latino/a, 118 percent for Asian, and 80 percent for African-American students—faster than the 49 percent increase in degrees granted to White students from 2008 to 2013 (calendar years).



A Transformation Agenda. (From left) **U.S. Secretary of Labor Thomas Perez, U.S. Secretary of Education Arne Duncan,** and students of **Springfield Technical Community College** tour the college's advanced manufacturing center as part of a celebration of the \$20 million U.S. Department of Labor continuation grant awarded to all 15 community colleges in October 2014. Photo courtesy of *The Republican*.

Improving Success Ratios

The **Massachusetts Community Colleges & Workforce Development Transformation Agenda (TA)** is helping to ramp up community college completion and student success rates. More than 6,000 students have enrolled in 151 programs to help them earn degrees or certificates in six high-need fields: health care, advanced manufacturing, information technology, biotechnology, clean energy and financial services. A new \$20 million continuation grant from the **U.S. Department of Labor**, the largest of its kind awarded to any state under the grant program in 2014, will be used to develop pathways for “acceleration of learning and completion of STEM degree and certificate programs.”

At **Bristol Community College** completion rates for TA programs are nearly double the overall student success rate of 46 percent. Eighty percent of students in the business administration transfer program earned their associate's degrees last year, as did 89 percent of those earning central sterile processing (health care) certificates. ■

Campus Highlights



■ **Westfield State University's** six-year graduation rate is among the highest of the Commonwealth's state universities, standing at 58% as of 2013. Westfield attributes its success to a number of institutional academic and capital improvement initiatives. To close achievement gaps, the University has launched a multi-year strategic plan to increase retention of first-year and transfer students. The University has implemented graduation audit software that makes it possible for students to accurately monitor their own progress toward their degree, and increased resources and academic support services for students through its Urban Education program and Banacos Academic Center, which provides additional advising, peer-tutoring and the only public Learning Disabilities Program in New England. *Photo courtesy of Westfield State University.*

■ **UMass Amherst** continues to show impressive improvement in student success; the Commonwealth's flagship campus has the highest student retention and graduation rates in the public sector. From 2010 to 2013, the four-year graduation rate at UMass Amherst rose from 54% to 66%, while the six-year rate for 2013 stands at 73%. UMass Amherst is attracting students with stronger academic preparation for college and participating in a national consortium to apply state-of-the-art analytics and advising best practices to students in all majors, especially in the critical first year.



Honorable Mention: Student Vets. Salem State University has nearly doubled its population of student military veterans in the last five years, 63 percent of whom graduate with honors (compared with 36 percent of the general student population). As part of its push to enroll, retain and graduate more vets, Salem State is developing specific programs to help vets with job placements and career networking. Last June Salem partnered with **North Shore Community College** and **Abiomed**, a Danvers-based health care technology company, to host the first-ever life sciences career seminar for veterans. Photo courtesy of Salem State University.

OPINION

Massachusetts Community College Performance-Based Funding Formula: A New Model for New England?

The following excerpt is reprinted with permission from the New England Journal of Higher Education.

The Massachusetts community college system is entering a second year with funding for each of its 15 schools determined using a new performance-based formula. Under the new model, 50 percent of each college's allocation is based on performance on metrics related to enrollment and student success, with added incentives for "at-risk" students completing certificates and degrees and those graduating in disciplines that fuel that state's economy. The new funding model provides clarity, equity and accountability to students and taxpayers.

The evolution to this new formula is an accomplishment that sets Massachusetts apart nationally. With the exception of Tennessee—the first state to adopt value-added assessment for evaluating K-12 teachers, and where all funding for higher education is based on performance—no other state has been so bold to tie 50 percent of funding to performance.

Ultimately, the Massachusetts funding model highlights the values of the system and its commitment to aligning education with the workforce needs of the state. The new funding formula also preserves the system's historical commitment to the liberal arts and encouraging students to transfer to bachelor's-degree granting institutions.

Values in new funding formula

Community colleges attract students who are diverse in race, age, socio-economic status and academic preparation. A statewide strategy that incentivizes postsecondary educational attainment and aligns education to fields where residents have a high probability of securing well-paying salaried positions will help sustain economic growth, equity and mobility toward the middle class.

The new funding model incentivizes high enrollment, completion and transfer in a segment of higher education where the annual cost of attendance is about \$5,000. It is built to reward rather than penalize schools for enrolling low-income, at-risk students. It incentivizes



Yves Salomon-Fernandez is vice president for strategic planning, institutional effectiveness and grants development at MassBay Community College and executive officer of MassBay's Framingham campus.

progress through remedial/developmental education and rewards colleges not just for graduation, but also progress toward graduation and transfer even if students transfer before graduating from their community college. Additionally, given the complex lives of community college students, the model accounts for variation in the pace of college completion by embracing a six-year time frame. Lastly, it acknowledges variations in academic program cost. Fully implementing the model without dilution is the challenge before the community college system in Massachusetts. ■

In the Works: Remedial Math Remedies

Westfield State University (WSU) is taking part in a pilot authorized by the **Board of Higher Education** (BHE) to gauge whether high school GPA is a better indicator of student readiness for college-level math than the traditional ACCUPLACER® placement exams. Students with a GPA of 2.7 or higher are now exempt from taking the ACCUPLACER® exam. While the overall number of students enrolled in remedial math has plunged, some faculty voice concern that students who need extra help may not be getting it. Math department chair **Karin Vorwerk, Ph.D.**, believes that overall high school GPA can mask deficits in math abilities. WSU has launched a study to see if using students' specific high school math GPA and other metrics gives a better read on whether they are likely to be successful in college-level math.

"We are looking at this (BHE policy change) as a chance to figure out what we can do better," Vorwerk said. "Our model of giving students an extra hour of help when needed has been quite effective, but we now have more diagnostic tools we can use to pinpoint students' math abilities, with the goal of using the most precise instrument available to us."

Northern Essex Community College (NECC) has also restructured its developmental math pathways, looking for better, faster student transitions into credit-bearing coursework. NECC created two separate instructional tracks—one for STEM majors, and one for non-STEM (liberal arts, education) majors. The change eliminates one entire developmental course for the non-STEM students and has improved outcomes for all students. Seventy-one percent of NECC STEM majors and 80 percent of non-STEM majors have successfully transitioned to college-level math—up from 65 percent a year ago—saving students both time and money.

"Our math faculty suspected all along that the two pathways might help both groups of students," said **William Heineman, Ed.D.**, vice president of academic and student affairs at Northern Essex. "Faculty attention and ability to move through the material crisply was undoubtedly affected by the need to help non-STEM students through the concepts. Now, STEM students make up the whole class, and the instructor can focus on how to help them with college-level algebra, trig, or calculus in courses such as engineering where they will have to apply that math." ■

Campus Highlights



■ **The First-Year Experience: Middlesex Community College** is using an enhanced First-Year Experience to help new students develop the campus connections that research shows keep them persisting in their studies. Along with social and civic activities, MCC is connecting first-year students through learning communities which group them with the same cohort of students. Ninety-five percent of students who completed the First-Year Interdisciplinary Studies 101 course in spring 2013 enrolled the following semester, compared with a 65% re-enrollment rate for those who did not complete the course. MCC is also linking first-year seminars with general education courses. Students in the linked courses are persisting at higher rates than those taking non-linked courses.

■ **Focus on Latino Males: Worcester State University's Latino Education Institute** has received a \$200,000 grant from the **Boston Foundation** and **Lloyd G. Balfour Foundation** to track postsecondary outcomes for Latino male students in Worcester, Lawrence, Boston, Springfield and Holyoke.



"Pathways to Higher Education: Opportunities and Outcomes for Latino Young Men in Five Massachusetts Communities" represents a unique opportunity to identify strategies that could be used across the state to improve career and college outcomes for Latino boys," says **Mary Jo Marion**, executive director of the Latino Education Institute. "We intend to lift Latino youths' voices in the public discourse."

■ **Saving Tuition, Time to Degree: Fitchburg State University** has shortened the time to degree completion for students interested in law careers. FSU is offering a three-year baccalaureate degree as part of a new partnership with the **University of Massachusetts Law School**. Qualifying students will have an opportunity to earn their bachelor's and law degrees in just six years. The program will save participating students a year's worth of undergraduate tuition and fees while shortening the time to complete two degrees.

"I'm hopeful that this agreement will motivate students to do something they otherwise may not have attempted," said Fitchburg State Interim Vice President for Academic Affairs **Paul I. Weizer**.



Going National

Massachusetts Assessment Project Embraced by Eight Other States

Through the Vision Project, Massachusetts has emerged as a national leader in efforts to assess student learning without state-mandated standardized tests. Eight other states—Connecticut, Indiana, Kentucky, Minnesota, Missouri, Oregon, Rhode Island and Utah—have joined us in forming the **Multi-State Collaborative to Advance Learning Outcomes Assessment** (MSC), now under the direction of the association of **State Higher Education Executive Officers** (SHEEO) and the **Association of American Colleges & Universities** (AAC&U). The goal of the project is to collect data that will allow for cross-state comparisons of student achievement, while also providing states, institutions and faculty with the means to assess and improve instruction. Sixty-eight institutions, including 14 public campuses in Massachusetts, will use AAC&U’s LEAP Essential Learning Outcomes to measure student learning.

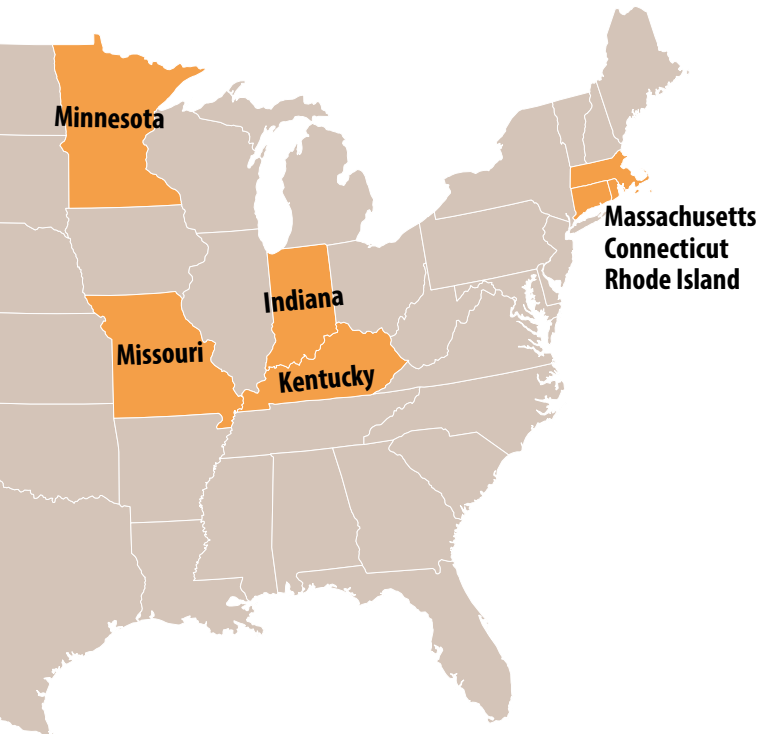
“This will give the Commonwealth important information about how our students perform compared with peers in other states,” says **Commissioner Richard M. Freeland**. “It will provide the first comprehensive evidence of whether our graduates are truly prepared to compete in and contribute to the world.” ■

MORE INFO AT WWW.SHEEO.ORG/MSC





Critical Thinking. Roxbury Community College honors student **Dimone Mannon** presents to his class. The RCC Honors Program offers students the chance to create research-based projects that emphasize learning outcomes like critical thinking and innovation. Photo courtesy of Phuong Tang/Roxbury Community College.



Campus Highlights



■ **“You Spoke, We Listened”:** UMass Dartmouth is using a promotional campaign called “You Spoke. We Listened” to make students aware of how data they provide is used to improve the student experience—and academic outcomes. The campaign devised by the campus Office of Institutional Research and Assessment is aimed at fostering a “culture of improvement” by asking students to assess a broad range of practices and policies, from library hours to how assignments are designed. Responses to student feedback—with reports on steps taken by the University—are then posted all over campus. “Too often we forget about the students’ role in assessment,” said **Marlene Clapp, Ph.D.**, UMass Dartmouth senior institutional research analyst. “This is a way to show students how their own assessments can lead to positive change.”

■ **New Thoughts on Assessment:** Cape Cod Community College Language and Literature Professor **Bill Berry, Ph.D.**, has been very involved in the Vision Project’s AMCOA (Advancing a Massachusetts Culture of Assessment) group, which led him to see the “distinct differences” between assessment and grading. Using a new assessment program called WEAVE, Berry uploaded assignments and rubrics and added qualitative data only to discover that in many cases, students were graded highly even though they were actually missing what he was trying to assess in their learning. As a result, Berry is now retooling his assessments.

“Part of the pushback that we’ve had about assessment on our campus is the notion that faculty are already doing assessment because they grade it,” Berry reflects. “But what does the grade tell us? Assessment is formative; students can take what’s being assessed and apply it to their next assignment. So I am trying to be more specific in the assessment materials about what skills I need them to demonstrate.”

Berry’s goal is not to make grading easier, but assessment clearer. “I want students to understand, for example, that because this is a final paper and they are still writing in the first person, and not the third person academic voice, that will be weighed more heavily than it was in the first paper they produced at the start of the year. So I am using a more graduated rubric. I am really applying the AMCOA conversations to my students’ work in class.”



Where does Massachusetts rank against other states in Workforce Alignment?

Data dashboard on page 42 →

A STEM Start

New Community College Academies Open Doors to Science, Technology, Engineering, Math Pursuits



They built a 16-foot suspension bridge at **Springfield Technical Community College**, simulated the lab discovery of a cancer drug and built electric guitars at **Quinsigamond Community College**, and learned about engineering career pathways at **North Shore Community College**. More than 5,500 high school juniors, seniors and recent graduates took part in 173 events and programs held during **STEM Starter Academies** this summer at the Commonwealth's 15 community colleges. The new statewide initiative championed by **House Speaker Robert DeLeo** aims to boost student interest in and preparation for college coursework and careers in science, technology, engineering and math fields. Students took free or subsidized college-level courses in math, engineering, biotechnology, computer and lab sciences, many of them earning college credit and cash stipends in the process.

"Students may not always think a STEM career is for them, but we want to show them there are a lot of places that degree can take them," said **Robert Dickerman**, dean of the School of Math, Sciences and Engineering Transfer at Springfield Technical Community College. "Being a part of a STEM Starter Academy is a phenomenal opportunity for local students." ■



"A Phenomenal Opportunity!"

Students participate in STEM Starter Academies at (clockwise from left) **Bristol, Bunker Hill and Springfield Technical Community Colleges**. Photos courtesy of campuses.

**MORE INFO AT
WWW.MASS.EDU/STEM**

Educating Nurses to a Higher Degree

Massachusetts needs more nurses educated at the baccalaureate level or higher—and the statewide nursing plan developed by the Department of Higher Education (DHE) in partnership with public and private college and university nursing programs and industry leaders is achieving results faster than anyone expected.

The overall number of students graduating with bachelor of science in nursing (BSN) degrees increased 34 percent statewide from 2010 to 2013. Within that group the number of licensed nurses returning to college to earn their BSNs increased an impressive 81 percent in the last three years, as incumbent nurses took advantage of degree programs like the one offered by **Worcester State University** on the campus of **UMass Medical Center**, where nurses can take classes at the hospital after completing their shifts.

Meanwhile the number of students graduating with associate's degrees in nursing (ADN) remained relatively flat, a sign that more students may be recognizing the need for better credentials. Research indicates that nurses with baccalaureate or higher degrees have improved patient outcomes as well as better competencies to manage technological change and increasingly complex demands of a health care system transitioning from an acute-care model to a community-based care model.

"We laid out a schedule for growth in the BSN-educated nursing workforce, and I am delighted to see that we are about two years ahead of schedule," said **David Cedrone**, DHE's Associate Commissioner for Economic and Workforce Development. **UMass Boston**, the top producer of BSN-educated nurses in the state, graduated 56 percent more nurses in 2013 than in 2010, a DHE data analysis shows. ■

Campus Highlights



■ **Advancing Interest in STEM: Quinsigamond Community College** (QCC) is closing achievement gaps and boosting student interest in science, technology, engineering and math fields with its Advanced Robotics Intensive (ARI) programs for middle school students in Worcester. ARI is an @Scale-endorsed project funded by the **Governor's STEM Advisory Council**, with grant funding from the Vision Project Performance Incentive Fund paying college students to mentor younger students during summer camps. Data analyzed by the **UMass Donahue Institute** indicated that 80% of the male students and 68% of the female students who participated in ARI "think most" about STEM jobs when planning their future, compared to 37% interest in STEM jobs among Massachusetts SAT-takers.



"We're starting to see kids in Worcester begin in robotics in elementary school and then continue," says **Betty Lauer**, program director, noting that Worcester now has the nation's second-highest number of school robotics teams. "Given similar exposure and access to robotics, there are no performance gaps between students of color and White students in our program." *Photo courtesy of Hillarie Jason/Quinsigamond Community College.*

■ **Retaining STEM Majors: Massachusetts College of Liberal Arts** (MCLA) is using \$639,826 from the **National Science Foundation** (NSF) to fund need-based STEM scholarships, while also tapping a grant from the DHE's STEM Pipeline Fund to help more students persist and graduate with STEM degrees. Through the NSF grant and the STEM Pathways Program, students will receive academic support, career guidance, and research opportunities. MCLA faculty are also collaborating with faculty from other state universities to identify best practices to improve student retention and completion, and will receive STEM Pipeline funding to support their work.

National data indicate that fewer than 40% of students who enter college intending to major in a STEM field ever complete a STEM degree.

■ **Mentoring for Success:** Mindful that employment in the biopharmaceutical industry accounts for over 57,000 jobs in Massachusetts, **MassBay Community College** has launched a mentoring program to help students prepare to work in the field. MassBay assigns a mentor to every entering Life Sciences student testing into at least Algebra I and every returning student with a minimum of a 3.0 GPA. This year alone, MassBay recruited 55 new mentors with **Genzyme**, a **Sanofi Company**, supplying 40. The Genzyme partnership has helped identify areas where MassBay can address middle-skills gaps in the company's advanced manufacturing arm.

IT, Allied Health Benefit from New “Real-Time” Workforce Planning

Building on its success working with campuses and industry groups to project the state’s future nursing workforce needs, the **Department of Higher Education** (DHE) has expanded its strategic workforce planning to information technology and allied health fields.

Information Technology & Computer Science

The *Technology Talent Initiative Workforce Plan* offered the first comprehensive statewide assessment of the “critical gap between the number of degrees granted in computer science and information technology at our public (campuses), and the current and projected growth in jobs requiring those credentials.” Authors of the report concluded that “degree-granting in these fields should double to fill the gap in qualified talent.”

Allied Health—Direct Care

Similar shortages loom in the allied health field, where a largely female direct care workforce (including certified nurse assistants, medical assistants, personal care and home health aides) needs educational pathways that allow them to acquire credentials and advance into jobs that offer family-sustaining wages.

“The direct care workforce grew 50 percent faster than the Health Care and Social Services sector overall,” stated the *Allied Health – Direct Care Workforce Plan* approved by the Board of Higher Education in June 2014. “Despite growth in employment, these are the positions that are often more difficult to fill.”

“Real Time” Data

Faced with the challenge to offer degree and certificate programs aligned with

continually changing workforce demands, this year Massachusetts’ public colleges and universities and the DHE jointly purchased a tool called Help Wanted OnLine. The program uses real-time labor market information, combing through all job postings on the web to aggregate information about what certifications and credentials employers are mentioning in their ads.

“This efficient use of shared technology is leading to better decisions on programming and investments to achieve desired certificate and degree completion that will meet labor market needs across the Commonwealth.”

The information is used to better understand hiring trends and education and skill requirements of job openings, and provide insight into how jobs and job titles are changing. In the past year, the DHE has used this tool to inform the IT and allied health workforce plans, as well as *Massachusetts STEM Plan 2.0* and Guided Pathways to Success in STEM Careers initiative. This efficient use of shared technology is leading to better decisions on programming and investments to achieve desired certificate and degree completion that will meet workforce needs across the Commonwealth.

At right are recent findings of this work based on summer 2014 data. ■

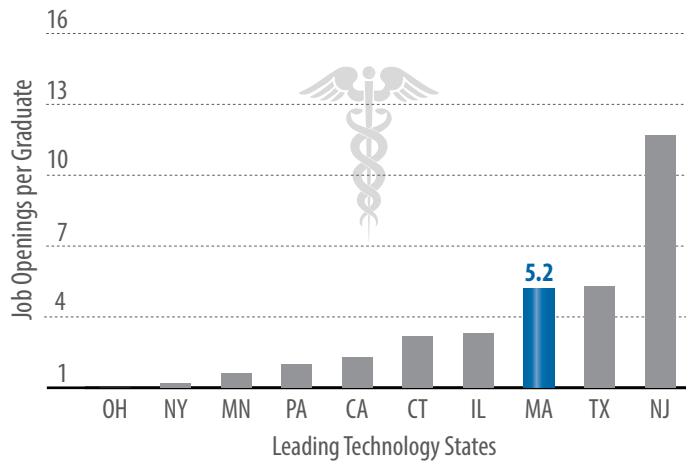


Stellar STEM Grad. 2014 **Roxbury Community College** graduate (and 29 Who Shine honoree) **Nene Diallo** was part of the Louis Stokes Alliance for Minority Participation (LSAMP) program, which works to increase postsecondary attainment in STEM fields among under-represented minority groups. Photo courtesy of Roxbury Community College.

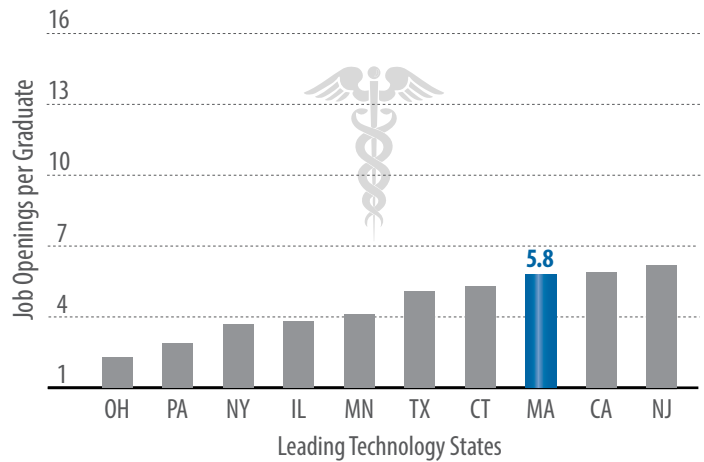
High-Demand Fields: Job Openings per Graduate in Leading Technology States

A value close to 1 (small bar) indicates better alignment between the number of job openings in the state and the number of graduates the state is producing in related fields. A high bar means employer hiring demand exceeds higher education supply and the state has an opportunity to accelerate job growth by expanding higher education programs in these fields.

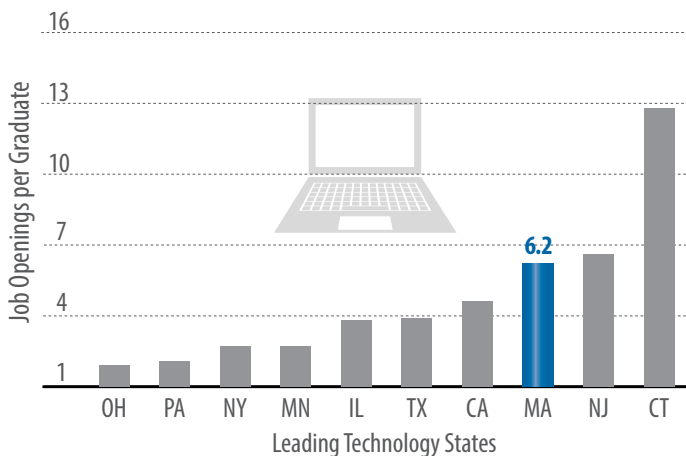
Associate's Degrees & Certificates in Health Care Support



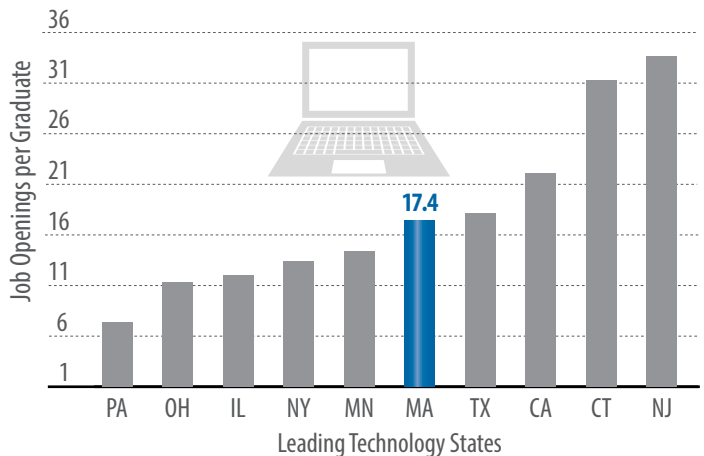
Bachelor's Degrees in Health Care Practice



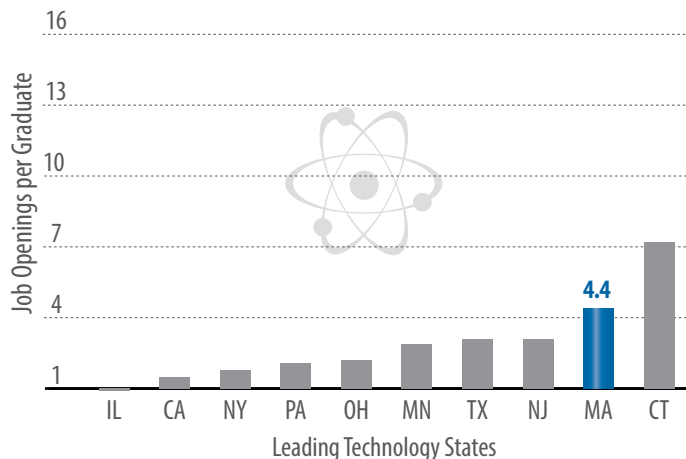
Associate's Degrees & Certificates in Computer Science & Information Technology



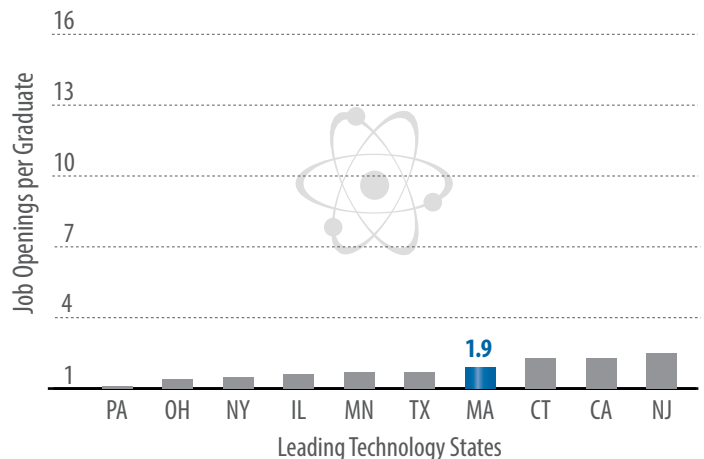
Bachelor's Degrees in Computer Science & Information Technology



Associate's Degrees & Certificates in Other STEM Fields



Bachelor's Degrees in Other STEM Fields



Sources: Wanted Analytics, May–July 2014; U.S. Department of Education (IPEDS), 2010–2012 (three-year average). Calculations by MDHE.



Our Civic Duty

Commonwealth Leads on Civic Learning

“**Massachusetts is showing us the way forward by reconnecting college, careers and civic vitality.**”

—CAROL GEARY SCHNEIDER,
PRESIDENT, ASSOCIATION
OF AMERICAN COLLEGES
& UNIVERSITIES

In 2012, the **Massachusetts Board of Higher Education** became the first statewide governing board in the nation to designate civic learning as an “expected outcome” for undergraduate students and, in May 2014, followed up with a policy for implementation by campuses. The policy defines civic learning as:

The knowledge, the intellectual skills and the applied competencies that citizens need for informed and effective participation in civic and democratic life; it also means acquiring an understanding of the social values that underlie democratic structures and practices.

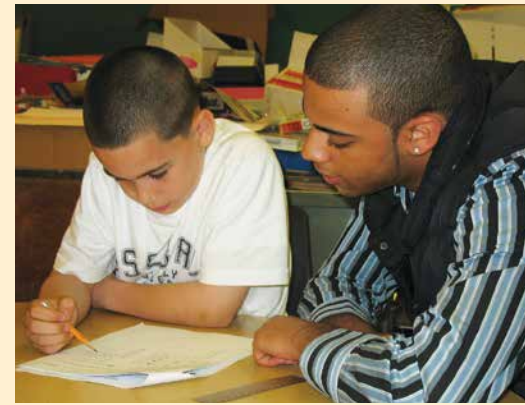
What’s next? The 29 public campuses will convene at a fall conference at the new **Edward M. Kennedy Institute for the United States Senate** to share best practices and discuss implementation of the new policy, including plans to collect data on civic learning. A Data Collection Team including representatives from four state universities, four community colleges, **Massachusetts Campus Compact** and the **Department of Higher Education** is currently discussing possible approaches to documenting levels of student participation in civic learning programs as well as actual levels of student learning in this area.

“We have long needed determined leadership to make civic learning in college just as important as preparation for careers,” said **Carol Geary Schneider**, president of the **Association of American Colleges & Universities**. “Massachusetts is showing us the way forward by reconnecting college, careers and civic vitality.” ■



Teaching Social Values. Westfield State nursing students participated in an international public health mission to Santa Maria de Jesus, Guatemala in March 2014. The goal was to supplement the classroom experience with public health field work addressing the issues of affordability and access to health care. Photo courtesy of David Fried/Westfield State University.

Campus Highlights



■ **Partnership in Pittsfield:** As part of **Berkshire Community College's** (BCC)



focus on civic learning, BCC faculty used a Vision Project Performance Incentive Fund grant to redesign six courses to incorporate civic engagement concepts, such as communication strategies to “establish relationships to further civic action” and lessons to prepare students for “working within and learning from a diversity of communities and cultures.” The courses provided a civic learning framework for students tutoring and mentoring elementary school students through a partnership with the Pittsfield Public Schools. The school system reports that 42% of its students showed academic improvement and 69% showed a heightened awareness of educational opportunities after working with BCC tutors.

Photo: blogs.berkshirecc.edu.

■ **Living History Through Civic Learning: North Shore Community College** (NSCC) is putting a new emphasis on democratic engagement by integrating service learning into many of its core classes. In US History, students are tasked with interviewing seniors from nearby Lynn to document the mill city’s history through the lens of eyewitnesses. Students then tie these narratives to their own learning about American history and present it at community forums held at the Lynn Museum.

Art & Community



Training Leaders. MassArt students participating in CACP’s 2013–14 Community-Based Leadership Trainings entitled *Social Justice and Cultural Competency Training Series*. Photo courtesy of MassArt.

Massachusetts College of Art and Design (MassArt) has integrated civic learning through the Center for Art and Community Partnerships (CACP).



CACP’s Community-Based Student Employment program places students as curators, designers and teachers at local community-based organizations where students often experience a range of social and cultural challenges. A six-session training series, including an overnight retreat, are required of students to help them develop cross-cultural communication skills and the ability to promote racial justice.

“Using these tools will certainly help me have the courage to address the tough topics [citizens must face],” one student said in an assessment survey. ■



Making an Impact

**\$591 million in UMass
R&D Expenditures in 2013**

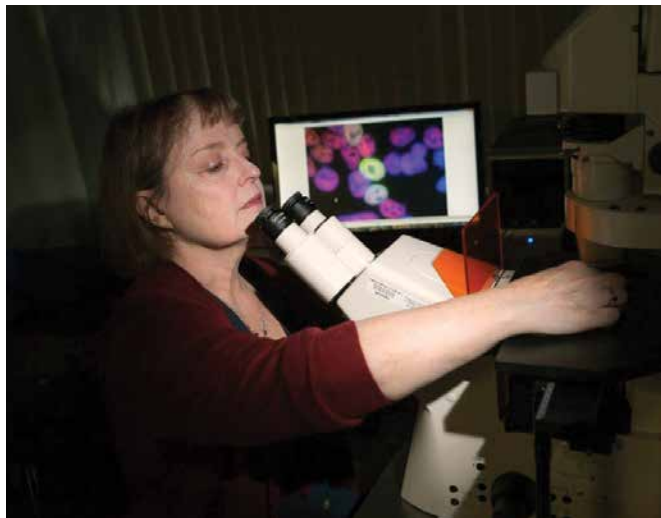
“The ripple
effect of our
activities directly
or indirectly
**touches every
person in
the state.”**

—ROBERT L. CARET, PRESIDENT,
UNIVERSITY OF MASSACHUSETTS

Research and development (R&D) expenditures by the **University of Massachusetts** totaled \$591 million in 2013, according to an annual report by the **UMass Donahue Institute**. These expenditures reverberated throughout the Massachusetts economy in a variety of ways—as local purchases were made on supplies and as workers spent their paychecks. In total, UMass R&D expenditures contributed an estimated \$1.1 billion in economic activity to the Massachusetts economy last year.

“In addition to providing academic excellence in a wide variety of disciplines and internationally recognized research, the University of Massachusetts is a significant economic driver for the Commonwealth,” said UMass President **Robert L. Caret**. “State investment in UMass leverages significant in-state and out-of-state resources and activity such as federal research grants and innovative business start-up and technology commercialization. The ripple effect of our activities directly or indirectly touches every person in the state.” ■

Down Syndrome Breakthrough



Groundbreaking Research. Dr. Jeanne B. Lawrence in her research laboratory. Photo courtesy of UMass Medical School.

Scientists at **UMass Medical School** are the first to establish that a naturally occurring X chromosome “off switch” can be rerouted to neutralize the extra chromosome responsible for Down syndrome.

The discovery provides the first evidence that the underlying genetic defect responsible for Down syndrome can be suppressed in the cells of a fetus, paving the way for researchers to study the cell pathologies and identify genome-wide pathways implicated in the disorder, a goal that has so far proven elusive.

“Our hope is that for individuals living with Down syndrome, this proof-of-principle opens up multiple exciting new avenues for studying the disorder now, and brings into the realm of consideration research on the concept of ‘chromosome therapy’ in the future,” said lead author **Jeanne B. Lawrence, Ph.D.**, professor of cell & developmental biology. ■

Campus Highlights



■ **Partnerships: UMass Lowell** has struck a major new partnership with Raytheon Co., which will spend at least \$3 million to establish a joint research facility at UML’s new **Mark and Elisia Saab Emerging Technologies and Innovation Center**. Raytheon engineers and students will collaborate on electronics and nanotechnology projects aimed at refining the defense contractor’s manufacturing processes. *Photo courtesy of Joson Images.*

■ **One of a Kind: UMass Boston** and IBM have launched an innovation center to advance accessible technology solutions for people with disabilities. IBM will provide access to technology and industry expertise to students, professors and researchers at UMass Boston’s new **School for Global Inclusion and Social Development**, the first and only graduate school focused on education, research policy and technology development for serving people with disabilities.

■ **Patents: UMass Amherst** has won a software patent for a network of short-range radars that nearly doubled the average tornado warning time at an Oklahoma test site. The software system developed at the UMass Amherst **Center for Collaborative Adaptive Sensing of the Atmosphere (CASA)** scans the lower atmosphere, allowing forecasters to more precisely pinpoint the location and severity of severe weather.

■ **Strategic Planning: UMass Dartmouth** opened the **Center for Scientific Computing and Visualization Research**, which will promote the high-level interdisciplinary and multidisciplinary development of innovative and powerful computational tools to address pressing scientific and societal challenges. The Center provides undergraduate and graduate students with high-quality, discovery-based educational experiences that transcend the traditional boundaries of academic field or department and foster collaborative research in the computational sciences within the University and with researchers at other universities, National Labs, and industry.

BY THE NUMBERS

Campuses Collaborate to Save \$\$, Produce Efficiencies

Since 2011, Massachusetts public campuses have saved over

\$212m in taxpayer dollars

through a combination of collaborative and individual cost-saving efforts.

The community colleges and state universities' **Partnership to Advance Collaboration and Efficiencies** (PACE), funded by the Vision Project Performance Incentive Fund, has saved:



- **\$95,000** through joint purchasing of electricity (five-campus pilot program)
- **\$640,000** through joint IT assessments and security training, as well as energy cost savings

Meanwhile **individual community college and state university campuses** have achieved total savings of:

- **\$86m** on contracts, IT, energy and purchasing (state universities)
- **\$70m** on contracts, IT, energy, purchasing and elimination or consolidation of positions (community colleges)

Separately, through its own **Efficiency and Effectiveness** program launched in 2011, the University of Massachusetts reports savings of:

- **\$56m** in the areas of information technology, travel, procurement, and energy

“This past year the Department of Higher Education created Vision Project data dashboards for every campus board of trustees, a valuable tool to use in evaluating institutional and leadership performance. At RCC we found these data profiles incredibly helpful. As trustees we need to understand the progress taking place at our campus—where we’re seeing real results, and where we need to redouble our efforts.”

**GERALD CHERTAVIAN,
FOUNDER & CEO, YEAR UP,
AND CHAIR, ROXBURY
COMMUNITY COLLEGE
BOARD OF TRUSTEES**




DATA

Dashboards

How does the Massachusetts system of public higher education compare against other state systems in the U.S.? This section presents the data used to track progress in the key outcome areas of the Vision Project. In line with the goal of national leadership, Massachusetts' standing is compared to leading states and the national average where available. The data is presented in a series of dashboards; trend data is incorporated where available to show whether Massachusetts is improving in performance, remaining flat, or worsening in performance on key metrics.

How to Read the Dashboards

Bar Graphs. Where available, national comparisons are displayed along with Massachusetts' performance in the central bar graphs.

 = Leading State(s)  = Massachusetts  = National Average

MA Trend Data. Where available, analysis of trend data on Massachusetts' performance, comparing three-year rolling averages, is displayed to the right of the bar graphs.

 = Improving Performance  = Flat Performance or Achievement Gap  = Worsening Performance
 = Improving (Shrinking) Gap  = Worsening Achievement Gap

Comparison Groups. Pages 46–49 present all available data on achievement rates and gaps between Massachusetts' African-American and Latino/a students and White students.

 = African-American  = Latino  = White  = Size of Gap

Data Source Acronyms. A glossary of these acronyms is on page 51.

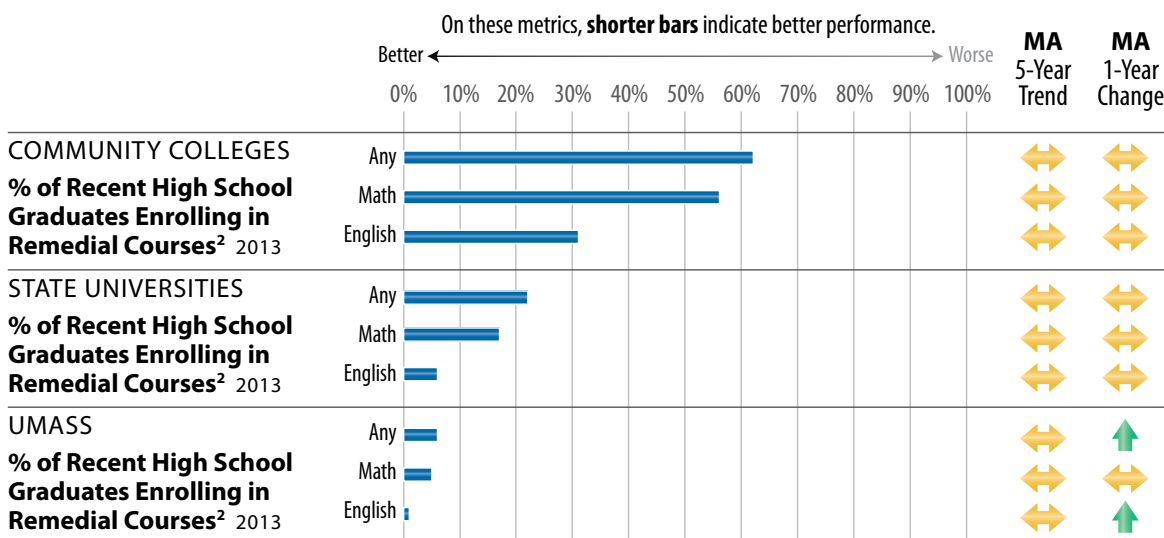
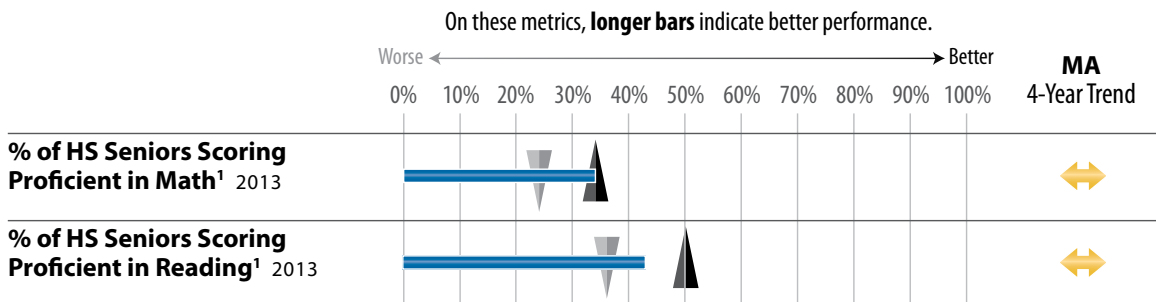
Other resources, including supplemental metrics, index of leading states, and technical appendix are available at www.mass.edu/vpreport



College Participation

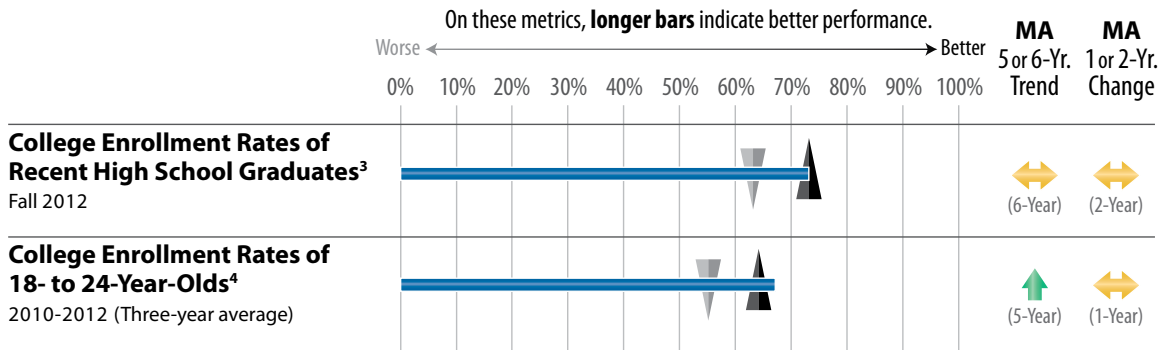
College Readiness Rates

With national comparisons and trends where available



College Enrollment Rates

With national comparisons and trends where available

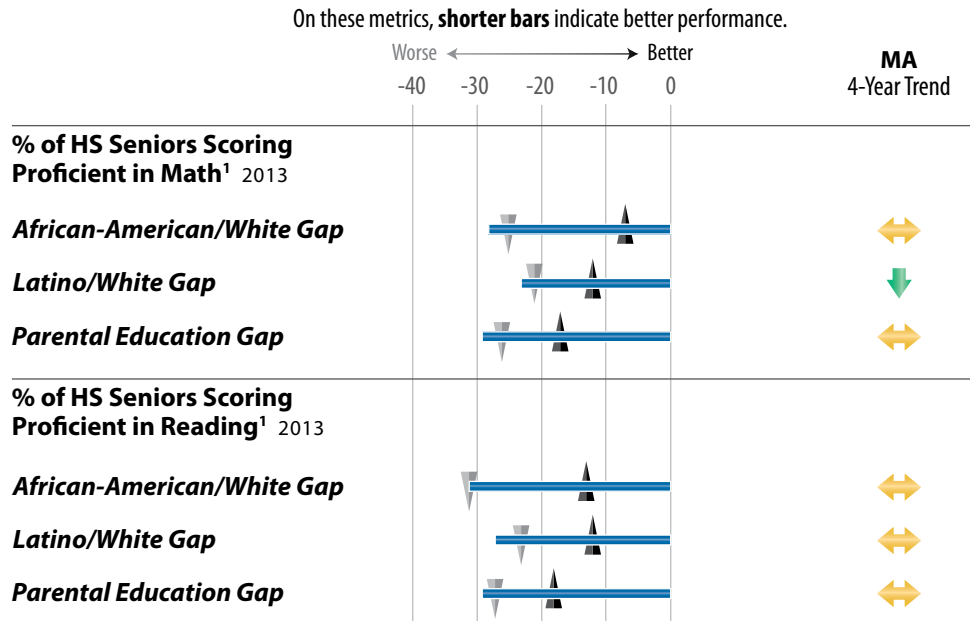


Bar Graphs ▲ = Leading State(s) ■ = Massachusetts ▼ = National Average

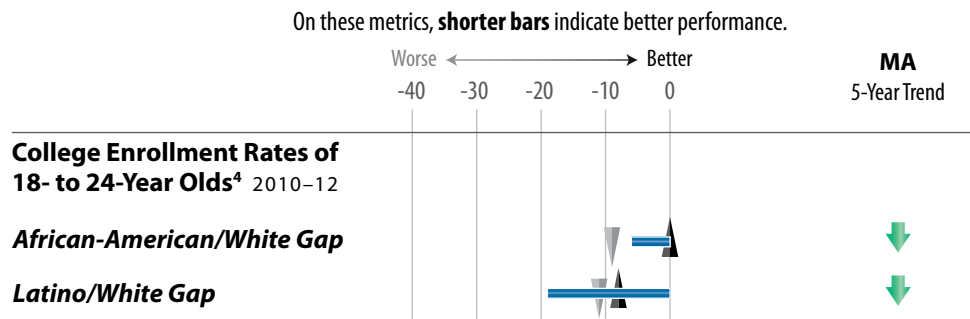
MA Trend Data ▲ = Improving Performance ↔ = Flat Performance or Achievement Gap ▼ = Worsening Performance
 ▼ = Improving (Shrinking) Gap ▲ = Worsening Achievement Gap



Gaps in College Readiness Rates (in percentage points) With national comparisons



Gaps in College Enrollment Rates (in percentage points) With national comparisons



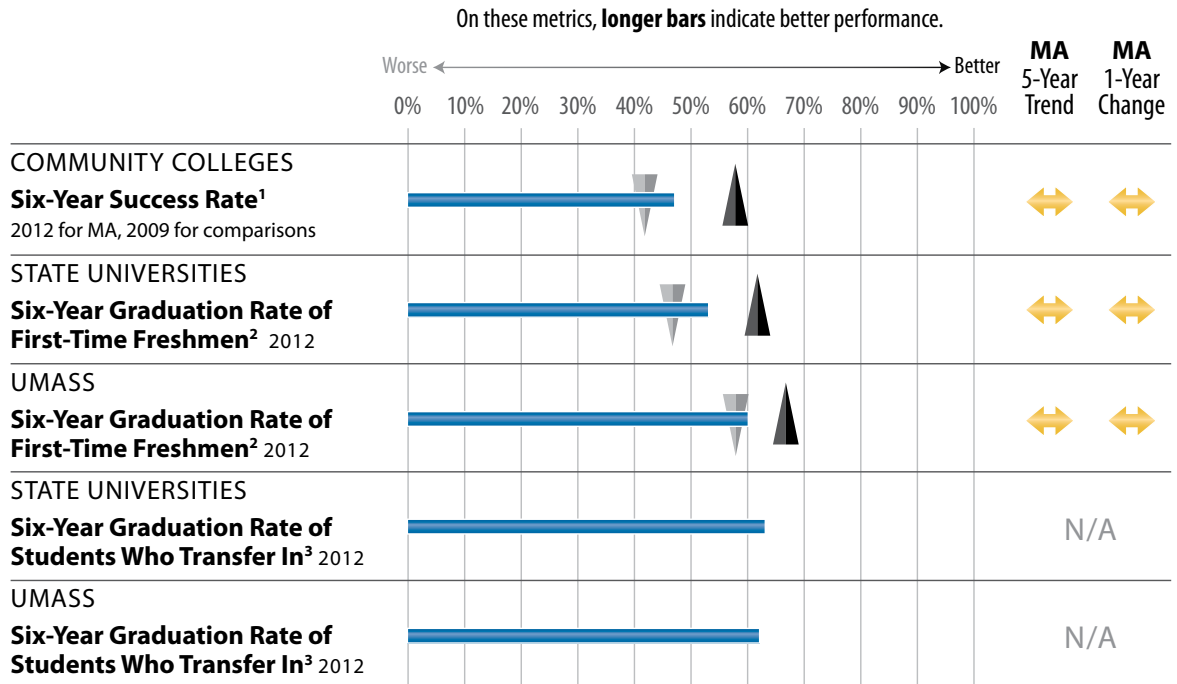
Cohorts and Sources • ¹ Cohort: Public high school seniors scoring proficient or higher in 2013. Source: 12th Grade National Assessment of Education Progress (NAEP), USDOE/NCES • ² Cohort: First-time, full-time, degree-seeking students who are recent Massachusetts public high school graduates and who enrolled in fall 2013. Trend data spans 2008–2013. Source: MDHE • ³ Cohort: Recent high school graduates (graduated within previous year). “Enrolled” refers to enrollment as first-time, degree-seeking student in fall 2012 at public or private institution, in state or out of state. Trend data spans 2006–2012. Source: USDOE/IPEDS, WICHE • ⁴ Cohort: 18- to 24-year-olds holding high school diploma or GED and not holding a bachelor’s degree in 2010–2012. “Enrolled” refers to enrollment in postsecondary education, at public or private institutions. Source: US Census Bureau, 2010–12 American Community Survey



College Completion

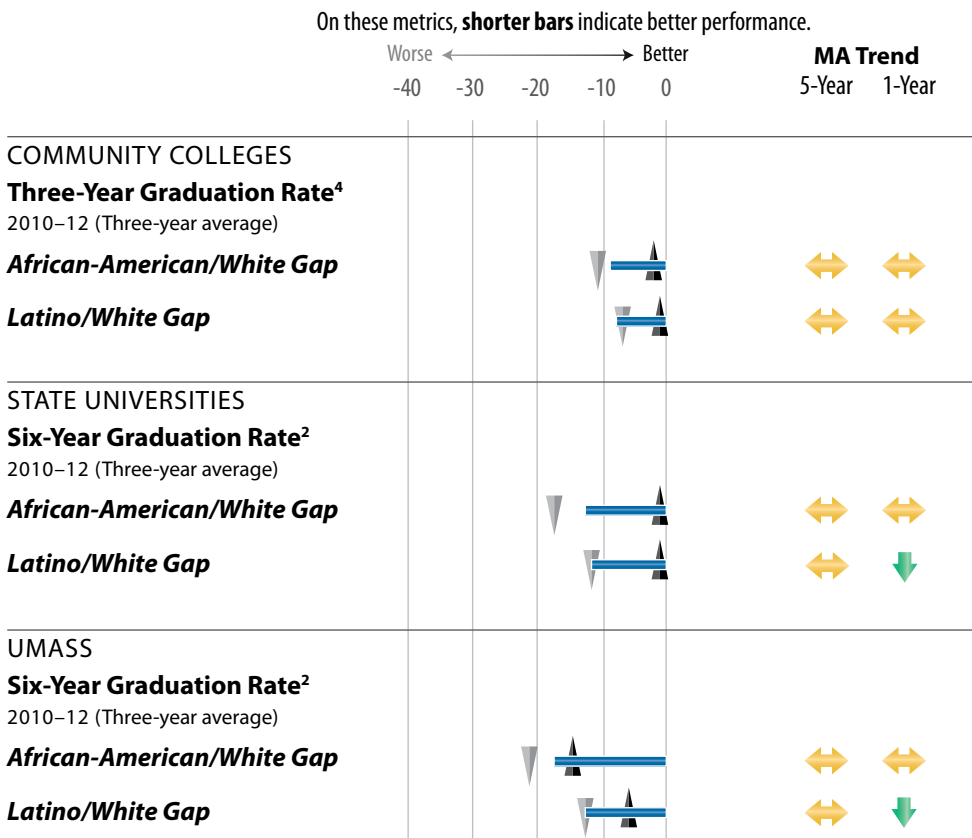
Graduation and Student Success Rates

With national comparisons and trends



Gaps in Graduation Rates (in percentage points)

With national comparisons and trends



Bar Graphs ▲ = Leading State(s) ■ = Massachusetts ▼ = National Average

MA Trend Data ▲ = Improving Performance ↔ = Flat Performance or Achievement Gap ▼ = Worsening Performance
 ▼ = Improving (Shrinking) Gap ▲ = Worsening Achievement Gap

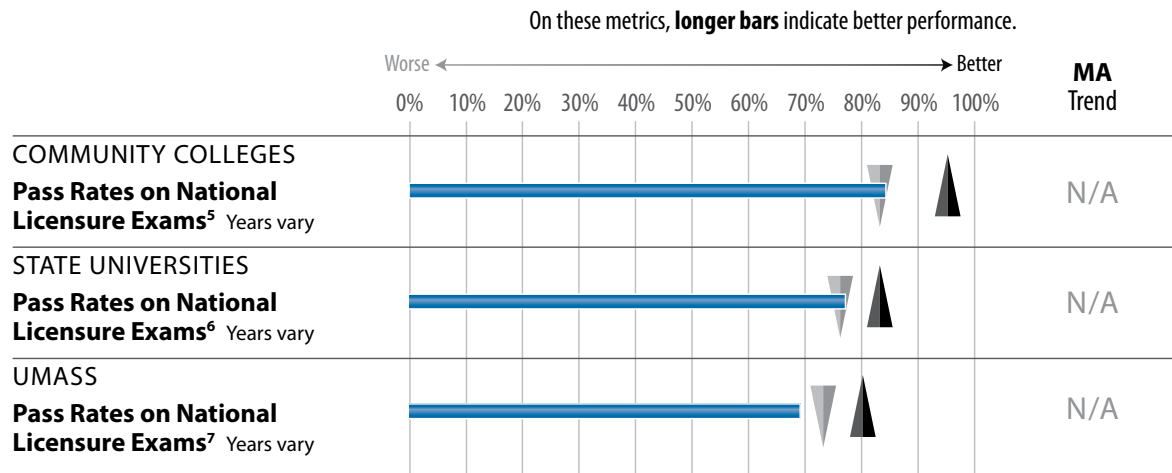
3



Student Learning

Pass Rates on National Licensure Exams

With national comparisons



Cohorts and Sources • ¹ Cohort for MA: First-time, degree-seeking students entering in fall 2006; measure examines their rate of success by September 2012. Cohort for national comparisons: First-time, degree-seeking students entering in fall 2003; measure examines their rate of success by September 2009. More recent national data is not available. Source: MDHE, NSC, Jobs for the Future. This metric recognizes the complex mission of community colleges by including both full- and part-time students and capturing students who, within six years of initial enrollment, earn an associate's degree or certificate, transfer to a four-year institution, or are still enrolled with at least 30 credits earned. Data is only available for nine states; because of the small comparison group, national leadership is equated with the performance of the top state, rather than the top five states. • ² Cohort: First-time, full-time, degree-seeking students entering in fall 2006; measure examines their rate of graduation within six years of initial enrollment by 2012. Trend data compares three-year averages for students entering fall 2000–2006 and graduating by fall 2006–2012 respectively. Gap analysis is based on three-year average for students entering fall 2004–2006 and graduating by fall 2010–2012 respectively. Source: USDOE/IPEDS • ³ Cohort: Transfer students entering in fall 2006; measure examines their rate of graduation by 2012. Source: MDHE. • ⁴ Cohort: First-time, full-time, degree-seeking students entering in fall 2007–2009; measure examines their rate of graduation within three years of initial enrollment by 2010–2012 respectively. Trend data compares three-year averages for students entering fall 2003–2009 and graduating by 2006–2012 respectively. Source: USDOE/IPEDS • ⁵ Tests included: Dental Assistant, Dental Hygiene, Licensed Practical Nurse, Medical Assistant, Occupational Therapy Assistant, Physical Therapy Assistant, Radiation Technologist, Registered Nurse, Respiratory Therapy Assistant, Surgical Technologist. Cohort: Cohorts vary by test; see technical appendix at www.mass.edu/vpreport for more information. Source: National testing agencies; see technical appendix for more information. • ⁶ Tests included: Certified Public Accountant, Registered Nurse, Social Work BA. Cohort: Cohorts vary by test; see technical appendix at www.mass.edu/vpreport for more information. Because of the comparatively small numbers of state university students taking the Social Work BA exam, results are aggregated over the most recent three years. Source: National testing agencies; see technical appendix for more information. • ⁷ Tests included: Certified Public Accountant, Registered Nurse, Engineering-FE. Cohort: Cohorts vary by test; see technical appendix at www.mass.edu/vpreport for more information. Source: National testing agencies; see technical appendix for more information.



Workforce Alignment

Trends and Projections in College Attainment

Massachusetts compared with 60% by 2010–2020 Goal

How to read these charts:

These projections began with calculations of the number of college graduates that Massachusetts would need each year, beginning in 2010, to meet the goal of 60% of residents holding a college degree by 2020.

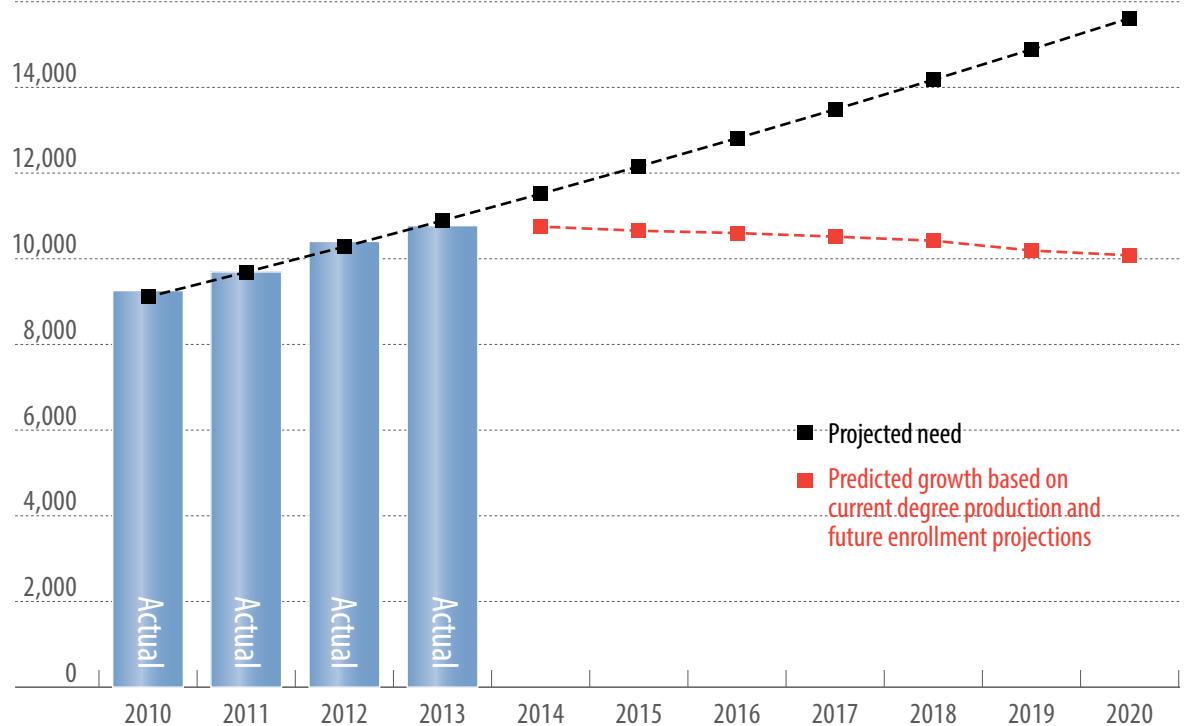
To better align this goal with Massachusetts' specific workforce needs, this total number of graduates was broken out by degree type—associate's, bachelor's, and graduate—using projections from Georgetown's Center for Education and the Workforce.

Because this report focuses on Massachusetts' public campuses, degree totals were then broken out by public and private share using the current split in Massachusetts for each degree type. Only the public share is shown here; the charts do not show the projected need for or growth in private college graduates.

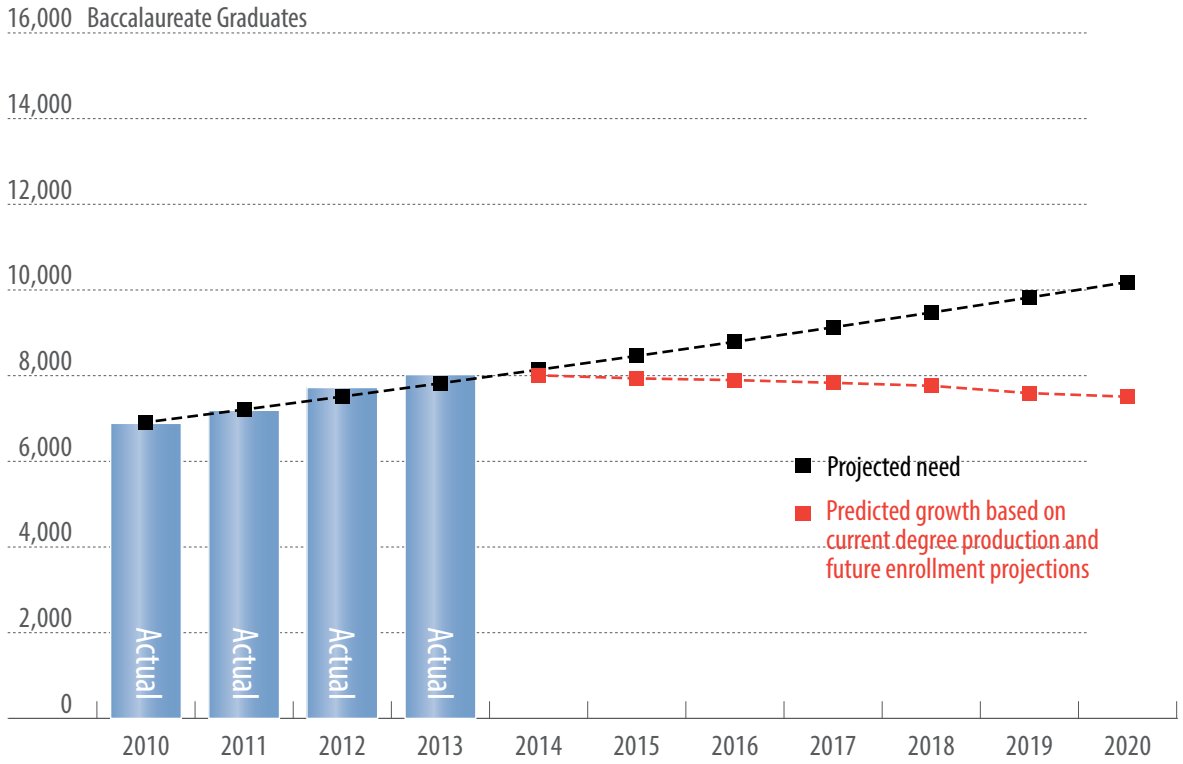
COMMUNITY COLLEGES

Associate's Degrees in All Fields

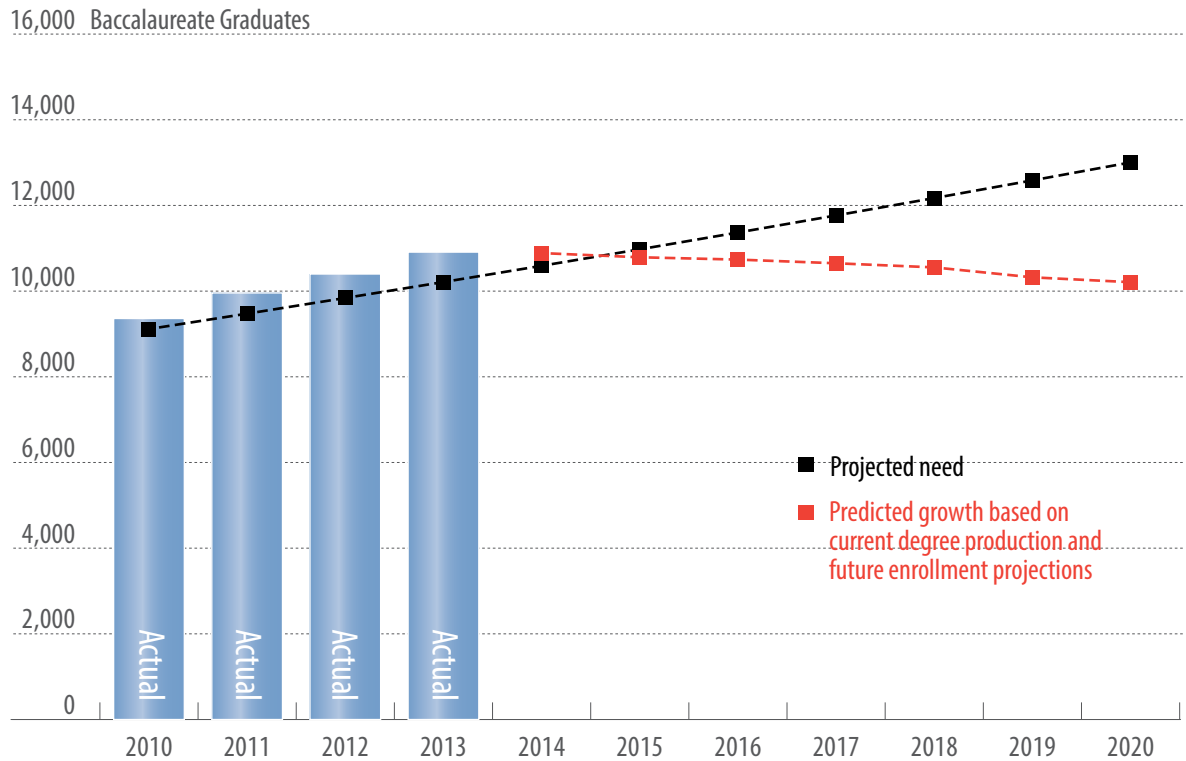
16,000 Associate Graduates



STATE UNIVERSITIES
Bachelor's Degrees in All Fields



UMASS
Bachelor's Degrees in All Fields



Source for all Trends and Projections in College Attainment graphs • MDHE with data from WICHE, NCHEMS, Georgetown Center for Education and the Workforce, USDOE/IPEDS.



Workforce Alignment (cont'd)

Projected Level of Alignment in High-Need Fields by 2020

With comparison to 25 most populous U.S. states

How to read these charts:

This metric looks at future workforce needs, rather than current job vacancies.

Each chart shows a comparison of the 25 most populous states' projected workforce alignment in high-need fields in 2020.

Each bar represents projections for one state, with its height representing, in the respective field, that state's distance from its needed number of graduates in 2020. Leading States are those with the smallest bars, whether Below or Above, meaning they are projected to be closest to On Target. To the left of the Leading States are the states projected to be progressively further Below Target; to the right, the states progressively further Above.

High-Need Fields: While graduates of Massachusetts' public campuses are employed in a wide range of fields, the three fields included in this metric—Health Care; STEM (Science, Technology, Engineering & Mathematics); and Business & Finance—show both a high level of projected growth and a high number of future vacancies. For example, Health Care, STEM and Business & Finance represent 38 percent of projected jobs in 2020 requiring a bachelor degree.

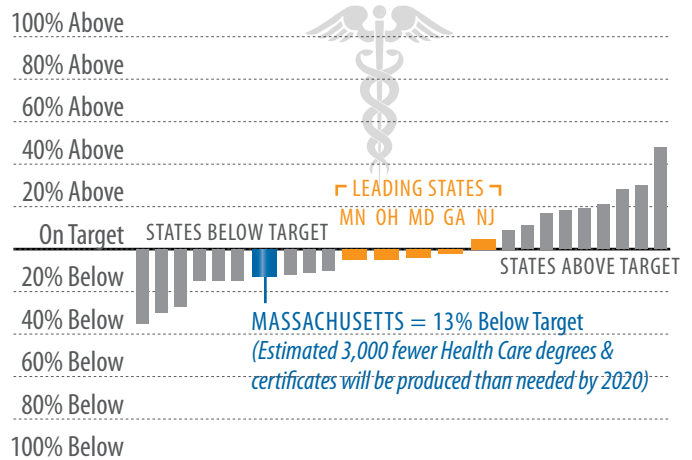
These fields include the four high-growth sectors on which the Patrick Administration's workforce development strategy focuses—Health Care, Life Sciences, IT and Advanced Manufacturing. The latter three are included in the STEM field analysis.

Comparison States: For this metric, Massachusetts is compared against the 25 most populous states in the nation, as alignment in smaller states is often skewed to overproduction because of issues of scale.

This metric also looks only at public campuses' contribution to workforce development; the estimated number of future jobs is adjusted for the public higher education share of degrees in that field.

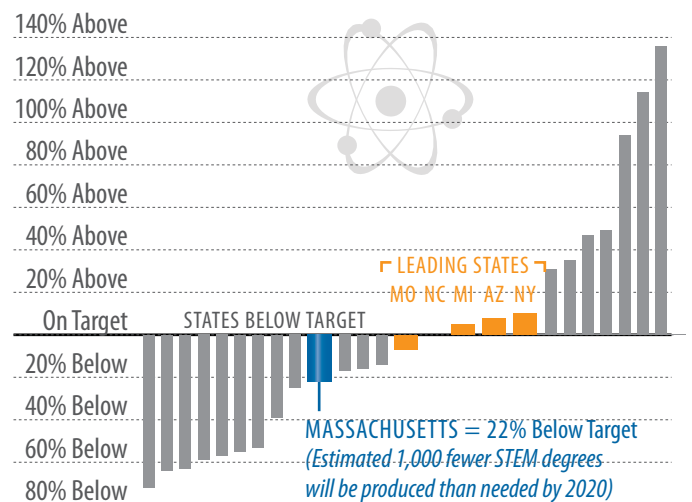
COMMUNITY COLLEGES

Associate's Degrees & Certificates in Health Care Support

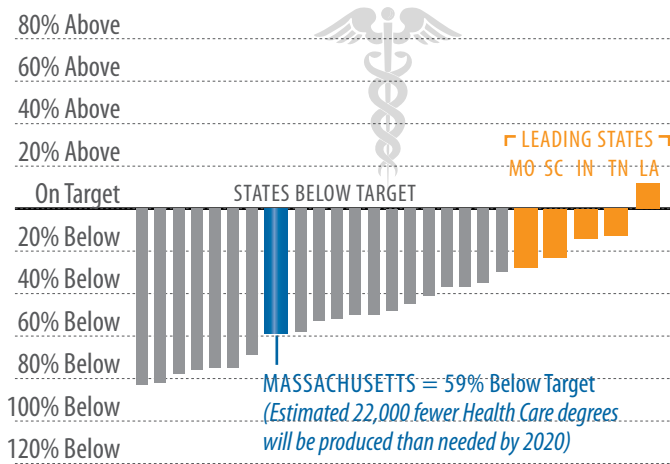


COMMUNITY COLLEGES

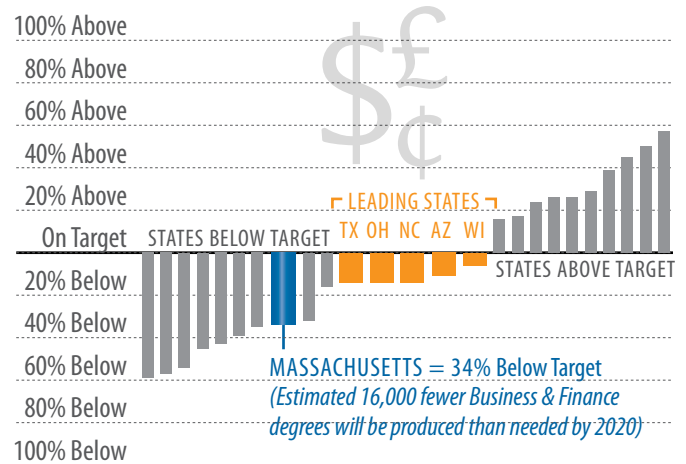
Associate's Degrees in STEM Technician Fields



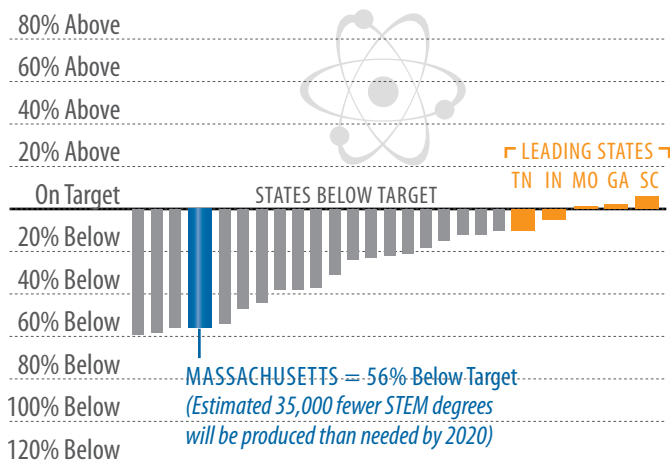
STATE UNIVERSITIES & UMASS
Bachelor's Degrees in Health Care Practice



STATE UNIVERSITIES & UMASS
Bachelor's Degrees in Business & Finance



STATE UNIVERSITIES & UMASS
Bachelor's Degrees in STEM Fields



Source for all Level of Alignment in High-Need Fields graphs • MDHE with data from WICHE, USDOE/IPEDS, Georgetown Center for Education and the Workforce, USDOE Baccalaureate and Beyond Longitudinal Study.

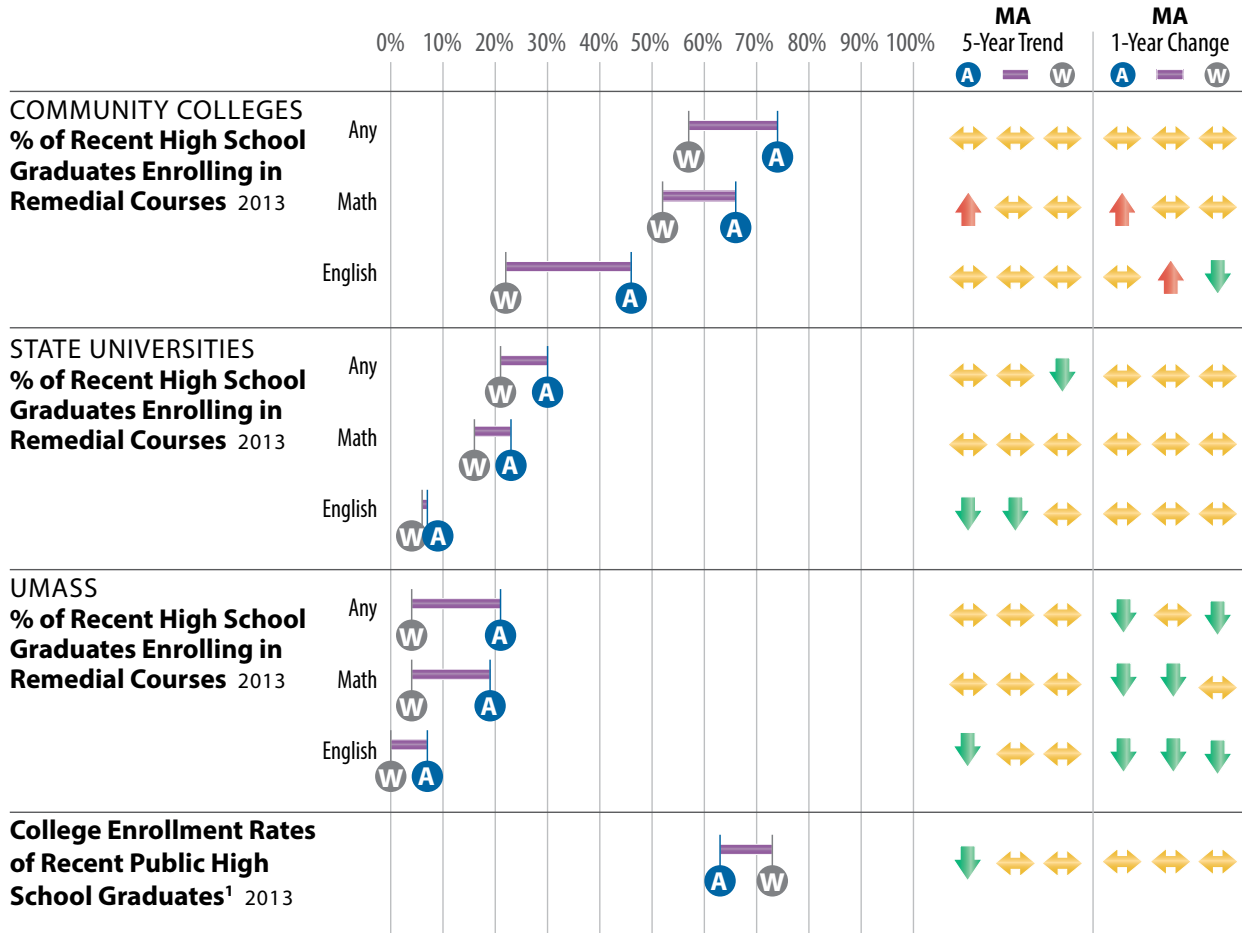


Closing Achievement Gaps

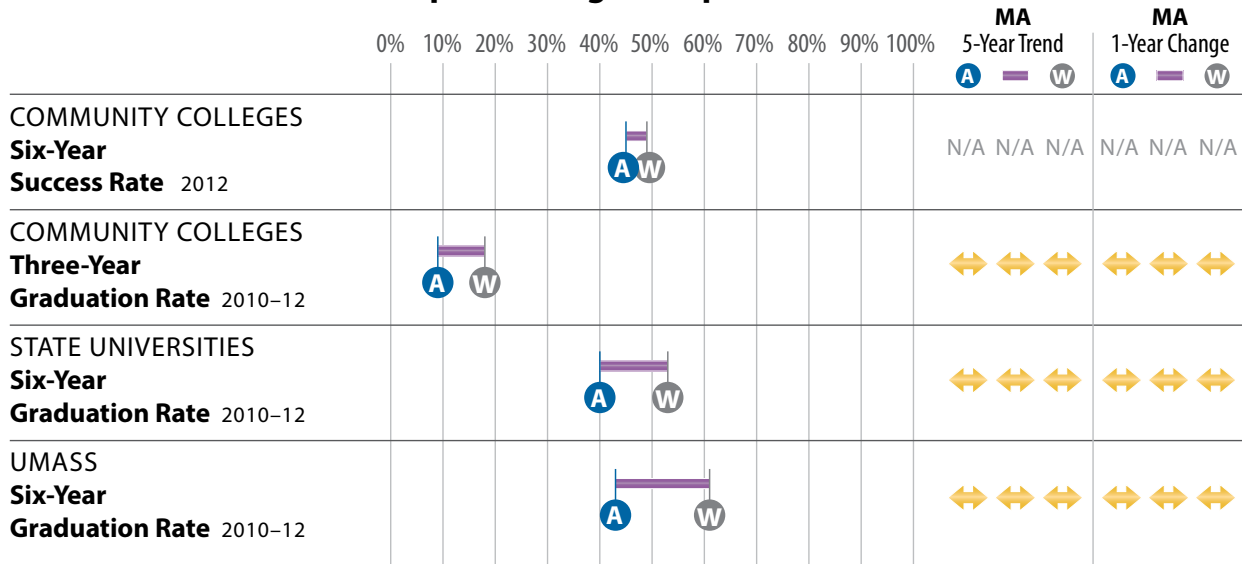
African-American/White Gaps—All available Massachusetts data



African-American/White Gaps in College Participation



African-American/White Gaps in College Completion



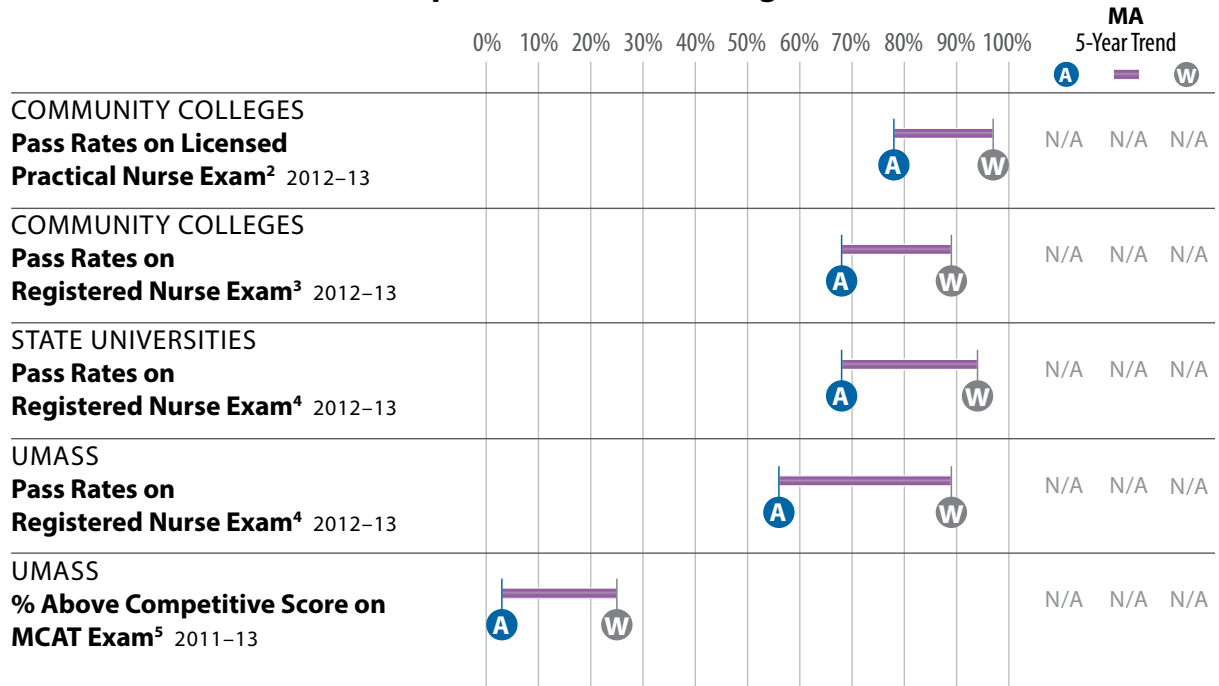
^{1 2 3 4 5 6} See footnotes on page 51.

Comparison Group Icons **A** = African-American **W** = White **—** = Size of Gap

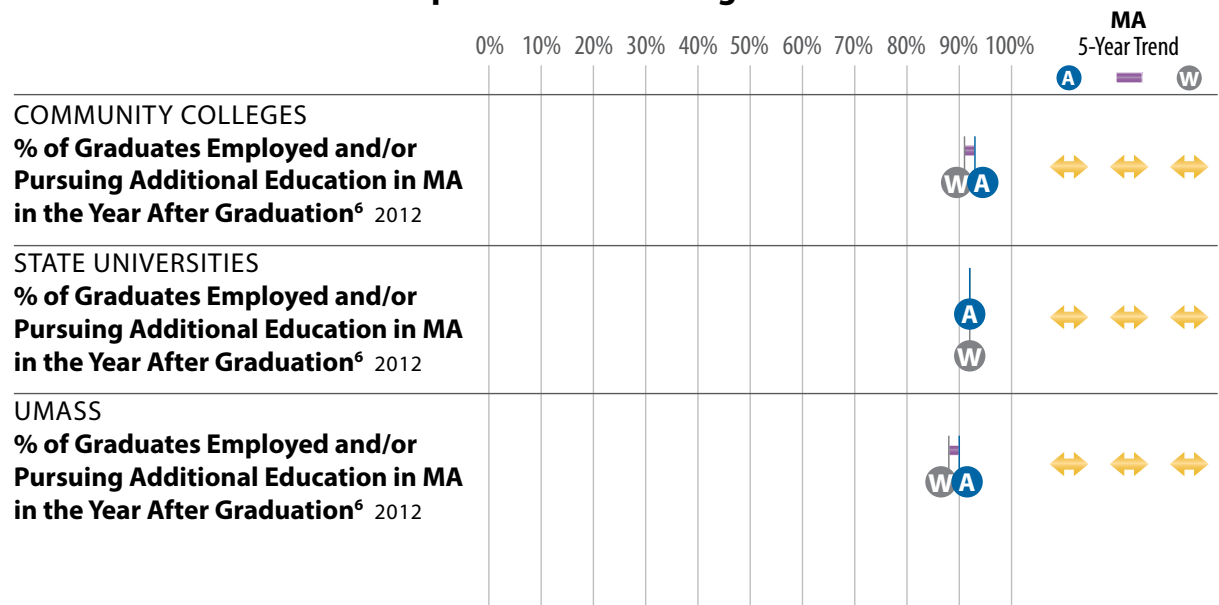
MA Trend Data **↓** = Improving (Shrinking) Gap **↔** = Flat Achievement Gap **↑** = Worsening Achievement Gap



African-American/White Gaps in Student Learning



African-American/White Gaps in Workforce Alignment



^{1 2 3 4 5 6} See footnotes on page 51.

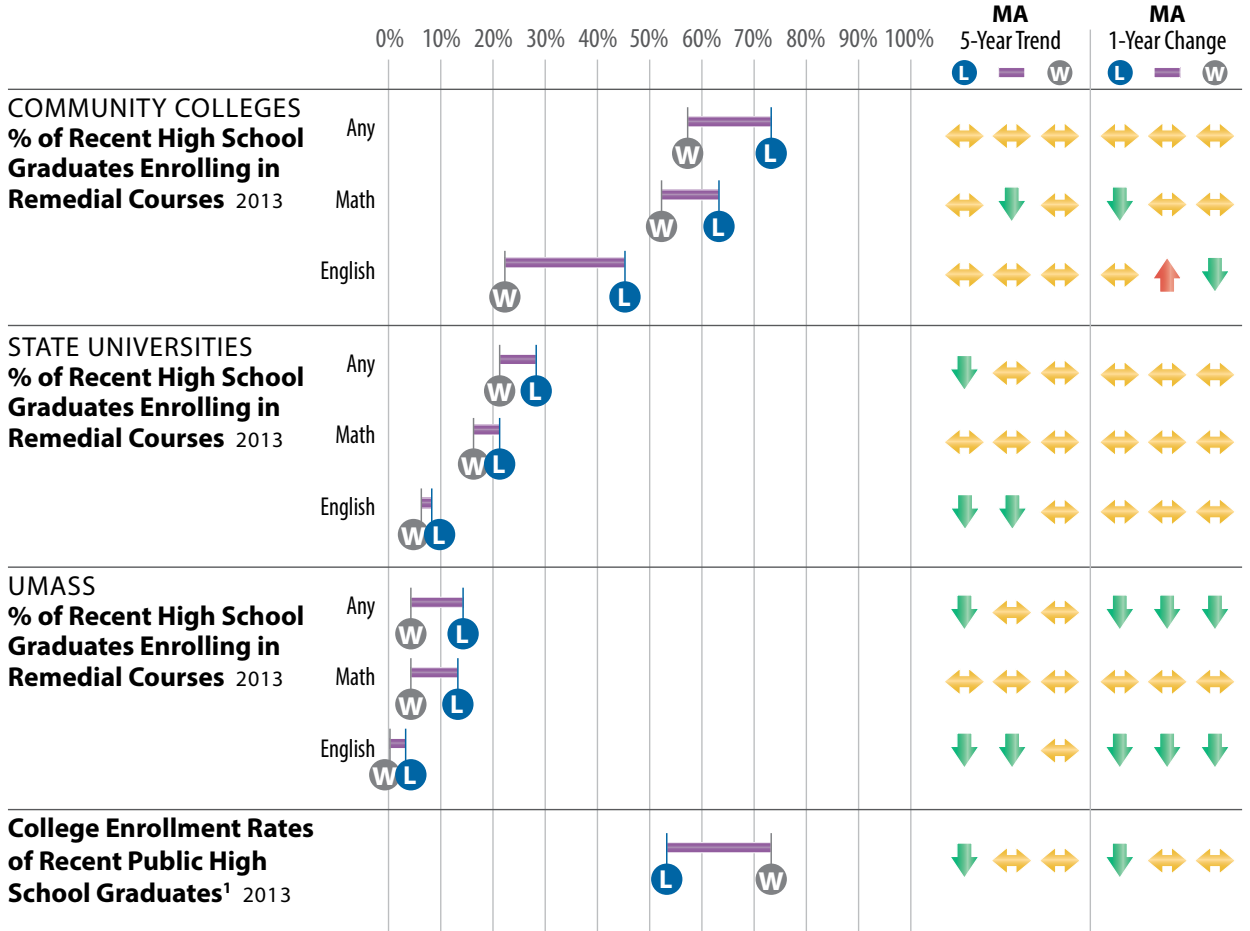


Closing Achievement Gaps (continued)

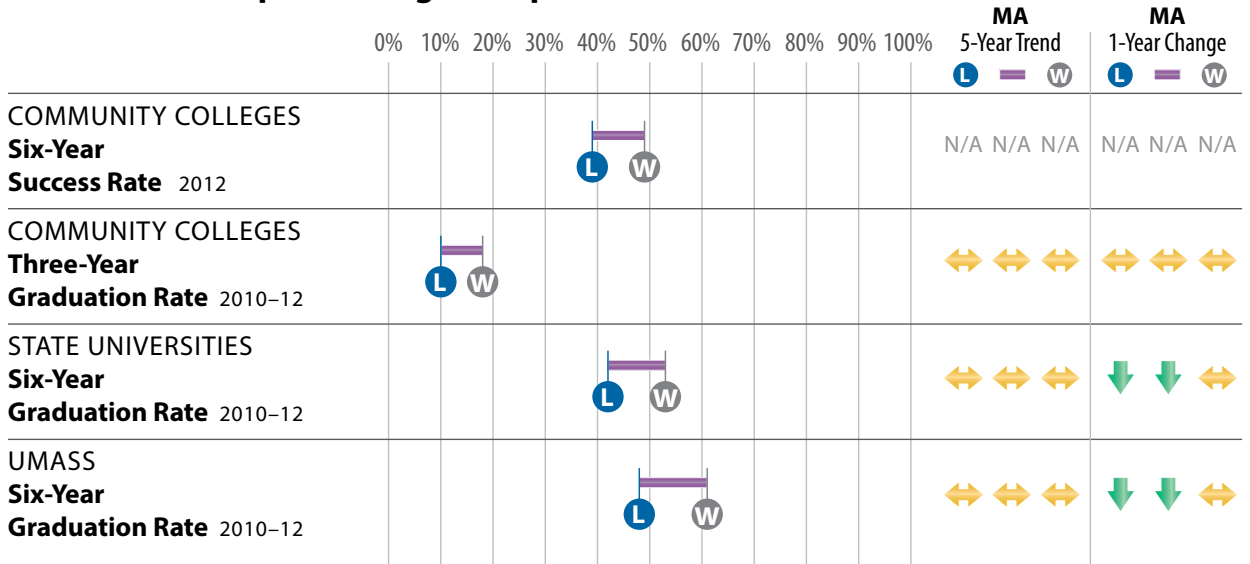
Latino/White Gaps—All available Massachusetts data



Latino/White Gaps in College Participation






Latino/White Gaps in College Completion



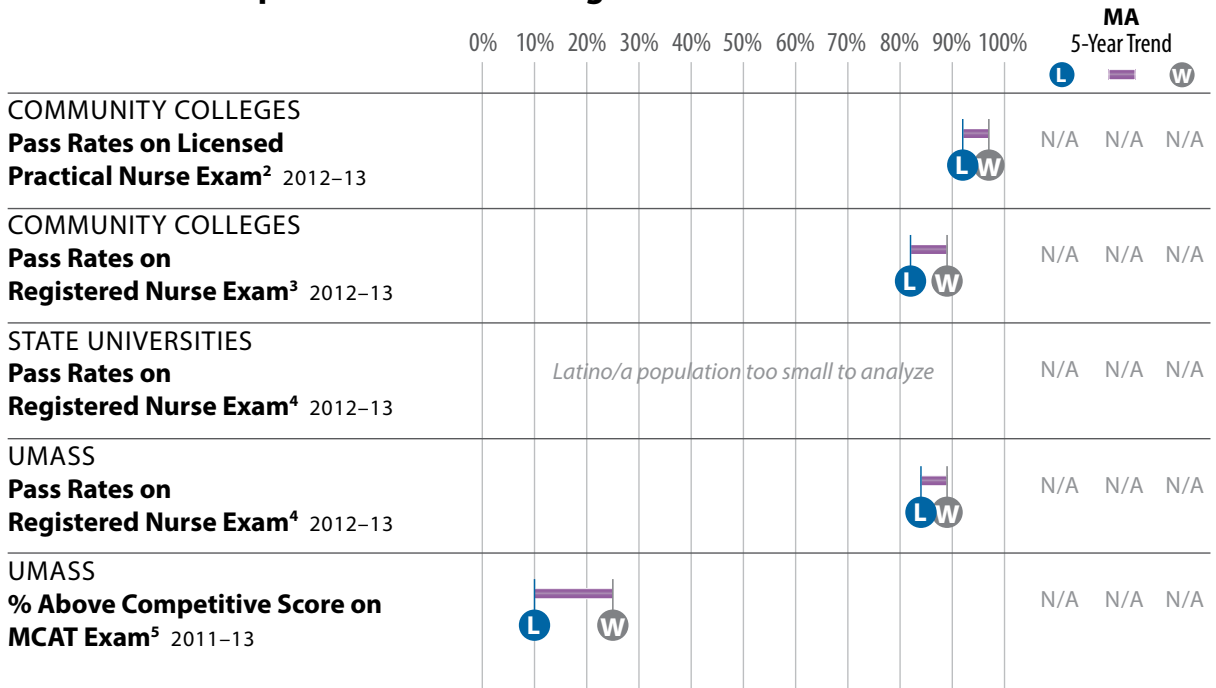
¹²³⁴⁵⁶ See footnotes on page 51.

Comparison Group Icons **L** = Latino **W** = White  = Size of Gap

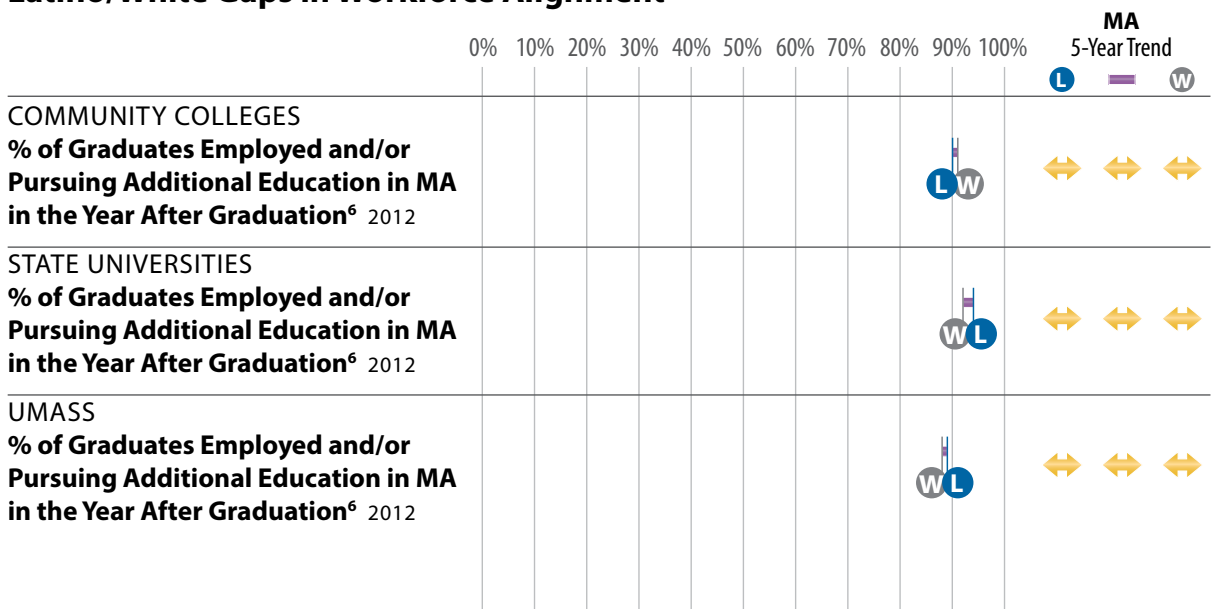
MA Trend Data  = Improving (Shrinking) Gap  = Flat Achievement Gap  = Worsening Achievement Gap



Latino/White Gaps in Student Learning



Latino/White Gaps in Workforce Alignment



^{1 2 3 4 5 6} See footnotes on page 51.



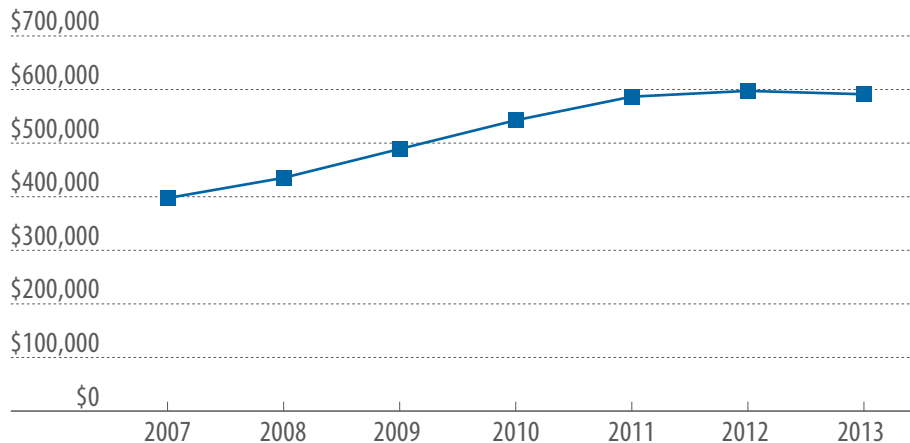
Research

Research and Economic Development Data

With trends

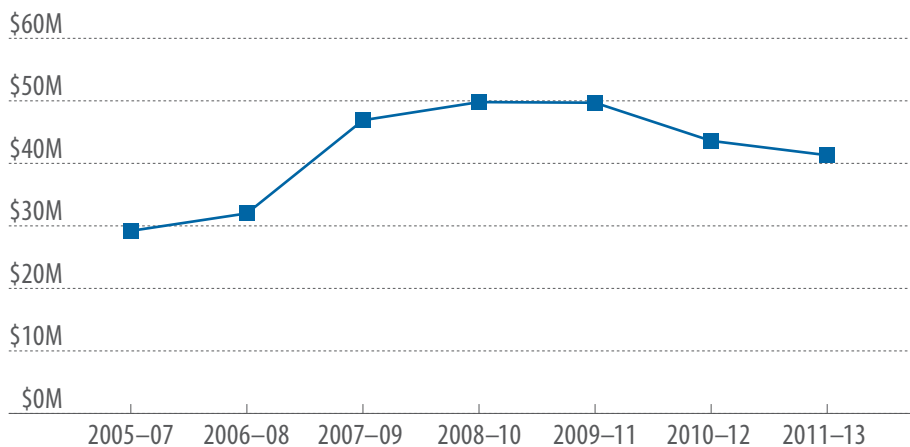
UMASS

Trend in Research and Development Expenditures¹ 2007–13



UMASS

Trend in Licensing Income² 2005–13 (Three-year averages)



Sources • ¹UMass President's Office / National Science Foundation. • ²UMass President's Office / Association of University Technology Managers

Cohorts and Sources for Closing Achievement Gaps

(pages 46–49)

¹ Cohort: Massachusetts public high school students graduating in 2013. The measure is the percent enrolling in college in the immediate fall term after high school graduation. Trend analysis is based on 2006–2013 graduating classes. Source: MDHE, MDESE, NSC.

² Cohort: First-time U.S.-educated candidates graduating in 2012–2013. Source: National Council of State Boards of Nursing; Massachusetts Department of Health and Human Services.

³ Cohort: First-time U.S.-educated candidates graduating with associate's degrees in 2012–2013. Source: National Council of State Boards of Nursing; Massachusetts Department of Health and Human Services.

⁴ Cohort: First-time U.S.-educated candidates graduating with bachelor's degrees in 2012–2013. Source: National Council of State Boards of Nursing; Massachusetts Department of Health and Human Services.

⁵ All test takers in 2011–2013. Source: American Association of Medical Colleges.

⁶ Massachusetts residents earning a degree or certificate from a MA public higher education institution in FY2012. Source: MDHE, Massachusetts Department of Career Services, NSC.

DATA SOURCE ACRONYM GLOSSARY

Georgetown CEW

Georgetown University Center on Education and the Workforce

HEGIS

Higher Education General Information Survey (USDOE)

IPEDS

Integrated Postsecondary Education Data System (USDOE)

MDESE

Massachusetts Department of Elementary and Secondary Education

MDHE

Massachusetts Department of Higher Education

NCES

National Center for Education Statistics (USDOE)

NCHEMS

National Center for Higher Education Management Systems

NSC

National Student Clearinghouse

NSF

National Science Foundation

USDOE

United States Department of Education

WICHE

Western Interstate Commission for Higher Education

ADDITIONAL RESOURCES AT WWW.MASS.EDU/VPREPORT

Data Tables for all graphs in this report

Index of Leading States for each metric

Supplemental Metrics

Technical Appendix

The Massachusetts Department of Higher Education acknowledges with gratitude the encouragement, support and counsel of leaders of state government, including members of the Great and General Court, as well as the assistance of the philanthropic community.

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