

TIME TO LEAD

The Need for Excellence in Public Higher Education



A Report to the People of Massachusetts
From the Massachusetts Department of Higher Education
September 2012



There is a knowledge explosion in the global economy, so we need all of Massachusetts educational assets to be firing on all cylinders.

—THE HONORABLE DEVAL L. PATRICK,
GOVERNOR, COMMONWEALTH
OF MASSACHUSETTS



Time to Lead

Today, more than ever, Massachusetts' knowledge economy depends on a highly educated workforce and on research that drives innovation.

Excellence at the Commonwealth's 29 public colleges and universities is essential to meeting these needs—and to maintaining our overall quality of life.

Through the Vision Project, public higher education has united to achieve the national leadership that our importance to the state demands.

Progress has been made, but in too many areas we are not yet national leaders.

This first Vision Project Report offers a full accounting of where public higher education stands in comparison with other states and describes a statewide strategy for reaching our goal.

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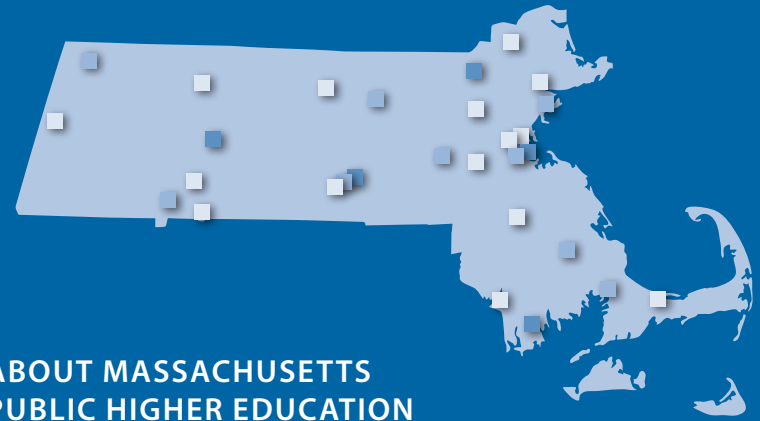
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We can't do it alone. Public higher education needs help from key partners in the public, private and nonprofit sectors.



ABOUT MASSACHUSETTS PUBLIC HIGHER EDUCATION

- 29 CAMPUSES
 - 15 COMMUNITY COLLEGES
 - 9 STATE UNIVERSITIES
 - 5 UNIVERSITY OF MASSACHUSETTS CAMPUSES
- 290,000 STUDENTS
- 39,000 FACULTY AND STAFF
- \$590 MILLION IN ANNUAL RESEARCH EXPENDITURES

I. THE NEED FOR

EXCELLENCE

**And Our Strategy to Achieve It—
An Executive Summary**

The world has changed.

1973

28%

of U.S. jobs¹ required some college education.

■ Growth of high-wage jobs in Massachusetts comes mostly from a short list of knowledge-dependent sectors:

Health Care

Finance

Technology

Education

Life Sciences

■ The national unemployment rate for recent high school graduates is more than triple that for recent baccalaureate graduates—24% vs. 7%.¹

2018

63%

of U.S. jobs¹ will require some college education.

■ If the Commonwealth is to compete effectively for jobs, investment and talent—and sustain our rich civic life and cultural landscape—

Massachusetts needs the best-educated citizenry and workforce in the nation, and we must be leaders in research that drives economic development.

And in this new world, Massachusetts will lead the nation with

70%

of jobs¹ requiring some college education.

Massachusetts doesn't make many ships or shoes anymore.

Massachusetts makes brains.

—ADMIRAL RICHARD GURNON, PRESIDENT, MASSACHUSETTS MARITIME ACADEMY

The role of Massachusetts public higher education has also changed.

1967

30%

of all undergraduate students in Massachusetts attended Massachusetts public colleges and universities.²

Today

52%

of all undergraduate students in Massachusetts are attending Massachusetts public colleges and universities.³

Among Massachusetts high school graduates

67%

of those who attend college in-state enroll at one of our public campuses.³

We're educating more students than ever before, and they come to us with bigger dreams and greater needs. I'm proud of the job we're doing and the strides we've made.

—WILLIAM MESSNER, PRESIDENT,
HOLYOKE COMMUNITY COLLEGE

■ Massachusetts public colleges and universities also educate:

59% of Massachusetts African-American and Latino undergraduates.³

72% of Massachusetts adult undergraduates age 25 and older.³

■ Public campus enrollments have grown at more than twice the rate of independent colleges and universities over the past five years.³

The Commonwealth depends on our graduates and research.

One year after graduation

9 OUT OF **10**

Massachusetts public higher education graduates remain in the state, working or pursuing further education.⁴

■ **50% of undergraduate education degrees** awarded in Massachusetts are from our public colleges and universities.⁶

■ **33% of the undergraduate health care and science, technology, engineering and math (STEM) degrees** are from our public colleges and universities.⁶

■ **And 75% of the state's young working adults with associate's degrees** earned them at Massachusetts' community colleges.⁶

Since 2005

68%

growth in the University of Massachusetts' research expenditures, an increase of \$240 million, has advanced research and innovation.⁵

Sources:

¹ Georgetown University Center for Education and the Workforce

² U.S. Department of Higher Education (IPEDS/HEGIS), Fall 1967

³ U.S. Department of Higher Education (IPEDS), Fall 2010

⁴ Massachusetts Department of Higher Education, Executive Office of Labor and Workforce Development

⁵ National Science Foundation

⁶ Massachusetts Department of Higher Education

The Vision Project is Massachusetts' plan to achieve national leadership in public higher education.



the Vision Project

In 2010, in recognition of the heightened role of the state's public colleges and universities, the Massachusetts Board of Higher Education endorsed an ambitious strategic plan called the Vision Project. Since then, **the community colleges, state universities and University of Massachusetts have united with the Massachusetts Department of Higher Education in an effort to strengthen our performance** in both educational achievement and research—while also pledging to hold ourselves accountable to the public for results.

To focus our activities and track our progress, we have identified **seven key outcomes** in which Massachusetts needs to be a leader among state systems of higher education:

KEY OUTCOME

1 COLLEGE PARTICIPATION

Raising the percentage of high school graduates **going to college**—and the **readiness of these students** for college-level work.

KEY OUTCOME

2 COLLEGE COMPLETION

Increasing the percentage of students who complete **degree and certificate programs**.

KEY OUTCOME

3 STUDENT LEARNING

Achieving **higher levels of student learning** through better assessment and more extensive use of assessment results.

KEY OUTCOME

4 WORKFORCE ALIGNMENT

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

KEY OUTCOME

5 PREPARING CITIZENS

Providing students with the knowledge, skills and dispositions to be **active, informed citizens**.

KEY OUTCOME

6 CLOSING ACHIEVEMENT GAPS

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

KEY OUTCOME

7 RESEARCH

Conducting research that drives **economic development**.

The Board vote to adopt the Vision Project agenda was historic.

It marked a turning point, the first time that the Commonwealth has launched such a bid to reach the highest possible bar of academic achievement in public higher education.

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

Massachusetts' new vision for public higher education has drawn national notice...

The Commonwealth:

■ Emerged as a national leader in the **Partnership for the Assessment of Readiness for College and Careers (PARCC)**, a collaboration among 24 states focused on dramatically increasing the number of students who graduate from high school ready for 21st-century demands in college and careers.

■ Initiated a national effort to develop **student learning assessment tools** that capture the complexity of college learning better than a single standardized test and that allow for comparisons between public campuses in Massachusetts and similar institutions in other states.

■ Developed a **Plan for Excellence in Science, Technology, Engineering and Mathematics (STEM) Education**. This cohesive approach to building the pipeline of STEM professionals has been identified by the National Governors Association as a model for other states.

■ Became the first state to add **civic engagement** to campus accountability measures, building on the Carnegie Foundation's recognition of ten of our campuses as community engagement schools and the inclusion of ten campuses on the 2012 President's Higher Education Community Service Honor Roll.

... And, here at home, this comprehensive strategy has resulted in concrete actions.

Highlights include:

■ The Massachusetts Board of Higher Education raised **math and science standards** for admission to our state universities and the University of Massachusetts.

■ Campus collaboration continued to ease the process for **student transfer** among Massachusetts' public colleges and universities.

■ Campuses developed **new initiatives to support the Vision Project key outcomes**, funded in part by the Legislature's competitive Vision Project Performance Incentive Fund.

■ Faculty and staff from every campus have come together through regular meetings and quarterly conferences to learn from one another's best practices in **student learning assessment**.

■ Agencies across state government increased **collaboration in educational programming to meet workforce needs**.

■ Eleven campuses have joined with the Department of Higher Education to launch a **pilot financial aid program** to increase college completion rates for low-income and first-generation college students.

■ With the Medical School at the helm, the University of Massachusetts joined a national initiative to expedite the translation of **laboratory discoveries** into practical use.

Seeing the public campuses working together, sharing strategies—that's what impresses me most about the Vision Project.

—THE HONORABLE
MICHAEL O. MOORE,
SENATE CHAIR,
JOINT COMMITTEE ON
HIGHER EDUCATION

We're striving for excellence. Part of that is making sure no student is left behind.

—THE HONORABLE
TOM SANNICANDRO,
HOUSE CHAIR,
JOINT COMMITTEE ON
HIGHER EDUCATION

Yet critical challenges remain...

- One-third of the students who enroll in Massachusetts public colleges and universities are not prepared for **college-level work**.
- Massachusetts lags behind other states, such as Virginia and Texas, in its college and university **graduation rates and measures of student success**.
- Student pass rates on **national licensure exams** in health care, accounting, social work, and engineering fields trail leading states by seven to 15 percentage points, while mean scores on **entrance exams** for medical, law, pharmacy, and graduate school trail national leaders by five points.
- Massachusetts needs to pick up the pace of **degree attainment** to remain on track to meet national graduation rate goals and workforce needs.
- Across all these indicators of educational success, large **disparities and achievement gaps** based on student race, gender, and economic status remain entrenched.

The Vision Project has set a clear leadership goal for Massachusetts. **We are doing well already, but doing well isn't good enough.** Our aim is to be the best, and the benchmarks set forth in the Vision Project give us a clear path leading there.

—PAUL REVILLE,
SECRETARY OF EDUCATION,
COMMONWEALTH OF
MASSACHUSETTS

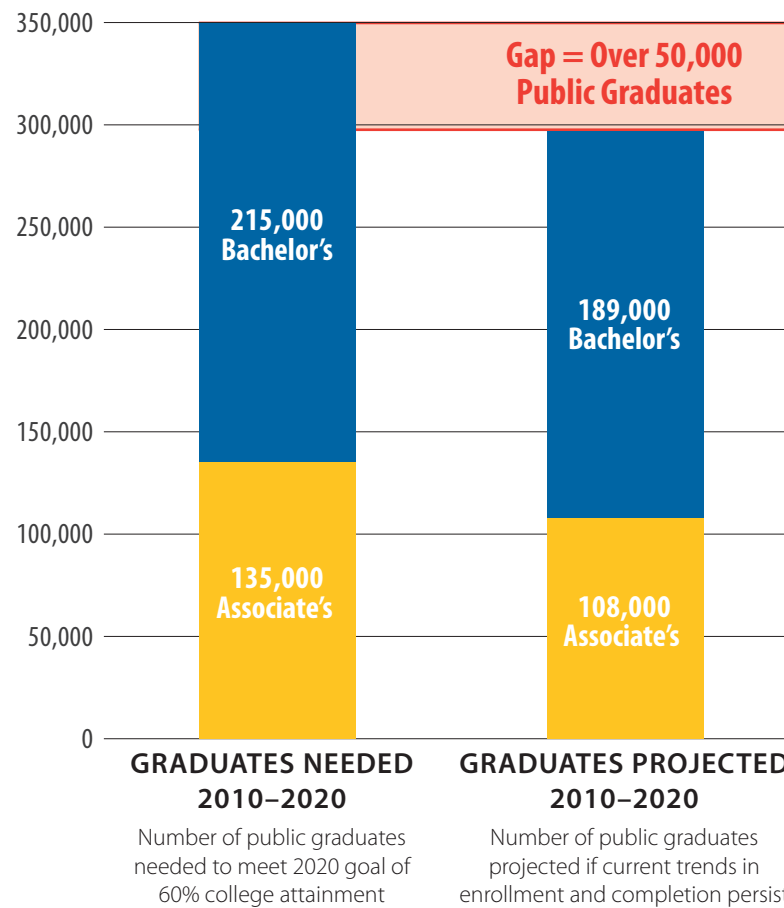
... And Massachusetts public higher education needs to grow more rapidly than projected to meet 2020 goals.

New Graduates from Massachusetts Public Higher Education: 2010–2020

This analysis is based on the goal of having 60 percent of Massachusetts 25–34-year-olds hold a college degree by 2020. This goal aligns with both the national goal of restoring the U.S. to global leadership in educational attainment, and projections of future workforce needs in Massachusetts.

This chart highlights the number of associate’s and bachelor’s degree-holders our public campuses need to graduate for Massachusetts to reach this target.

Source: MDHE analysis based on data from NCHEMS, USDOE, and Georgetown CEW.



Quoting President Kennedy last year at my inaugural, I said: “Our progress as a nation can be no swifter than our progress in education. The human mind is our fundamental resource.”

Providing access to a quality education ensures for our students a path to achievement, and for the Commonwealth a dynamic future.

—ROBERT L. CARET, PRESIDENT, UNIVERSITY OF MASSACHUSETTS

Our public system is on the move to national leadership... but we can't get there alone.

■ BUSINESS AND EMPLOYER COMMUNITY PARTNERS

The business and employer community has provided critical support, funding science, technology, engineering and math (STEM) projects, launching internship programs like the **Massachusetts Competitive Partnership's** "Learn and Earn" program, and supporting campus research endeavors.

■ EDUCATIONAL PARTNERS

Colleagues in **early childhood, elementary and secondary education** have worked with higher education policymakers to increase student readiness for college-level work, create data systems that follow students from pre-school through postsecondary education, and improve teacher preparation programs.

And through regional campus consortia and projects such as the **Nursing and Allied Health Initiative**, **independent colleges and universities** have worked collaboratively with state campuses to grow opportunities for students.

■ PHILANTHROPIC PARTNERS

Over the past two years, the Department of Higher Education has raised more than \$2.5 million from private foundations—including the **Boston, Nellie Mae Education, Davis Educational, Hewlett, Lumina, Balfour, and Gates Foundations** and the **National Governors Association**—to support Vision Project initiatives.

■ NATIONAL ASSOCIATION AND ORGANIZATION PARTNERS

National non-profits such as the **State Higher Education Executive Officers (SHEEO)** and the **American Association of Colleges and Universities (AAC&U)** have provided expertise, insight, and support to key areas of the Vision Project.

■ FEDERAL PARTNERS

Federal support of higher education targets two areas: financial aid grants and research. In 2011 Massachusetts public higher education received \$655 million in federal grants for these two areas, with 40% going to financial aid and 60% to research. In addition, programmatic support from the federal government in the past two years has totaled \$29 million, including a \$20 million **U.S. Department of Labor** grant won through a joint effort by all 15 community colleges.

■ STATE GOVERNMENT PARTNERS

The **Patrick-Murray Administration** and the **Legislature** have worked hard despite challenging fiscal circumstances to protect funding of public higher education. A 2008 bond bill made possible critical investments in campus infrastructure. The Vision Project Performance Incentive Fund grants represent the first performance-based funding awarded to public colleges and universities in recent decades, and received \$7.5 million in new funding in the FY13 budget.

But Massachusetts still ranks in the middle tier of states in appropriations per full-time student. Our persistently low standing reflects a history of complacency about public higher education in a state with many prestigious private institutions. More recently, explosive enrollment growth that has outpaced funding has exacerbated this pattern.

- Massachusetts public higher education enrollment grew 21 percent from 2006 to 2011.

- In 2011, Massachusetts ranked 30th among states in higher education funding per student, behind such states as California, Connecticut, Florida, Illinois, Kentucky, Louisiana, Maine, Maryland, Mississippi, New Jersey, New York, North Carolina, Texas, Washington, and Wisconsin.

As funding has declined, the cost of attendance has increased, creating a major burden on those least able to pay.

- The MASSGrant, the Commonwealth's major financial aid grant program for low-income students, covers only 8 percent of tuition and fees for a public college or university in the Commonwealth. In 1988, the MASSGrant covered 80 percent of student charges.

■ In the years ahead, all of these critical partnerships and sources of support need to be strengthened if we are to attain national leadership.

As a technology leader, our greatest asset is our world-class people. To consistently innovate, it is critical for businesses like ours to strengthen partnerships with the Commonwealth's public universities and community colleges, so that the students of today can attain the skills they need to excel in the jobs of tomorrow.

—WILLIAM H. SWANSON,
CHAIRMAN AND CEO,
RAYTHEON COMPANY

II. THE BASELINE

How do Massachusetts public campuses compare with the rest of the nation?

■ This section presents the baseline data that we will use to track our progress in the Vision Project key outcome areas in the years to come. As the goal of the Vision Project is to achieve national leadership in each of these areas, we compare Massachusetts against the Leading States as well as the National Average on each metric.

KEY OUTCOME **1 COLLEGE PARTICIPATION** ■ 16

KEY OUTCOME **2 COLLEGE COMPLETION** ■ 22

KEY OUTCOME **3 STUDENT LEARNING** ■ 26

KEY OUTCOME **4 WORKFORCE ALIGNMENT** ■ 28

KEY OUTCOME **5 PREPARING CITIZENS** ■

*Metrics will be developed in the coming year;
analysis will appear in future reports*

KEY OUTCOME **6 CLOSING ACHIEVEMENT GAPS** ■ 34

KEY OUTCOME **7 RESEARCH** ■ 38

APPENDICES

DATA SOURCE ACRONYM GLOSSARY ■ 80

INDEX OF LEADING STATES ■ 80

SEE ALSO

WWW.MASS.EDU/VPREPORT
for additional data

KEY OUTCOME

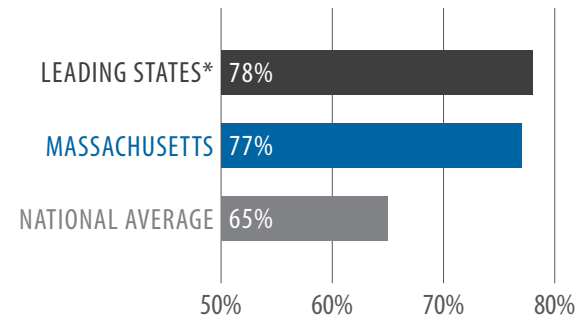
1 COLLEGE PARTICIPATION

Massachusetts is a national leader in the percentage of high school graduates who go to college and who are ready for college-level work. But challenges remain—even as national leaders, too many of our students are not college-ready, and large disparities persist in readiness and participation by race, ethnicity and socioeconomic status.

KEY METRIC

Is Massachusetts a national leader in the college-going rates of recent high school graduates? *Yes.*

College Enrollment Rates of Recent High School Graduates



Cohort: Recent high school graduates (graduated within past year) enrolled anywhere (public or private, in state or out of state) as first-time, degree-seeking students in fall 2010.

Source: USDOE/IPEDS, WICHE**

* Leading states defined as average of top five states for each outcome, unless noted otherwise. Index of Leading States is available on page 80.

** See the Data Source Acronym Glossary on page 80 for the full names of these organizations.

Understanding College Participation Measures

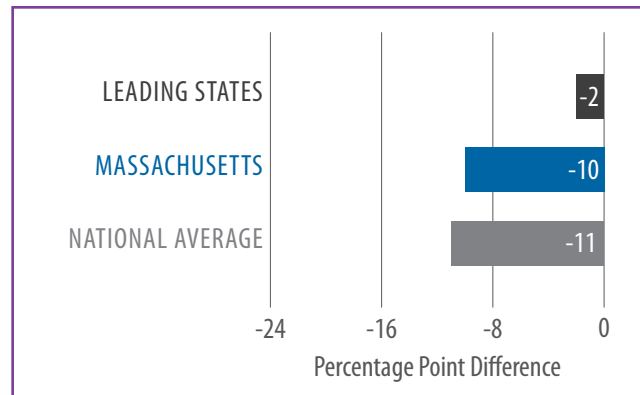
No single data source provides information on all aspects of college participation and college readiness, so this section uses four different data sources to create a complete picture. As a result, the populations of students studied shift somewhat for each metric, and are noted accordingly. College Readiness measures, shown on pages 18–21, are the most challenging. In addition to academic preparation, college readiness encompasses

a range of skills and attitudes such as persistence, time management, the ability to work independently, an understanding of the performance levels expected in college, and facility in interacting with college professors and peers. Most college readiness measures however, including those used here, assess only academic preparation in specific fields.

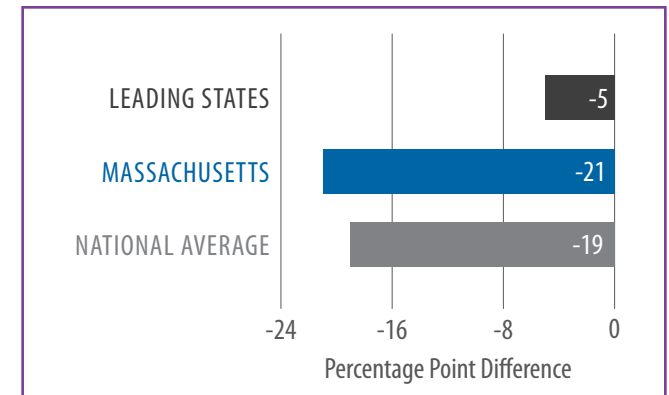
KEY METRIC

Is Massachusetts a national leader in reducing disparities in the college-going rates of young adults? *No.*

African-American/White Gap in College Enrollment Rates of 18- to 24-Year-Olds



Latino/White Gap in College Enrollment Rates of 18- to 24-Year-Olds



Cohort: 18- to 24-year-olds enrolled in college, at public or private institutions, in 2007–2009.

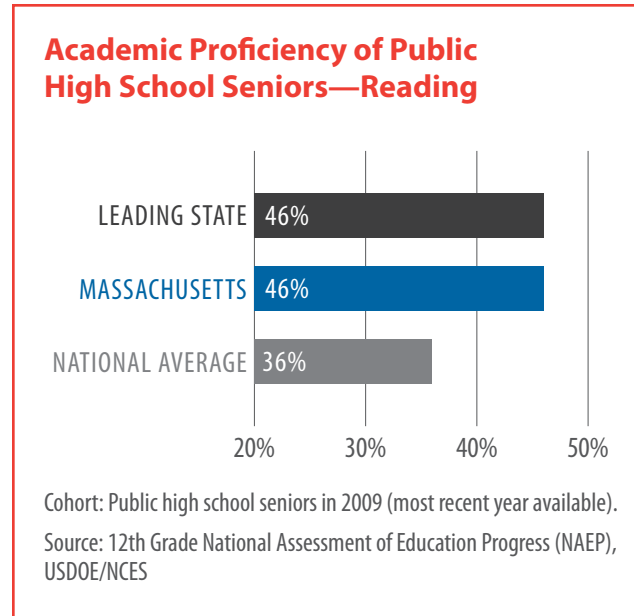
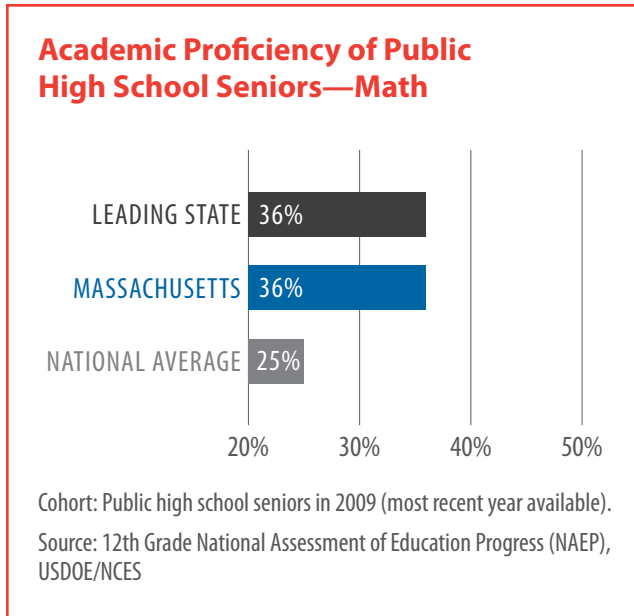
Source: US Census Bureau, 2007–09 American Community Survey

Note shift in population studied from recent high school graduates to 18- to 24-year-olds. National achievement gap data are not available for recent high school graduates. National comparison data on gaps by gender or income are not currently available for either group.

On all achievement gap charts, unlike the other charts in this report, smaller bars indicate better performance.

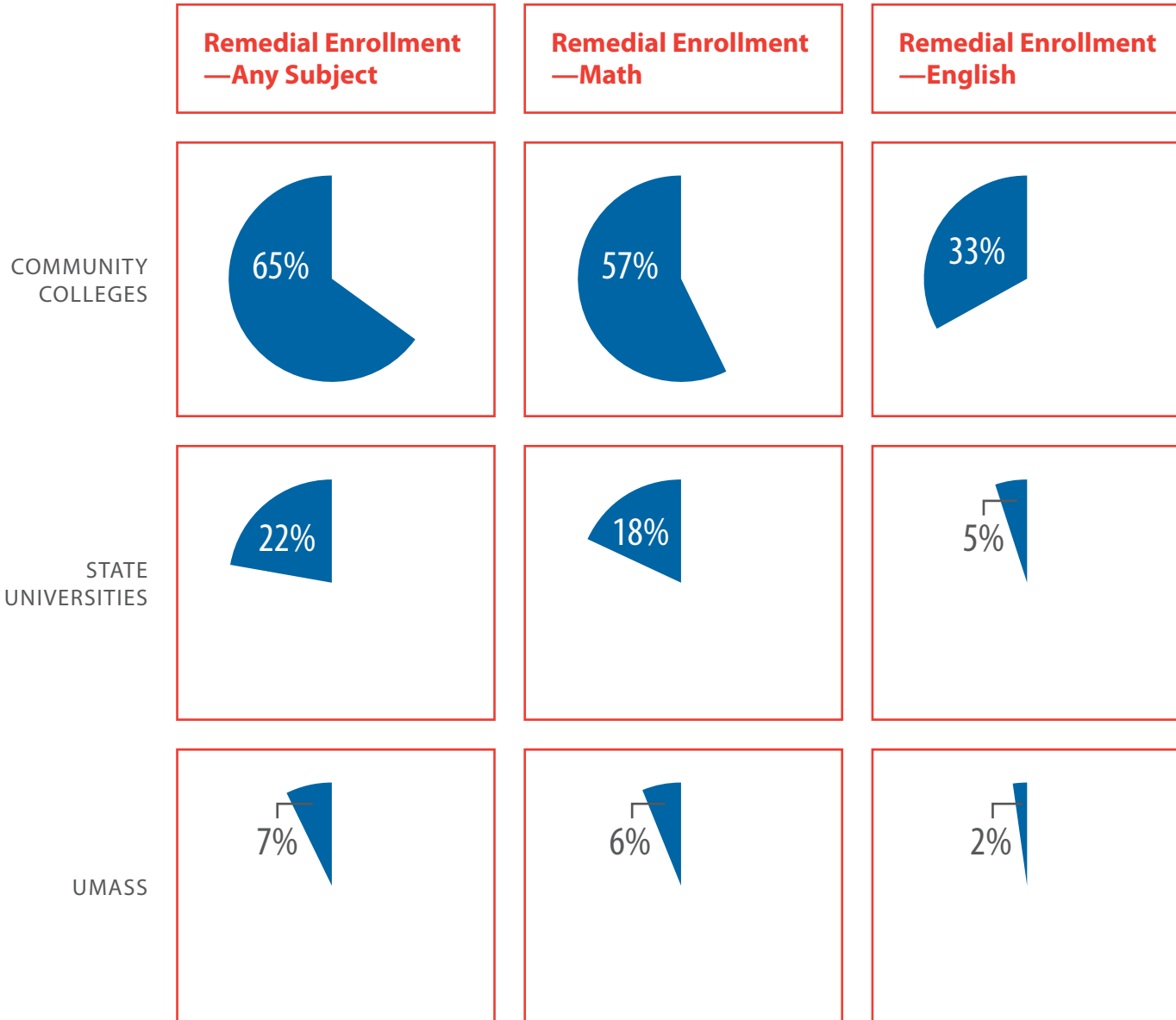
ADD'L METRIC

Is Massachusetts a national leader in preparing high school students for college-level work? Yes. *But even here, in the leading state, the majority of students do not achieve proficiency on the 12th grade NAEP math and reading exams.*



The results on the National Assessment of Educational Progress (NAEP) shown above indicate the percentage of students scoring Proficient or higher on the 12th grade NAEP exam. This level correlates with a score of 500 on the SAT Reading and Math exams. While the national average is based on students in all states, leading state data comes from a NAEP pilot study of 11 states: AR, CT, FL, ID, IL, IA, MA, NH, NJ, SD and WV. Massachusetts is the leading state within this study in both Math and Reading.

What percentage of Massachusetts public high school students enter our public higher education system underprepared for college-level work?



This page presents Massachusetts data only. Because policies for placement into remedial education vary significantly by state, no meaningful national comparison is possible.

Readers who compare remedial education enrollment with the NAEP proficiency results shown on page 18 may notice that the percentage of students who place out of remedial education is more, and in the case of the four-year institutions considerably more, than the percentage who achieve proficiency on the NAEP exam. The primary explanation for this difference lies in the different populations of students examined. The NAEP exam tests high school seniors, including those who never go on to higher education, whereas the remedial education percentages reflect only students who have made it to college.

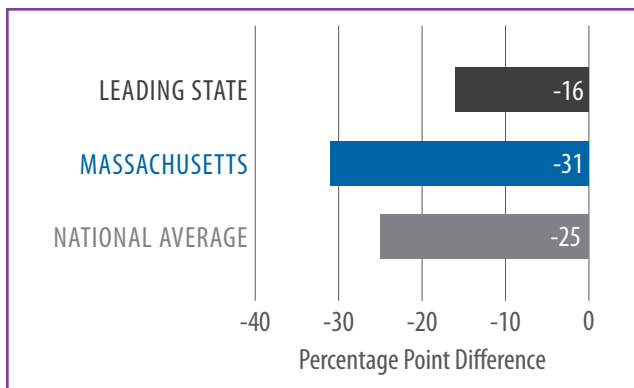
Cohort: First-time, full-time, degree-seeking students who are recent Massachusetts public high school graduates and who enrolled in remedial courses in fall 2011.

Source: MDHE/HEIRS

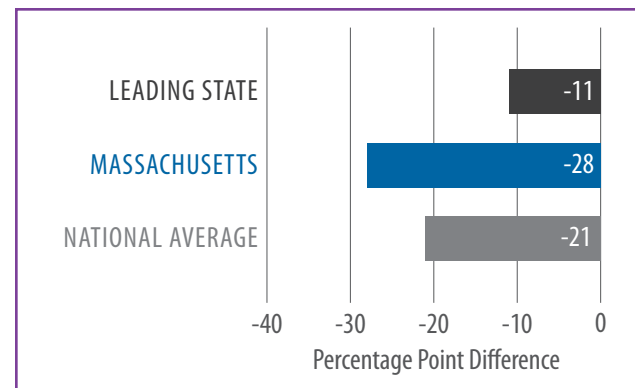
Is Massachusetts a national leader in closing achievement gaps in college preparedness? **No.**

While Massachusetts' achievement gaps exceed the national average, we are at or above the national average in the proficiency of our students when compared with that of students of the same race, ethnicity, or income.

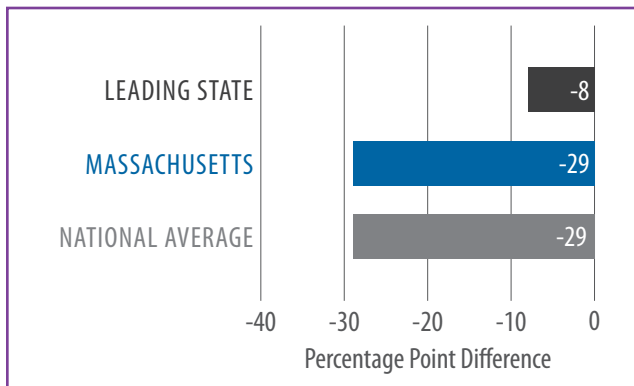
African-American/White Gap in Academic Proficiency of High School Seniors—Math



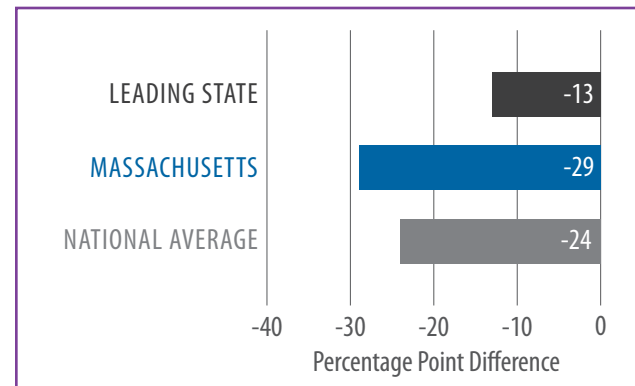
Latino/White Gap in Academic Proficiency of High School Seniors—Math



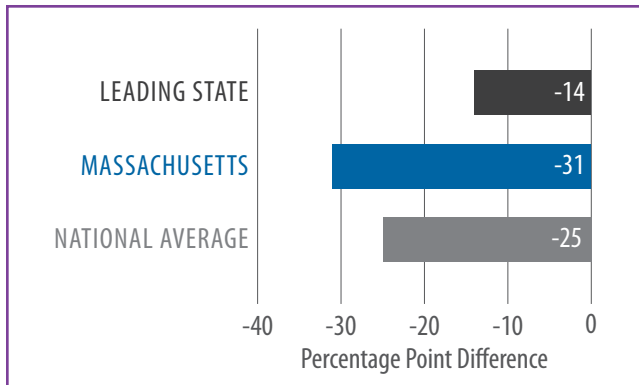
African-American/White Gap in Academic Proficiency of High School Seniors—Reading



Latino/White Gap in Academic Proficiency of High School Seniors—Reading

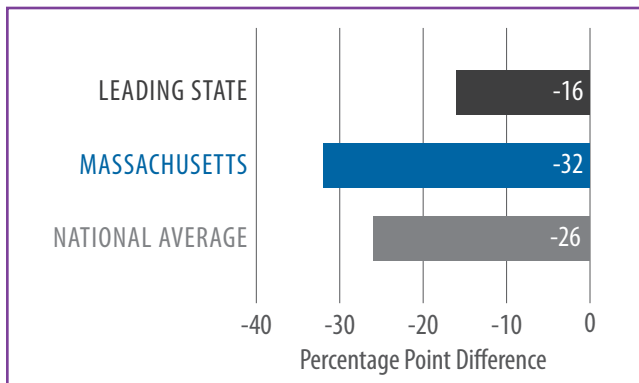


**Parental Education Gap
in Academic Proficiency of
High School Seniors—Math**



Parental Education gaps are a widely used measure of socioeconomic status. In these charts, the gaps show the difference in outcomes between those students whose parents hold only high school diplomas or less, and those students with at least one parent holding a college degree.

**Parental Education Gap
in Academic Proficiency of
High School Seniors—Reading**



Cohort for both rows: Public high school seniors in 2009 (most recent year available).

Source: 12th Grade National Assessment of Education Progress (NAEP), USDOE/NCES

Why are income gaps not reported in the Vision Project?

Many researchers believe that family income is the strongest predictor of academic success—stronger than race/ethnicity and gender. In recognition of this, the Board of Higher Education voted to include income gaps in the metrics used to measure progress in Closing Achievement Gaps.

In the area of College Participation, we know that in Massachusetts the college enrollment rates of recent high school graduates from low-income families is 23 percentage points below those of their peers. But a national comparison is not currently available.

Likewise, in College Completion and other outcome areas, income data is sparsely available in Massachusetts and even less available in national data sets. Congress recently began to require higher education institutions to submit the graduation rates of students eligible for Pell Grants. As data of this kind becomes publicly available, greater income analysis will appear in Vision Project reports.

KEY OUTCOME

2 COLLEGE COMPLETION

College completion increases an individual’s employment prospects and is the strongest indicator of future civic participation. Students who graduate are also better able to pay back college loans. In this area, Massachusetts trails national leaders by 6 to 13 percentage points and has achievement gaps by race, ethnicity, income, and gender.

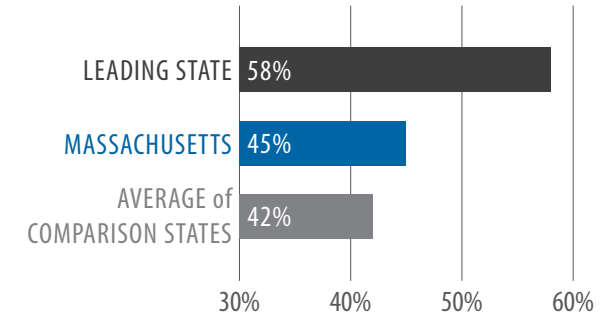
KEY METRICS

Is Massachusetts a national leader in the college completion rates of its public higher education students? **No.**

The “Achieving the Dream” indicator recognizes the complex multiple missions of the Community College segment 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—Connecticut, Florida, Massachusetts, North Carolina, Ohio, Oklahoma, Texas, Virginia, Washington. Because of the small comparison group, national leadership is equated with the performance of the top state, rather than the top 5 states.

COMMUNITY COLLEGES “Achieving the Dream” Six-Year Success Rate



Cohort: First-time, degree-seeking students entering in fall 2003; measure examines their rate of success by September 2009.

Source: MDHE/HEIRS, NSC, Jobs for the Future

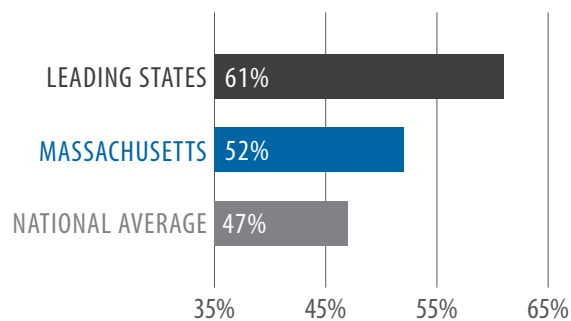
Understanding College Completion Measures

In recent years, graduation rates have engendered considerable national debate, particularly in relation to community college students. The graduation rates tracked by the National Center for Education Statistics—the sole source of national comparison data—ignore the considerable percentage of community college students who transfer or attend part time. Moreover, NCES data only counts students as graduating if they gradu-

ate from the same college at which they began. Students who transfer and then graduate elsewhere count as failures under this approach. For this reason we use an alternative measure of community college success, but in doing so sacrifice the ability to compare against a broad range of states. National comparisons using the NCES data are available on the Vision Project report website at www.mass.edu/vpreport.

STATE UNIVERSITIES

Six-Year Graduation Rate

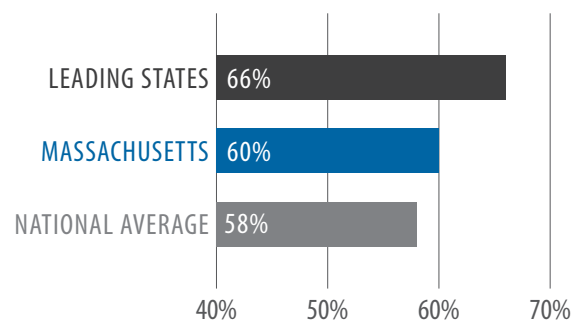


Cohort: First-time, full-time, degree-seeking students entering in fall 2004; measure examines their rate of graduation by August 2010.

Source: USDOE/IPEDS

UMASS

Six-Year Graduation Rate



Cohort: First-time, full-time, degree-seeking students entering in fall 2004; measure examines their rate of graduation by August 2010.

Source: USDOE/IPEDS

As noted above, transfer students, who compose roughly a third of all new students enrolling in public bachelor degree programs, are not included in the Six-Year Graduation Rate metrics. Their graduation rate is 60% in the State University segment and 60% in the UMass segment.

In addition, many students transfer from UMass or their state university and successfully complete their studies at a different institution. Including those students raises the graduation rate by 12 percentage points in the State University segment and 14 percentage points in the UMass segment. No national comparisons are available for graduation rates of students who transfer into or out of four-year colleges.

KEY METRIC

Is Massachusetts a national leader in closing achievement gaps in college completion rates of its public higher education students? **No.**

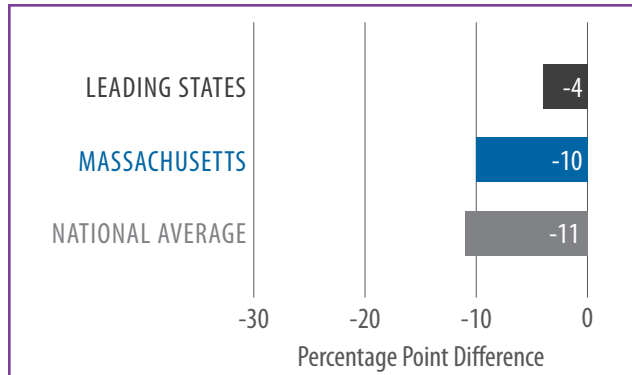
COMMUNITY COLLEGES

Three-Year Graduation Rate

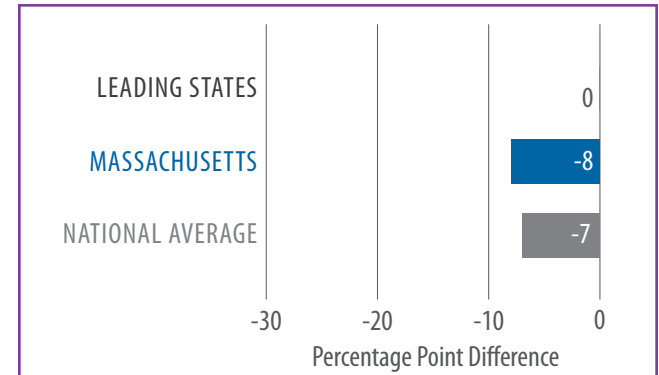
Cohort: First-time, degree-seeking students entering in fall 2007; measure examines their rate of graduation by August 2010.

Source: USDOE/IPEDS

African-American/White Gap in Public Higher Ed Graduation Rates



Latino/White Gap in Public Higher Ed Graduation Rates

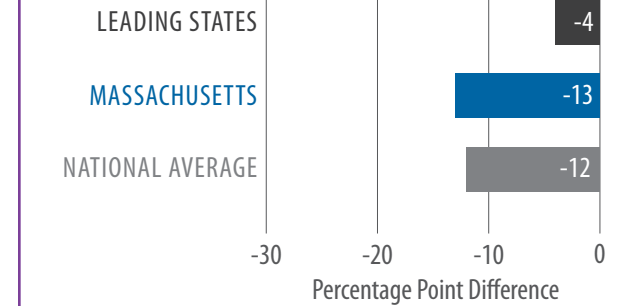
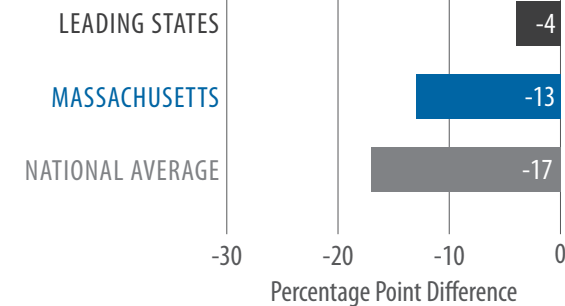


STATE UNIVERSITIES

Six-Year Graduation Rate

Cohort: First-time, full-time, degree-seeking students entering in fall 2004; measure examines their rate of graduation by August 2010.

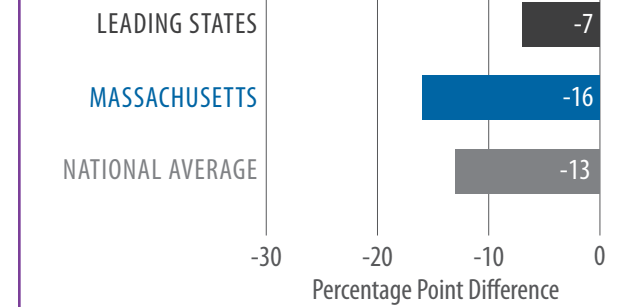
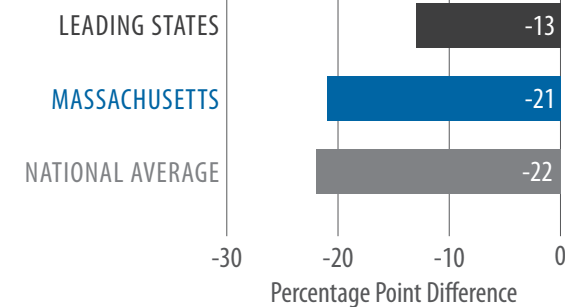
Source: USDOE/IPEDS



UMASS Six-Year Graduation Rate

Cohort: First-time, full-time, degree-seeking students entering in fall 2004; measure examines their rate of graduation by August 2010.

Source: USDOE/IPEDS



Note the change to Three-Year Graduation Rate as the focus of our analysis of Community College achievement gaps in this section. The Achieving the Dream Success Rate Indicator (Key Metric on page 22) lacks the data from other states needed to do achievement gap analyses.

Why are gender gaps not reported in the Vision Project?

On average, gender-based achievement gaps are the smallest of those examined in the Vision Project, with several outcomes showing no gaps at all. In some areas, however, gender gaps are significant. Gender-based gaps are unusual in that females trail males in some measures, while males lag behind females in others.

Female students at Massachusetts' public campuses lag behind males by 21 percentage points in the achievement of competitive scores on the MCAT entrance exam to medical school, and by 8 to 17 percentage points in participation in Science, Technology, Engineering or Math (STEM) majors. Male high school students trail females by 9 to 10 percentage points in college enrollment rates and college preparedness in reading. Male students also trail females by 6 to 22 percentage points on nursing licensure exam pass rates.

Additional analysis of gender-based gaps is available on the Vision Project Report website at www.mass.edu/vpreport.

KEY OUTCOME

3 STUDENT LEARNING

Because college completion rates do not indicate actual levels of academic achievement, the Vision Project also tracks measures of what public college graduates know and are able to do. The best available data that allows cross-institutional comparisons comes from results on national licensure and graduate entrance exams; on these tests Massachusetts is 5 to 15 percentage points from national leadership.

Licensure and graduate entrance exams capture only a portion of students and student work. See page 58 for an overview of our work to develop new Student Learning measures.

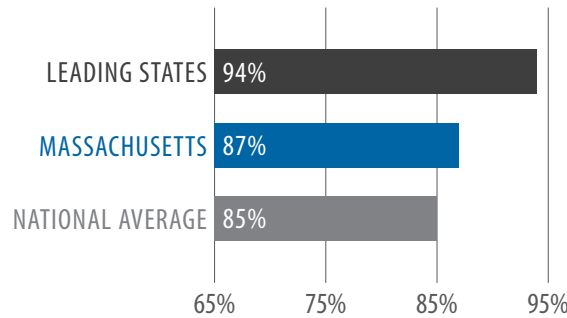
KEY METRICS

Is Massachusetts a national leader in pass rates of public higher education students on national licensure exams? **No.**

National achievement gap data is not available for licensure exams or the workforce metrics used in the following section. See pages 34–37 for Massachusetts-only data on disparities in outcomes by race and ethnicity.

COMMUNITY COLLEGES

Pass Rates on National Licensure Exams



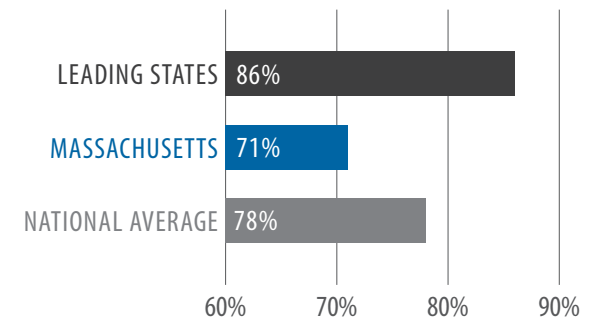
Tests included: Dental Assistant, Dental Hygiene, Licensed Practical Nurse, Medical Assistant, Occupational Therapy Assistant, Physical Therapy Assistant, Radiation Technologist, Registered Nurse, Respiratory Therapy Assistant, Surgical Technologist

Cohort: Cohorts vary by test; see technical appendix on website for more information.

Source: National testing agencies; see technical appendix on website for more information.

STATE UNIVERSITIES

Pass Rates on National Licensure Exams



Tests included: Certified Public Accountant, Registered Nurse, Social Work BA

Cohort: Cohorts vary by test; see technical appendix on website for more information. Because of the comparatively small numbers of state university students taking these exams, results are aggregated over the most recent three years.

Source: National testing agencies; see technical appendix on website for more information.

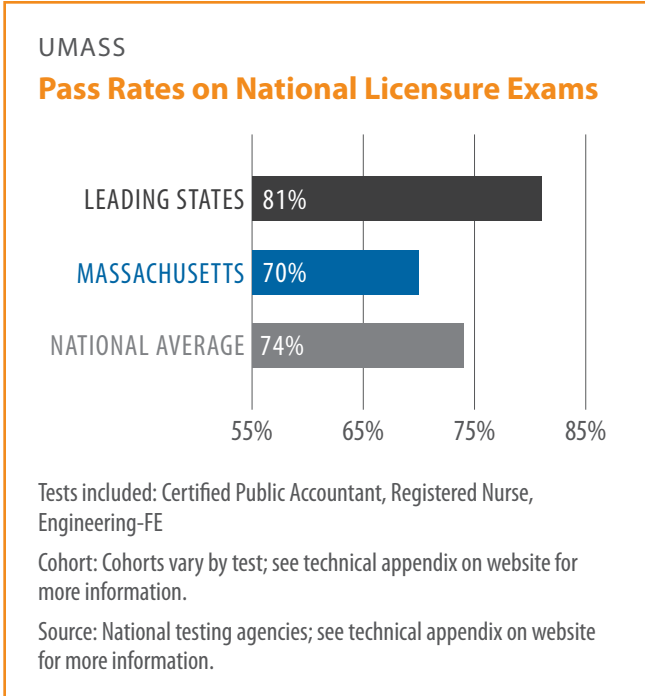
Understanding Student Learning Measures

Research shows that the best way to determine what college students know and can do is to examine their learning outcomes from multiple viewpoints. Future Vision Project reports will look at student learning through three different lenses: (1) assessments of student coursework based on the same standards used by other institutions; (2) national licensure and

graduate entrance exams; and (3) indirect assessments—student surveys that identify the prevalence of practices tied to increased student learning. Of these, only the exam data is available for this first Vision Project report. See page 58 for a more detailed explanation of Massachusetts’ plans to improve student learning through better assessment.

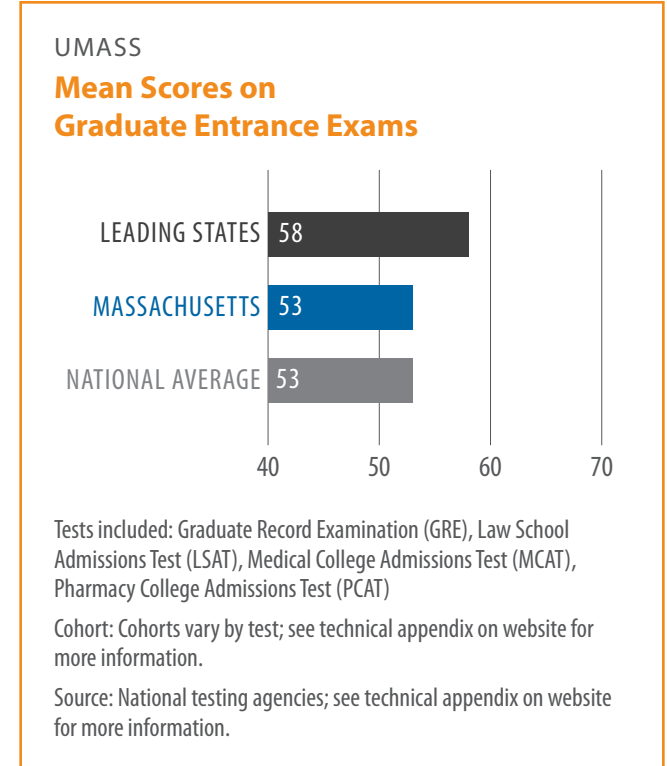
ADD’L METRIC

Is Massachusetts a national leader in performance by public higher education students on graduate entrance exams? **No.**



Graduate entrance exams use widely varying score ranges (for instance, 120–180 for the LSAT and 3–45 for the MCAT). Scores were normalized to a 0–100 scale in order to make aggregation possible.

Another way to look at graduate entrance exams is the percentage of students above a competitive score. At UMass, 29% of students scored above a competitive score, compared with a 34% National Average. Competitive scores were determined by national experts from NCHEMS.



KEY OUTCOME

4 WORKFORCE ALIGNMENT

OVERALL

In Massachusetts' knowledge-based economy, increasing college attainment is critical to providing the highly educated workforce that employers demand. Massachusetts is currently on track to meeting the national goal of having 60% of 25- to 34-year-olds hold college degrees by 2020, but in future years will need greater gains to stay on track.

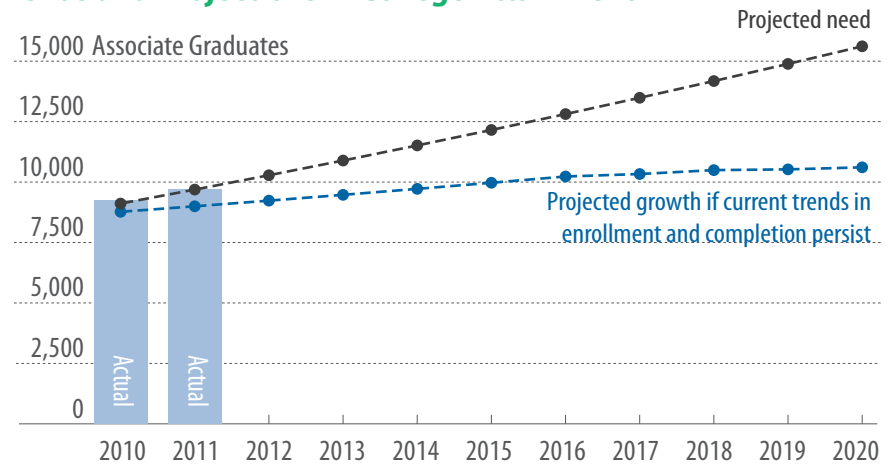
KEY METRIC

Are we on track to have 60% of Massachusetts' 25- to 34-year-olds holding a college degree by 2020?

Yes. Massachusetts' public colleges and universities have met the target number of graduates for 2010 and 2011—but greater annual gains will be needed in the future to stay on track.

COMMUNITY COLLEGES—ASSOCIATE'S DEGREES IN ALL FIELDS

Trends and Projections in College Attainment



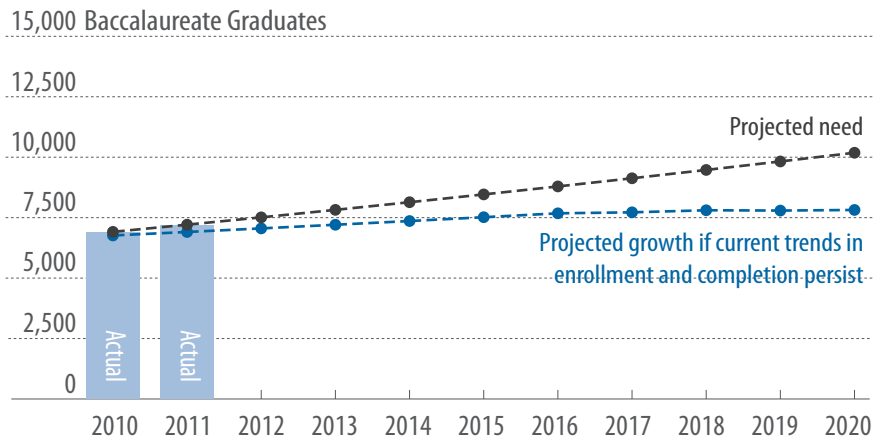
Source: MDHE with data from NCHEMS, Georgetown Center for Education and the Workforce, USDOE/IPEDS

Understanding Overall Workforce Alignment Measures

The projections below began with calculations of the college graduates Massachusetts will need each year to meet the goal of 60% college attainment by 2020 (see page 11). To better align this goal with Massachusetts' specific workforce needs, this total number of graduates was then broken out by degree type—associate's, bachelor's, graduate—using projections

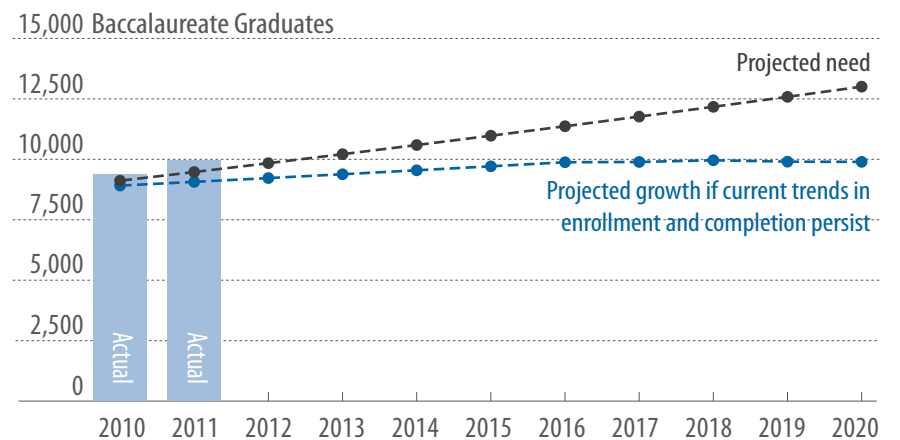
from Georgetown's Center for Education and the Workforce. Because this report focuses on Massachusetts' public campuses, degree totals were then broken out by public and private share using the current split in Massachusetts for each degree type. The charts do not show the private campus contribution to college graduates needed.

STATE UNIVERSITIES—BACHELOR'S DEGREES IN ALL FIELDS
Trends and Projections in College Attainment



Source: MDHE with data from NCHEMS, Georgetown Center for Education and the Workforce, USDOE/IPEDS

UMASS—BACHELOR'S DEGREES IN ALL FIELDS
Trends and Projections in College Attainment



Source: MDHE with data from NCHEMS, Georgetown Center for Education and the Workforce, USDOE/IPEDS

KEY OUTCOME

4 WORKFORCE ALIGNMENT

HIGH-NEED FIELDS

High-need fields—STEM, health care, and business and finance—show both high projected growth in employment due to new job creation, and high projected vacancies due to retirements and other departures. In these fields, Massachusetts is not a national leader in the alignment between projected job openings and qualified graduates to fill them.

KEY METRICS

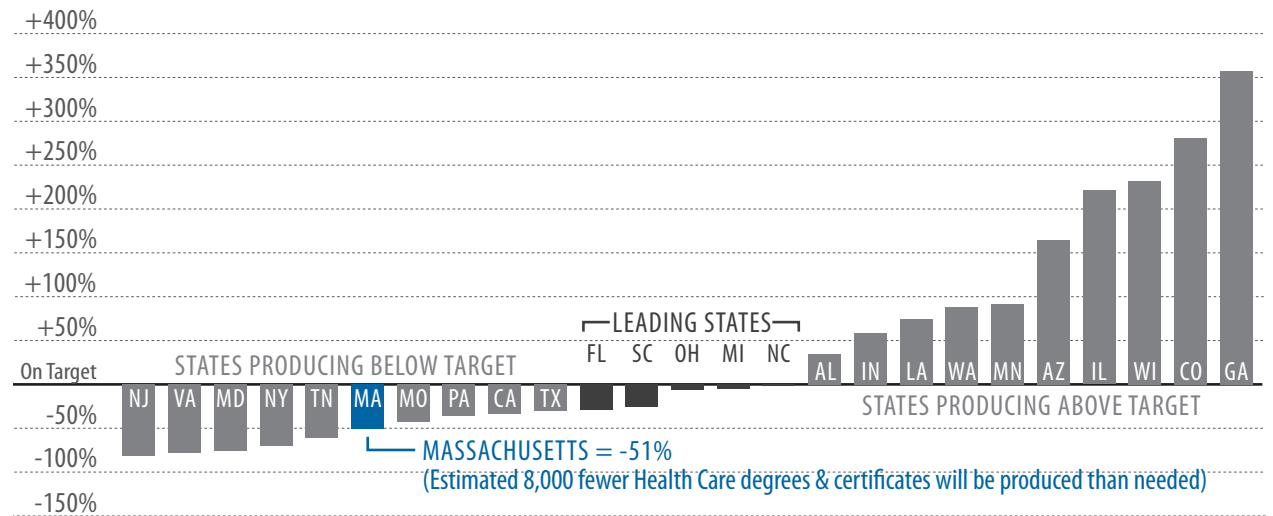
Is Massachusetts a national leader in aligning public degree programs with future workforce needs in health care? **No.**

High-Need Fields: This metric focuses on three high-need fields: Health Care; Science, Technology, Engineering, and Mathematics (STEM); and Business and Finance. While graduates of Massachusetts' public campuses are employed in a wide range of fields, these three areas show both a high level of projected growth and a high number of future vacancies. By 2018, they will represent 35% of Massachusetts jobs requiring a college education.

These fields include the four high-growth sectors on which the Patrick-Murray 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.

COMMUNITY COLLEGES—ASSOCIATE'S DEGREES & CERTIFICATES IN HEALTH CARE SUPPORT
Projected Percentage Gap by 2018 Between Degrees Produced and Degrees Needed

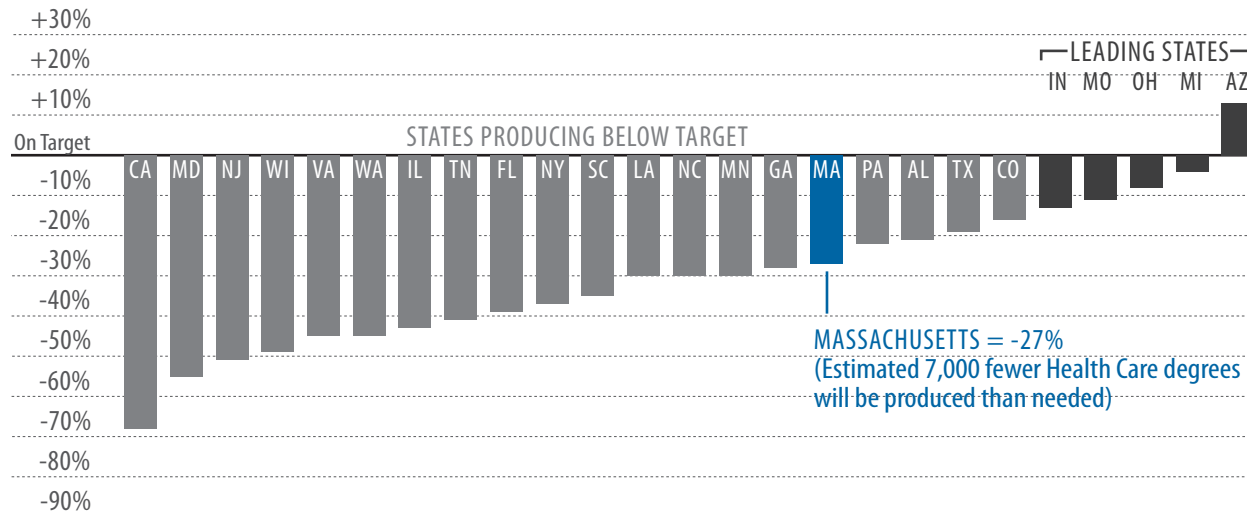


Understanding High-Need Fields Workforce Alignment Measures

The methodology for this cutting-edge alignment metric was developed by William Mass and the Center for Industrial Competitiveness at the University of Massachusetts Lowell, in partnership with the Massachusetts Department of Higher Education. To our knowledge, this is the first attempt to make state-by-state comparisons of the alignment between projected job openings and qualified college graduates. As with any new metric, we expect to make ongoing improvement of

both analyses and underlying data. Percentage gaps shown on the charts below should not be regarded as definitively indicative of poor alignment, but rather as a flag for further study. Retention and graduation rates in key occupational areas, as well as the number and percentage of students pursuing STEM degrees, are available on the Vision Project report website at www.mass.edu/vpreport.

STATE UNIVERSITIES & UMASS—BACHELOR’S DEGREES IN HEALTH CARE PRACTICE
Projected Percentage Gap by 2018 Between Degrees Produced and Degrees Needed



How to read the charts in this section:

- Leading states are defined as those closest to target.
- This metric looks at future workforce needs, rather than current job vacancies.
- Each chart compares projected job openings in a given high-growth field with the projected number of graduates possessing degrees in that field.
- To allow comparisons between states of different sizes, the chart shows a percentage: the gap between degrees projected and degrees needed, divided by the total degrees needed.
- Bars at the target line indicate states where the projected need for graduates is aligned with the projected number of graduates. The gap here is zero.
- The comparison looks only at public campus contribution to workforce development; the estimated number of future jobs is adjusted for the public higher education share of degrees in that field.

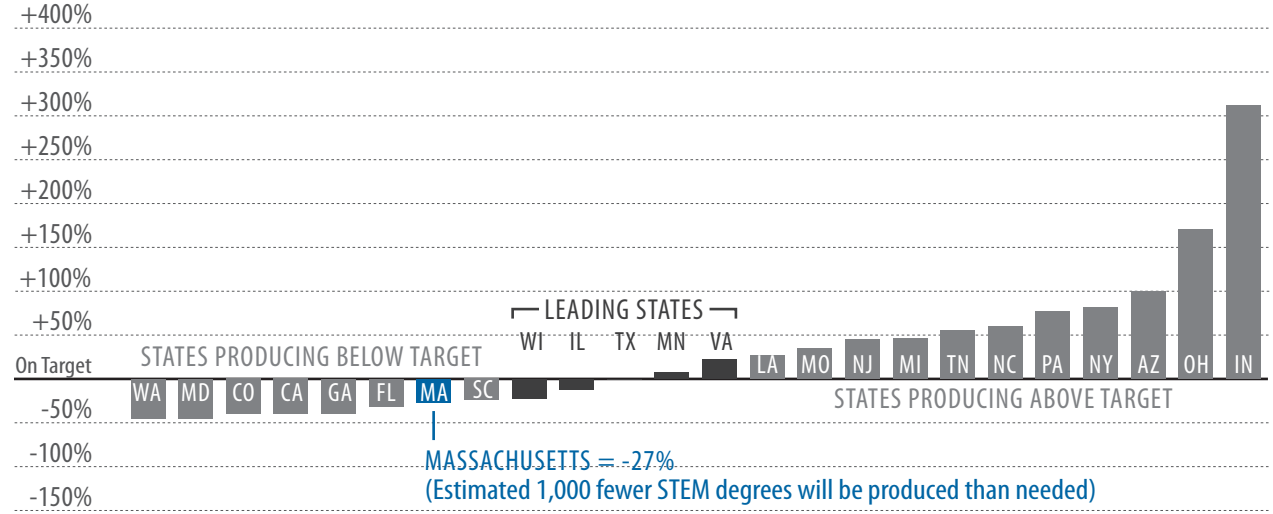
Source: MDHE with data from USDOE/IPEDS, Georgetown Center for Education and the Workforce, USDOE Baccalaureate and Beyond Longitudinal Study

KEY METRICS

Is Massachusetts a national leader in aligning public degree programs with future workforce needs in Science, Technology, Engineering, and Mathematics? **No.**

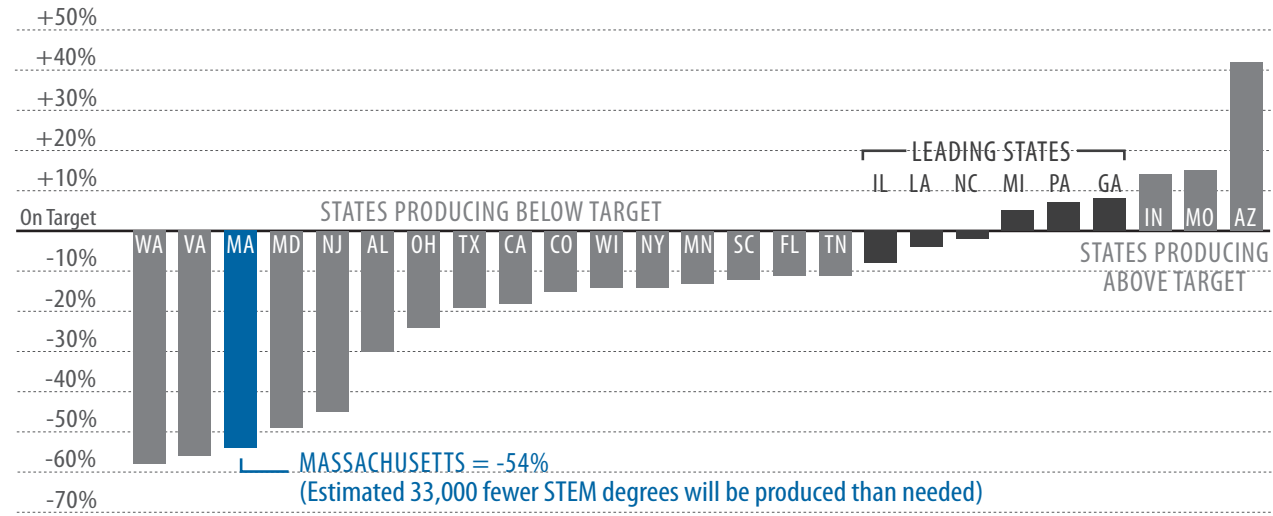
COMMUNITY COLLEGES—ASSOCIATE’S DEGREES IN STEM TECHNICIAN FIELDS

Projected Percentage Gap by 2018 Between Degrees Produced and Degrees Needed



STATE UNIVERSITIES & UMASS—BACHELOR’S DEGREES IN STEM FIELDS

Projected Percentage Gap by 2018 Between Degrees Produced and Degrees Needed

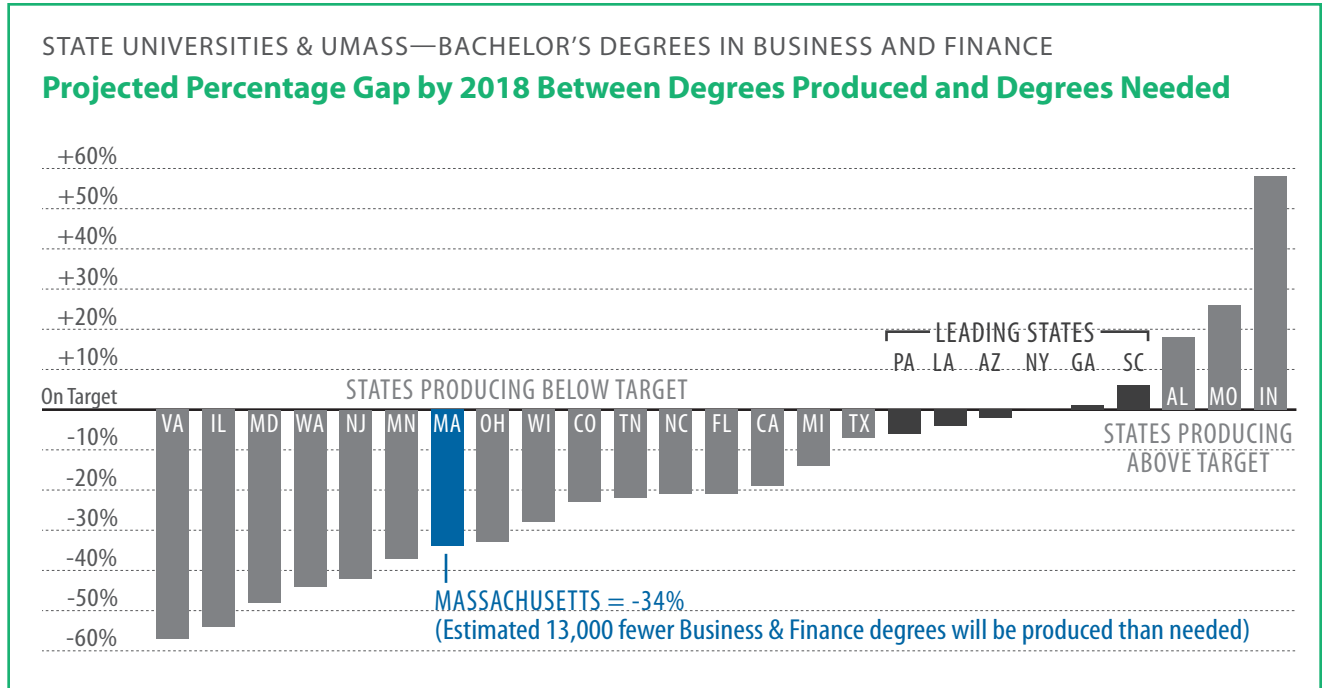


Source: MDHE with data from USDOE/IPEDS, Georgetown Center for Education and the Workforce, USDOE Baccalaureate and Beyond Longitudinal Study

KEY METRIC

Is Massachusetts a national leader in aligning public degree programs with future workforce needs in business and finance? *No.*

Source: MDHE with data from USDOE/IPEDS, Georgetown Center for Education and the Workforce, USDOE Baccalaureate and Beyond Longitudinal Study



KEY OUTCOME

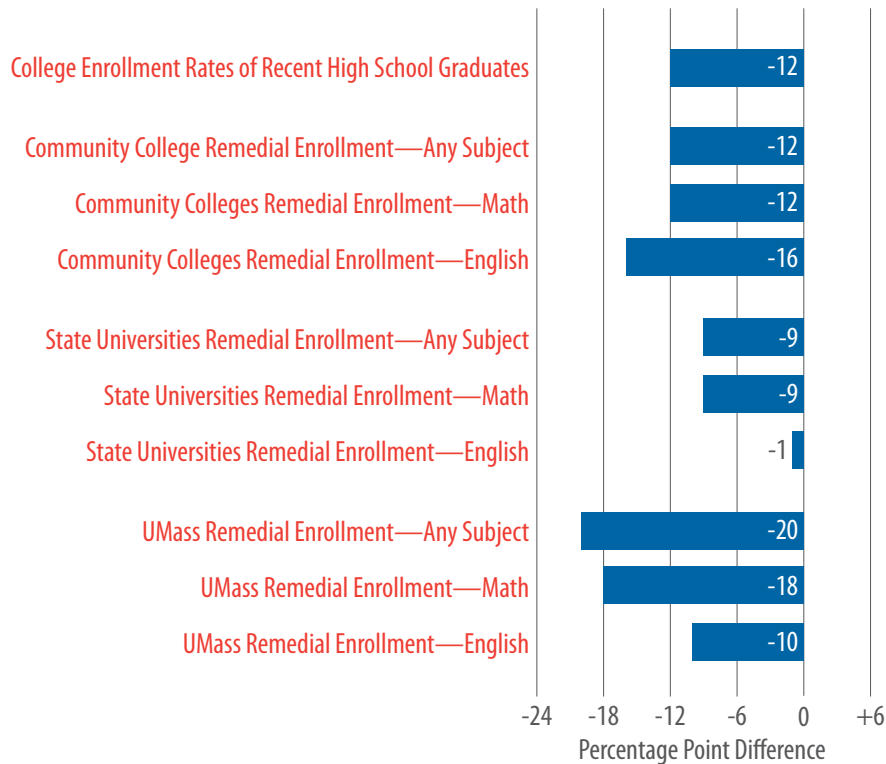
6 CLOSING ACHIEVEMENT GAPS

The overall Vision Project goal—producing the best-educated citizenry and workforce in the nation—can be achieved only if achievement gaps are significantly reduced or eliminated. Earlier chapters include measures allowing for national comparison of these gaps. This section adds to that picture by providing Massachusetts-only data for a wider array of metrics for which national comparisons are not available.

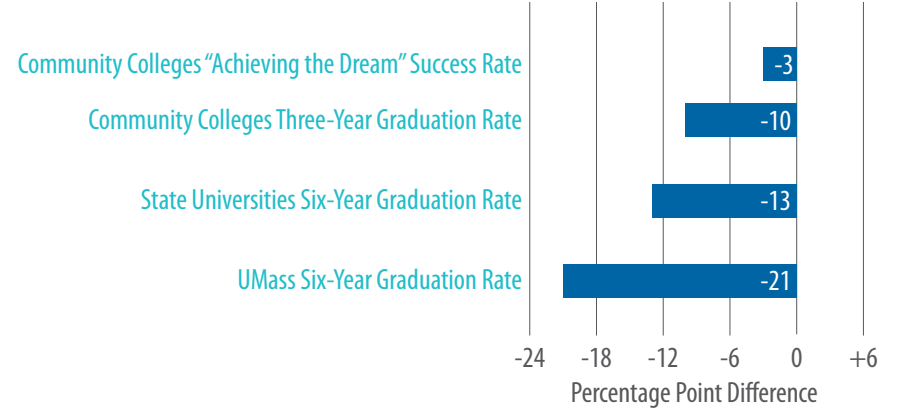
ADD'L METRIC

How large are African-American/White achievement gaps in Massachusetts across all outcome areas?

African-American/White Gaps in College Participation in Massachusetts



African-American/White Gaps in College Completion in Massachusetts



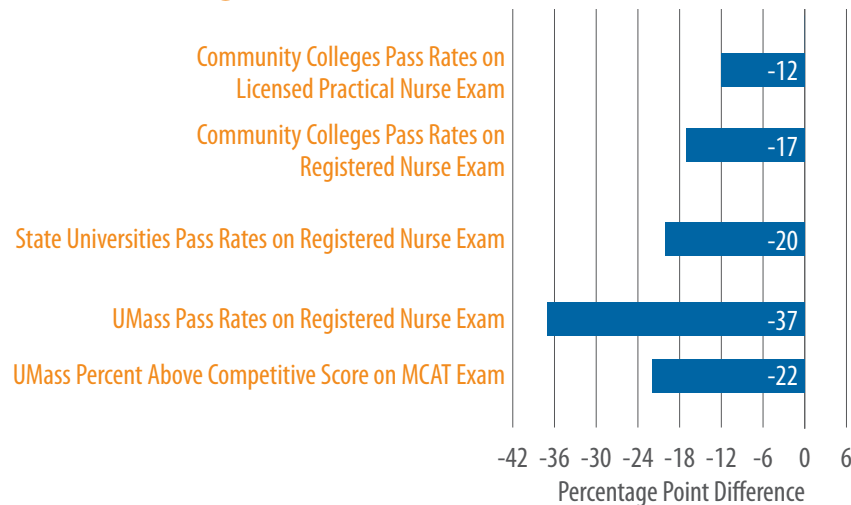
Understanding Achievement Gap Measures

Achievement gap data are traditionally viewed through a single lens, such as ethnicity or gender. But research and campus experience suggest that the intersections of such data offer a more nuanced, telling portrait. For example, African-American males fare worse academically than African-American females. And achievement gaps for older male students can be more significant than for males under 25. The challenge in making

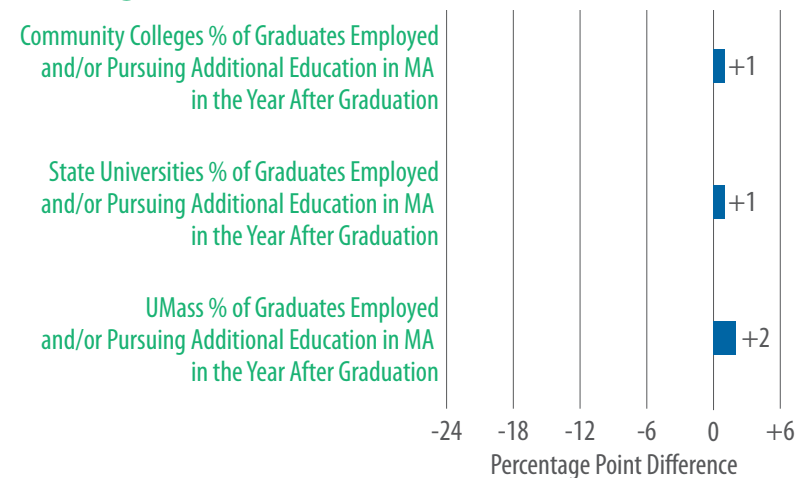
such subgroup analyses, however, is that sample sizes at the state level often become too small for valid comparisons, as subgroups are divided by other subgroups within it. At the national level, comparison data is often still lacking. Massachusetts-only achievement gap data for retention and graduation rates in key occupational areas are available on the Vision Project report website at www.mass.edu/vpreport.

Bars to left of 0 indicate extent by which African-Americans underperform whites. Larger bars equal larger gaps. Note that in Workforce Alignment, African-Americans tend to stay in Massachusetts after graduation by slightly larger margins than whites.

African-American/White Gaps in Student Learning in Massachusetts



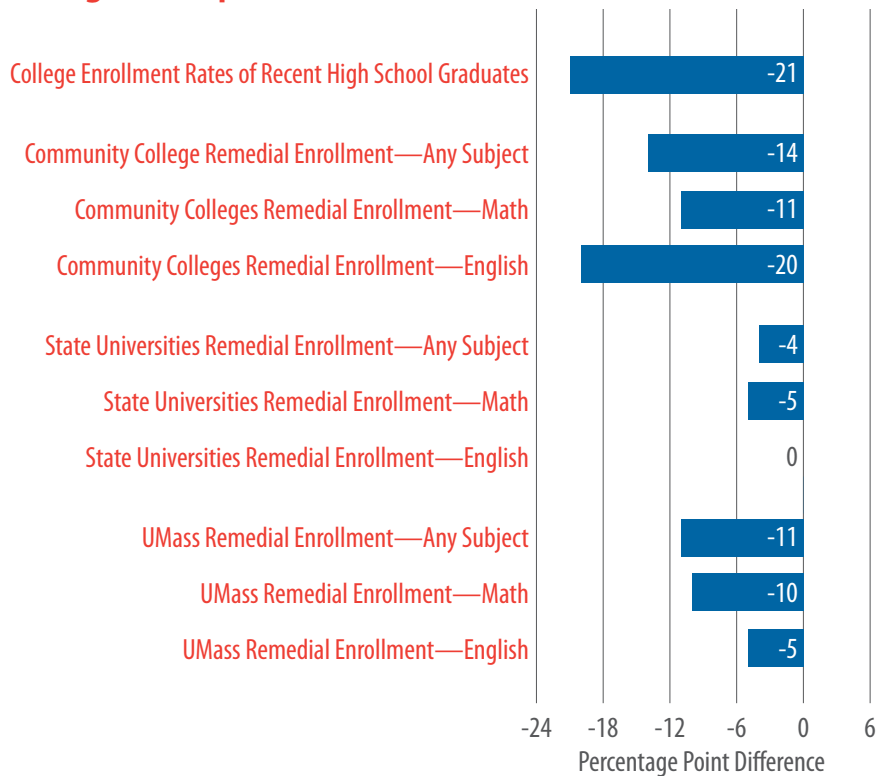
African-American/White Gaps in Workforce Alignment in Massachusetts



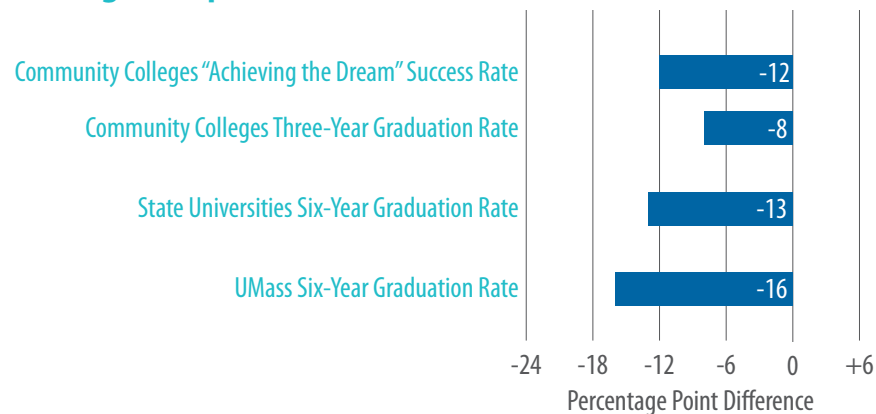
Data is aggregated over most recent three years. Exams are shown only if achievement gap data is available and the total number of African-American test-takers is greater than 40.

How large are Latino/White achievement gaps in Massachusetts across all outcome areas?

**Latino/White Gaps
in College Participation in Massachusetts**

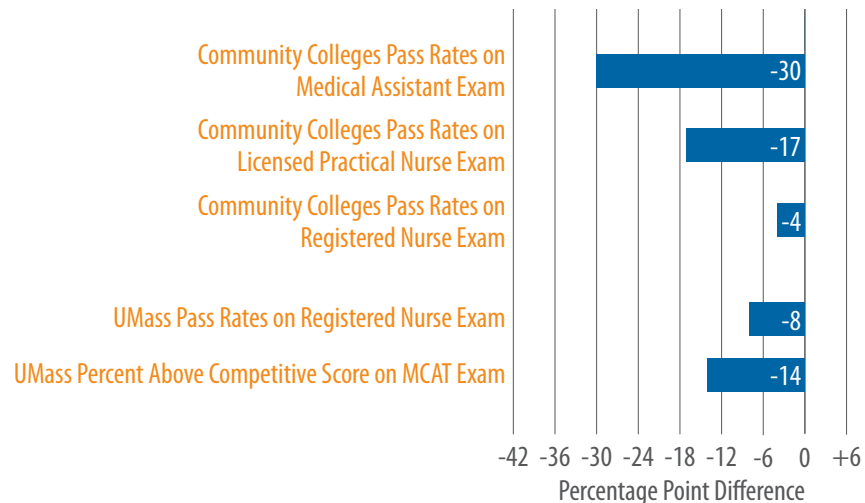


**Latino/White Gaps
in College Completion in Massachusetts**

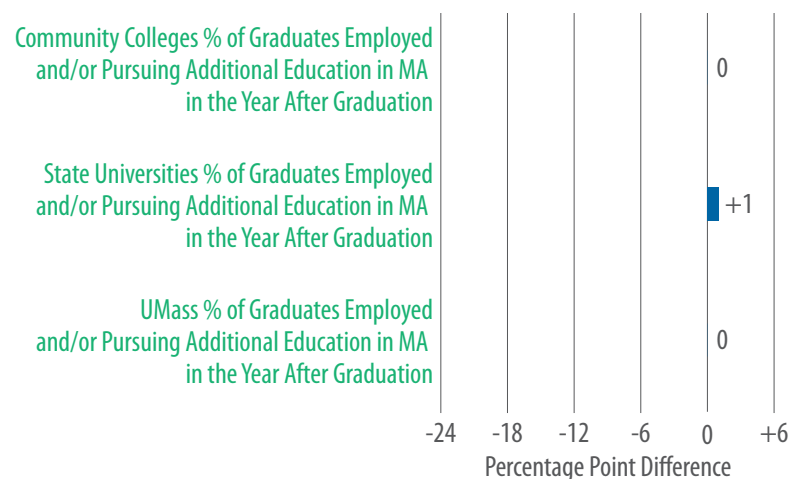


Bars to left of 0 indicate extent by which Latinos underperform whites. Larger bars equal larger gaps. Note that in Workforce Alignment, Latinos tend to stay in Massachusetts after graduation by equivalent or slightly larger margins than whites.

Latino/White Gaps in Student Learning in Massachusetts



Latino/White Gaps in Workforce Alignment in Massachusetts



Data is aggregated over most recent three years. Exams are shown only if achievement gap data is available and the total number of Latino test-takers is greater than 40.

KEY OUTCOME

7 RESEARCH

Research expenditures at UMass increased by 68 percent over the past six years, rising from \$350 million in 2005 to \$587 million in 2011. Licensing income, shown as a three-year rolling average, doubled over this same period, from \$25 million in 2005 to \$50 million in 2011.

KEY METRIC

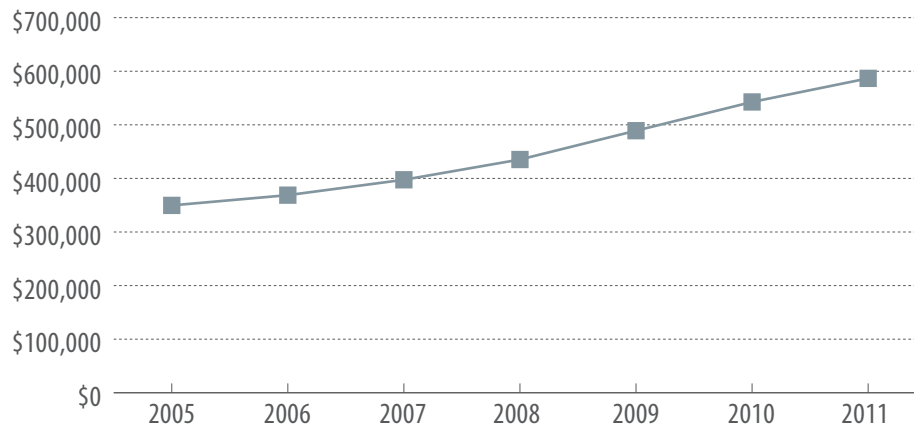
How have UMass' research and development expenditures changed over the past six years?

For more information on research at UMass, including highlights from individual campuses and the principles and priorities that guide the research, see the *UMass FY2011 Annual Research and Development Expenditures Report* at:

<http://bit.ly/LIEbAs>

UMASS

Trend in Research and Development Expenditures



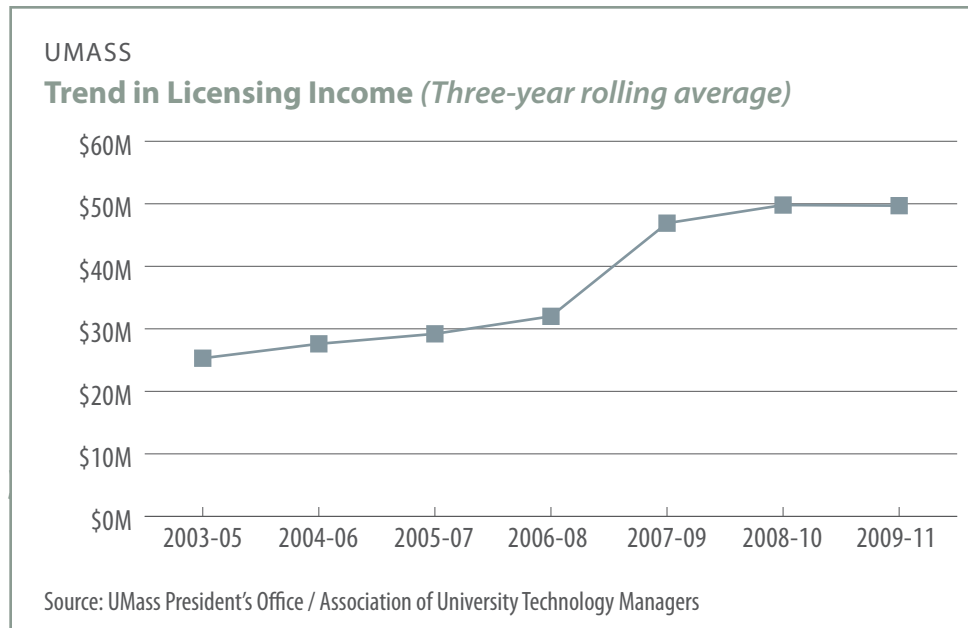
Source: UMass President's Office / National Science Foundation

**Understanding
Research Measures**

Research and Development expenditures are an indicator of an institution's research capacity and accomplishment. Licensing income comes from faculty-derived discoveries and products. It is a measure of the economic value of a university's inventiveness, as well as being a contributor to the university's financial strength. Because licensing revenue fluctuates from year to year with significant spikes from the introduction of new products, a three-year rolling average is used for this metric.

KEY METRIC

How has UMass' licensing income changed over the past six years?



III. GOALS

AND

STRATEGIES

**What work is being undertaken
to achieve the goal
of national leadership?**

■ This section outlines the **wide array of work underway to advance Massachusetts' performance** in the Vision Project's key outcomes. From policy development at the state level to student-centered programs on the campuses, from longstanding initiatives to new and innovative experiments, the work described here forms a comprehensive strategy to achieve the Vision Project goal of national leadership for Massachusetts public higher education.

KEY OUTCOME **1 COLLEGE PARTICIPATION** ■ 42

KEY OUTCOME **2 COLLEGE COMPLETION** ■ 48

KEY OUTCOME **3 STUDENT LEARNING** ■ 54

KEY OUTCOME **4 WORKFORCE ALIGNMENT** ■ 60

KEY OUTCOME **5 PREPARING CITIZENS** ■ 66

KEY OUTCOME **6 CLOSING ACHIEVEMENT GAPS** ■

Strategies to close achievement gaps for each outcome are described in the above sections

KEY OUTCOME **7 RESEARCH** ■

Information available on UMass' website at <http://bit.ly/LIEbAs>

Leaders of Tomorrow

ALEX SAMUEL CHAEZ
SPRINGFIELD TECHNICAL COMMUNITY COLLEGE '12



Last May, Alex Samuel Chaez became the first person in his family to (proudly!) graduate from college. He earned a degree in Computer & IT Security from Springfield Technical Community College (STCC) and will continue his education at Western New England University. He eventually hopes to earn a doctorate. Alex's younger brother, inspired by Alex's achievements, will enroll this fall in STCC's Liberal Arts Transfer Program.

As President of the STCC Phi Theta Kappa honor society, Alex served as an elementary school volunteer and coordinated a clothing drive for the Big Brothers Big Sisters organization. He also worked in the Dean of Students office. He chose to remain in Springfield in order to assist his parents, both financially and physically, serving as a personal care assistant to his father, who suffers from ALS (Lou Gehrig's disease).

"Springfield Technical Community College, like the over 1,000 other community colleges in the United States, exists to provide a place for first steps, second chances, and achieving dreams," said Dr. Ira Rubenzhal, STCC President. "Students like Alex Chaez humble us with their life stories, inspire us with their dreams and remind us every day how fortunate we are to be a part of something larger than ourselves."



Students cross the campus green at Westfield State.
Photo by Westfield State University.



KEY OUTCOME

1 COLLEGE PARTICIPATION

With Massachusetts already leading the nation in college participation of recent high school graduates, Vision Project work in this area has focused on three core goals:

- **Ensure that “college-bound” means “college-ready”**
- **Eliminate gaps in college participation by low-income students**
- **Safeguard affordability**

Strong collaboration with elementary and secondary education, a hallmark of recent efforts to promote college participation, will become even more critical as we work to ensure that public college students are representative of the entire citizenry of the Commonwealth.

STRATEGIES TO

Ensure that “college-bound” means “college-ready”

■ INCREASE AWARENESS OF COLLEGE AMONG K-12 STUDENTS

YourPlanforCollege.org is Massachusetts’ free, one-stop, web-based college planning portal managed by the **Massachusetts Educational Finance Agency (MEFA)**. A winner of *The Boston Globe*’s 2011 “Best of the New” awards, YourPlanforCollege centralizes all the key planning elements of a student’s educational career, including interactive planning tools, personal portfolio development, and key milestone reminders such as college application and financial aid deadlines. In 2011 the site, previously accessible only to students at participating high schools, became available to every student in the state.

Through the **College Connection** program, college advisors from **Cape Cod Community College** travel to ten Cape Cod high schools to provide personalized financial aid assistance, basic skills assessment, academic advising, course registration, and on-the-spot admissions interviews. This program now reaches nearly 2,000 Cape Cod high school seniors and provides particular benefit to students whose families are not familiar with the college application process.

■ MAKE SURE HIGH SCHOOL STUDENTS TAKE A RIGOROUS COLLEGE PREP CURRICULUM

A record of success in academically challenging high school coursework is the best indicator of a student’s readiness for college. The majority of students who arrive at college unprepared for college-level work are, by large margins, struggling in math. In 2011, the **Board of Higher Education** voted to strengthen **admissions standards** at the state universities and the University of Massachusetts by increasing the minimum mathematics requirement for admission from three years to four, helping to ensure that students do not lose ground by bypassing math during their senior year of high school. In June 2012, the Board further strengthened admissions standards by increasing the minimum laboratory science requirement from two years to three and allowing students to apply engineering and technology coursework toward this requirement.

MassCore is a rigorous high school program of study that was developed by a statewide advisory group of business leaders and K-12 and higher education policy makers. In 2008, the **Board of Elementary and Secondary Education** adopted MassCore as the recommended course of study for every Massachusetts public high school student.



Photo by Cape Cod Community College

College Knowledge Cape Cod Community College “College Connection” Outreach Counselor Kurt Lawson advises Barnstable High School students about admissions and financial aid.

■ EXPOSE STUDENTS TO COLLEGE-LEVEL WORK WHILE STILL IN HIGH SCHOOL

Research shows that giving high school students access to college coursework increases the likelihood that they will go to college—and do well once they get there. The **Commonwealth Dual Enrollment Program** (CDEP), managed by the **Department of Higher Education**, enables eligible high school students to take courses at public campuses in Massachusetts, simultaneously earning credit for their high school diploma and future college degree. CDEP focuses on students who are low-income, first-generation, or interested in STEM. Since 2008, participation in dual enrollment programs, including both CDEP and campus programs, has increased 170 percent.



Photo by Massachusetts College of Liberal Arts

College Exposure Third-graders from Greylock Elementary School in North Adams are wowed by a chemistry experiment at Massachusetts College of Liberal Arts in September 2011, part of “Berkshire County Goes To College” (see page 75).



Photo by Northern Essex Community College

College Experience These Amesbury High School graduates will continue into baccalaureate programs in fall 2012 with a year of college credits already completed through Northern Essex Community College’s Early College Program.

Greenfield Community College’s **dual enrollment program** serves as a key component to area high schools’ drop-out prevention strategies, while also providing high school students opportunities for early access into higher education. At **Worcester State University**, **dual enrollment** enables Worcester Public School students to take course work in STEM as well as English composition, identified as frequent stumbling blocks for Worcester High School graduates transitioning to college.

Northern Essex Community College uses its **Early College Program** to make it possible for Amesbury High School “middle-performing” students to earn high school and college credit. Courses are co-taught in Amesbury by an Amesbury High School teacher and a NECC professor. Grade point averages, credits attained, and college-going rates for students in the program are significantly higher than for the overall student population.

■ ALIGN HIGH SCHOOL AND HIGHER EDUCATION ASSESSMENTS

Passing the MCAS does not necessarily mean that a student is college-ready. To close the gap between the skills needed to graduate high school and those needed for college-level work, Massachusetts has taken a leadership role in the **Partnership for Assessment of Readiness for College and Careers (PARCC)**, a 24-state consortium dedicated to developing a common set of K-12 assessments that mark students’ progress toward college and career readiness from 3rd grade up. Massachusetts is the lead governing state in PARCC, with **Mitchell Chester**, Massachusetts’ Commissioner of Elementary and Secondary Education, serving as Chair of the PARCC Governing Board, and **Richard Freeland**, Commissioner of Higher Education, co-chairing PARCC’s higher education advisory committee. Massachusetts’ work to better align high school and college expectations is supported by a three-year grant from the Hewlett Foundation.

Quinsigamond Community College’s partnership program with the **Worcester Public Schools**, **Plugging the Leaks in Worcester’s Math Pipeline**, is supported in part by the Vision Project’s **Performance Incentive Fund**. The program enables Worcester students to take the math college placement exam while still in high school. College and high school faculty are working together to redesign math curricula based on students’ identified skill gaps, and run intensive after-school math boot camps to provide additional support to students. One hundred percent of boot camp students who enter College Algebra pass the course, as compared with a 65-percent pass rate of remedial students who don’t attend boot camps.

Eliminate gaps in college participation by low-income students



Photo by Department of Higher Education

Gaining Awareness Students from Pyne Arts Middle School in Lowell participate in GEAR UP’s “Carnival of Learning” in spring 2012. This hands-on college fair exposes middle-schoolers to career paths and college majors.



Photo by MassArt

Getting Prepared With a grant from the Vision Project Performance Incentive Fund, MassArt is giving Boston’s “Artward Bound” high school students the preparation they need to apply to and succeed in a college of art or design.

■ INVEST IN PRE-COLLEGE SUPPORT AND PREPARATION PROGRAMS

Since being designated as the lead agency for **Massachusetts College Access Challenge Grant (CACG) Program** funding, the **Department of Higher Education** has supported seven regional partnerships that focus on increasing college readiness and participation of underrepresented student groups. **Mount Wachusett Community College’s** grant, for example, targets low-income and/or first-generation high school seniors from eight partner school districts. Counselors work with students to develop “college knowledge,” college readiness, and self-advocacy skills. A developmental math program for seniors who placed below college-level math on the math assessment exam is a core component of the college readiness work, which included the purchase of MyMathLab software to enable individualized work on math skill gaps.

MassArt’s Artward Bound Program, recipient of a Performance Incentive Fund grant, seeks to increase the number of low-income Boston students who will be prepared to enter MassArt or other visual arts colleges. The program’s initial cohort of 25 9th and 10th graders will expand to 50 high

school students, with a new 9th-grade group being added each year. This program is unique nationally in its long-term commitment to prepare students for entry and success at a college of art and design and its integration of arts programs with rigorous academic, social, family, and community support. Students attend for free but must commit to program participation throughout high school. Evaluation of Artward Bound by a team of researchers at the midpoint and close of the 2011–12 school year found that the program is on track toward meeting its goals.

GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs) gives low-income middle and high school students the skills, knowledge, and academic background they need to succeed in college. This federally funded early intervention program, which is run by the **Department of Higher Education**, serves 7,250 7th through 12th graders in seven Massachusetts school districts: Boston, Holyoke, Lawrence, Lowell, New Bedford, Springfield, and Worcester. Comprehensive services include mentoring, tutoring, counseling, and after-school and summer programs. GEAR UP students who go on to college are eligible for an annual GEAR UP Scholarship up to \$1,000.

STRATEGIES TO

Safeguard affordability

■ MAXIMIZE FINANCIAL AID

The **Patrick-Murray Administration** has fought successfully to protect state financial aid from cuts during the recent economic downturn, but the dollar value of that aid has nonetheless declined over time. The MASSGrant, the Commonwealth's major financial aid grant program for low-income students, now covers only 8 percent of tuition and fees for a public college or university in the Commonwealth; in 1988, the MASSGrant covered 80 percent of student charges. In order to maintain the highest possible levels of financial aid, **Massachusetts public campuses** supplement state and federal scholarships with funds from their own operating budgets.

Campuses also work to ensure that students get every dollar of financial aid for which they qualify. For example, through their **College Access Challenge Grant, Greenfield, Holyoke, and Springfield Technical Community Colleges** provided workshops and individualized assistance that enabled over 600 students in 2011 to accurately complete their Free Application for Federal Student Aid (FAFSA), a critical step to helping each student receive the full amount of aid to which they were entitled. The grant also enabled Springfield Technical Community College to hire a bilingual financial aid counselor and Holyoke and Greenfield to implement Financial Aid TV, a web-based library of financial aid tips and tools.



Photo by Berkshire Community College

■ INCREASE EFFICIENCIES, LOWER COSTS FOR STUDENTS

One way to lower costs for students is to increase campus financial efficiencies. **Massachusetts state universities and community colleges** launched the **Partnership to Advance Collaboration and Efficiency (PACE)** in 2011. Through PACE, the colleges have begun a systematic process of reducing operating costs through consortium purchase of gas, electricity, banking services and other campus needs. Savings to date include \$750,000 from a joint financial auditing services bid, with an audit of contracts in areas such as vending and software licenses expected to net a minimum cost reduction of 10 percent.

When Dads Become Grads This Berkshire Community College graduate celebrates with young son in tow. Affordability is a critical consideration for adult degree-seekers juggling jobs, families and studies.



Photo by Springfield Tech. Community College

Form Aid Student Robert R. Guilbert, Jr., receives FAFSA completion help from Ciara Smith, Springfield Technical Community College's FAFSA Assistance Advisor, through the College Access Challenge Grant program.

Leaders of Tomorrow

JACQUELYNN
PALAZOLA
SALEM STATE
UNIVERSITY '12



At Salem State University, Jacquelynn Palazola of Beverly combined exemplary academic achievement with public service, earning a degree while serving as an active member of the Air Force Reserves.

Before graduating with a 3.9 GPA, Jacquelynn worked tirelessly to promote the needs of student veterans. She was the keynote speaker at the 2011 "Women are Veterans, Too" conference at the State House in Boston. Last fall, she also worked with the Massachusetts Department of Veterans' Services (DVS), where she worked to establish a student veterans council that will help the state address the issues and concerns of student veterans.

The only woman in her graduating class from the Air Force Fire Academy, Jacquelynn was deployed to Iraq and the United Arab Emirates in response to Operation Iraqi Freedom and Operation Enduring Freedom. As a military member and military spouse, she has been stationed across the globe and taken classes throughout the course of her travels. She is only the second person in her family to go to college.

Jacquelynn has juggled military, civic and academic responsibilities with her role as a mother. She gave birth to her second child just a week after spring classes ended at Salem State, and started one of her internships a few weeks later. Jacquelynn is currently stationed with the U.S. Air Reserve at Westover Air Reserve Base in Chicopee.



Students celebrate their achievement at Framingham State's spring 2012 commencement ceremony. Photo by Framingham State University.



KEY OUTCOME

2 COLLEGE COMPLETION

Massachusetts' efforts to achieve national leadership in college completion are built on the following core goals:

- **Remove barriers that slow students' progress toward graduation**
- **Close achievement gaps in college success through programs for high-risk students**
- **Develop high-impact policies based on research and evidence**

With this focused approach to improving student success, Massachusetts aims to increase completion rates for *all* students at both the baccalaureate and community college levels.

Remove barriers that slow students' progress toward graduation



Professional Development Aemiro Beyene, Assistant Professor of Mathematics at Quinsigamond Community College, speaks to colleagues at the June 2012 Developmental Math Conference held at Massasoit Community College.

■ TRANSFORM REMEDIAL EDUCATION

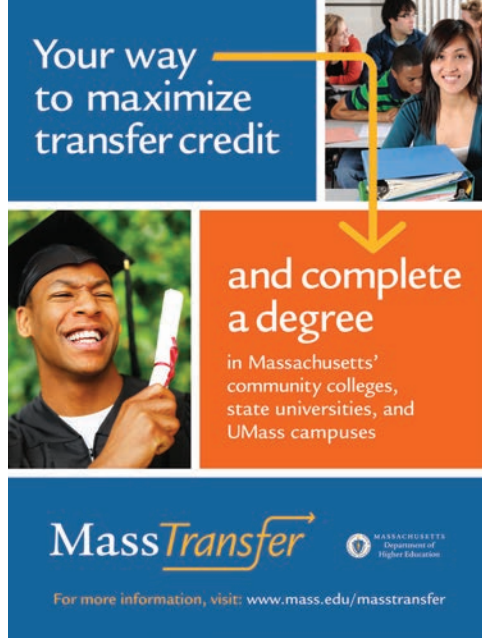
The need to take remedial courses, also known as developmental education, adds both time and cost to the quest for a degree or certificate, thus lowering chances of success. Additionally, more than half of African-American and Latino students enrolled in the public higher education system take at least one developmental course during their first semester, compared with a third of all white students. As a result, the Vision Project's **Working Group on Graduation and Student Success Rates** identified the need to transform **remedial (developmental) education** as a critical priority.

At the campus level, **Middlesex Community College** has piloted a **concurrent enrollment program** which enables developmental education students who score just below college readiness in writing to enroll in English 101. To support their success, these students also take a remedial writing class—taught by the same professor as their English 101 class. The percentage of students who go on to pass English 102 is more than twice that of students enrolled in traditional remediation.

In order to determine their readiness for college-level math courses, students at Massachusetts public colleges and universities take an ACCUPLACER® exam in math. **Worcester State University** has achieved considerable success through its approach of requiring **mandatory ACCUPLACER pre-tests**, which gives a second chance to students who failed the test because of gaps in a small number of skills.

When coupled with a review session for those who do not pass the practice exam on their first or second try, the approach has cut the percentage of students needing to take remedial math in half, from 54 percent in 2004 to 25 percent in 2007.

Roxbury Community College has tripled the rate at which students who start in remedial math advance to college-level, credit-bearing math courses. This gain is associated with RCC's comprehensive overhaul of **remedial math education**, which included new placement procedures, a lab component and technology-assisted instruction, a shortened developmental math sequence, and smaller course modules. These modules allow students to skip work in areas where they are already proficient and focus on skills that need improvement.



Credit Where It's Due Promotional poster for *MassTransfer*, the state's core policy to streamline the transfer process among Massachusetts' public colleges and universities.



UMass Welcome Governor Patrick joins education officials and students at Roxbury Community College to launch the UMass Amherst Community College Connection in March 2011. The initiative is intended to strengthen UMass Amherst's ties with Massachusetts community colleges.

SMOOTH TRANSFER PROCESS BETWEEN TWO-YEAR AND FOUR-YEAR INSTITUTIONS

With student mobility increasing nationally, transfer from one institution to another has become more and more common. Yet when transfer students are denied credit for courses taken at their original institution, the time and cost of getting a degree increases, thus reducing the chance that they will ever graduate. *MassTransfer*, now in its fourth year, provides Massachusetts community college graduates who complete designated associate's degrees with full credit transfer, guaranteed admission, and a tuition discount to linked bachelor's degree programs. The next step identified by the **Commonwealth Transfer Advisory Group** is to expand transfer alignment from the degree level to the program and course level.

University of Massachusetts Amherst launched the **UMass Amherst Community College Connection** (UMCCC) in March 2011 to encourage community college students to pursue bachelor's degrees at the flagship campus. Community college students are offered priority review of financial aid packages as well as special assistance for on-campus housing, early advising, and course registration. Tuition is waived for those with a 3.0 GPA or higher; students with a 3.7 GPA earn a \$500 book scholarship. Noting that community college students who transfer to UMass Amherst have a higher graduation rate than the general undergraduate student population, campus officials have expressed hope that UMCCC will have a positive impact on overall graduation rates.

HELP STUDENTS STAY IN SCHOOL DESPITE FINANCIAL EMERGENCIES

Because financial emergencies can significantly interfere with students' ability to continue attending college, **Bunker Hill Community College** is using **emergency assistance funds** to keep students on track to completion. The campus provides students experiencing short-term financial problems with up to \$1,000 within three days of receiving a request, with funds being used for such core expenses as rent, utilities, food, and childcare. The year-to-year retention rate of students who have utilized the BHCC fund is 65 percent higher than that of the general student population.

STRATEGIES TO

Close achievement gaps in college success through programs for high-risk students



Photo by Massasoit Community College

Incentive to Complete The pilot Completion Incentive Grant program, launching in fall 2012, aims to keep students on track to degree completion, with financial aid awarded for completion of college credits. Massasoit Community College is one of ten participating state campuses.

■ USE FINANCIAL AID TO HELP STUDENTS STAY ON TRACK TO GRADUATION

A handful of states are experimenting with financial incentives as a means of increasing college completion. In fall 2012 the **Department of Higher Education**, in collaboration with participating campuses, will launch its own pilot program, the **Completion Incentive Grant**. Incentive grants of up to \$2,000 a year will be given to students who meet a threshold for credit completion and GPA each semester, maintain continuous enrollment, and make use of campus support services. Campuses commit to providing an array of academic support services for the low-income, first-generation students targeted in the program. The pilot will run for four years, with extensive program assessment and evaluation.

■ USE MULTICULTURAL OUTREACH AND MENTORING TO AID STUDENTS AND FAMILIES

The **Multicultural Achievement Peer Program** at **Middlesex Community College** helps students from diverse backgrounds make a successful transition to college. The peer mentoring program employs culturally sensitive interventions including workshops, cultural activities, and one-on-one mentoring. In 2011–2012, the fall-to-spring persistence rate of the mentors and mentees was 95 percent, with an average GPA of 2.75.

The **Latino Education Institute** at **Worcester State University** serves 800 families annually with a focus on increasing both college participation and college completion of Latino students. One of their more innovative projects is the Teaching Corps Program, in which WSU students are trained in literacy and conflict resolution, and then assigned to paid positions in Worcester public elementary schools. In addition to providing strong role models for Worcester youth, the program aims to increase retention and work readiness of Latino students at Worcester State.



Photo by Worcester State University

Shared Culture, Shared Success Worcester State University student Damaris Velez runs a first-grade reading circle at the Chandler Magnet Elementary School through WSU's Latino Education Institute.

STRATEGIES TO

Develop high-impact policies based on research and evidence

■ CRAFT TARGETED INTERVENTIONS BASED ON ANALYSES OF STUDENT SUCCESS

A major focus of the national **Achieving the Dream** initiative is the careful use of data to create policies that promote persistence at community colleges. Four Massachusetts community colleges have participated in this initiative since 2007—**Bunker Hill, Northern Essex, Roxbury, and Springfield Technical Community Colleges**—with the **Board of Higher Education** serving as the lead state policy organization.

Analysis of student results at **Northern Essex Community College** led to a focus on five specific **academic support** goals: improving developmental writing outcomes for Latino students, improving developmental writing and reading outcomes for students 25 years and younger and for males, and improving English Composition I and all math outcomes for all students. Related initiatives include creating math tutoring centers in Haverhill and Lawrence, introducing supplemental instructors in challenging courses, and expanding academic advising services. “These efforts are already showing results,” notes NECC President Lane Glenn, who cites the 25 percent increase from 2007 to 2010 in students who completed remedial Algebra and then a college-level math course.

Springfield Technical Community College increased the availability of **academic advisors to General Studies students** in response to research showing that students whose career goals are unclear derive particular benefit from making a connection with a college faculty or staff member, and that this connection makes students more likely to persist in their academic and career goals. STCC’s Data Team, comprised of both faculty and staff, closely monitors the results of this initiative and two others designed to increase student completion and close achievement gaps.

■ IMPLEMENT RESEARCH-SUPPORTED STRATEGIES FOR STUDENTS MOST AT RISK OF DROPPING OUT

Through **Project Compass**, **Bridgewater State University** closed retention gaps for underserved students while simultaneously raising the percentage of all students who returned after their freshman year from 75 to 81 percent. This multi-year initiative implemented a range of research-supported interventions, including an integrated faculty-student mentoring process, faculty development designed to increase the use of culturally inclusive pedagogies, and structured student study groups for courses with high rates of failure, withdrawals, and incomplete grades. After five years, gaps had been eliminated for low-income students, first-generation college students, and students of color.



Photo by Joan Thomas/Springfield Tech, Community College

Substance and Styles “Through STCC’s Achieving the Dream initiative, I’ve become much more aware of student learning styles. I offer different options to help my students succeed in math,” said Professor Donna Bedinelli (right), shown with three of her Algebra I students.

Fitchburg State University’s pilot program of **intrusive advising**, identified by researchers as a promising practice, addresses the challenge of students who drop out of college without ever making use of campus resources that might have helped them. At-risk freshmen were assigned to a Retention Specialist, who in turn consistently reached out to these students to provide advising and referrals to support services. Data available this fall will enable Fitchburg to compare the retention rates of students in this pilot program with their peers.

Leaders of Tomorrow

DIANA ROSE RAMOS
BRIDGEWATER STATE
UNIVERSITY '12



Diana Rose Ramos of Worcester graduated from Bridgewater State University in 2012 with a degree in political science, a 3.9 cumulative GPA, and a plan to use her leadership skills and acquired knowledge to improve public policy. During her junior year, she interned at Senator John Kerry's Office and conducted a directed study researching citizen outreach on conservation efforts. Diana also interned, through the Washington Center, at the U.S. Office of Surface Mining where she researched development issues relating to rural watersheds. She has studied sustainable development in Costa Rica and researched issues related to food security. As a high-achieving student, Diana received multiple awards and scholarships such as the Pi Sigma Alpha Political Science Honors Society Award and the Robert A. Daniel African American Scholarship. She was recognized as a Rose Scholar throughout her time at BSU. On campus, Diana served as the founder and president of the Students for Sustainability group, the publicity chair for Aware and Active Minds, and an active member of the Social Justice League. Off campus, she assisted with the Worcester Vegetarian Festival and Nuestro Huerto, which helps urban farms.



An instructor leads a book discussion at UMass Dartmouth.
Photo by UMass Dartmouth.



KEY OUTCOME

3 STUDENT LEARNING

How do we know what college graduates have actually learned and are able to do? And equally important, how can we assess student learning in ways that help us improve teaching? Massachusetts seeks to answer these two questions through the following core goals:

- **Strengthen campus-level assessment of student learning**
- **Find ways to compare student learning among states**

The work is challenging but promises to make possible a continuous cycle of improvement that will help campuses not only identify problem areas in student learning, but understand how to solve them. At the national level, Massachusetts is leading a conversation through the Vision Project on how to build an interstate system to compare student learning outcomes.

Strengthen campus-level assessment of student learning



Photo by Kevin Harkins Photography

■ ENGAGE THE EXPERTISE OF CAMPUS FACULTY AND STAFF

From the beginning, the Vision Project work in the area of Student Learning has been guided by the skill and experience of campus educators. The **Working Group on Student Learning Outcomes and Assessment**, consisting of **learning outcomes experts** from the campuses and Department of Higher Education, studied best practices both within Massachusetts and across the nation before making the recommendations to the Board of Higher Education that have since defined the work in this area.

Among these recommendations was a new initiative: **Advancing a Massachusetts Culture of Assessment (AMCOA)**. Funded by the **Davis Educational Foundation**, AMCOA is led by a team of faculty

and staff from each of the 28 undergraduate campuses, with a goal of helping every campus improve curriculum and learning through development of state-of-the-art programs of learning outcomes assessment. AMCOA's first year was so successful in achieving system-wide collaboration on learning outcomes that the Davis Educational Foundation provided additional funding for a second year.

One of the enormous benefits of AMCOA has been the forging of strong working relationships that cut across campus boundaries. **Framingham State University** and **MassBay Community College**, for example, are using **joint assessments of student learning** in writing, quantitative reasoning, and creative thinking as a path to improving the success of students who transfer from MassBay to Framingham.

In Collaboration Middlesex Community College's Elise Martin, Associate Dean of Assessment, and John Savage, Professor of Chemistry and Faculty Chair of Gen Ed Committee, serve as conference co-chairs for the February 2012 AMCOA Conference at UMass Lowell. One of four statewide AMCOA conferences held last year, it drew faculty and staff to share best practices in student assessment.

Through its meetings and conferences, AMCOA has allowed faculty and staff to meet new colleagues and learning from each other's experience and best practices. We have a sense that our voices on assessment are heard. The process has expanded my vision of assessment in the Commonwealth and given me new perspectives with which to serve my students and my institution.

—NEAL BRUSS, ASSOCIATE PROFESSOR OF ENGLISH,
UNIVERSITY OF MASSACHUSETTS BOSTON



In Progress Students in the classroom at MassBay Community College. MBCC has partnered with Framingham State University to create joint assessments of student learning in order to ease student transfer between the institutions.

■ STRENGTHEN CAMPUS EFFORTS THROUGH PROFESSIONAL SUPPORT

One resource provided to campuses through the Davis Foundation grant has been the expertise of Peggy Maki, a **national expert in student learning assessment**. Beginning in the summer of 2011, Maki facilitated monthly AMCOA team meetings and quarterly conferences. She also supported campus-level efforts through individual visits and coaching. This kind of support has enabled faculty and staff to identify and share the aspects of assessment at which their campuses excel, develop new skills, and move Massachusetts closer to its goal of a continuous cycle of improvement in student learning.

Through AMCOA, **Massachusetts College of Liberal Arts** and **Berkshire Community College** are collaborating with a **nationally known expert in student writing** to assess student writing at a number of key points in students' careers. The results will be used to determine action steps for improving student success in writing at each institution and for students who transfer from BCC to MCLA.



In the Know President Carole Cowan of Middlesex Community College speaks with Peggy Maki, a national expert hired by the Department of Higher Education to provide expertise in student learning assessment to every public college and university.

Find ways to compare student learning among states

■ USE COMMON SCORING STANDARDS THAT ENABLE COMPARISONS ACROSS CAMPUSES

Based on a recommendation from the **Working Group on Student Learning and Outcomes Assessment**, the **Board of Higher Education** voted in January 2012 to apply to become a **state partner in Liberal Education and America's Promise (LEAP)**, the signature national initiative of the Association of **American Colleges and Universities (AAC&U)**. LEAP learning outcomes in quantitative literacy, critical thinking and written communication—which were developed by college and university faculty—provide a common framework for comparison of student learning achievement at both the campus and state level. In March the AAC&U announced that Massachusetts had been awarded status as a LEAP State.

LEAP learning outcomes are already being tested at Massachusetts campuses. **Bristol and Massasoit Community Colleges**, in another AMCOA-funded endeavor, are engaging their English faculties in a regional effort to use the LEAP standards to assess **mastery of written communication skills**. The experiment will provide a structure for comparing the use of the LEAP rubrics and locally designed rubrics on the same student assignment.

■ DEVELOP RELATIONSHIPS THAT CUT ACROSS STATE BOUNDARIES

In an initiative that holds promise for national leadership, Massachusetts is working to develop a **multi-state collaborative** to advance learning outcomes assessment and allow for cross-state comparisons. In May 2012, the Commonwealth hosted a multi-state gathering with public higher education leaders from 17 states. The conference, which was cosponsored by the **AAC&U** and the **State Higher Education Executive Officers (SHEEO)** and supported by the **Nellie Mae Education Foundation**, focused on how best to develop assessment systems that:

- Present assessment outcomes in ways understandable by non-academic stakeholders;
- Center on using actual student work, closely linked to curriculum and to the instruction work of the faculty, and
- Allow comparison of student learning across state lines.

This ambitious work, if successful, will enable states to use shared standards to compare their students' level of learning with other states.

Massachusetts already has established a leadership role among the various state systems both in its shared vision for high-quality education and in its recognition that any contemporary vision for learning also requires new ways of showing what students are accomplishing across their studies.

—CAROL GEARY SCHNEIDER,
PRESIDENT, ASSOCIATION OF
AMERICAN COLLEGES AND
UNIVERSITIES (AAC&U)



Photo by State Higher Education Executive Officers (SHEEO)

National Assessment Dialogue Richard M. Freeland, Commissioner, Massachusetts Department of Higher Education; Carol Geary Schneider, President, Association of American Colleges and Universities; and Paul Lingenfelter, President, State Higher Education Executive Officers, convene a May 2012 national conference in Colorado to propose development of a multi-state collaborative to advance student learning outcomes assessment.

■ TEST ASSESSMENT MODELS THAT CAN SCALE TO OTHER COLLEGES AND UNIVERSITIES

In the fall of 2011, Massachusetts public campuses competed for grants to support **assessment experiments** across the Commonwealth. Funded by the **Davis Educational Foundation** as part of the AMCOA project, the grants support campuses working both singly and in teams, with a goal of developing models that can be expanded to other colleges and universities.

Holyoke Community College, one of the Davis grant winners, is using the funds to expand its work in integrating **quantitative reasoning assessment and instruction** in courses ranging from nutrition and biology to art and economics. Faculty experts in the application of mathematical concepts and skills are teaming with faculty in highly enrolled, high-impact introductory courses to develop, implement, and assess modules in quantitative reasoning.

A grant from the **Lumina Foundation** is supporting an additional four campuses in developing models that have the potential to increase student success



Photo by Fitchburg State University

Multi-State Partnerships Students in the classroom at Fitchburg State University, one of the four Massachusetts campuses participating in the national Quality Collaboratives Project intended to improve the transfer pathway between community colleges and four-year institutions through focus on student learning outcomes.

and degree completion system-wide. Massachusetts is one of eight states selected to participate in the **Quality Collaboratives Project** sponsored by the **AAC&U**, with **Fitchburg State University** and **Mount Wachusett Community College** paired together in one partnership, and **Middlesex Community College** and the **UMass Lowell** in a second. Both dyads are working to improve the transfer pathway between the community college and the university. They will focus on developing shared learning outcomes across institutions, fostering faculty leadership, and using student learning outcomes to set transfer policies and practices.

Leaders of Tomorrow

RENEE
MICHELLE
KEYES
ROXBURY
COMMUNITY
COLLEGE '12



As a biotechnology/biological science major at Roxbury Community College, Renee Michelle Keyes conducted extensive undergraduate research. In 2011 this honors student, who was previously homeless, participated in the Research Experiences for Undergrads (REU) Program at Northeastern University's Center for High-Rate Nanomanufacturing. She was a member of RCC's Louis Stokes Alliances for Minority Participation (LSAMP) Program, and also received the college's STEM Homeland Security Scholarship. Last spring, she was one of several students invited to present her work on mutating an enzyme at Harvard Medical School. A mother with two young daughters, Renee now serves as a mentor to teen mothers in her community. She notes that her oldest daughter is very proud of her and is thinking about becoming a scientist like her mom. "For me, Roxbury Community College has truly been the gateway to my dream," says Keyes. "I'm hoping that, through a career in biotechnology, I will inspire my own daughters and also be a role model for other young women interested in careers in the sciences."



Bunker Hill Community College Professor Scott Benjamin observes a specimen of elodea with environmental science students. Photo by Bunker Hill Community College.



KEY OUTCOME

4 WORKFORCE ALIGNMENT

While Massachusetts' economy has proved resilient during the recent economic downturn, the state's public colleges and universities are barely keeping pace with the

demand for a highly educated workforce. To meet these future workforce needs, the Vision Project is working on two levels.

First, we seek to increase the overall percentage of Massachusetts residents with college degrees because of the strong correlation between high numbers of college graduates and strong economic performance. This goal expresses the importance of a broad liberal education and encompasses all aspects of Vision Project work.

Second, we seek to meet workforce requirements in areas of greatest economic growth. In this second context the Vision Project is pursuing three core goals:

- **Address workforce development needs in innovative and high-growth sectors**
- **Strengthen student interest and success in science, technology, engineering and math (STEM) fields**
- **Reduce gaps in STEM for African-American, Latino and female students**

Address workforce development needs in high-growth sectors

Baby boomer retirements are expected to deplete the science and technology workforce by 50 percent over the next decade, putting the U.S. at risk of losing our leadership in technology and innovation.

—TIMOTHY P. MURRAY,
LIEUTENANT GOVERNOR AND
CHAIR OF THE GOVERNOR'S
STEM ADVISORY COUNCIL

■ CREATE NEW COLLABORATIVE STRUCTURES TO INCREASE DEGREE PRODUCTION IN KEY FIELDS

The **Patrick-Murray Administration's** workforce development strategy focuses on four key high-growth sectors: **Health Care, Life Sciences, Information Technology, and Advanced Manufacturing**. A strategic plan developed jointly by the Secretaries of Education, Housing and Economic Development, and Labor and Workforce Development ensures a coordinated approach.

One of the plan's primary goals is to better align educational and workforce training programs with clearly defined industry-specific pathways to employment. The **Pathways to Prosperity** project will help Massachusetts build a system of six-year career pathways for high-school-age students beginning in 9th grade. Working with employers, workforce investment boards, local social service providers, and state-level agencies, the **Executive Office of Education** will develop three sector-based projects in Greater Boston, Metro West and Springfield. This is the first step in developing a statewide system that enables all young people to successfully transition from high school through a postsecondary credential to a high-skills, family-supporting career.

■ DEVELOP INDUSTRY-SPECIFIC, STATEWIDE WORKFORCE DEVELOPMENT PLANS FOR KEY SECTORS

A key strategy in workforce development is the creation of industry-specific plans that combine assessment of future workforce needs with a coordinated system of education and training. A model of such a plan is provided by the **Department of Higher Education's Nursing and Allied Health Initiative**, which is a partnership of the DHE, health care providers, and schools of nursing to raise the percentage of Massachusetts nurses who hold a Bachelor of Science in Nursing (BSN) from 55 percent today to 66 percent by 2020. Research shows that nurses with bachelor's degrees provide improved patient outcomes at lower costs, and increasingly employers are demanding that nurses attain the BSN.

Through the Nursing and Allied Health Initiative, the DHE and its partners have sponsored the development of pathway programs from associate's degrees to bachelor's and master's, as well as from Licensed Practical Nurse to BSN. **Springfield Technical Community College** and **UMass Amherst** provide one innovative example of a clear pathway to the BSN. These two institutions have developed a **joint nursing track** that enables students to get associate's degrees in three years at STCC and then, after passing their Registered Nurse licensure exam, take one year of online courses at UMass to obtain a bachelor's degree.



Photo by Branding and Creative Communications,
University of Massachusetts Amherst

Advancing by Degrees UMass Amherst nursing students gaining clinical experience. The Department of Higher Education's Nursing and Allied Health Initiative sponsors the development of pathway programs such as one between Springfield Technical Community College and UMass Amherst, to help nurses advance their education from the associate's to the baccalaureate level.

■ DESIGN PROGRAMS TO MEET THE NEEDS OF ADULT LEARNERS

An important role of public higher education is providing **adult workers** with the additional knowledge and skills they need to advance in their current job or change careers altogether. **Salem State University** tailors a number of its programs to working healthcare professionals. A part-time evening program for Certified Occupational Therapy Assistants, for instance, provides a path to obtaining bachelor's and master's degrees, necessary steps to advancing to the role of Occupational Therapist.

At **Bristol Community College**, the **Professional Advancement to Health and Human Services Careers** program has helped 450 underemployed or unemployed adults obtain industry-recognized certificates over the past three years. And in 2011, **Mount Wachusett Community College** successfully partnered with 27 businesses in North Central Massachusetts to provide **workforce training** for 300 workers. This collaboration benefited these employers through improved productivity, workforce stability, and employee morale, and helped workers increase their salaries, competence, and job satisfaction.



Photo by Mount Wachusett Community College

Learning for Life Mount Wachusett Community College workforce training at Tyco International in Westminster, a leading provider of security and fire safety products and services. Offering continuing education to adult workers helps businesses become more productive and employees advance their careers.

STRATEGIES TO

Strengthen student interest, learning and completion of programs in the science, technology, engineering and math (STEM) fields

■ DEVELOP A COMPREHENSIVE STATEWIDE PLAN TO BUILD THE PIPELINE OF STEM PROFESSIONALS

Eighty percent of jobs created in the next decade will require math and science skills, yet Massachusetts high school students lag behind peers in other states in their level of interest in science, technology, engineering and math (STEM) majors. In addition, many students who began college intending to major in a STEM field transfer to non-STEM programs during the course of their studies. These are issues of critical concern to both educators and legislators, given the particular needs of the state's knowledge-based economy.

The **Massachusetts Plan for Excellence in STEM Education** is the state's answer to this challenge. Offering a coherent and comprehensive approach to building the pipeline of STEM professionals, the Massachusetts STEM Plan has quickly become a national model. The plan was authored by the **Massachusetts STEM Advisory Council**, now in its third year. The Council, chaired by Lt. Governor Tim Murray, works to increase the statewide focus on STEM fields and ensure that all students receive a quality education in science, technology, engineering and math.

■ IDENTIFY SUCCESSFUL PROGRAMS AND BRING THEM TO SCALE

One component of the Massachusetts STEM Plan is the **@Scale Initiative**, which takes programs that have demonstrated success and effectively scales them by leveraging state grant money on a 1:3 match with funds from outside sources, especially the business community. A hallmark of @Scale is its coordinated plan for developing a portfolio of projects that span all four STEM fields, from elementary school through postsecondary education and into the workforce. An initial group of @Scale grants from the state's STEM Pipeline Fund was distributed in the spring of 2011.

At the college level, **Massasoit Community College's Science Transfer Initiative** provides enhanced advising, exposure to science career paths, early undergraduate research opportunities, and increased access to financial aid information to science majors. The results—greater enrollment, improved performance, increased likelihood of continuing science studies at a four-year institution—have been impressive enough to garner a \$150,000 **National Science Foundation** grant which will enable this @Scale program to expand to **Bristol and Cape Cod Community Colleges**.



Potential to Build Lt. Governor Tim Murray (fourth from right) and Secretary of Education Paul Reville (far right) pose with 2011 @Scale Endorsement recipients. @Scale recognizes the potential of local STEM programs to grow statewide and encourages businesses and foundations to support them with 1:3 match of state grant to private funding.

STRATEGIES TO

Reduce gaps in STEM for African-American, Latino, and female students

■ TARGET STEM OUTREACH TO UNDERSERVED GROUPS

The Massachusetts STEM Advisory Council's **WOW Campaign** highlights the achievements of African-Americans and Latinos in the fields of math, science and technology. Featured professionals include Nigel Jacob, emerging technology advisor to Boston Mayor Thomas Menino; Andrew Jackson, chemist at Cubist Pharmaceuticals; and Emmanuel Gomez, electro-mechanical lab technician at Metso Automation USA. Through videos, posters and live events, these role models tell their stories and encourage Massachusetts middle school students to pursue STEM careers.

North Shore Community College's **Bridges to the STARS** program has achieved 80-percent retention in STEM majors for the students it serves: Latino, African-American, and women undergraduates who are first-generation college or low-income. The program, funded by Verizon and Comcast, offers tutoring combined with career and personal growth counseling. Peer support from classmates in each 20-student cohort and from older student mentors is also an important aspect of the program.

■ GET YOUNG WOMEN ENGAGED WITH SCIENCE BEFORE THEY GO TO COLLEGE

During the summer of 2012, the Massachusetts Maritime Academy hosted events for the **Girl Scouts 100th Anniversary Celebration**, providing learning opportunities for over 2,000 girl scouts and their families. The workshops, presented in part by faculty from MIT and **Bridgewater State University**, offered participants unique opportunities for exploration and inquiry into STEM disciplines such as oceanography and biology. Another Mass Maritime program targeted at young women is the SciTech Girls expo, which provides more than 100 female students with classes in the operation of submersible Remotely Operated Vehicles.

There's a story behind every WOW. Start discovering yours today!

Mish Michaels Meteorologist
Anna Mrazek Dietrich Co-founder of company that makes a "frying pan" Ternafugia
Morris Green Electrical Engineer working on energy storage solutions FastCAP Systems Corporation
Bill James Statistician Boston Red Sox
Martha Murray Orthopedic surgeon specializing in sports medicine Children's Hospital
Andrew Jackson Chemist Cubist Pharmaceuticals
Catherine Reyes Medical school student
Nigel Jacob Emerging Technology Advisor Office of the Mayor of Boston

Mikell Taylor Robotics Engineer Bluefin Robotics Corporation
Amy Kukulya Oceanographic Engineer Woods Hole Oceanographic Institution
Daniel Pratt Supervisor of the Crime Scene Response Unit Massachusetts State Police
Sena Kumarasena Physical Designer of the Zakim bridge Anman & Whitney
Jim Toepel Music game designer Harmonix Music Systems
Emmanuel Gomez Electro-mechanical lab technician Metro Automation USA
Laura Hajduk Wildlife biologist managing the state's Black Bear Project Massachusetts Division of Fisheries and Wildlife

GOVERNOR'S STEM ADVISORY COUNCIL
Timothy P. Murray, Lt. Governor, Chair
David Cedrone, Executive Director
www.mass.gov/governor/STEM

Deval L. Patrick, Governor

Science • Tech • Engineering • Math
All In Massachusetts

Stars of STEM WOW Campaign poster developed by the Massachusetts STEM Advisory Council promotes role models for African-American and Latino students engaging with math, science, engineering and technology.

Leaders of Tomorrow

ABRAHAM JAFFE
UMASS MEDICAL
SCHOOL '12



Arlington native Abraham Jaffe graduated from UMass Medical School in May. He was the recipient of the Albert Schweitzer Fellowship, awarded to individuals dedicated to and skilled in addressing the health needs of underserved communities. As his project, he helped design and open a free health clinic for underserved African immigrants in Worcester.

At UMMS, Abraham also volunteered at the African Children's Education Program as a tutor, served on the UMMS Student Body Committee, and helped raise over \$10,000 for local charities. He was president of the International Student Interest Group and led a group of 11 medical and nurse practitioner students on a medical mission to Guatemala.

Abraham travelled to Mali, West Africa, as a 2008 King Shaw Fellow, helping to organize and run Mali's first pilot program for the One Laptop Per Child (OLPC) initiative. He extended his clinical years by one year, conducting independent research under the supervision of Dr. Ulises Torres of the UMass Medical Trauma Surgery Department and traveling to Peru to complete a clinical rotation in general surgery at the Hospital Maria Auxiliadora in Lima.

Abraham will continue his residency at the UMass Memorial Medical Center in Worcester.

As Board of Higher Education Chairman Charles F. Desmond and State Representative Tom Sannicandro look on, UMass Amherst student Melanie Mulvey addresses a crowd of 400 at the Massachusetts State House. Public Higher Education Advocacy Day brought students, faculty, and staff from every public campus to the State House in March 2012 to advocate for increased state funding and financial aid. Photo by Massachusetts Teachers Association.





GOALS AND STRATEGIES

5 PREPARING CITIZENS

In March 2012, the Board of Higher Education voted to add a seventh key Vision Project outcome to the six that were approved in 2010: becoming a national leader in the preparation of students to be active, engaged, informed citizens. This step was taken in order to align the programmatic goals of the Vision Project more fully with the initiative’s underlying vision: to produce the “best-educated *citizenry and workforce*” in the nation. The Board’s action makes Massachusetts the first state to include civic learning and engagement as part of a system-wide program of accountability measures.

Given the recent date of the Board’s vote, the key outcome of preparing citizens is not as developed as other Vision Project goals and strategies. The emerging work in this area is described in the upcoming pages.

MORE INFORMATION ON

Developing work in Preparing Citizens

The **Board of Higher Education's** vote to add a civic learning and engagement outcome to the Vision Project reflects state-level as well as national concerns that higher education has too often abandoned its role of preparing students to assume the responsibilities of citizenship. Declining rates of voter participation and a superficial understanding of public issues among young people are often cited as indicators of higher education's inattention to this matter. At a time of sweeping demographic change in the United States, many argue that it is critical to balance global awareness with an understanding of American democracy. These concerns have led many to conclude that colleges and universities must play a more active role in fighting what Charles N. Quigley, the executive director of the Center for Civic Education, calls a "civic recession."

A great deal of work is occurring within higher education all across the United States to reassert the importance of preparation for active and informed citizenship as a goal of undergraduate education. Colleges and universities are recognizing that civic learning and engagement can be critical aspects of a liberal arts education, and can occur in every dimension of student learning: in the formal curriculum, through **study of history, government and political science**; in extracurricular activity, such as **participation in student government or policy-oriented clubs and discussion groups**; and in the world at large, through **community service, service learning, and internships**.

The **Department of Higher Education** will form a study group of campus representatives and civic education experts during the 2012–13 academic year to review current work on education for citizenship and make recommendations regarding how the state's public colleges and universities can most effectively integrate this emphasis into their work. The study group will also develop specific goals for public higher education in this area and will recommend metrics by which to track and report progress. These metrics, like the other metrics in the Vision Project, should allow us to compare the quality of student preparation for active citizenship with that achieved in other states.

Massachusetts public higher education has a strong foundation of current work on which to build as we develop this new component of the Vision Project. Many of our public colleges and universities are already focused on strengthening civic education and engagement, and several of our campuses have received national plaudits for this work. For example:

■ **Ten Massachusetts public campuses** have received the **Community Engagement Classification** from the Carnegie Foundation for the Advancement of Teaching, an honor given to only 163 public campuses nationally. To achieve this distinction, institutions must provide compelling evidence of outreach or partnerships that benefit the community, and of teaching and scholarship that deepen students' civic and academic learning.



Service Learning Students at Mount Wachusett Community College's wind turbine dedication ceremony in April 2011 wear T-shirts designed and sold by the Computer Graphic Design Club. The service learning project netted \$1,900 for student scholarships.

The Massachusetts campuses classified by the Carnegie Foundation as Community Engagement Institutions are:

- **Bristol Community College**
- **Bunker Hill Community College**
- **Middlesex Community College**
- **Mount Wachusett Community College**
- **North Shore Community College**
- **UMass Amherst**
- **UMass Boston**
- **UMass Dartmouth**
- **UMass Lowell**
- **UMass Worcester**



Photo by Bunker Hill Community College

Community Service Bunker Hill Community College students Jeffrey Philogene and Jocelyn Santiago working with Habitat for Humanity of Greater Boston.



Photo by UMass Dartmouth

Community Engagement UMass Dartmouth celebrates the May 2012 dedication of the Leduc Center for Civic Engagement, named for University donors and Fall River natives Robert and Jeanne Leduc. UMass Dartmouth is received a top honor on the President's 2012 Higher Education Community Service Honor Roll.

■ **University of Massachusetts Dartmouth** was awarded the level of Honor Roll Finalist, the highest ranking achieved by any college or university in Massachusetts, in the **President's 2012 Higher Education Community Service Honor Roll**. Launched in 2006, this annual award highlights the role that colleges and universities play in placing students on a lifelong path of civic engagement. An additional nine public campuses were included as 2012 Honor Roll members, with University of Massachusetts Lowell listed as "Honor Roll with distinction."

■ **Mount Wachusett** and **Middlesex** were two of only ten community colleges nationally to be chosen in March 2012 as leadership institutions in the **Bridging Cultures project** of the Association of American Colleges and Universities. Funded by the National Endowment for the Humanities, this three-year curriculum and faculty development initiative seeks to promote greater adoption of high-impact practices that advance civic learning outcomes, and to infuse questions about difference, community, and democratic thinking into transfer courses in the humanities.

■ **Westfield State University** is one of 25 campuses nationally (the only one in Massachusetts) participating in the **Campus and Community Health Initiative** of the American Association of State Colleges and Universities. The goal of this two-year initiative is to create strategies for measuring and improving civic health, including levels of community service and fulfillment of civic obligations, both on and off campus.

IV. PARTNERSHIPS

AND

**What support does
public higher education
need to achieve its goals?**

PUBLIC SUPPORT

- We can't do it alone. *Time To Lead* closes with **acknowledgement of public higher education's key partners** in the public, private and nonprofit sectors and makes the case for expanding these partnerships still further.

Through the Vision Project, Massachusetts public higher education has united in a bid to achieve national leadership. But we cannot hope to reach this ambitious goal alone. Robust partnerships and support from many quarters—including the business and philanthropic communities, our colleagues at all levels of education, and, of course, state government—have been critical to the progress we have made. These partnerships will need to be further strengthened in the years ahead.

Public Support for Public Higher Education

72%

of Massachusetts voters agree that it is very important that Massachusetts have one of the best public higher education systems in the United States.

Source: *Opinion Dynamics, The Massachusetts Department of Higher Education Registered Voter Survey, July 2011*

82%

of Massachusetts voters think it is extremely important that the state's public colleges and universities remain affordable.

THE BUSINESS AND EMPLOYER COMMUNITY

The **Massachusetts business and employer community** has been a critical Vision Project partner, both in building support for the cause of excellence in public higher education and in working with the Commonwealth's public campuses to ensure that our graduates have the skills demanded in the workforce. Collaboration between the state's employers and higher education has been further enhanced by **Governor Patrick's** creation in 2011 of a new position—the **Director of Education and Workforce Development**—with responsibility to coordinate workforce development efforts across the state, focusing specifically on strengthening partnerships between community colleges and employers.



Learning and Earning Bunker Hill Community College student interns working at State Street through the Massachusetts Competitive Partnership's "Learn and Earn" program.



The Sky's the Limit A student in North Shore Community College's aviation program. NSCC has created programs to meet workforce needs in regional aerospace and defense industries, including one in advanced manufacturing at General Electric Aviation in Lynn.

In addition to ongoing regional collaborations between campuses and employers, recent examples of joint efforts include:

- **The Learn and Earn program** at **Bunker Hill Community College**, sponsored by the **Massachusetts Competitive Partnership**, which offers paid work experience at businesses including Bank of America, BJ's Wholesale Club, EMC, Fidelity, Raytheon, State Street Corporation and Suffolk Construction;

- **General Electric Aviation's advanced manufacturing program** developed in partnership with **North Shore Community College**, which prepares graduates for solid careers as machinists/machine repair technicians;

- **UMass Boston's Student Entrepreneur Program**, in which UMass business students work as paid interns at one of more than 40 high-tech start-ups in areas including marketing, sales, IT, software development, and finance; and

- **Future Ready Massachusetts**, an umbrella communications strategy to acquaint students, families, counselors and mentors with college and career programs and strategies, being developed by the **Massachusetts Business Alliance for Education** in collaboration with the **Departments of Higher Education** and **Elementary and Secondary Education**.

But, as the recent report of the **Board of Elementary and Secondary Education's** Task Force on Integrating College and Career Readiness states, the linkage between public higher education and the business and employer community needs to be strengthened even further in order to reach the state's workforce development goals. We must:

- Expand ties between employers and the state's high schools to help students understand **workplace culture** and **career opportunities in emerging fields**;
- Make **college internship** and **co-op opportunities** more widely available throughout the public higher education system; and
- Make use of the **Legislature's** recently created **Rapid Response Fund** to strengthen the capacity of public campuses to address the training needs of employers seeking to expand in Massachusetts or relocate their operations here.



Gold Status Two students work in the state-of-the-art lab built for Northern Essex Community College's associate's degree program in laboratory science.

On the Leading Edge

The new Massachusetts Life Science Education Consortium, a partnership between the life science industry and higher education, has issued "gold" endorsements of biotechnology programs at four Massachusetts community colleges:

- **Middlesex Community College**
Associate in Science—Biotechnology Technician Certificate—Biotechnology Technician
- **Northern Essex Community College**
Associate in Applied Science—Laboratory Science
- **Quinsigamond Community College**
Certificate—Biotechnology
- **Roxbury Community College**
Associate of Science—Biotechnology Certificate—Biotechnology/Biomufacturing

An additional four campuses received "silver" endorsements for their programs.

In my experience, the current level of collaboration between the Commonwealth's higher education and K-12 systems is unprecedented. By aligning our standards and assessments, developing multiple pathways from middle grades through postsecondary education, and promoting career as well as college readiness, K-12 and higher education are now committed to a joint agenda.

—MITCHELL CHESTER,
COMMISSIONER, MASSACHUSETTS
DEPARTMENT OF ELEMENTARY
AND SECONDARY EDUCATION

■ EARLY CHILDHOOD, ELEMENTARY AND SECONDARY EDUCATION

Educators in higher and secondary education have traditionally worked along parallel but separate tracks, with the result that many students have been able to complete high school requirements without being ready for college-level work.

The **Patrick-Murray Administration** has sought to right this problem by creating an **integrated administrative structure** that unites early education, elementary and secondary education, and public higher education under a single secretariat.

Within this framework, public higher education has embarked on an unprecedented level of collaboration with K-12 colleagues. In addition to the national **Partnership for Assessment of Readiness for College and Careers (PARCC)** and the **Massachusetts Task Force on College and Career Readiness**, this work includes:

- The **Educator Preparation Advisory Council**, a joint effort of the **Executive Office of Education** and members of the **Boards of Higher Education, Elementary and Secondary Education**, and **Early Education and Care**, created to improve the effectiveness of teacher preparation programs through strengthening the content and quality of required coursework, creating more robust classroom-based learning opportunities, and better integrating teacher preparation with the first three years of service;
- Postsecondary courses designed to enhance K-12 teacher expertise in specific fields, such as **Massachusetts Maritime Academy's sustainable energy education** for secondary school educators;



Photo by kulbakphoto.com

New Levels of Collaboration Charles F. Desmond and Maura Banta, chairs of the Massachusetts Board of Higher Education and Board of Elementary and Secondary Education, respectively, have presided over an era of unprecedented collaboration between their sectors.

- **Dual enrollment and early college programs** that enable students to take college courses while still in high school;
- The creation of a **longitudinal data system** that will enable a continuous pre-K through college view of educational system effectiveness by systematically and comprehensively linking data from the **Departments of Higher Education, Elementary and Secondary Education**, and **Early Education and Care**; and
- The development of **early educator pathways** that will provide early childhood educators with stackable credentials and learning experiences, moving through multiple certifications and on through degrees ranging from associate's to doctorate.

■ INDEPENDENT COLLEGES AND UNIVERSITIES

Massachusetts' independent colleges and universities must play an important role in ensuring that the state has the best-educated citizenry and workforce in the nation, and in driving research that supports economic development. The state has benefited for many years from long-standing models of collaboration between public and private campuses, such as the **Five Colleges in the Pioneer Valley** and the **Colleges of Worcester consortium**. More recent alliances address a number of Vision Project goals:

- **Berkshire County Goes to College**, a Western Massachusetts college participation initiative organized by **Berkshire Community College**, **Massachusetts College of Liberal Arts**, **Williams College** and **Bard College at Simon's Rock**. Now in its fifth year, the annual spring event raises awareness of college in Berkshire county students at an early age by providing every sixth-grader an opportunity to visit a college campus.
- The state's **Nursing and Allied Health Initiative**, described on page 62, in which public and private colleges and the health care industry have worked to meet future nursing needs. This joint project can serve as a model for similar public/independent efforts in other industries.



Photo by Eugena Osofi / Governor's Office

Partnership for Economic Growth Governor Deval Patrick joins education and business leaders in June 2009 to announce plans for the Massachusetts Green High-Performance Computing Center in Holyoke.

Public/private research partnerships also play an important role in advancing knowledge and industry in Massachusetts, and in attracting the federal dollars that are the lifeblood of this work. Recent examples include:

- The joint work of the **University of Massachusetts**, **Harvard**, **MIT**, **Boston University**, **Northeastern University**, **EMC Corp** and **Cisco Systems** that produced the \$168 million **Massachusetts Green High-Performance Computing Center** in downtown Holyoke.
- **University of Massachusetts Lowell**, **Northeastern University**, and the **University of New Hampshire's** collaboration in nanotechnology through the National Science Foundation-funded **Center for High-rate Nanomanufacturing**.



Photo by Department of Higher Education

Partnership for Future Workforce Needs Students and educators participating in a Regis College/Lahey Clinic "Transition into Practice Model Project," one of the numerous partnerships funded by the Department of Higher Education's Nursing and Allied Health Initiative to address the state's future workforce needs in these areas.

@Scale Supporters

The **@Scale Initiative**, described in more detail on page 64, works to scale or replicate programs that increase students' interest and skills in science, technology, engineering and math (STEM). Launched in the spring of 2011, @Scale requires grant recipients to match every dollar in state seed money with three dollars in outside funding. As of July 2012, the following corporations and foundations had provided financial support to @Scale projects:

CORPORATE SUPPORT

- Analog Devices
- Broadcom
- Cisco
- EMC
- IBM
- Mediatech
- PTC
- Raytheon
- SolidWorks
- The Math Works
- Vertex
- Verizon

FOUNDATION SUPPORT

- Boston Scientific Foundation
- Ellesworth Foundation
- Greater Worcester Community Foundation
- Hoche-Schofield Foundation
- Linde Family Foundation
- National Math and Science Initiative
- Noyce Foundation
- Robotics Education and Competition Foundation

PHILANTHROPIC COMMUNITY

Support from the philanthropic community can provide the additional resources needed to achieve true excellence and to experiment with innovative educational models. Public campuses have benefited for many years from this kind of support, including assistance from the state's 14 regional community foundations. More recently Vision Project initiatives have benefited from more than \$2.5 million in foundation grants, with generous support coming from the **Boston Foundation, Nellie Mae Education Foundation, Davis Educational Foundation, Hewlett Foundation, Lumina Foundation, Balfour Foundation, Gates Foundation, and National Governors Association.**

Work supported by these grants includes:

- **Conferences** to bring together educational leaders both within and beyond Massachusetts to learn from one another about promising practices to improve the outcomes of public higher education;
- **Research** to support the accountability aspects of this report;
- Increased **collaboration** between higher education and K-12 to improve students' readiness for college;
- **Improvement** of student learning assessment across our campuses; and
- **Efforts** to improve college completion rates and facilitate effective student transfers.

The business and philanthropic communities stand behind the Vision Project because we recognize the critical need for strong higher education in the 21st-century economy. The work underway is impressive—but its success requires continued investment in efforts to measure and improve performance at all of our public colleges and universities.

—PAUL GROGAN, PRESIDENT AND CEO, THE BOSTON FOUNDATION

■ NATIONAL ASSOCIATIONS AND ORGANIZATIONS

Three Vision Project focus areas have benefitted tremendously from the support of national organizations:

■ The **Association of American Colleges and Universities** (AAC&U) and the national organization of **State Higher Education Executive Officers** (SHEEO) have been instrumental in supporting our work on student learning outcomes assessment.

■ **Achieving the Dream**, a national campaign dedicated to improving the college success of historically underserved students, has partnered with four of our community colleges—**Bunker Hill, Northern Essex, Roxbury, and Springfield Technical**—to increase the percentage of students who successfully complete their courses, advance from remedial to credit-bearing courses, and earn degrees or certificates. The ATD partnership extends to the **Board of Higher Education**, where the focus is on strengthening state policies in data and performance measurement systems, K-12 and postsecondary alignment, and transfer between institutions.

■ Massachusetts public higher education is working with **Complete College America** to improve graduation rates and student success.



Coming Together Public higher education faculty and administrators in the audience at the Nellie Mae-funded Vision Project Launch Conference in September 2010, the first of several Vision Project convenings supported by philanthropic grants.

■ THE FEDERAL GOVERNMENT

The federal government is a key source of supplementary funding for student financial aid, research, and educational programming at Massachusetts' public colleges and universities. Federal financial aid, especially the Pell Grant program, is indispensable to keeping college affordable for thousands of students from low income families. Many federal grants received by campuses align with Vision Project-related goals, including:

■ More than \$8 million for **GEAR UP** and the **College Access Challenge Grants**, two programs that increase college participation among traditionally underserved populations.

■ **Bristol Community College's** \$900,000 National Science Foundation grant to add new courses and augment existing ones so that every engineering technology graduate has sustainability and green technology skills.



Going Green With a \$900,000 grant from the National Science Foundation, Bristol Community College is weaving sustainable education into its engineering technology program.

■ **Framingham State University's** strong partnership with **Natick Soldier Systems Center** (NSSC) results in federal grants to faculty and internships/jobs for FSU students. NSSC funding allows FSU faculty to conduct research in fields such as nutritional science and genetic engineering, while FSU students are offered year-long internships that often lead to permanent employment. FSU students have been involved in the development of military MREs (Meals Ready to Eat), food air-drop systems, body armor, and fabric treated with insect repellent.

Continued success in winning financial support from the philanthropic community, national organizations and the federal government to support our public colleges and universities will be critical to achieving Vision Project goals.



Photo by Matt Bennett/Governor's Office

Fueling the Vision Governor Patrick announces the inaugural winners of Vision Project Performance Incentive Fund grants at Framingham State University in September 2011.

STATE GOVERNMENT

Despite severe fiscal constraints, the **Patrick-Murray Administration** and the **Legislature** have held the line against the kind of draconian budget cuts suffered by public campuses in some other states, while also providing new funding to support the Vision Project agenda.

- The **Performance Incentive Fund**, allocated \$7.5 million in FY13, supports public campuses in creating or strengthening programs that advance Vision Project goals.
- The FY13 budget also includes \$3.25 million for a **new scholarship program** to encourage students to major in fields critical to the state's economy.
- **Campus infrastructure** continues to receive long-overdue improvement and expansion of facilities as a result of the \$2 billion bond bill enacted in 2008.



Photo by UMass Boston

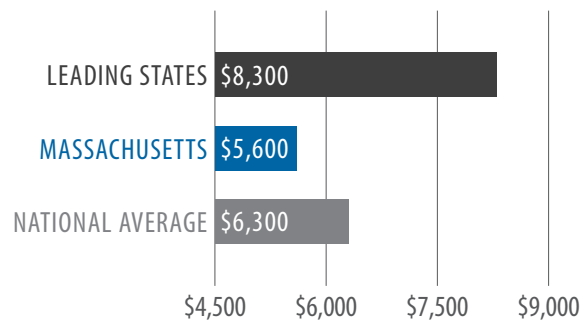


Photo by Eugena Osi/Governor's Office

Building Our Future Officials mark milestones in campus projects funded by the Patrick-Murray Administration's historic higher education bond bill, which includes a \$152 million Integrated Sciences Complex at UMass Boston (opening 2014) and a \$31 million modernization of Greenfield Community College's campus core.

PUBLIC HIGHER EDUCATION SYSTEM

State Appropriations per Full-Time Student



Represents state and local support for public higher education operating expenses, including ARRA funds, in 2011.

Source: SHEEO/SHEF

In 2011, Massachusetts ranked 30th among states in higher education funding per student, behind such states as California, Connecticut, Florida, Illinois, Kentucky, Louisiana, Maine, Maryland, Mississippi, New Jersey, New York, North Carolina, Texas, Washington, and Wisconsin.

The leading states, ranked from the top, are North Carolina, Connecticut, New York, New Mexico, and Texas. *This analysis excludes Wyoming and Alaska, which are high-spending outliers because of low population density.*

This support has been essential, but the Commonwealth still ranks in the middle tier nationally in higher education appropriations, with 29 states providing more funding per student in FY11 than Massachusetts. This low ranking has been a persistent pattern over many years, reflecting Massachusetts' historic complacency toward public higher education in a state with so many distinguished independent institutions. In addition:

- A 21 percent jump in enrollment at Massachusetts public campuses over the past five years—a rate that puts us among the top ten states nationally for growth—has placed **additional financial pressures** on public higher education.

- With enrollments growing and state funding constrained, the **cost of supporting public colleges and universities** has been shifting from the state to students and families. Tuition and fees now constitute a greater percentage of public higher education revenue than the national average.

- Rising college costs represent a barrier to both college participation and college completion. **Financial pressures** are the most common reason given by our community college students for halting their studies before they graduate.

- Public colleges and universities face a consistent challenge of maintaining **affordability** while making the **critical investments** needed to sustain quality, such as hiring full-time faculty to accommodate higher enrollments.

State support will be critical to keeping Massachusetts colleges affordable to our residents, and to ensuring the quality of the education is among the best in the nation.

I'm grateful for the excellent education I received at Salem State, but I do think we need a stronger public commitment to funding the state colleges and universities. Otherwise too many students are going to say, "I can't afford college." If other states can find a way, Massachusetts can too.

—ANGEL DONAHUE-RODRIGUEZ,
2011–2012 STUDENT BOARD
MEMBER, MASSACHUSETTS BOARD
OF HIGHER EDUCATION

DATA SOURCE ACRONYM GLOSSARY

Georgetown CEW

Georgetown University Center on Education and the Workforce

HEGIS

Higher Education General Information Survey (USDOE)

HEIRS

Higher Education Information Resource System (MDHE)

IPEDS

Integrated Postsecondary Education Data System (USDOE)

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

INDEX OF LEADING STATES

Massachusetts seeks national leadership in public higher education.

This **Index of Leading States** identifies the states that we need to surpass in each key outcome to achieve that goal. Although understandable questions may be asked regarding the comparability of some of these states with the Commonwealth, we believe that, when aggregated and averaged, these states are sufficiently similar to allow for reasonable comparison while allowing us to be consistent in our definition of national leadership.

* Comparison group includes fewer than 12 states, so “leading states” is defined as the top state or, in the case of a tie, the top two states.

Which states are in the lead in COLLEGE PARTICIPATION?

Page	Metric	Leading State(s)
16	■ College Enrollment Rates of Recent High School Graduates	LA NY SC MA GA
18	■ College Preparedness of High School Seniors—Math*	MA
	■ College Preparedness of High School Seniors—Reading*	MA

Which states are in the lead in COLLEGE COMPLETION?

Page	Metric	Leading State(s)
22	■ Community Colleges—“Achieving the Dream” Six-Year Success Rate*	TX
23	■ State Universities—Six-Year Graduation Rate	IA VA NJ WA SC
	■ UMass—Six-Year Graduation Rate	VA NJ CA PA SC

Which states are in the lead in STUDENT LEARNING?

Page	Metric	Leading State(s)
26	■ Community Colleges—Pass Rates on National Licensure Exams	
	<i>Dental Assistant</i>	IL OR MO MA MN
	<i>Medical Assistant</i>	UT IA MI WI WA
	<i>Licensed Practical Nurse</i>	MT WY UT VT SD
	<i>Registered Nurse</i>	ME TN LA RI ND
	<i>Physical Therapy Assistant</i>	OR LA AZ CT TX
	<i>Radiation Technologist</i>	OR SD CO IA ID
26	■ State Universities—Pass Rates on National Licensure Exams	
	<i>Certified Public Accountant</i>	FL IA MO VA WI
	<i>Registered Nurse</i>	UT NH TN OR CT
27	■ UMass—Pass Rates on National Licensure Exams	
	<i>Certified Public Accountant</i>	FL WI RI IA MN
	<i>Registered Nurse</i>	UT NH TN OR CT
27	■ UMass—Mean Scores on Graduate Entrance Exams	
	<i>Graduate Record Examination (GRE)</i>	MN VT CT RI WA
	<i>Pharmacy College Admissions Test (PCAT)</i>	UT WI WA MT MI

Which states are in the lead in WORKFORCE ALIGNMENT?

Page	Metric	Leading State(s)
30	■ Community Colleges—Associate's Degrees & Certificates in Health Care Support	NC MI OH SC FL
31	■ State Universities & UMass—Bachelor's Degrees in Health Care Practice	MI OH MO AZ IN
32	■ Community Colleges—Associate's Degrees in STEM Technician Fields	TX MN IL VA WI
	■ State Universities & UMass—Bachelor's Degrees in STEM Fields	NC LA MI PA GA IL
33	■ State Universities & UMass—Bachelor's Degrees in Business and Finance	NY GA AZ LA PA SC

Which states are in the lead in CLOSING ACHIEVEMENT GAPS?

Page	Metric	Leading State(s)
17	■ African-American/White Gap in College Enrollment Rates of 18- to 24-Year-Olds	OR NM AR ME OK
	■ Latino/White Gap in College Enrollment Rates of 18- to 24-Year-Olds	NH WV HI AK LA
20	■ African-American/White Gap in College Preparedness of High School Seniors—Math*	WV
	■ African-American/White Gap in College Preparedness of High School Seniors—Reading*	FL
	■ Latino/White Gap in College Preparedness of High School Seniors—Math*	WV
	■ Latino/White Gap in College Preparedness of High School Seniors—Reading*	FL IA
21	■ Parental Education Gap in College Preparedness of High School Seniors—Math*	AR
	■ Parental Education Gap in College Preparedness of High School Seniors—Reading*	SD
24	■ Community Colleges—African-American/White Gap in Three-Year Graduation Rate	AL NM MS TX SC
	■ State Universities—African-American/White Gap in Six-Year Graduation Rate	DE GA FL OK SC
	■ UMass—African-American/White Gap in Six-Year Graduation Rate	ID TN FL NM NY
	■ Community Colleges—Latino/White Gap in Three-Year Graduation Rate	AR AL SC TX DE
	■ State Universities—Latino/White Gap in Six-Year Graduation Rate	OR GA SC FL NM
	■ UMass—Latino/White Gap in Six-Year Graduation Rate	FL NC MI LA SC

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.

■ **State Government**

Governor

Deval L. Patrick

Lieutenant Governor

Timothy P. Murray

Secretary of Education

Paul Reville

Massachusetts Board of Higher Education

Charles F. Desmond, *Chairman*

Louis Ricciardi, *Vice Chair*

Paul Reville, *Ex Officio*

David J. Barron

Jeanne-Marie Boylan

Gianni Falzone

C. Bernard Fulp

Nancy Hoffman

Keith J. Peden

Fernando Reimers

Henry Thomas III

Paul F. Toner

■ **Philanthropic Supporters of the Vision Project**

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The Boston Foundation

Other Philanthropic Supporters

Nellie Mae Education Foundation

Davis Educational Foundation

Hewlett Foundation

Lumina Foundation

Balfour Foundation

Gates Foundation

National Governors Association

■ Massachusetts Public Higher Education

Massachusetts Department of Higher Education
Richard M. Freeland, Commissioner

Berkshire Community College
Ellen Kennedy, President

Bristol Community College
John J. Sbrega, President

Bunker Hill Community College
Mary Fifield, President

Cape Cod Community College
John L. Cox, President

Greenfield Community College
Robert L. Pura, President

Holyoke Community College
William F. Messner, President

Massasoit Community College
Charles Wall, President

MassBay Community College
John O'Donnell, President

Middlesex Community College
Carole A. Cowan, President

Mount Wachusett Community College
Daniel M. Asquino, President

North Shore Community College
Wayne Burton, President

Northern Essex Community College
Lane Glenn, President

Quinsigamond Community College
Gail Carberry, President

Roxbury Community College
Linda Edmonds Turner, Interim President

Springfield Technical Community College
Ira Rubenzahl, President

Bridgewater State University
Dana Mohler-Faria, President

Fitchburg State University
Robert Antonucci, President

Framingham State University
Timothy J. Flanagan, President

Massachusetts College of Art and Design
Dawn Barrett, President

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Massachusetts will not succeed unless its public colleges and universities succeed. In the end, it will take equal measures of hard work by the campuses of the Massachusetts public higher education system, strengthened collaboration with partner institutions and organizations, and sustained investment by the Commonwealth to get us where we need to be—national leadership in public higher education.

—RICHARD M. FREELAND, COMMISSIONER,
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