NEW ENGLAND JOURNAL OF HIGHER EDUCATION

THE NEW ENGLAND JOURNAL OF HIGHER EDUCATION

NEBHE's Connection

SPRING 2008 VOLUME XXII, NO. 5

www.nebhe.org/nejhe

Trends & Indicators in Higher Education 2008

COMMENTARY & ANALYSIS FROM THE NEW ENGLAND BOARD OF HIGHER EDUCATION

THE
NEW ENGLAND
JOURNAL OF
HIGHER EDUCATION

NEBHE's Connection

www.nebhe.org/nejhe

Vol. XXII, No. 5
Spring 2008

COMMENTARY & ANAYLSIS

SPECIAL REPORT

FORUM: COLLEGE AND CAREER READINESS

DEPARTMENTS

2008

American Student Assistance®

Symposium

American Student Assistance® (ASA) invites you to join us at our 23rd Annual Symposium **June 16-17** at the Boston Convention & Exhibition Center in Boston, Massachusetts.

BUILDING Futures–MEASURING Success

Day 1 June 16, 2008
BUILDING FUTURES will focus on Leadership and Mentoring, as well as Student Retention.

Day 2 June 17, 2008
MEASURING SUCCESS will focus on Success Metrics and Success Stories.

The symposium attracts national and international higher education decision makers and provides opportunities to exchange ideas with colleagues, network with experts in various fields, and catch up on the latest industry buzz. The theme of this year's 2-day event is BUILDING FUTURES—MEASURING SUCCESS.

Each year we strive to stage an event that is lively and informative, with stimulating Keynote Speakers, interactive Breakout and Concurrent Sessions on timely topics, relevant Roundtable Discussions, and the ever-popular Student Panel.

OUR ROSTER OF SPEAKERS FOR THE 2008 ANNUAL SYMPOSIUM IS EXCEPTIONAL:

- **Zenobia L. Hikes**, Vice President for Student Affairs at Virginia Tech.
- **John Wood**, author of *Leaving Microsoft to Change the World*.
- **Geoffrey Canada**, acclaimed author of *Reaching Up for Manhood: Transforming the Lives of Boys in America*.
- **Gary Heil**, author, educator, lawyer, consultant, coach, lecturer, and co-founder of The Center for Innovative Leadership (CFIL).

View the complete agenda at www.amsa.com/symposium.

REGISTER NOW

Visit www.amsa.com/symposium

American Student Assistance
Think About Tomorrow℠

THE
NEW ENGLAND
JOURNAL OF
HIGHER EDUCATION

The New England Journal of Higher Education (formerly Connection) is published five times a year by the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111-1325
Phone: 617.357.9620 Fax: 617.338.1577
Email: nejhe@nebhe.org

Vol. XXII, No. 5 Spring 2008

ISSN: 1938-5978

Publisher: Michael K. Thomas
Executive Editor: John O. Harney
Acting Editor: John Brady
Managing Editor: Charlotte Stratton

Design and Production: hm studios, Boston, MA

Back Issues: Back issues are accessible on the World Wide Web at www.nebhe.org/nejhe/archives. Hard copies of regular issues may be purchased from NEBHE for $3.95 each; annual directory issue, $20.

For advertising information, contact Charlotte Stratton at cstratton@nebhe.org.

The New England Journal of Higher Education is printed in New England.

The New England Journal of Higher Education is indexed and abstracted in EBSCOhost's Academic Search Elite, Academic Search Premier and Professional Development Collection, and indexed in the MLA International Bibliography and ERIC's Current Index to Journals in Education.

The New England Board of Higher Education is a nonprofit, congressionally authorized, interstate agency whose mission is to promote greater educational opportunities and services for the residents of New England. NEBHE was established by the New England Higher Education Compact, a 1955 agreement among the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

EDITOR'S MEMO

Trendwatching on Borrowed Time

As political candidates call for change in this endless primary season, we feel very much a part of the Zeitgeist as we present Trends & Indicators in Higher Education 2008—our annual compilation of key data that begins on page 37 this issue. Now is the time to take stock of where we are in order to create a strategy for change.

"The present is pregnant with the future," said German philosopher Gottfried Leibniz. Thus, everything that lays "*Out There*" is already incubating in the figures before us.

Higher education is facing some overwhelming changes in the decade ahead. "New England and the nation as a whole face intensifying global competition and rapidly growing demands for a skilled workforce," observes Travis Reindl in "Hitting Home: New Postsecondary Realities for New England—and the Nation" (page 33).

"The New England states bring particular advantages and obstacles to this effort, and political, educational and community leaders must recognize these as they consider new ways to fund, deliver, and measure higher education," adds Reindl. "The time to act is now, because key trends suggest that we are living on borrowed time."

Even when change is inevitable, there is always resistance. Newspapers, for instance, are in trouble today because they didn't see how shifting technology in the '70s would alter the way people got their news. "Industry practices have been handed down from one poorly trained, monopoly-spoiled generation to another," observed journalist Kevin McKenzie in Editor & Publisher recently. "Changing culture is long, hard work."

Of course, sound decisions cannot be made with seat-of-your-pants answers to do-or-die questions. Decision making, like change, is often a gradual process. We hope the data presented here assist you with the long, hard work ahead.

*****

Michael K. Thomas was appointed interim president and CEO of the New England Board of Higher Education on January 14, 2008. Thomas succeeds Evan S. Dobelle, who led NEBHE for three years before accepting the job as president of Westfield State College in Westfield, Mass.

Prior to his appointment, Thomas was NEBHE senior vice president and directed NEBHE's policy, research and programmatic activities, primarily focused on expanding innovative K-12, postsecondary and life-long learning policies and on promoting collaboration among leaders in business, government and education. He directed NEBHE's College Ready New England initiative, a regional alliance to increase college readiness and success among residents of the six New England states.

Thomas joined NEBHE in 2002 as director, later senior director, of policy and research. He holds a bachelor's degree in philosophy from Brigham Young University and a master's degree in higher education from Teachers College, Columbia University. He earned a doctorate in education and social policy from Harvard and an M.B.A. from Boston University.

Editor's Note: Longtime NEJHE executive editor John O. Harney is on leave and I am handling some of his duties until his return. We expect that John will be back on this page in the near future.

John Brady *is acting editor of* The New England Journal of Higher Education. *Email: Brady@nebhe.org*

Cutting-Edge Construction

As Vermont Technical College president Ty J. Handy noted in the Winter 2008 issue of *The New England Journal of Higher Education*, institutions will soon be competing for a dwindling number of prospective students as the number of young people in the pipeline shrinks.

This demographic trend combined with the current economic downturn presents a challenging marketplace, perhaps especially for small private colleges. Investing in new construction and renovations may pay off as a way of facing this challenge.

Institutions like Worcester Polytechnic Institute, The College of the Holy Cross and Anna Maria College are investing in science buildings and new residence halls. WPI is constructing a $45 million residence hall and parking garage which will house students in apartments rather than dormitories. The facility is expected to open by fall 2008. Holy Cross has invested $60 million to build a new integrated science complex; phase one should be completed by 2009.

According to the 2008 College Construction Report, published by the Peter Li Education Group, New England colleges spent $1.03 billion on campus construction in 2007, with 55 percent going toward new buildings. Interestingly, New England campus construction spending represented more than 7% of all dollars spent by colleges and universities nationally.

New Connecticut Yankees

One in eight Connecticut residents was born outside the United States, and one in eight Connecticut children in K-12 schools lives in a home where English is not the primary language, according to a new report from Connecticut Voices for Children, a statewide policy and advocacy group.

The report, titled *Immigration in Connecticut: A Growing Opportunity*, says Connecticut's growing immigrant population could counteract the economic affects of an aging population but only if policies are introduced to remove barriers that prevent the immigrant population from reaching their full potential and contributing to the state's economy.

Connecticut has the eleventh highest percentage of foreign-born residents in the country.

But immigrants in Connecticut face big challenges. They are more likely than native-born workers to earn less than $35,000 a year and to face language barriers. Voices for Children calls on policymakers to:

- Expand English language programs for foreign-born children and their parents.
- Assure that information about relevant state programs is communicated in multiple languages.
- Expand training and job opportunities for immigrant parents, and
- Increase state funding to school districts with a disproportionate share of immigrant children to help them address those students' unique needs.

G.I. Bill 2.0

In his Fall 2007 Editor's Memo, NEJHE Executive Editor John O. Harney described the difficulties returning soldiers often experience trying to learn about education benefits provided them through the Montgomery GI Bill. And, if they do become informed, they learn that the benefits they are entitled to fall far short. Estimates from the American Association of State Colleges and Universities show that the annual benefit available for former active duty service members meets just three quarters of the average cost of attending a four-year public institution.

If U.S. Sen. Jim Webb (D-Va.) has his way, Senate Bill 22 would align veteran's education benefits with the real cost of attending college today. The legislation would provide vets who have served on active duty since September 11 payments up to the cost of in-state tuition at the most expensive public institution in their state. They will also receive a monthly stipend equivalent to housing costs in their area. Additional payments would be available for tutorial assistance, and licensure and certification tests. A House companion bill, H.R. 2702, was introduced by Rep. Bobby Scott (D-Va.).

This "G.I. Bill for the 21st Century" would benefit the ailing national economy as well. The WW II-era G.I. Bill era ignited economic growth and expansion for an entire generation of Americans. A stronger, more robust G.I. bill today has the same potential. Nearly 8 million veterans used the benefits provided in some way after WWII, about half of the wartime veteran population. For every dollar invested in those veterans, seven dollars were generated.

The bill's cost? The estimated $2 billion needed yearly for the program equals less than one week of war in Iraq.

Snippets

Washington D.C.-based organization Every Child Matters recently ranked states based on Overall Child Vulnerability. The rating is arrived at using statistical measures such as the percent of children uninsured, child poverty rate, prenatal care and juvenile incarceration rates. All six New England states are among the 10 states with the lowest vulnerability rating.

	Overall Vulnerability Rating	High School Graduation Rates 2005
Vermont	1	83.2%
New Hampshire	2	78.0
Massachusetts	3	74.2
Connecticut	4	76.2
Maine	5	78.3
Rhode Island	10	73.0
Nation		68.0

Tuition Relief

Using investments to invest in students

Since the release of NACUBO's 2007 endowment study there have been a spate of articles and op-eds commenting on the nation's richest colleges and universities. The chart below lists the ten colleges and universities with the largest endowments. The list is not surprising, though the amount of wealth accrued just may be—the sums are stunning. According to a recent *New York Times* article, "…the growth alone in Harvard's endowment last year was $5.7 billion—a sum bigger than all but 14 other universities' total endowments."

To put this into perspective, just this past month software giant Microsoft made a bid to acquire Internet pioneer Yahoo for the unparalleled purchase price of $44.6 billion. A review of the NACUBO study shows that Harvard University has over 75 percent of that transaction cost and Yale has over 50 percent "sitting" in their endowment funds.

With tuition costs soaring, particularly at private institutions, college is growing out of reach for many students. NACUBO's report begs the question, should more of these institutions be required to share their wealth and, at a minimum, follow the lead of a handful of New England colleges and universities:

• Beginning in academic year 2008-09, Dartmouth College and MIT will eliminate tuition for students from families whose annual income is less than $75,000.

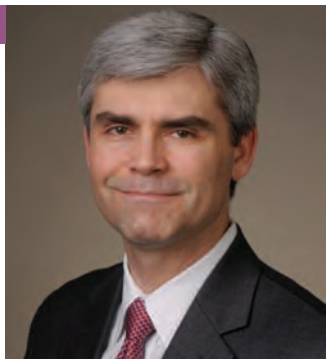
• Harvard, Yale and Brown University have eliminated tuition completely for students whose family income is less than $60,000 a year. These universities have also lowered costs for families in higher income brackets. Wellesley College has replaced loans with grants for students from families with incomes below $60,000 and also lowered costs for students with higher incomes.

• Amherst College, Bowdoin College, Colby College and Williams College, institutions with much smaller endowments, are moving to decrease student debt by eliminating student loans and replacing them with grants or scholarships.

• Holy Cross is lowering the required family contribution as well, but only for local residents. The college is offering free tuition to Worcester residents whose annual family income is below $50,000.

Terms of Endowment: The Top Ten

Rank	Institution	State	2007 Endowment Funds ($000)	2006 Endowment Funds ($000)	*Percent Change in Endowment (2006–2007)
1	Harvard University	Mass.	34,634,906	28,915,706	19.8%
2	Yale University	Conn.	22,530,200	18,030,600	25.0%
3	Stanford University	Calif.	17,164,836	14,084,676	21.9%
4	Princeton University	N.J.	15,787,200	13,044,900	21.0%
5	University of Texas System	Texas	15,613,672	13,234,848	18.0%
6	Massachusetts Institute of Technology	Mass.	9,980,410	8,368,066	19.3%
7	Columbia University	N.Y.	7,149,803	5,937,814	20.4%
8	University of Michigan	Mich.	7,089,830	5,652,262	25.4%
9	University of Pennsylvania	Pa.	6,635,187	5,313,268	24.9%
10	The Texas A&M University System and Foundations	Texas	6,590,300	5,642,978	16.8%



The View From the Summit

MICHAEL K. THOMAS

When the New England Board of Higher Education convened a first-ever Regional Leadership Summit on College and Career Readiness last November, it was likely to have been the region's largest-ever gathering of K-12 and higher education leaders.

Like this annual Trends & Indicators issue of *The New England Journal of Higher Education*, the purpose of the Summit was to answer the question: "How do the New England states measure up in terms of college readiness, access and success?"

The Summit also sought to address several key dimensions related to levels of readiness in the region. Specifically:

- How well have the New England states defined what it means to be "college and career ready"?
- To what extent are the academic standards and core curricula required of New England high school students rigorous enough to ensure college and career readiness?
- How can student performance data be used more effectively across the P-20 continuum to improve students' college readiness and success?
- How can we improve college affordability, and provide incentives for increasing readiness and success?

The Summit gathered national experts to share policy imperatives and key strategies for increasing readiness and success. It also drew upon the perspectives of regional and state leaders from K-12 schools, higher education institutions, state legislatures, governors' offices and college access organizations. They responded to national perspectives with their local experiences, best practices, innovations and lessons learned.

Here are some highlights:

In "*Improving College Preparation*" (p. 21) Michael Cohen draws on his work in more than 30 states to show how the misalignment of K-12 and higher education systems results in inaccurate signals about the knowledge and skills students need to succeed in college and careers.

In "*Rethinking College Readiness*" (p. 24) David Conley urges leaders, policymakers and practitioners to think beyond conventional measures of college readiness, such as courses taken and grades received in high school.

Jamie Merisotis, former president of the Institute for Higher Education Policy, now president of the Lumina Foundation for Education (p. 27) notes the workforce imperative of increasing underrepresented populations' college participation and success—and suggests how colleges might improve student retention and degree attainment.

In "*Why is Student-Level P-20 Data Sharing Important?*" (p. 30) Nancy J. Smith of the Data Quality Campaign calls for a culture change in terms of how educators and policymakers view and use data systems and proposes four key strategies for ensuring sustained P-20 data sharing.

Travis Reindl of Jobs for the Future and Lumina's Making Opportunity Affordable initiative in "*Hitting Home: New Postsecondary Realities for New England—and the Nation,*" p. 33 examines the extent to which students' and taxpayers' investments pay off—and proposes an agenda for getting more college degrees for the dollars states spend.

In sharing the summit's proceedings across the region, NEBHE intends to reignite both conversation and collaboration on these issues—in middle schools and high schools; at school committee and university governing board meetings; in legislative hearings and debates; at and between K-12 schools and higher education institutions.

One consensus item resulting from the summit was this: The responsibility for defining, promoting and increasing college and career readiness is a shared one. In particular, K-12 and higher education must bridge the gap that separates them and better align expectations, standards, assessments and data systems. Unless they first come to agreement on what it means to be college and career ready, it will be difficult to measure how well states are doing—or to help middle and high school students, particularly those from underrepresented populations, make the choices that are necessary to be ready and to succeed in postsecondary education and careers.

The responsibility for defining, promoting and increasing college and career readiness is a shared one.

***Michael K. Thomas** is interim president and CEO of the New England Board of Higher Education and publisher of* The New England Journal of Higher Education.
Email: mthomas@nebhe.org

Thinking about College?

The NHHEAF Network Organizations' Center for College Planning

Free!

- **Personalized College Counseling and Library**
- **College Planning Workshops**
- **Assistance with Financial Aid Applications**
- **CCP E-news**
  Subscribe online at nhheaf.org
- **College Essay Reviews**
  collegeplanning@nhheaf.org

1.888.7.GRADUATE x119 • www.nhheaf.org

Collaborating for Excellence

JOAN MENARD

As chair of the New England Board of Higher Education, I am proud of our region and the forethought its leaders showed five decades ago when they came together to promote greater educational opportunities for the residents of the six states by forming the New England Higher Education Compact and the tuition-saving Regional Student Program (RSP), which has allowed more than 200,000 New England residents to save an estimated $740 million in tuition.

Hundreds of New England's education and civic leaders gathered at NEBHE's New England Higher Education Excellence Awards in Boston last month to honor individuals, institutions and organizations that have contributed significantly to the advancement of educational opportunity in the region.

Among the 2008 Excellence Award winners, New Hampshire Governor John H. Lynch, knows that in anticipation of the coming decline in the high school age population, increasing the high school graduation rate is critical. He proposed legislation that would require students to stay in school either until the age of 18 or when they receive their diploma. Lynch made funds available for alternative programs to curb dropout rates and provide at-risk students with tutoring to ensure they graduate from high school. Additional steps include increasing the capacity at adult high schools for students who do not perform well in traditional high schools, and increasing tuition and transportation assistance to communities that support an expansion of regional dropout prevention programs.

Another award winner, the Boys & Girls Club of Burlington, has been serving youth in northern Vermont for 66 years. The club's KnowHow2Go College & Career Readiness program introduces middle and high school club members to career and post-secondary opportunities through exploratory and curriculum-based learning. This pilot program included a six-week curriculum designed to determine attitudes toward college and explain the opportunities available, a business club to introduce students to career skills, assistance with homework and with college admissions and the financial aid process. Surveys taken after the pilot program ended revealed a significant change in beliefs and assumptions about college access and financial aid, thus opening the doors of opportunity for all involved.

Robert S. Karam is another Excellence Award winner. Karam served on the board of trustees of the University of Massachusetts for 19 years and spent four years as chair. Widely regarded as the driving force behind the Advanced Technology and Manufacturing Center of the University of Massachusetts, Karam has also worked to establish partnerships between UMass Dartmouth and the business community in southeastern Massachusetts and Rhode Island. The center combines academic research and business entrepreneurship to attract technology and manufacturing companies to the region. Karam believes the center, along with the UMass Dartmouth's School for Marine Science and Technology in New Bedford, create tremendous scientific and economic potential for the area.

The 2008 NEBHE Excellence Awards winners have all made a positive impact on the region, our students and institutions. To highlight some achievers:

- At URI, President Robert L. Carothers increased enrollment of the best and brightest students from the state and region; increased the diversity among students, faculty and staff; and increased alumni, corporate and state support.
- President Jonathan Daube made Manchester Community College a model for other community colleges in Connecticut and the region.
- The Mitchell Scholarship Research Institute awards a scholarship to a student from each of Maine's public high schools every year.
- The work of the Massachusetts School-to-College Data Policy Team is an excellent example of collaboration between K-12 and higher education communities on behalf of students and their future.
- Keene State College's Cohen Center for Holocaust Studies is a leader in Holocaust and genocide studies.
- Dorcas Place Adult and Family Learning Center assists low-income Rhode Islanders in realizing their full potential.
- President John F. Brennan's leadership and entrepreneurial spirit reinvigorated Green Mountain College into a leading environmental liberal arts college.

These are just some of the individuals and institutions of many that devote themselves to excellence in the region's higher education enterprise and to educational access and opportunity for every New Englander. They make us proud.

***Joan Menard** is chair of the New England Board of Higher Education. She is a Massachusetts state senator representing the First Bristol and Plymouth district. Email: Joan.Menard@state.ma.us*

Is New England Ready for P-20?

A report card on efforts to expand the K-12 notion from preschool to grade 20.

BY JOSEPH M. CRONIN AND RICHARD H. GOODMAN

While New England schools serve the children of the affluent very well, many children from low-income backgrounds are left behind at key points in the *non-system* we perpetuate from preschool through college and beyond.

In 2006, *The New England Journal of Higher Education*, then *Connection*, published articles on why the segments of New England education should work more closely together so that more children, especially urban and rural students, could complete college degrees. Nationally, the State Higher Education Executive Officers association, the Bill & Melinda Gates Foundation and the National Governors Association (NGA) have defined higher expectations around preschool through "grade 20" collaboration, and, with the Nellie Mae Education Foundation, have invested $10 million in the New England states.

We recently reviewed how the six states began persuading higher education to work with the early childhood and K-12 systems toward this "P-20" goal. What progress has been made, and what barriers persist? Except in Rhode Island and parts of Massachusetts, many business leaders and their association leaders knew little about P-20.

Connecticut. For more than 50 years, the University of Connecticut enrolled 3,500 or so "motivated" (and generally gifted) high school students annually in a cooperative program, now called UConn Early College. Teachers at more than 100 high schools may offer college credit in calculus, chemistry, art and other subjects. Connecticut Collegiate Awareness & Preparation (CONNCAP) programs modeled after federal Upward Bound Programs also provide college preparation for disadvantaged students with high potential. Tech Prep initiatives connect high school students to two- and four-year programs in technical fields.

Governor Jodi Rell proposes major funding increases for preschool programs, and the Connecticut Business and Industry Association supports preschool and all-day kindergarten programs, especially for at-risk city children.

The governor's Commission on Education Finance called for greater data collection on: student test scores, behavior (truancy, suspensions and expulsions), high school graduation, acceptance to two- and four-year colleges and postsecondary education success one year later. The commission also recommended stronger state instructional audits and intervention strategies including district reconstitution and state management of underperforming schools.

The governor authorized a new P-16 council after hearing from a Connecticut STEM summit that progress in science, technology, engineering and math, including teacher preparation, should be reviewed annually, since only 50 percent of Connecticut students were passing state math and science tests.

Maine. A major source of energy for Maine college recruitment has been the Portland-based Senator George J. Mitchell Scholarship Research Institute. When the institute published its first report on "barriers" to college in Maine, the percentage of high school students enrolling in college immediately after high school had dropped to 49 percent. The NGA awarded a $2 million grant to support the Maine Readiness Campaign, in which high school and college and university faculty work to develop a core curriculum and higher graduation requirements at 50 "Maine Readiness" schools. All Maine students will take the PSAT in tenth grade and the SAT in junior year in lieu of a state assessment test. The Central Maine Power Company financed a "College Roadmap," a college-planning guide to help eighth graders and their parents prepare for college. The Maine Compact for Higher Education publishes directories of best practices in promoting college access and attainment.

The Mitchell Institute's "Access College Early" program allows students to take college courses for both high school and college credit. And Maine's Education Department also supports a bill to require that all Maine seniors complete a college application. Still, serious economic barriers persist, and Maine college students rank seventh nationally in debt.

Massachusetts. The Bay State's education systems are more fragmented today than they were in 1950 with three separate state education boards: one for early education and care, one for K-12, and another for higher education, each with a commissioner. The University of Massachusetts is substantially autonomous, with its own governing board, and its online system separate from the state colleges' online programs.

But many Massachusetts community colleges work closely with local K-12 schools. Middlesex Community College helps a Lowell alternative middle school for high-risk youth and runs the Lowell Middlesex Academy Charter School, with faculty members dedicated to reducing Lowell's 40 percent dropout rate.

A Massachusetts nonprofit, TERI (The Education Resources Institute) has expanded the Higher Education Information Centers in Boston's Back Bay, Roxbury and Brockton. TERI houses the Boston Higher

Education Partnership, issuing wake-up calls on the need to align high school courses with collegiate standards and support students through college access to completion.

The NGA gave Massachusetts a $2 million grant in 2002. Then-governor Jane Swift signed an executive order establishing a Pre-K-16 council, which brings together the chairs and vice chairs of the boards of education and higher education, the commissioner and chancellor. The council developed a Massachusetts core curriculum, with four years of high school math and science, to better prepare high school graduates for college.

Massachusetts and Rhode Island are among nine states nationally promoting and assessing Algebra II achievement, which many treat as a determinant of readiness for college-level work. Both states have agreed to assess Algebra II performance in 2008 as preparation for college.

The Bay State's new Department of Early Education and Care supervises federal and private programs serving 60,000 preschool children, and 2,500 pupils in a state pilot program. Margaret Blood of the Strategies for Children advocacy organization says that early schools must next agree upon "School Readiness Standards" essential for P-20 success.

The state is ready for reform, but a traditionally strong legislature must be persuaded that a new state education secretary, data systems and budgets would address the problems P-20 tries to solve.

New Hampshire. Despite New Hampshire's historical aversion to broad-based state taxes, Governor John Lynch, a former chair of the University System of New Hampshire, understands education and must by court directive find ways to achieve K-12 adequacy. Lynch proposed raising the compulsory school attendance age to 18, and created the NH P-20 "Working Group." Not quite a formal council, and lacking state funds, the K-12 commissioner, community college commissioner and university chancellor meet with state workforce council and the university council heads.

University Chancellor Stephen Reno and state Education Commissioner Lyonel Tracy agreed on several joint K-16 initiatives:

1. An early college program called Running Start, linking more than 50 high schools and providing 3,900 students with access to college courses.
2. A high school student-mentoring program staffed by New Hampshire students who receive academic credit. Several private colleges also provide mentors.
3. An experimental program where two high schools would require 100 percent of their seniors to apply to college.

New Hampshire already offers a high school pre-engineering program (28 high schools, 1,800 students), a K-16 Granite State Distance Learning Network, and a jobs and college dropout prevention program. New Hampshire has an excellent after-school program called Plus Time New Hampshire, supported by the Eisenhower, Nellie Mae and other foundations.

The state in 2005 dropped the high school Carnegie Unit graduation requirements and requires local school boards to show evidence of achieving defined educational outcomes. A state where more than 20 percent of the workforce is in high-tech fields will need to focus on additional reforms.

Rhode Island. Of the New England states, Rhode Island has expressed the greatest enthusiasm about seamless education systems. The state suffers from the lowest high school graduation rate in New England (72 percent), and low proficiency scores on NAEP fourth and eighth grade reading, math and writing tests. The percentage attending college right after graduation (56 percent) is below Massachusetts and Connecticut. Rhode Island in the late 1980s launched The Children's Crusade to encourage the lowest-income children to study hard, stay away from drugs and crime, and be rewarded with scholarship aid.

Governor Donald Carcieri, a former high school math teacher and an experienced business executive, appointed a P-16 council to coordinate all levels of education in 2002. Higher Education Commissioner Jack Warner and Education Commissioner Pete McWalters strongly support the P-16 initiative.

Rhode Island won a $2 million NGA/Gates Foundation grant to raise higher "college ready" standards for high school students. Carcieri and others envisioned a "science state" with STEM funds for increasing physics, chemistry and pre-engineering enrollments. Rhode Island will also expand dual-enrollment options to guide high school students to college courses in the upper high school grades. Eighteen percent of Rhode Island juniors and seniors now take college-level courses, the highest percentage in New England.

Rhode Island is coming from behind on achievement indicators and shows great commitment. The governor is a national figure in college readiness issues.

Vermont. Vermont anticipates a probable decline in the number of college graduates by 21 percent over the next decade or more. Vermont officials worry that there may not be an educated workforce to meet the need for nurses and special education teachers or to staff small high-tech companies.

Only 55 percent of high school students take the SAT, and only 43 percent enter college after high school graduation—13 percentage points below the U.S. average.

The Vermont Business Roundtable issued several reports on manpower needs and complained about a lack of a central education and training system. There is already a Vermont Education and Training Consortium, Vermont Technology Council and a Human Resources Investment Commission, with UVM and other educators involved. Vermont doesn't have a K-16 council. Instead,

there is a Vermont Public Education Partnership which includes the K-12 commissioner, the higher education commissioner, the president of UVM, the head of the community college system, the head of the Vermont Student Assistance Corp. (VSAC) and leaders of the school boards, superintendents and principals associations.

With a staff of 400, VSAC is the strongest agency working to increase college attendance. The VSAC staff travels to rural and remote areas to promote college awareness and packages, including $84 million in state scholarship aid. The goal is to raise college aspirations to 90 percent—the level needed to maintain the number of college graduates. Director Don Vickers predicts that dual-enrollment in Vermont will change from a service designed for gifted children to one serving all high school students including those at risk.

What might New England states do together?

Five key recommendations:

1. At least eight separate programs connect high school students to college: AP courses for advanced students, International Baccalaureate for high achievers, dual enrollment, early colleges for lower-income students, Tech Prep for students in technical fields and private university high schools such as those at Clark and Boston University. Yet states rarely discuss this de facto "system" of high school transitions. NEBHE, the New England Association of Schools and Colleges (NEASC), The New England Council, and the six governors should convene periodic summit meetings on Education P-20 and the Economy.
2. NEASC or NEBHE might issue annual P-20 report cards on the New England states, citing progress and identifying achievement and data gaps similar to the formats used by the Southern Regional Board (SREB) that evaluates sixteen states each year.
3. New England states need formats by which college student achievement, remedial needs, dropouts and completion rates get fed back to sending high schools.
4. The New England Council or New England Business Higher Education Roundtable might discuss what other states are doing, and the stakes for employers. Each state needs a comprehensive plan to upgrade preschool offerings, including defining the expectations and standards for high-quality programs.
5. To make P-20 seamless, NEASC needs accreditation standards that require better communication between education levels. The NEASC accreditation standards should include new language requiring colleges and universities to provide feedback to high schools, and should reward early college and dual-enrollment programs and data systems that facilitate P-20 collaboration. Legislatures need to hold joint P-20 education hearings and integrate budget policies.

Joseph M. Cronin *is president of Edvisors. He is the former president of Bentley College and former Massachusetts secretary of educational affairs.*
Email: Edvisors@aol.com

Richard H. Goodman *is project director at the New England School Development Council and former executive director of the New Hampshire Association of School Boards and School Superintendents.*
Email: dgoodman@rcn.com

Talking About a Revolution: Looking to the Past to Save Our Future

BY CHARLES DESMOND AND ELIZABETH GOLDMAN

For close to four centuries, New England has symbolized America's regard for ideas and education. The American Revolution began here. So did American literature, Transcendentalism, the anti-slavery movement, and public schooling. New England's skilled workforce created the American Industrial Revolution.

New England has re-invented itself time and again—from a largely farming economy, to a highly industrialized one. It is reinventing itself even now to accommodate an economy driven by information and technology. Today, this new economy, coupled with dramatic shifts in population, challenges our region once more to capitalize on the strengths and ingenuities of its people.

The face of the region is undeniably changing. Immigrant populations, people from low-income families and young people of color are now among the fastest-growing populations in New England. According to the Nellie Mae Education Foundation's 2006 report, *New England 2020*, all six New England states will witness dramatic increases in the percentage of their workforces composed of minorities. By 2020, the Massachusetts working-age population will be 28 percent minority, up from 13 percent in 2000 and well above the record-breaking projected national average of 15 percent.

The dilemma, however, is that the foundation of the region's future economic prosperity will be intellectual. Higher education will be critical. But, like the rest of country, New England has not done a good job of preparing low-income and minority students for higher education.

Meeting the crisis will call not only for resolute leadership; it will also require a new kind of leadership.

Although today's educational failures are local, the underlying problems are widespread, interconnected and complex, and are not unique to any one state or city. The solutions will necessarily be widespread, interconnected and systemic. Whether in rural Maine or Hartford, Connecticut, underperforming schools and poverty limit peoples' access to information and relationships that could improve their lives. Underperforming schools deny poor students access to high quality teaching and the state-of-the-art technology that enable them to gain access to higher education. These conditions deprive communities of the human and social capital New England needs to compete in the global arena.

We believe New England's six land-grant universities the Universities of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont—are best positioned to assume leadership and champion a massive transformation of education.

The land-grant universities occupy a privileged place in the educational landscape. Created by pubic funding, they are the original "peoples' universities."

New England's land-grant universities were part of an initiative proposed by Vermont Senator Justin Morrill, and signed into law by President Abraham Lincoln in 1862 to provide leadership to a nation undergoing massive social change in the years following the Civil War. The first federal investment in conjunction with states to improve higher education, that investment underwrote many of the advances in agriculture, health and manufacturing that 20th century Americans enjoyed.

The land-grant universities occupy a privileged place in the educational landscape. Created by pubic funding—the federal government provided tracts of land to states to finance the establishment of the land-grant colleges—for the purpose of providing the teaching, research and service of greatest use to the citizens of each state, they are the original "peoples' universities."

Like private colleges and universities, land-grants serve to conduct research, advance knowledge and meet the general needs of the public. But while private colleges and universities may operate from a narrower perspective, governed by the interests and concerns of those students whom they select to educate, the land-grant institutions are governed by the interests and concerns of the public at large, which, rightfully, views these institutions as their own.

The land-grants' purpose is broader and reaches further than that of private colleges and universities. Land-grants exist to serve, protect and advance the public's values, ideals and interests. To do this, they must fight to ensure that the reality of educational excellence and opportunity remains available and accessible to all through the concerted, unified and rigorous use of knowledge to improve teaching practice.

The legislation that created the land-grants originally defined them as agriculture schools. Their leaders had a clearly defined problem before them: to research and disseminate agricultural practice and science. Their efforts created the most productive agriculture in the world.

Now we must create, if you will, the most productive minds in the world.

This task will not be easy. In order for our land-grant universities to serve this role, they will need to step forward and provide the kind of leadership that launched the agricultural revolution and advanced industrial capacity in the U.S.

While these institutions will certainly need input from and cooperation with other sectors—governors, congressional delegations, state and local legislators, corporations, philanthropies, non-profits, adult educators, public school teachers, researchers and community agencies— they are best suited to convene the relevant problem-solvers to learn from our successes and build a 21st century educational system. Many organizations, public and private, are dedicated to improving education. But the land-grants have the widest reach. They can attract the best knowledge and information on educational reform from both the public and private sectors. Drawing on knowledge wherever it can be found, the land-grants could organize, synthesize and produce action steps that would address the public's need for highly skilled, well-educated students who could compete on the global level.

Many leaders in the region are themselves graduates of land-grant institutions and are natural allies. The land-grants have a history of success at broad-scale, paradigm-altering research and development. And it is what they were created to do.

The manifold demands placed on the presidents of these institutions—assuming the roles of fund-raiser, faculty leader, legislative liaison and the public face of the institution, among others—certainly make it difficult for them to focus on these new challenges of demography, poor schools and poverty.

For this reason, leadership must address the challenges our region face in a collaborative manner. The opportunities we can create as a region will dwarf anything any single state or institution can do. For example, the region could focus an intensive research initiative on education in urban and rural communities where poverty, poor schools and changing demographics are pervasive. Bridging research from a range of fields—from neurobiology and pedagogy to economics and creativity —"centers of excellence" in rural and urban education would provide the solutions to the problems of educating all students to 21st century standards.

A combination of public, private and philanthropic resources should underwrite a planning process to bring New England's best minds—researchers, academics, educators and community activists—together to begin establishing such rural- and urban-focused centers of educational excellence.

Today, we know that skilled teachers, working to high standards, can reverse the effects of poor education. New England is making educational progress, but not at a speed or breadth commensurate to the crisis we face.

We know what we can achieve. Even without near-instantaneous communication or computer-aided design, our predecessors were able to generate, share and adapt knowledge to create world-class industries in shipbuilding, whaling and textile manufacturing. Today, we know that skilled teachers, working to high standards, can reverse the effects of poor education. New England is making educational progress, but not at a speed or breadth commensurate to the crisis we face.

We face a mutually determined destiny. The "blessings of liberty" the authors of the Constitution sought to pass on to us cannot—do not—transpire in conditions of poverty. Those goods we value—a higher standard of living, health care, social support structures and so forth—depend on economic success for all.

New England has the institutions with the expertise; the regional knowledge base is enormous. What is necessary is to create the connective tissue that will allow this knowledge and expertise to circulate and inform the educational transformation circumstances require.

Our region has always been a source of revolutionary ideas, from Women's Suffrage and Abolition to the Revolution itself. With the right leadership, we can provide for all students the rigorous education the future will demand of them and create the revolution necessary for our time.

Charles Desmond *is Executive Vice President of the Trefler Foundation. Email: cdesmond@treflerfoundation.org*

Elizabeth Goldman *is a research associate at RMC Research Corporation. This column includes excerpts from Desmond and Goldman's white paper, "Centers of Excellence: Education and New England's Future." Email: egoldman@rmcres.com*

In November of 2007, NEBHE hosted a regional summit on college readiness and success held at the Federal Reserve Bank of Boston with support from the Nellie Mae Education Foundation. This successful convening of more than 300 higher education and K-12 leaders, policy makers and educators had one focus: to determine how the New England states measure up in terms of college readiness, access and success. The national experts who led the panels that day have contributed the articles that follow to provide us with a recap of these important discussions.

Improving College Preparation

Lessons From the American Diploma Project

BY MICHAEL COHEN

Successful completion of some postsecondary education is increasingly important in today's global economy. Individuals with two- or four-year college degrees earn more and are less likely to experience unemployment than their less well-educated peers. Likewise, states—and nations—with larger numbers and percentages of adults with post-secondary degrees will be better equipped to innovate, compete and create rewarding jobs and address the complex civic, social and technological challenges facing modern societies.

Yet far too many young people who graduate from high school and enter postsecondary education are ill prepared, and their chances for success in college are diminished significantly. Nationally, 30 percent of first year students in 2- and 4-year institutions lack the basic skills needed to enter credit-bearing courses and are instead required to take developmental courses in math, writing or reading. The likelihood of earning a degree is significantly lower than for their better-prepared peers. A recent ACT study estimates that only half of college-bound students are ready for college-level reading.

A 2004 national survey revealed that 40 percent of recent high school graduates enrolled in college reported significant gaps in their academic preparation for the work they were expected to do. The same students in large numbers reported that they would have worked harder and taken more challenging courses if such courses had been required. The same Peter Hart survey showed that faculty estimated 42 percent of first year students in credit-bearing courses are academically unprepared to succeed in those courses.

The disconnect of academic expectations between postsecondary education and K-12 is one of the primary reasons for the poor preparation of so many high school graduates. Our separate systems of K-12 and higher education fail to provide both clear and accurate signals about the knowledge and skills students must acquire and a seamless transition from one system to the other.

The American Diploma Project, led by Achieve in partnership with the Education Trust and the Thomas B. Fordham Foundation, was launched in 2002 to conduct research and policy analysis that could help states improve preparation for postsecondary education and careers. This article summarizes key ADP research findings as well as our experience in working with more than 30 states to translate research into action.

Expectations Gap

Evidence of this expectations gap is abundant. Consider the following:

Academic Standards. Research with college faculty and employers shows that high school standards and expectations do not match up with the core academic knowledge and skills needed to enter and succeed in postsecondary education and the workforce. For example, high school graduates must be able to:

- Synthesize information from multiple informational and technical sources and draw conclusions based on evidence from these sources, yet high school English language arts standards often place little emphasis on reading and comprehending complex informational text, particularly in comparison to the attention paid to literature.
- Carry out research projects, including defining a researchable problem, gathering and evaluating the credibility and validity of data from a variety of sources, and producing a written analysis that marshals evidence in support of a clear thesis statement and related claims—skills that are rarely incorporated into high school standards and curriculum for all students.
- Solve problems using basic theorems in geometry and by converting verbal information into appropriate mathematical models or systems of equations and solving and interpreting them accurately and appropriately— yet in many states high school standards do not incorporate these reasoning and problem solving skills.
- Use statistical thinking and apply basic concepts of probability to develop and evaluate inferences, make predictions and draw conclusions from data. Again, few state academic standards incorporate data, probability and statistics.

Curriculum and High School Graduation Requirements. The mathematical knowledge and skills required for success in postsecondary education are typically taught in a rigorous, four-year course sequence including Algebra I, Geometry, Algebra II and a course that includes

data, probability and statistics. In 2004, when Achieve surveyed the graduation requirements in all 50 states, only two – Texas and Arkansas – required students to take math through Algebra II in order to earn a high school diploma, and these requirements had been adopted just recently. At the time, most states required students to take two or three years of math, and frequently did not specify the mathematical content they needed to learn. Only a handful required students to take math courses that included the content typically found in Algebra I and Geometry.

High School Testing. College-bound high school students take a lot of tests, but few if any tell them if they are prepared for college-level work. In every state, students take state tests for school accountability purposes; in nearly half the states students must pass tests in order to earn a high school diploma. These tests are typically given in the tenth grade, and generally measure eighth and ninth grade level skills rather than the advanced reasoning and problem solving skills required for success in the college classroom. Not surprisingly, postsecondary institutions pay no attention to the scores students earn on these tests.

Students who make their way through these tests, graduate from high school, and enroll in college face a battery of placement tests, and some 30 percent learn only then that they are not yet "college-ready" and must take remedial rather than credit-bearing courses.

The American Diploma Project: Closing the Expectations Gap

Poorly aligned expectations need not be a permanent condition, though it requires a systemic solution. Governors and chief state school officers have critical roles to play in changing policies that affect K-12 education. However, without strategic leadership from the higher education community in each state, meaningful change will not occur. Over the past three years, 32 states – educating nearly three quarters of America's public school students – have joined the American Diploma Project Network, including Rhode Island, Massachusetts, Maine and Connecticut. State leadership from governors' offices, K-12, postsecondary and business formed the ADP Network to help advocate for, design and implement policies that will ensure that students leave high school prepared for college and careers.

Admission to the ADP Network requires the commitment of state leaders to align the expectations for graduating from high school with the demands of college and work. Specifically, the ADP Network states have committed to taking action on four policy priorities:

1. **Aligning high school standards with the knowledge and skills required for success after high school.** This requires anchoring high school standards to real-world college and workplace expectations.
2. **Requiring all graduates to take a rigorous curriculum, aligned with state standards that prepare them for life after high school.** ADP calls for four years of grade-level English, including literature, writing, reasoning, logic and communications skills; and four years of math, including courses that cover the content typically found in Algebra I and II, geometry, data analysis and statistics. The content matters most; course titles and Carnegie units are important only insofar as they effectively organize and help teachers deliver rigorous content.
3. **Streamlining the assessment system so that the tests students take in high school also can serve as placement tests for college.** This means that states should give all high school students an assessment—before their senior year—that measures readiness for credit-bearing postsecondary courses and 21st century jobs. Such assessments should enable schools to fill learning gaps prior to graduation, reducing the need for remediation, eliminating unnecessary tests and increasing the likelihood of postsecondary success
4. **Holding high schools accountable for graduating students who are ready for college and careers, and holding postsecondary institutions accountable for students' success once enrolled.** To do this, states must develop longitudinal data systems that track individual student progress, providing early warning indicators of students at risk of failing to graduate, and support effective transitions from secondary to postsecondary education and beyond.

Each state develops its own plan to carry out the shared policy agenda. Nationally, the leaders of the American Council on Education (ACE), the National Association of System Heads (NASH), and the State Higher Education Executive Officers (SHEEO) have joined with Achieve to promote higher education involvement in each ADP Network state's policy agenda.

Over the past several years, states have made considerable progress on key parts of this policy agenda. Currently 19 states, including Rhode Island, have aligned high school standards with postsecondary demands, and 22 states are in the process of doing so. Eighteen states and the District of Columbia have defined a core college and work curriculum and require students to complete that curriculum in order to earn a high school diploma, an increase of 15 states since 2005. Nine states administer high school assessments also used by higher education to place incoming students. Eight states report that they have P-20 longitudinal data systems in place, capable of tracking an individual student's progress from Pre-K through college graduation. These data systems are essential for system improvements and accountability.

Implications for Higher Education

Higher education systems and institutions have played critical leadership roles in the states that have made progress on the ADP policy agenda.

From their leadership we have learned it is essential for higher education to:

Establish a single statewide standard for college readiness for all 2- and 4-year public institutions. In many states private institutions will want to voluntarily participate in this effort. While it may seem difficult, higher education and high school faculty working together are quite capable of defining the essential knowledge and skills. Further, as more higher education systems adopt articulation and transfer agreements, defining common entry standards into credit-bearing courses helps promote a consistent level of learning within the courses.

Through the leadership of state higher education executive officers, Indiana, Kentucky, Georgia, and Rhode Island, among other states, have established statewide college-ready standards. They have accomplished this by bringing together faculty who teach first-year arts and science courses, those responsible for making placement decisions, and high school faculty, to review the work students do in introductory courses, the high school curriculum, data on the success of first year students, national models of college-ready standards developed by College Board, ACT and ADP, and other relevant evidence. Out of their efforts, the K-12 and postsecondary systems were able for the first time to adopt jointly-owned academic standards.

Work with the K-12 system to put in place eleventh grade tests that are aligned with state standards, and that can be used to inform placement decisions. Assessments define standards in concrete terms, and are used to set the level of performance that constitutes "good enough" against the standard. The state postsecondary system must work with the state secondary schools to identify and implement eleventh grade assessments, with a statewide cut score, that can provide individual students and postsecondary institutions with information that can be used to determine if a student is ready to take credit-bearing courses. There are a number of ways to do this.

The California State University System, working in partnership with the California Department of Education, has added additional items to the state's eleventh grade math and English school accountability tests to align the tests with CSU placement standards. The tests provide an early warning signal to students, who can take the additional items on a voluntary basis. CSU guarantees placement into credit-bearing courses to students who score well enough, and exempts them from additional tests to determine if they need remediation once enrolled. Perhaps more important, CSU has worked with secondary schools to provide senior year courses for students to make up skill deficiencies if they do not score well enough to meet the college ready standard. This approach should help reduce the need for remediation, though it is too early in the program to have data to bear this out.

Other states are taking different approaches. A number of states are incorporating the ACT or SAT into the state high school assessment system, since large numbers of students already take them. These admissions tests were not designed to be used as placement tests, though they often are. To be used effectively for these purposes and as an integral part of the high school assessment system, they may need to be augmented with additional items to align well with state standards (a process that Maine is engaged in with the SAT). In addition, state postsecondary systems must establish college-ready cut scores, and provide feedback about readiness (not just admissions) to students while they are still in high school.

Thirteen states, including Massachusetts and Rhode Island, have collaborated in the development of the American Diploma Project common end-of-course exam in Algebra II. This test, to be administered for the first time in the spring of 2008, will help schools improve curriculum and instruction, and will provide postsecondary institutions with results that can help determine readiness for credit-bearing courses.

Enable and encourage higher education faculty to work closely with high school faculty on curriculum issues. College faculty are in a unique position to help high school faculty understand deeply the knowledge and skills their students need to be well prepared for college. By working together to review college syllabi and examples of the work college students do in first year courses, high school teachers can get a much better sense of how to prepare their students, and how well they need to be prepared in order to succeed.

There is an emerging national consensus on the need for a rigorous system of high school graduation standards, curriculum and assessments aligned with college readiness, and growing momentum among the states to translate consensus into concrete action. Though our postsecondary and elementary and secondary education systems typically operate in isolation from each other, action at the state level is resulting in an unprecedented degree of cross-sector cooperation around these core issues. If policy action is to be translated into better results for students and institutions, the continued leadership of higher education will be essential.

The disconnect between postsecondary education and K-12 in academic expectations is one of the primary reasons for the poor preparation of so many high school graduates.

Michael Cohen *is president of Achieve, Inc. Email: mcohen@achieve.org*

Rethinking College Readiness

High schools need to graduate greater numbers of young people prepared for college and careers. But how should readiness be defined?

DAVID T. CONLEY

The likelihood that students will make a successful transition to the college environment is often a function of their readiness—the degree to which previous educational and personal experiences have equipped them for the expectations and demands they will encounter in college. A key problem is that the current measures of college preparation are limited in their ability to communicate to students and to educators the true range of what students must do to be fully ready to succeed in college. This article outlines a broader, more comprehensive conception of college readiness, one built on four facets: key cognitive strategies, key content knowledge, academic behaviors, and contextual skills and knowledge.

Cognitive Strategies. At the heart of college readiness is development of the cognitive and metacognitive capabilities of incoming students. These include analysis, interpretation, precision and accuracy, problem solving, and reasoning. Student facility with these strategies has been consistently and emphatically identified by those who teach entry-level college courses as being centrally important to college success.

Content Knowledge. Close behind in importance is knowledge of spe cific types of content knowledge. Several studies have led to college readiness standards that specify key content knowledge associated with college success. Writing may be by far the single academic skill most closely associated with college success, but the "big ideas" of each content area are also very important building blocks.

Academic Behaviors. Also contributing to student success is a set of academic self-management behaviors. Among these are time management, strategic study skills, and awareness of one's true performance, persistence and the ability to utilize study groups. All require students to demonstrate high degrees of self-awareness, self-control and intentionality.

Contextual Skills and Knowledge. Finally, an increasing number of studies have highlighted the complexity of the contextual knowledge associated with application and acculturation to college. The application process has a great deal of technical information associated with it, while the first-year college experience has a strong cultural component. Students who are the first in their families to apply to and attend college are particularly at a loss to deal with issues of this nature.

A Definition of College Ready

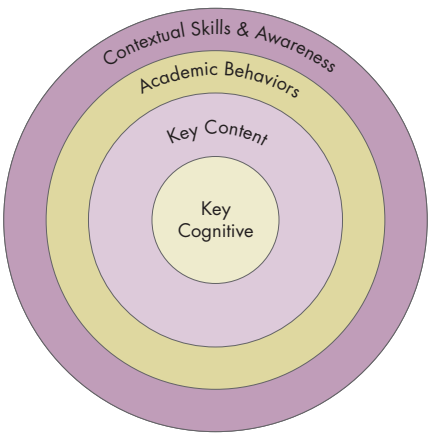
College readiness can be defined as the level of preparation a student needs in order to enroll and succeed—without remediation—in a credit-bearing general education course at a post secondary institution that offers a baccalaureate degree or transfer to a baccalaureate program. "Succeed" is defined as completing entry-level courses at a level of understanding and proficiency that makes it possible for the student to consider taking the next course in the sequence or the next level of course in the subject area. This conception uses as its reference point "best practices" entry-level courses as opposed to the stereotypical freshman course.

The college ready student envisioned by this definition is able to understand what is expected in a college course, can cope with the content knowledge that is presented and can develop as a result of the course the key intellectual lessons and dispositions the course was designed to convey. In addition, the student can get the most out of the college experience by understanding the culture and structure of postsecondary education and the ways of knowing and intellectual norms of this academic and social environment.

Components in a Comprehensive Definition of College Readiness

The college ready student is proficient in the four elements of the model presented here. Figure 1 demonstrates the relationship among the four facets of college readiness. This model derives from the author's research and related studies.

FIGURE 1: FACETS OF COLLEGE READINESS



The model argues for a more comprehensive look at what it means to be college ready and is explained in greater detail below.

Key Cognitive Strategies

The success of a well-prepared college student is built upon a foundation of key cognitive strategies that enable students to learn content from a range of disciplines. Some of the specific

key cognitive strategies identified as being most important to student success include the following:

Problem formulation and problem solving: The student develops and applies multiple strategies to formulate and solve routine and non-routine problems, and selects the appropriate method for solving complex problems that require method-based problem solving.

Research: The student engages in active inquiry and dialogue about subject matter and research questions and seeks evidence to defend arguments, explanations or lines of reasoning. The student documents assertions and builds an argument that extends from previous findings or arguments. The student utilizes appropriate references to support an assertion or a line of reasoning. The student identifies and evaluates data, material and sources for quality of content, validity, credibility and relevance. The student compares and contrasts sources and findings and generates summaries and explanations of source materials.

Reasoning, argumentation, proof: The student constructs well-reasoned arguments or proofs to explain phenomena or issues, utilizes recognized forms of reasoning to construct an argument and defend a point of view or conclusion, accepts critiques of or challenges to assertions, and addresses critiques and challenges by providing a logical explanation or refutation, or by acknowledging the accuracy of the critique or challenge.

Interpretation: The student analyzes competing and conflicting descriptions of an event or issue to determine the strengths and flaws in each description and any commonalities among or distinctions between them. The student synthesizes the results of an analysis of competing or conflicting descriptions of an event or issue or phenomenon into a coherent explanation. Based on available evidence, the student states the interpretation that is most likely correct or is most reasonable. The student presents orally or in writing an extended description, summary and evaluation of varied perspectives and conflicting points of view on a topic or issue.

Precision and accuracy: The student knows what type of precision is appropriate to the task and the subject area, is able to increase precision and accuracy through successive approximations when a task or process is repeated, and uses precision appropriately to reach correct conclusions in the context of the task or subject.

At the heart of college readiness is development of the cognitive and metacognitive capabilities of incoming students. These include analysis, interpretation, precision and accuracy, problem solving, and reasoning.

These key cognitive strategies are broadly representative of the foundational elements that underlie various "ways of knowing." They are at the heart of the intellectual endeavor of the university. They are necessary to discern truth and meaning as well as to pursue them. They are at the heart of how postsecondary faculty members think about their subject areas.

Academic Knowledge and Skills

Academic knowledge and skills consist of big ideas, key concepts and vocabulary that create the structure of the various disciplines and subjects.

Core Academic Subjects Knowledge and Skills

English: The knowledge and skills developed in entry-level English courses enable students to engage texts critically and create well-written, organized and supported work products in both oral and written formats. The foundations of English include reading comprehension and literature, information gathering, writing, editing, analysis, critiques and connections. To be ready to succeed in such courses, students need to build vocabulary and word analysis skills, including roots and derivations. Similarly, students need to utilize techniques such as strategic reading that will help them understand a wide range of non-fiction and technical texts.

Math: Students with a thorough understanding of the basic concepts, principles, and techniques of algebra are more likely to succeed in an entry-level college mathematics course. College-ready students possess more than a formulaic understanding of mathematics. They have the ability to apply conceptual understandings in order to extract a problem from a context, to solve the problem and then to interpret the solution back into the context.

Science: College science courses emphasize scientific thinking in all its facets. This includes the communication conventions followed by scientists, the way that empirical evidence is used to draw conclusions, and how such conclusions are then subject to challenge and interpretation. Students come to appreciate that scientific knowledge is both constant and changing at any given moment. Students grasp that scientists think in terms of models and systems as ways to comprehend complex phenomena.

Social Sciences: The social sciences entail a range of subject areas, each with its own content base and analytic techniques and conventions. The analytic methods that are common across the social studies emphasize the skills of interpreting sources, evaluating evidence and competing claims, and understanding themes and events within larger frameworks or organizing structures. The social sciences consist of certain "big ideas" (theories and concepts) that are used to order and structure all of the detail that often overwhelms students.

Academic Behaviors

Key academic behaviors include self-awareness, self-monitoring, and self-control. These tend to transcend content areas.

Self-management is a form of metacognition, the act of thinking about how one is thinking. Examples of some key self-management skill areas include: awareness of one's current level of mastery and understanding (and misunderstandings) of a subject; the ability to reflect on what worked and what needed improvement regarding a particular academic task; the ability to persist when presented with a novel, difficult or ambiguous task; the tendency to identify and systematically select among and employ a range of learning strategies; and the capability to transfer learning and strategies from familiar settings and situations to new ones.

Another important set of academic behaviors is student mastery of study skills necessary for college success. Important study-skill behaviors include time management, stress management, task prioritizing, using information resources, taking class notes, and communicating with teachers and advisors. An additional critical skill is the ability to participate successfully in a study group and to recognize the potential value of a well-structured study group.

Time management is perhaps the most foundational of all the self-management and study skills. Examples of time management techniques and habits include: accurately estimating how much time it takes to complete all outstanding and anticipated tasks and allocating sufficient time to complete the tasks, using calendars and creating "to do" lists to organize studying into productive chunks of time, locating and utilizing settings conducive to proper study, and prioritizing study time in relation to competing demands such as work and socializing.

College-ready students possess more than a formulaic understanding of mathematics. They have the ability to apply conceptual understandings in order to extract a problem from a context, to solve the problem, and then to interpret the solution back into the context.

Contextual Skills and Awareness

College knowledge consists of the privileged information necessary to apply successfully to college, gain necessary financial aid, and then, subsequent to matriculation, understand how college operates as a system and culture.

Students must master the information, formal and informal, stated and unstated, necessary to be eligible for admission, select an appropriate postsecondary institution, gain admission to a college and obtain financial aid. This knowledge is distributed inequitably in society.

Success in college is enhanced for students who possess the knowledge and skills that enable them to interact with a diverse cross-section of academicians and peers. These include: the ability to collaborate and work in a team, knowledge of the norms of the "academic" culture and how one interacts with professors, administrators and others in that environment, the ability to be comfortable around people from different backgrounds and cultures, the ability to take advantage of academic and personal support resources available on most campuses, and the ability to demonstrate leadership skills in a variety of settings.

Conclusion

Clearly, far fewer students are truly ready for college when measured against this multi-dimensional model than when judged by current conventional measures of courses taken and grades received in high school. The goal of presenting a more comprehensive model of college readiness is to highlight the gaps that exist between *college-eligible* and *college-ready*.

Colleges can take steps to ensure that more students are college ready. First, colleges should adopt a set of college readiness standards that specify the key cognitive strategies and content knowledge that incoming students are assumed to know. Second, colleges should be clearly focused on enabling students to develop the key cognitive strategies, key content knowledge and self-management skills necessary for college success. Third, colleges need to work to simplify the application and financial aid process and to provide better support services for these students.

By adopting the four-part conception of college readiness presented in this article, high schools and colleges can communicate in the same terms what it takes for students to be ready for postsecondary education. Making certain that they are not just eligible, but prepared, will help students achieve their goals and help colleges function better.

Clearly, far fewer students are truly ready for college when measured against this multi-dimensional model than when judged by current conventional measures of courses taken and grades received in high school.

David T. Conley *is director of the Center for Educational Policy Research, University of Oregon, and CEO of the Educational Policy Improvement Center. This article is adapted from Conley, D.T. (2007):* Toward a comprehensive conception of college readiness. *Eugene, Oregon: Educational Policy Improvement Center. Email: conley@uoregon.edu*

Where Do We Go From Here?

Reducing inequities and today's changing demographic.

JAMIE P. MERISOTIS

At the Harvard commencement last year, Bill Gates gave a remarkable speech, one that you may have read about in the coverage that followed. It was a speech in which Gates made clear that his own sense of achievement is not clouded by the fact that he has become one of the wealthiest humans in history. He had this wonderful, powerful line in the speech: "Reducing inequity is the highest human achievement." Gates knows a lightning bolt struck him, that his experience is not the norm but the amazing exception. He recognizes that the problems of global health in this world, the challenges of alleviating poverty and despair, and the wide disparities in educational attainment require significant investment by those with the capacity to change lives—the philanthropic sector, government and private industry. In the speech, Gates made clear that despite his own unique experiences, he understands that higher education is critical to reducing inequities because we have clear evidence that it has enormous individual and public benefits that more than compensate for the up-front investment.

The simple fact remains that increasing educational opportunities for all Americans results in tremendous public, private, social and economic benefits. We know that workers who have gone to college tend to have higher salaries, higher savings, and more overall productivity professionally and personally, and better health and life expectancy. Higher earnings for college graduates result in more revenue for government expenditures through increased tax collections. Increasing the number of college graduates saves millions of dollars in avoided social costs as a result of improved health, lower crime, and reduced welfare and unemployment. The social benefits from higher education range from higher voting rates to more charitable giving and volunteerism. In short, by investing in our fellow Americans who might not otherwise go to college, we are investing in our united future and well being. It's not simply that it's the right thing to do, but that it is in our collective economic and social self-interest to do so. These important public and private benefits of higher education represent critical pillars in the foundation of an innovative and qualified national workforce, a secure economy and a robust democracy.

Moving the needle on student access and success

For those who know the work of the Institute for Higher Education Policy, you are no doubt familiar with our deep experience in linking the public and private benefits of higher education to an array of policy work at the federal and state levels. That work is ongoing —but where do we go from here? At IHEP we are now engaged in two very specific dimensions that are focused on the context within which American higher education is operating, and what we might learn to both respond to the challenges of student access and success and turn them into opportunities. One is the changing demographic of the nation and what we might learn from those institutions that are already educating large numbers of historically underrepresented students; and the other is the global dimensions of higher education and what we might learn from the experiences of other nations as they seek to transform their higher education systems. My simple thesis is that if we really want to start grappling with the large scale issues of moving the needle on student access and success, we need to start looking in places where we have not looked before for answers and ideas that will result in measurable change.

As we gaze into the future, we can see clearly that our future workforce will require large numbers of college-educated workers, most of whom will come from families that currently do not participate in higher education at sufficient levels to meet that future workforce need. We've already seen tremendous demographic changes in our nation over the last two decades, with the juggernaut of the booming Latino population, continuing increases in the African American and Asian American/Pacific Islander populations, and even growth in the often marginalized Native American population. Of particular importance is the fact that the under-24 youth population, together with the early adult populations in the 25 to 44 year old age group, all will see real declines among whites by 2020, while Hispanics, African Americans and other populations—including Asian Americans and Native Americans—will increase significantly.

Another important trend is the changing geographic center of the nation. As the nation's population has expanded to just over 300 million people, the population has consistently shifted west and south over the course of the last century, with the highest population declines experienced in the northeast. Today, we see significant numbers of college students in the northeast and particularly the New England states in terms of total enrollments. But given these overall population trends, I think it's fair to say that the days are numbered for the continuing northeastern domination of the nation's higher education system. It's unlikely that the northeast will be able to maintain this share of the national higher education market without some substantial changes in marketing, recruitment and fundraising strategies.

Increasing numbers of students of color

In the New England states, current projections indicate a substantial decline in high school graduates between now and 2020. That decline is entirely driven by falling numbers of white high school graduates. But even for the fast-growing Hispanic and Asian American populations, the increase in high school graduates will be fairly modest compared to other parts of the nation. In short, there will plainly just be fewer students from the New England states in general whom we can draw from in terms of our potential future student cohorts.

Lessons learned from the BEAMS project

So in thinking about how we might find solutions to these looming challenges, it will be important to look in new and different places, to take a sort of 360 degree inquiry model approach to problem solving, rather than one that focuses on intriguing and sometimes spectacular examples that often cannot be brought to scale. One way of doing this is to look at institutions that traditionally have not been our usual exemplars. For example, I have come to believe that no group of institutions does more to promote the dual goals of investing in students who might not otherwise go to college and ensuring accountability to those students than Minority-Serving Institutions (MSIs). Tribal Colleges and Universities (TCUs), Hispanic-Serving Institutions (HSIs), and Historically Black Colleges and Universities (HBCUs) and other predominantly black institutions, which collectively are referred to as MSIs, represent some of the nation's most important but underserved postsecondary education resources. Combined, more than 2.3 million students are educated by these institutions, or about one-third of all students of color. These numbers have been growing rapidly in recent years as increasing numbers of students of color seek opportunities for a college education.

Most MSIs provide postsecondary education opportunities specifically tailored to low-income, educationally disadvantaged students. Forty-four percent of students enrolled at MSIs are from families in the lowest income quartile, compared to 24 percent enrolled at all institutions. The fact that nearly half of all full-time students enrolled at MSIs receive Pell Grants, compared to only 31 percent of all students enrolled in higher education, is evidence of the high financial need of MSI students and the critical importance of grant aid to their educational endeavors.

At the Institute for Higher Education Policy, we have had an interesting and informative experience with these issues as a result of our deep collaborations with a wide array of minority-serving institutions and organizations that serve their interests. One illustration of this work is what is known as the Building Engagement and Attainment for Minority Students (BEAMS) initiative. BEAMS was structured as a five-year project intended to foster data-driven campus change initiatives at HBCUs, HSIs, and TCUs. The BEAMS project helps participating MSIs to

The Bologna Process

It's a process, not processed meat.

My IHEP colleague Clifford Adelman, known for his groundbreaking research work in his former life at the U.S. Department of Education, is heading up this new line of inquiry. Cliff's recent speech about Bologna around the country, titled "Bologna Is a Process, Not a Processed Meat," gives you some sense of his views about our current state of knowledge in the U.S. about these important changes taking place in Europe.

The Process, established originally by 29 education ministers in 1999, has many important dimensions. While the establishment of a European Higher Education Area that is globally competitive and influential lies at its core, the revolution seeks to develop a lifelong dynamic of certification, credentialing, and documentation of knowledge and skills that is sufficiently transparent to be recognized and linked to the labor market across borders. It involves at least ten different dimensions:

1. An 8-level "European Qualifications Framework" (EQF) that encompasses both higher education and occupational training;
2. The refinement of national qualifications frameworks to reference the EQF levels;
3. Common course and training credit systems (ECTS) based on student workload, a very different approach to time-on-task than that of the U.S. credit currency;
4. "Zones of Mutual Trust" that facilitate student mobility from institution-to-institution and from country-to-country;
5. Diploma Supplements that document the content of degrees;
6. "Europass" that combines standard curriculum vitae with a "language portfolio" and Diploma Supplements as a living, accessible individual record of lifelong learning;
7. A learning outcomes approach to all documentation of credentials;
8. The evolution of quality assurance processes to assure the comparability of credentials across borders;
9. A continent-wide supporting information system devoted to the assessment and recognition of qualifications; and
10. A supportive Tuning Educational Structures project that works with individual institutions of higher education to produce comparable curricula, a common course and training credit systems methodology and statements of student learning outcomes.

enhance their capacity to collect and use data for institutional decision-making and accountability, and to create a "culture of evidence" where research and data are key forces behind campus change. Early next year, IHEP will be publishing a monograph that details some of the many ways that MSIs have seen success, including increases in short-term retention and NSSE scores, changes in institutional decision-making either through the use of more data or through collaboration across campus, receiving additional external funding in part because BEAMS action plans help address pressing and pertinent needs, and regional and national recognition for the work undertaken through the BEAMS project.

Pressure from China

I think the key point here is that the lessons learned from BEAMS can be helpful for MSIs and non-MSIs alike, as they consider how to build their own institutional capacity for using data to improve student retention and degree attainment. This is an exciting and largely uncharted area where new and important lessons can be learned to improve student success.

Where else can we look for models and ideas? If you consider what our national needs are in the specific sense of human capital, it's clear that we are looking at an enormous shortage of skilled workers in the not-too-distant future. Already, we are seeing corporations recruiting heavily overseas in critical workforce sectors like technology, and by 2020 we will be looking at a gap of about 14 million people to fill jobs that require a college education. Unless we plan to radically alter our immigration policies—an unlikely scenario in the current political context—we will need to significantly increase the number of people who go to college. Just a decade ago, China educated less than one half of the total people enrolled in higher education compared to the U.S. Today, China has the largest higher education system in the world, having surpassed American enrollments sometime in the last two years. The global economic marketplace for university-educated personnel will soon be exerting tremendous pressure on the past dominance of the U.S. system.

We can learn from Europe

Perhaps the best example of where we can learn from the experiences of other nations is the treasure trove of knowledge to be gleaned from what has happened in European higher education as a result of the Bologna Process, a revolution involving 45 countries, 16 million students, and 4,000 institutions that have all agreed to adopt common rules for degrees, credits, credentials and communication of student outcomes. In dimensions that cut across language and culture, and in ways that are turning some of the world's most change-averse higher education institutions in radically new directions, Bologna represents, in my view, the most important, coordinated strategy to create change in higher education anywhere in the last 50 years. (See sidebar, "*The Bologna Process*," p. 28.)

IHEP has launched an initiative to create a new understanding of this rapidly changing global context for higher education learning and credentialing and the impact of these changes on U.S. higher education. "The Measuring Global Performance Initiative" is focusing on two key areas of inquiry: The first is better understanding and interpreting for an American audience what has been unfolding in Europe over the past decade under the Bologna Process, the details and challenges of which are largely unknown to U.S. policymakers or which have been caricatured as having something to do with three-year degrees. And the second is the nature of comparative educational attainment data for adult populations that are commonly cited by U.S. policymakers to steer both public opinion and the U.S. regulatory environment.

The Gates doctrine and beyond

Not all that is taking place in Europe or for that matter in any other part of the world is comparable or directly transferable to the U.S. context. But already, we are beginning to see some important aspects of the work taking place under the Bologna Process that might drive new and innovative thinking here in the U.S. Among these possible changes are: developing detailed and public degree qualification frameworks in students' major fields; revising the reference points and terms of our credit system; introducing a new class of postsecondary learning credentials; refining our definition and treatment of part-time students; and developing a distinctive version of a diploma supplement that summarizes individual student achievement.

Bill Gates' simple declaration that our measure of success as human beings should be driven by a willingness to reduce inequity and thereby contribute to our collective well being is an important goal to achieve.

The two illustrations I have used—looking at the experiences of minority-serving colleges and universities, and examining the large-scale changes taking place in higher education in other parts of the world—are certainly not the only new areas for inquiry. For example, we might want to recognize that higher education is an industry that can learn from other industries. We might want to examine the experiences of the health care industry, the banking and finance sectors, and the other service sector industries to explore how they have addressed both pricing and cost issues and to learn from both their successes and failures. Similarly, we might look to the model of the U.S. military and its efforts to educate large numbers of highly mobile, part-time, diverse populations.

These and other new avenues may help to provide new ideas, motivation, and inspiration for our work in higher education at a time when so much is at stake for our national well being.

Jamie P. Merisotis *is former president of the Institute for Higher Education Policy and was named president and CEO of the Lumina Foundation for Education in January 2008. This article is adapted from a keynote address delivered in Nov. 2007. Email: jmerisotis@luminafoundation.org*

Why Is Student-Level P-20 Data Sharing Important?

What New England can learn from the Data Quality Campaign

NANCY J. SMITH

Many states currently share information between P-12 and higher education; however, the resulting reports are usually based on aggregate counts of students instead of individual student data. For example, in many states higher education institutions provide "high school feedback" reports to individual high schools that include figures such as the total number of the school's graduates enrolled in that institution and the percentage of those students enrolled in college remediation courses. While useful to administrators, these reports can be enhanced significantly when supported by student-level information.

As of the 2007 Data Quality Campaign (DQC) annual survey, 22 states reported having the ability to share P-12 student- level data with higher education systems. With the ability to match *student-level* records between P-12 and postsecondary systems, policymakers and educators will be able to know, for example:

- The percentage of each district's high school graduates who enrolled in public higher education institutions within 15 months after graduation, so that the data can be analyzed by student demographics or special services received.
- The percentage of last year's graduates from each high school or school district who needed remediation in college, and how this percentage varied by student poverty status and ethnicity.
- The percentage of students who met the proficiency standard on the state high school test and still needed remediation in the same subject in college.
- How students' ability to stay in and complete college is related to their high school courses, grades and test scores.
- The percentage of students receiving special education services in P-12 who go on to public higher education institutions in the state.

The desire and commitment to answer questions such as these require a general culture change among educators and policymakers throughout the P-20 spectrum across the country in terms of how they view and use data systems.

Educators and policymakers are realizing the power of using data beyond the purpose of meeting state and federal reporting requirements. To support national and state goals to increase student achievement, education leaders are increasingly acknowledging the key role of data, not only for accountability and transparency, but also to inform continuous improvement.

Student-level longitudinal data should be collected and used for strategic planning of course offerings, both in P-12 and higher education, cost-benefit analysis of district and school-level programs and evaluation of course and program effectiveness. In addition, with the ability to connect P-12 student data to higher education data and teacher data, a state can evaluate the effectiveness of its teacher preparation programs.

P-20 systems can create a rich picture of student progress and school, district, and program performance. Longitudinal data helps monitor student progress across years, diagnose difficulties in specific areas of learning and prescribe interventions, conduct internal (to the school or district) and external benchmarking studies, predict which students are likely to succeed at the next level, and evaluate school, district and program effectiveness.

Observed Challenges to Forming a P-20 Data System

1. *Perceived barriers due to Family Educational Rights and Privacy Act (FERPA) regulations inhibit data sharing.*

In recent years, as more states have begun to build student-level longitudinal data systems, increased attention has been focused on clarifying FERPA and its regulations about using and sharing data. FERPA was enacted in a time when local education agencies (LEAs) were the primary collectors and users of student data, before state education agencies (SEAs) found it necessary to collect individual student data to fulfill U.S. Department of Education (USED) reporting requirements and long before technology provided the hardware and software to collect, clean, analyze and report massive amounts of data at a time. The economies of scale that current technology allows SEAs to provide their LEAs and the emphasis on using data for outcomes-based research have enabled a huge shift in the culture of education, but the FERPA language has not experienced a similar shift to address current goals, concerns and abilities in terms of educational data use.

In order to help states navigate the ambiguous and sometimes-conflicting rules, the DQC, through the Washington, D.C law firm of Holland and Knight,

In general, the SSN is collected but is not used as the primary unique student ID for a variety of reasons. For privacy and data quality purposes, it is recommended that states randomly assign each student a unique student ID.

LLP, conducted a detailed analysis of FERPA in relation to student-level longitudinal data systems. (See *Maximizing the Power of Education Data while Ensuring Compliance with Federal Student Privacy Laws: A Guide for Policymakers*, online at www.dataqualitycampaign.org.

Essential findings in analysis of FERPA:

- Sharing student data that are not personally identifiable is permissible.
- Even in instances in which personally identifiable information on students is shared, there are several types of disclosures that are permissible:
  - Evaluating/auditing state and local programs and implementing school and district accountability;
  - Monitoring and analyzing assessment, enrollment and graduation data;
  - Performing studies to improve instruction; and
  - Sharing student records among schools.

2. *Perceived problems with collection of student Social Security numbers (SSN) affects matching data between P-12 and higher education.*

Many states make the collection of the SSN an option for schools and parents, while others have policies in place that prevent the collection of the SSN. Rarely is the SSN used as the primary unique student identifier (ID), even in states that do collect it. Other than state-specific laws or policies, however, there are no strong objections from experts in the education data community to collect and use the SSN as one of a series of identifiers when assigning unique student IDs and matching student records over time and/or across schools or districts.

In general, the SSN is collected but is not used as the primary unique student ID for a variety of reasons. Primarily, there are concerns about student privacy, but there are also data quality concerns since not all students have an SSN and parents sometimes provide the same SSN for all students in their family. So, for privacy and data quality purposes, it is recommended that states randomly assign each student a unique student ID.

The SSN, while not 100 percent unique, does increase the probability of tracking the same student across databases. States usually use an algorithm of matching identifiers such as first name, middle initial, last name, date of birth, gender and SSN to create a unique ID. Given the plethora of common names and dates of birth (especially considering twins or other multiple births) and the existence of data entry errors, as well as the high mobility levels among students, it behooves each state to include as many options for identifying each particular student as possible. Analyses conducted in some states indicate that including the SSN in the matching algorithm significantly increases the match rate of student records from different sources.

The onus, then, if SSNs are included in the database, is on the data collectors, users, and researchers to make sure that they apply due diligence to not inadvertently release the SSN or any other personally identifiable information.

3. *Data system infrastructure is decentralized.*

Many SEAs are currently undergoing significant technology and cultural changes to accommodate a student-level longitudinal data system. Historically, data systems within the SEAs have been decentralized, such that each program area (e.g., Title I, Special Education, English Language Learner/Bilingual) have collected their own data from school districts—often duplicating efforts. Usually, the information technology division also has periodic data collections to meet other reporting and information needs.

This type of data system infrastructure makes data sharing, analysis and reporting problematic, since different areas sometimes produce conflicting reports because they are not each using the same source data file and often ask for similar information in different ways. By having a centralized data collection system at the student-level that is used to feed each program area's analyses, the SEA is more likely to reduce the burden on district, free up staff time from so many data collections, and have more accurate data and reports.

Similarly, at the postsecondary level, if public postsecondary institutions fed their student-level data into a centralized higher education student data system, it would be easier to conduct research, create standardized reports, reduce analytical burdens across institutions, and share data with the P-12 arena.

Actions to Ensure Sustained P-20 Student-Level Data Sharing:

1. *Foster political buy-in from all levels of ongoing support to ensure that it remains after personnel and leadership changes.*

There should be a consistent mission and goal within the education community—from the governor, legislature, postsecondary regents and institutions to the state board of education, SEA and down to the local education agencies—that data are important and will be used to inform policy and funding decisions and improve student achievement and teacher effectiveness from P-12 through higher education. Without a common message and purpose about the value of data, it is unlikely that all stakeholders will work from the same perspective to create and use a true information system.

The P-20 Councils, SEAs and postsecondary organizations need on-going support to keep the P-20 data sharing initiative functioning and up-to-date over time. Whether or not the council and support for longitudinal data systems are provided for in state statutes, there should be clear and institutionalized statewide support from policymakers that is sustained long-term to prevent the weakening of the longitudinal systems and data-driven decision-making after a change in statewide leadership, such as a change in governor or commissioner of

either higher education or elementary and secondary education.

2. *Designate one or more organizations to act as an authorized evaluator/researcher of student and teacher data for the purpose of improving student achievement.*

The SEA and the state's higher education coordinating board each have a critical responsibility to evaluate their respective student data to ensure continued student achievement. By sharing data and working together and/or with other research organizations or state agencies, they should benefit from each others' resources and expertise to gain a broader and deeper understanding of the effectiveness of the education system the state.

If the SEA does not have the capacity or staff skill set to conduct thorough research and evaluation activities, they can designate the higher education coordinating board or a postsecondary institution as an authorized evaluator of student data (P-20) in order to abate perceived FERPA obstacles.

3. *Establish a Memorandum of Understanding (MOU) between P-12 and higher education to share data.*

This MOU should specify what data elements will be shared with whom and by whom, the timeline for and frequency of sharing specific files, and the products (e.g., reports, datasets) that higher education and P-12 will produce for each other to enable their own research or reporting activities, as well as any limitations on how the data will be used and shared by each partner.

4. *Create a technical subcommittee to P-20 council.*

A technical subcommittee comprised of technology and information systems staff and program area representatives from both higher education and P-12 should be formed to work through the logistics of how to match and share the data, as well as develop common data definitions and discrepancies that will affect interpretation.

If public postsecondary institutions fed their student-level data into a centralized higher education student data system, it would be easier to conduct research, create standardized reports, reduce analytical burdens across institutions, and share data with the P-12 arena.

We frequently hear business people and postsecondary educators say that high school graduates come to them unprepared to succeed at the next level. Educators and administrators say that their graduates have passed the statewide assessments and met the state-defined diploma requirements. If both statements are true, where is the crack in the system?

In order to find the crack and figure out how to fix it, educators, policymakers and analysts need to work together to ask some probing questions and evaluate the data. Before the appropriate analyses can occur, however, we need to make sure that our educational data systems in both the P-12 and postsecondary arenas are robust enough to track students' educational and performance histories and can be connected across the education pipeline.

Without robust, student-level data systems, it will not get any easier to determine why the postsecondary community says that students come to them unprepared, even though students have received a CCR-driven diploma. Without the ability to know which classes a student took, what grades they received, and how well they did on high school exams and the ability to connect that information to how the student performed in higher education, the most we can say is that some students are ready and some students are not.

The conversation about why students are not ready for college and the workforce has gone beyond just an educational topic; it is concern for state and national economic development. The student-level longitudinal data systems are essential to informing educational policy and practices at both the local and statewide levels.

Nancy J. Smith *is deputy director of the Data Quality Campaign. She oversees the operations of the Data Quality Campaign (DQC) at the National Center for Educational Achievement (NCEA), including research, newsletters, publications and the annual survey of state data systems. Email: nancy@dataqualitycampaign.org*

Hitting Home: New Postsecondary Realities for New England—and the Nation

BY TRAVIS REINDL

Over the past half-century, New England's colleges and universities—and their counterparts across the nation—have made great strides in serving a growing and diversifying population. This unprecedented expansion of college opportunity has paid large economic and social dividends, and it must continue.

But we must be prepared to continue that expansion in the face of new and challenging realities. New England and the nation as a whole face intensifying global competition and rapidly growing demands for a skilled workforce. Yet disparities in educational opportunity and degree completion linger, even as more Americans than ever recognize that education beyond high school is essential to their economic and social well being.

Significant increases in spending by students and taxpayers have not moved the needle: the percentage of adults with a college degree has changed little over the past decade. While we must continue to invest in higher education, we cannot award the number of degrees needed to be competitive and expand opportunity without increasing productivity—generating more degrees for the dollars we spend.

Boosting productivity is a national imperative that must be addressed at the regional and state levels. The New England states bring particular advantages and obstacles to this effort, and political, educational, and community leaders must recognize these as they consider new ways to fund, deliver, and measure higher education. The time to act is now, because key trends suggest that we are living on borrowed time.

Why Productivity? Why Now?

We must come to terms with four converging trends that spell serious trouble for "business as usual" for higher education and underscore the need to think in terms of productivity.

1. Educational Attainment Is Leveling Off. The U.S. has reached a plateau in the percentage of adults age 25-64 with a college degree, while other nations are making rapid gains. According to the Organisation for Economic Cooperation and Development (OECD), the U.S. has now fallen to tenth among industrialized nations in the percentage of 25-34 year olds with a college degree. Perhaps more troubling is the fact that younger adults (age 25-34) now post a lower educational attainment rate than older adults (age 35-44).

This slippage is due in part to poor degree completion rates. OECD also reports that the U.S. is tied for last among industrialized nations in the percentage of entering students that complete degree programs (54 percent, compared with the OECD average of 71 percent). Even though our institutions are enrolling record numbers of students, we are treading water on educational attainment because too many students fail to make it from orientation to graduation.

While New England leads the nation in postsecondary attainment, the region still falls short of where it will need to be to meet workforce demands and compete with best-performing nations. According to estimates by the National Center for Higher Education Management Systems, states should be aiming to have 55 percent of its adult population with college degrees by 2025 to be competitive. Today, none of the New England states have reached that benchmark, and assuming "business as usual" in degree production between now and 2025, only two states (Massachusetts and Rhode Island) are on track to do so. This assumes, however, that these states will maintain their degree production rates for a more diverse population, which is a big assumption.

2. A New Population Is Facing Old Inequities. The face of New England, like the rest of the nation, is changing rapidly. These changes have serious implications for efforts to increase college access and success within an environment of limited resources. Simply put, two of the groups slated for the fastest growth over the next two decades—students of color and adult learners—are underrepresented and underserved in higher education.

New England is becoming more racially and ethnically diverse. According to the U.S. Census Bureau, the number of whites age 18-44 will decline by just under 275,000 between 2005 and 2025. Over the same period, the number of Hispanics in that age group will increase by the same amount, and the number of African Americans will increase by nearly 80,000. But in America today, 42 percent of whites age 25-64 have a college degree, compared with 26 percent of African Americans and 18 percent of Hispanics. This makes it clear that competitiveness demands a concerted focus on equity of educational opportunity.

New England also is getting older. Between 2005 and 2025, half of the New England states (Maine, New Hampshire, and Vermont) will see their 18-24 year-old populations shrink, but all will see increases among adults 25 and older. Any competitiveness

Significant increases in spending by students and taxpayers have not moved the needle: the percentage of adults with a college degree has changed little over the past decade.

strategy for the region must include plans for reaching adult learners, who generally attend and complete college at lower rates than their younger counterparts.

3. Higher Education Finance Is Reaching a Turning Point—or a Breaking Point. Two questions loom large in this area: 1) How much can colleges and universities reasonably expect in the way of additional revenue in the short and longer terms? and 2) How are students' and taxpayers' investments translating into more degrees?

On the "how much" front, the picture is not terribly rosy, particularly for public colleges and universities. In the short term, the specter of recession is already impacting state budgets, meaning that higher education is once again likely to feel the pinch. Looking ahead, the demands associated with an aging population, deteriorating roads and bridges, and overcrowded prisons will make it even more difficult for campuses and systems to compete for funding.

But perhaps more important—and less discussed—are the questions related to how much institutions spend and on what. Today, the U.S. spends nearly three times per student as the average industrialized nation, even as the percentage of adults with a college degree levels off. At the same time, there appears to be a strong "don't ask, don't tell" worldview in academe when it comes to spending or spending in relation to results. A 2007 survey by the Association of Governing Boards of Universities and Colleges found that fewer than half of the 700 responding institutions had presented per student spending data to their governing boards in fiscal year 2006.

What we are now learning in the area of spending should give us pause. Preliminary research from the Delta Project on Postsecondary Costs indicates that there is little evidence to suggest that institutional spending increases have either positively or negatively affected degree completion rates. This may be due in part to the fact that the bulk of increased spending over the past decade has not gone into classroom instruction, but into areas such as administration and institutional aid (which is increasingly awarded on the basis of academic merit). The bigger implication is that institutions do not have investment strategies that explicitly focus dollars on getting more students successfully through college. There is much more that we need to understand in this area, but we must start by legitimizing the cost conversation.

It is easy to see that we need more degrees for the dollars we spend and easy to say that we want more degrees for the dollars we spend, but how do we make that happen?

4. Public Anxiety and Political Pressure for Change Are Rising. There is mounting evidence that colleges and universities will face increasing scrutiny and calls for changes in the way they do business. Opinion research from the National Center for Public Policy and Higher Education and Public Agenda reveals that the percentage of Americans believing that qualified students are being denied college opportunity because of cost has reached an all-time high of 62 percent. Moreover, a majority of Americans (56 percent) feel that colleges and universities could expand access without significantly increasing costs, and Americans are equally divided on the question of whether more spending by colleges and universities is resulting in more learning by students.

State and federal policymakers are also getting into the act. In its final report, *A Test of Leadership*, the Secretary of Education's Commission on the Future of Higher Education called on colleges and universities to become more productive by focusing more on results than reputation. The National Conference of State Legislatures echoed that call through its Blue Ribbon Commission on Higher Education, urging lawmakers to shift state policy conversations from "spending more money" to "spending money more efficiently."

A Productivity Agenda: More Degrees for the Dollars We Spend

It is easy to see that we need more degrees for the dollars we spend and easy to say that we want more degrees for the dollars we spend, but how do we make that happen? Advancing a productivity agenda requires three fundamental commitments:

1. Measure what matters. Look at any higher education report card or data system, and you will find a lot about what comes in—revenues and enrollments—but comparatively little about what goes out:spending and degrees. States need to establish compelling and transparent goals for reducing cost per degree and increasing degree attainment for historically underrepresented groups—low-income and first-generation students, students of color, and adult learners. These goals need to be accompanied by clear progress indicators that are reported annually and publicly. These goals and measures should figure prominently in accountability reports and be used by governors, legislators, and campus and system governing boards in strategic planning and budgeting processes.

2. Fund what matters. Money is the single largest determinant of institutional behavior, so we should not be surprised by lagging completion rates and lingering disparities in educational attainment when our finance system emphasizes enrollment over completion and academic profile over access. States that are serious about boosting productivity and expanding opportunity must be prepared to change their funding models to allocate a portion of institutional appropriations based on persistence and completion, focus-

ing on historically underrepresented groups. Additionally, states need to review and revise their funding strategies to ensure that efforts to expand enrollment capacity are cost-effective and responsive to demographic realities and regional needs (i.e., looking beyond more bricks and mortar).

Institutions should be encouraged to audit their curricula to contain "credit creep," to outsource or eliminate low-enrolled courses and programs, and to redesign introductory level courses using technology to improve learning while reducing the cost of delivery.

3. Do what matters. Campuses, systems, and states are currently involved in a number of efforts to increase efficiency and smooth the path to a degree. The challenge now is to expand and sustain these efforts, changing regulations, policies, and practices to provide real incentives for boosting cost-effectiveness and reinvesting the savings in proven approaches for increasing degree completion. This work falls into three broad categories:

- **Operations and infrastructure**. While colleges and universities have made considerable progress in streamlining their back office functions, more must be done in this area. Opportunities include consolidating and outsourcing administrative functions, improving the use of campus facilities, and revamping regulations that create ten dollars worth of paperwork for a five-dollar purchase.
- **Academic programming**. Efforts to boost productivity must reach beyond the boardroom to the classroom. Institutions should be encouraged to audit their curricula to contain "credit creep," to outsource or eliminate low-enrolled courses and programs, and to redesign introductory level courses using technology to improve learning while reducing the cost of delivery.
- **Student transitions**. States and their colleges and universities have a number of options for reducing time-to-degree and the costs associated with student attrition. These include expanded use of accelerated learning (dual/concurrent enrollment, early college high schools), comprehensive articulation and transfer agreements between two- and four-year institutions, and outreach to students leaving institutions with significant credits but no degree.

Moving this agenda will be an ambitious and difficult task. It will require leaders who are willing to speak up and spend political capital to effect change and new knowledge and tools that will help policymakers and practitioners frame the issues and explore new ways of doing business.

But our colleges and universities have met the challenge of change before. They have transformed themselves to power New England and the nation through the industrial age and the space age into the information age, opening the doors of opportunity to millions of veterans, women, low-income students, and students of color along the way. The time has come to do it again.

If we are to make good on higher education's promise of opportunity, social mobility, and economic competitiveness in the face of a changing New England, we have to be smart, strategic, and swift.

Travis Reindl *is program director of Jobs for the Future & Lumina Foundation's Making Opportunity Affordable Initiative. Email: treindl@jff.org*

NEJHE's Trends & Indicators in Higher Education, 2008

NEJHE's Trends & Indicators in Higher Education features 64 tables and charts exploring New England's demography, high school performance and graduation, college enrollment, college graduation rates and degree production, higher education financing and university research.

The figures presented are organized to correspond with the four goals of the New England Board of Higher Education's *College Ready New England* initiative. They are:

High School Success *Increasing the number of high school graduates and GED recipients in New England;*

College Readiness *Increasing the number of high school graduates prepared for college and career success;*

College Access *Increasing the number of people enrolling in college; and*

College Success *Increasing the number of college graduates.*

Some highlights from Trends & Indicators in Higher Education, 2008:

• Since 1990, New England's population has grown by just 8 percent, compared with more than 56 percent for the Mountain states and 21 percent for the nation as a whole.

• Four of the six New England states appear in the bottom five nationally in terms of growth of the 25 to 34 year old population.

• 76 percent of New England 9th-graders graduate from high school in the normal four years time compared with 56 percent nationally. Of those high school graduates, 83 percent enroll in college the following fall.

• Fewer than half of New England students who finish high school have completed the necessary courses and mastered the skills to be considered "college ready." However, the New England states perform above the national norm on most indicators of college readiness.

• About 80 percent of first-time freshmen from New England stay in the region and enroll in a New England college or university.

• Most college-bound high school seniors in New England name "Business and Commerce" as their intended college major followed closely by "Health and Allied Services."

• New England's colleges and universities enrolled 886,000 in 2006, but the region's once disproportionate share of total U.S. enrollment stayed at just 5 percent.

• Half of New England college students attend private institutions compared with less than one quarter nationally.

• Women students outnumber men on New England college and university campuses by more than 136,000.

• More than 44,000 foreign students are enrolled on New England campuses comprising 7.6 percent of the national total.

• Less than 20 percent of students graduate from New England community colleges within three years of enrolling—and substantial gaps exist among racial and ethnic groups.

• Three in 10 doctorates awarded by New England universities go to foreign students, while just one in 10 go to U.S. minority students.

• Nearly 60 percent of all higher education degrees awarded in New England are awarded to women.

• Total yearly charges for resident students, including room and board, top $40,000 at New England's private four-year institutions and $20,000 at the region's public institutions—far above national figures.

• Americans pay an average of $257 each in annual state taxes to support public higher education and student aid in their states. New Englanders, however, pay just $190.

• More than 60 percent of family income is required to cover college costs at New England private colleges and universities. In some of the region's states, that figure exceeds 80 percent.

• New England universities performed $3.6 billion worth of research and development in 2006, and the region's share of all U.S. university R&D was level with 2004 at 7.6 percent.

The data presented on the following pages are collected and analyzed annually by the New England Board of Higher Education. The data are drawn from a variety of sources, including the U.S. Department Education, the National Science Foundation, the College Board, the National Center for Higher Education Management Systems, and NEBHE's own Annual Survey of New England Colleges and Universities.

Data compiled by former NEBHE research analyst Sue Klemer, now with North Shore Community College's Department of Planning and Research.

An Index of Figures appears on page 38.

INDEX OF FIGURES

DEMOGRAPHY

Since 1990, New England's population has grown by just 8 percent compared with more than 56 percent for the Mountain states and 21 percent for the nation as a whole. All six New England states are among the bottom 10 nationally in growth of 25-34-year olds. New England continues to see greater racial/ethnic diversity in its southern tier.

Fig. 1: Change in Population, 1990 to 2007, New England States and Other Regions

	1990	2000	2003	2004	2005	2006	2007	% Change 1990 to 2007	% Change 2006 to 2007
Connecticut	3,287,116	3,411,990	3,472,964	3,481,890	3,486,490	3,495,753	3,502,309	7%	-0.2%
Maine	1,227,928	1,277,225	1,303,441	1,308,892	1,312,222	1,314,910	1,317,207	7	0.2
Massachusetts	6,016,425	6,363,190	6,438,510	6,433,676	6,429,137	6,434,389	6,449,755	7	0.2
New Hampshire	1,109,252	1,240,442	1,282,844	1,294,285	1,303,112	1,311,821	1,315,828	19	0.3
Rhode Island	1,003,464	1,050,807	1,072,629	1,072,859	1,066,721	1,061,641	1,057,832	5	-0.4
Vermont	562,758	609,909	617,101	618,794	619,736	620,778	621,254	10	0.1
New England	13,206,943	13,953,563	14,187,489	14,210,396	14,217,418	14,239,292	14,264,185	8	0.2
Middle Atlantic	37,602,286	39,714,086	40,139,892	40,248,332	40,287,266	40,350,880	40,416,441	7	0.2
East North Central	42,008,942	45,224,913	45,796,229	45,964,643	46,084,860	46,218,183	46,338,216	10	0.3
West North Central	17,659,690	19,271,732	19,551,070	19,662,113	19,768,987	19,910,300	20,050,579	14	0.7
South Atlantic	43,566,853	51,964,860	54,328,359	55,217,414	56,136,808	57,088,309	57,860,260	33	1.4
East South Central	15,176,284	17,052,775	17,323,854	17,447,322	17,600,392	17,768,709	17,944,829	18	1.0
West South Central	26,702,793	31,550,342	32,779,595	33,202,227	33,647,747	34,037,564	34,649,697	30	1.8
Mountain	13,658,776	18,276,190	19,397,087	19,828,344	20,324,318	20,869,631	21,360,990	56	2.4
Pacific	39,127,306	45,185,847	46,944,069	47,410,720	47,828,101	48,271,951	48,735,960	25	1.0
United States	248,709,873	282,194,308	290,447,644	293,191,511	295,895,897	298,754,819	301,621,157	21%	1.0%

Note: Middle Atlantic includes New Jersey, New York, Pennsylvania. East North Central includes Ohio, Illinois, Indiana, Michigan, Wisconsin. West North Central includes Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas. South Atlantic includes Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida. East South Central includes Kentucky, Tennessee, Alabama, Mississippi. West South Central includes Arkansas, Louisiana, Oklahoma, Texas. Mountain includes Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada. Pacific includes Washington, Oregon, California, Alaska, Hawaii.

Source: New England Board of Higher Education analysis of U.S. Census Bureau data; www.census.gov.

Fig. 2: Population of New England by Race, 2006

	White alone	Black or African-American alone	American Indian and Alaska Native alone	Asian-American alone	Native Hawaiian and Other Pacific Islander alone	Two or more races	Total
Connecticut	2,966,187	358,210	12,497	117,986	2,597	47,332	3,504,809
Maine	1,278,398	10,918	7,582	11,490	433	12,753	1,321,574
Massachusetts	5,568,643	446,721	19,044	313,942	5,126	83,717	6,437,193
New Hampshire	1,259,738	13,905	3,458	24,389	514	12,891	1,314,895
Rhode Island	947,030	67,328	6,574	29,177	1,287	16,214	1,067,610
Vermont	603,345	4,329	2,386	6,847	172	6,829	623,908
New England	12,623,341	901,411	51,541	503,831	10,129	179,736	14,269,989
United States	239,746,254	38,342,549	2,902,851	13,159,343	528,818	4,718,669	299,398,484

Note: The above categories reflect the U.S. Census Bureau Guidance on the Presentation and Comparison of Race and Hispanic Origin. For additional information, see www.census.gov

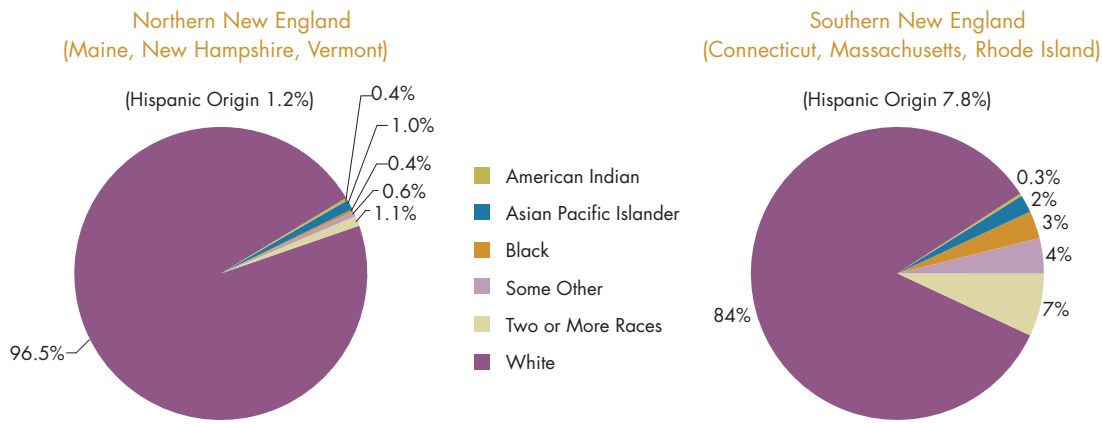
Source: New England Board of Higher Education analysis of U.S. Census Bureau data; www.census.gov.

Fig. 3: Change in Population Ages 25 to 34, 1990 to 2006, Top Five and Bottom Five States

Rank	State	1990	2006	1990-2006 Percentage Change
1st	Nevada	222,027	372,343	68%
2nd	Utah	274,898	406,703	48
3rd	Arizona	634,899	899,531	42
4th	Idaho	152,800	199,904	31
5th	Colorado	611,849	711,501	61
	United States	43,175,932	39,905,599	-8%
46th	Massachusetts	1,105,544	817,050	-26
47th	Maine	205,235	151,992	-26
48th	Vermont	95,257	70,002	-27
49th	North Dakota	105,010	74,205	-29
50th	Connecticut	583,882	407,930	-30%

Source: New England Board of Higher Education analysis of U.S. Census Bureau data; www.census.gov.

Fig. 4: Racial Composition of Northern and Southern New England, 2006



Source: New England Board of Higher Education analysis of U.S. Census Bureau data; www.census.gov.

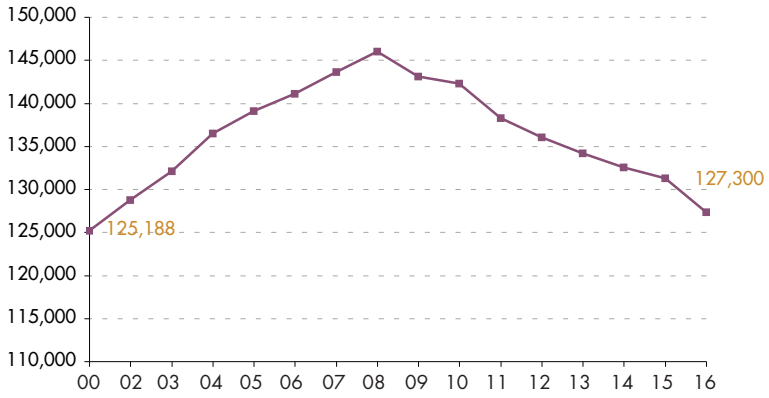
Fig. 5: Growth in the Number of Persons Obtaining Legal Permanent Resident Status in New England, 1997 to 2006

Source: New England Board of Higher Education Analysis of U.S. Department of Homeland Security Data.

HIGH SCHOOL SUCCESS

High school graduating classes will continue to shrink forcing the region's colleges and universities to adjust. High school graduation rates for minority students still lag behind while women graduate at higher rates than their male counterparts.

Fig. 6: Public High School Graduates in New England, Projected 2000 to 2016



Note: 2001 to 2005 represents actual data.

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 7: New England Public High School Graduates by Race, Projected 2007 to 2018

	2006-07	2017-18	Projected % Change
Connecticut			
American Indian	103	159	54%
Asian	1,271	2,858	125%
Hispanic	3,885	5,166	33%
African-American	4,355	4,067	-7%
White	26,511	22,422	-15%
Maine			
American Indian	66	94	42%
Asian	155	259	67%
Hispanic	114	202	77%
African-American	241	540	124%
White	12,310	9,841	-20%
Massachusetts			
American Indian	219	490	124%
Asian	3,260	5,074	56%
Hispanic	5,042	5,948	18%
African-American	5,057	4,614	-9%
White	46,978	40,093	-15%

	2006-07	2017-18	Projected % Change
New Hampshire			
American Indian	29	61	110%
Asian	213	874	310%
Hispanic	315	912	190%
African-American	152	378	149%
White	11,886	9,902	-17%
Rhode Island			
American Indian	51	120	135%
Asian	299	335	12%
Hispanic	1,513	2,713	79%
African-American	944	1,240	31%
White	7,240	5,828	-20%
Vermont			
American Indian	33	24	-27%
Asian	114	213	87%
Hispanic	88	873	892%
African-American	43	47	9%
White	6,339	4,786	-25%

Source: New England Board of Higher Education analysis of Western Interstate Commission for Higher Education (WICHE) data.

Fig. 8: Public High School Graduation Rates, 2004-05

	Fall 2001 9th-Graders	2004-05 High School Graduates	Percent Graduating within Four Years
Connecticut	46,621	35,515	76%
Maine	16,689	13,073	78
Massachusetts	80,394	59,665	74
New Hampshire	17,646	13,771	78
Rhode Island	13,538	9,881	73
Vermont	8,595	7,152	83
New England	183,483	139,057	76
United States	4,012,333	2,760,672	56%

Source: National Center for Higher Education Management Systems (NCHEMS); www.higheredinfo.org.

Fig. 9: New England High School Graduation Rates by Race/Ethnicity and Gender, 2003-04

	All Students	Male	Female	Native American	Asian American	Hispanic	African-American	White
Connecticut	79.8%	75.9%	82.9%	NA	79.3%	53.6%	63.5%	85.5%
Maine	76.2	73.4	77.4	29.9	57.2	NA	NA	76.1
Massachusetts	73.2	69.8	76.4	32.5	75.8	44	56.6	79.4
New Hampshire	76.0	NA	NA	NA	NA	NA	NA	NA
Rhode Island	70.6	66.0	74.8	28.3	53.7	54.4	57.2	74.3
Vermont	81.0	71.0	76.6	NA	77.7	NA	NA	80.9
United States	69.9%	66.0%	73.6%	49.3%	80.2%	57.8%	53.4%	76.2%

Source: New England Board of Higher Education analysis of Editorial Projects in Education (EPE) Research Center data, *Diplomas Count* 2007.

Fig. 10 : High School Graduation Rates by OECD Country, 2004

	Percentage with a High School Credential
Norway	100%
Germany	99
South Korea	96
Ireland	92
Japan	91
Denmark	90
Finland	90
Switzerland	89
Czech Republic	87
Hungary	86
Iceland	84
Slovak Republic	83
France	81
Italy	81
OECD average	81
Poland	79
New Zealand	75
Sweden	75
United States	75
Luxembourg	69
Spain	66
Turkey	53
Mexico	38%

Notes: High School graduation rate is percentage of population at typical upper secondary graduation age (e.g., 18 years old in United States) completing upper secondary education programs. OECD average based on all OECD countries with available data.

Source: Organisation for Economic Co-operation and Development (OECD), Education at a Glance; OECD Indicators 2006.

Fig. 11: Education Pipeline: High School Graduation, College Participation and Success, 2004

For every 100 public high school 9th graders...

	Graduate from High School	Enter College the Following Fall	Return to the Same College for Sophomore Year	Graduate College within 150% Time
Connecticut	76	46	35	24
Maine	77	38	28	20
Massachusetts	75	47	36	26
New Hampshire	76	42	31	24
Rhode Island	72	40	29	20
Vermont	83	36	28	22
United States	69	39	27	18

Note: 150% percent of time means that students attending four-year institutions graduate within six years and students attending two-year institutions graduate within three years.

Source: National Center for Higher Education Management Systems analysis of US Department of Education data.

COLLEGE READINESS

State-by state indicators of college readiness include: children living in poverty, preschool funding and attendance, K-12 course taking, student-teacher ratios, NAEP and SAT performance, AP scores, high school graduation and college enrollment. On most indicators all six New England states perform above the national norm.

Fig. 12: Indicators of College Readiness: A State-by-State Comparison

	Conn.	Maine	Mass.	N.H.	R.I.	Vt.	New England	United States
Percentage of Children in Poverty, 2007	11%	18%	12%	10%	15%	13%	NA	18%
Children in households where the household head is a high school dropout, 2006	10%	7%	10%	6%	16%	9%	NA	16%
State Preschool Programs, 2006								
Percent of 3- and 4-year-olds enrolled	17%	16%	19%	NA	NA	61%	NA	23%
State spending per child enrolled	$7,101	$1,793	$3,619	NA	NA	$2,439	NA	$3,482
NAEP Achievement Levels, 2007								
4th Grade Math	45%	42%	58%	52%	34%	49%	NA	39%
4th Grade Reading	41%	36%	49%	41%	31%	41%	NA	32%
8th Grade Math	35%	34%	51%	38%	28%	41%	NA	31%
8th Grade Reading	37%	37%	43%	37%	27%	42%	NA	29%
8th Grade Writing, 2002	45%	36%	42%	NA	29%	41%	NA	NA
Expenditures per Student in Public K-12 Schools, 2006	$13,914	$12,358	$13,981	$11,205	$11,609	$13,995	NA	$10,643
Student-Teacher Ratios in Public K-12 Schools, 2006	14.5	11.7	13.2	13.2	10.7	10.9	NA	15.7
% of 2006 Graduating Class who scored 3 (out of 5) or higher on an AP Exam at some point in H.S. career	19.4%	14.4%	19.8%	13.6%	8.4%	16.3%	NA	14.8%
PSAT Participation, 2007								
Percent of 11th Graders Taking PSAT	88%	97%	84%	72%	NA	66%	87%	47%
Percent of 10th Graders Taking PSAT	65%	NA	55%	41%	NA	19%	64%	43%
SAT Performance, 2007								
Participation Rate	84%	100%	85%	83%	68%	67%	NA	48%
Mean Critical Reading Scores	510	466	513	521	496	516	NA	502
Mean Math Scores	512	465	522	521	498	518	NA	515
Mean Writing Scores	511	457	511	512	492	508	NA	494
Percent of Seniors with College-Ready Transcripts	40%	42%	41%	40%	40%	45%	NA	36%
High School Graduation Rate, 2005	76%	78%	74%	78%	73%	83%	76%	69%
Percentage of High School Graduates entering College the Fall after Graduation, 2005	86%	76%	88%	77%	68%	62%	83%	70%

Notes: For Maine, preschool data refer to 4 year olds only; New Hampshire and Rhode Island have no distinct state preschool programs. NAEP Achievement Levels represent the percent of students that scored proficient on the National Assessment of Educational Progress or NAEP exams.
In order to have a "College-Ready Transcript" students must have taken at least four years of English, three years of math, and two years of natural science, social science and foreign language before graduating from high school.

Sources: U.S. Census Bureau, www.census.gov; National Institute for Early Education Research; Editorial Projects in Education Research Center; The College Board, www.collegeboard.com; The National Center for Public Policy and Higher Education; Kids Count, Annie Casey Foundation; National Education Association.

COLLEGE ACCESS

Fig. 13: Percent of High School Graduates Enrolling in College the Fall after Graduating High School, 2006

	High School Graduates 2006	First-Time Freshmen Enrolled Directly from High School Anywhere in the U.S. Fall 2006	Percent of High School Graduates Going Directly to College
Connecticut	35,515	30,370	86%
Maine	13,077	9,988	76
Massachusetts	59,665	52,647	88
New Hampshire	13,775	10,628	77
Rhode Island	9,881	6,762	68
Vermont	7,152	4,426	62
New England	139,065	114,821	83
United States	2,799,250	1,951,054	70%

Source: New England Board of Higher Education analysis of National Center for Education Statistics data; www.nces.ed.gov.

Fig. 14: Stock and Flow of College Educated Human Capital in New England, 1989 and 2001

	March 1989 Stock			March 2001 Stock					
State	Pop. Age 25 & over	Bachelor's or More	Population with Bachelor's Degrees	Pop. Age 25 & over	Bachelor's or More	Population with Bachelor's Degrees	Increase in Stock between 1989 & 2001	Production Additions to Stock	Net Migration: Stock Increase less Production 1989 to 2001
Connecticut	2,145,000	27.5%	589,875	2,281,000	32.4%	739,044	149,169	172,724	(23,555)
Maine	789,000	18.5%	145,965	867,000	22.2%	192,474	46,509	66,823	(20,314)
Massachusetts	3,839,000	28.1%	1,078,759	4,283,000	32.5%	1,391,975	313,216	506,336	(193,120)
New Hampshire	705,000	23.5%	165,675	837,000	31.6%	264,492	98,817	88,783	10,034
Rhode Island	643,000	20.2%	129,886	697,000	27.4%	190,978	61,092	105,178	(44,086)
Vermont	342,000	26.7%	91,314	409,000	29.0%	118,610	27,296	54,607	(27,311)
New England	8,463,000	26.0%	2,201,474	9,374,000	30.9%	2,897,573	696,099	994,451	(298,352)
United States	154,162,000	21.1%	32,553,042	180,386	26.2%	47,234,518	14,681,476	13,723,402	958,074

Note: Stock and flow measures net migration into and out of a state.

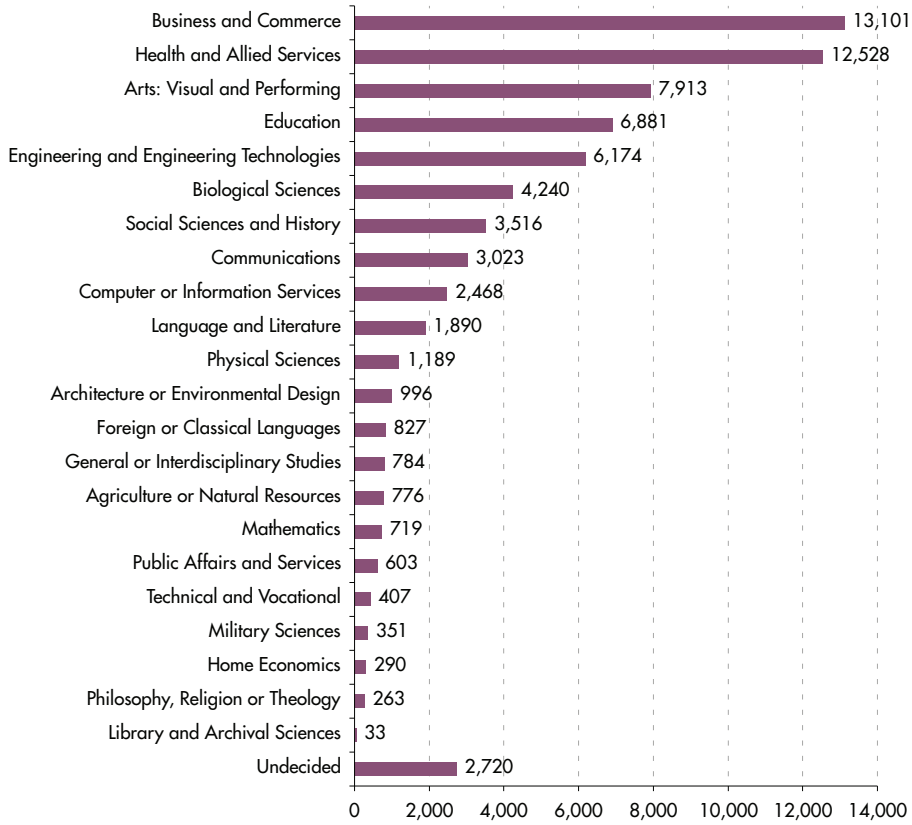
Source: New England Board of Higher Education analysis of Postsecondary Education Opportunity data; www.postsecondary.org.

Fig. 15: Migration of First-Time Freshmen to and from New England, 2006

		Destination State						
State of Origin	Total Freshmen from State	Conn.	Maine	Mass.	N.H.	R.I	Vt.	Total Enrolling in New England
Connecticut	30,370	15,554	285	3,409	763	1,356	545	21,912
Maine	9,988	151	6,399	961	476	177	242	8,406
Massachusetts	52,647	1,734	834	34,474	2,401	2,707	1,056	43,206
New Hampshire	10,628	248	422	1,676	5,470	330	374	8,520
Rhode Island	6,762	222	66	937	242	3,877	96	5,440
Vermont	4,426	74	167	486	298	96	1,898	3,019
New England	114,821	17,983	8,173	41,943	9,650	8,543	4,211	90,503

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

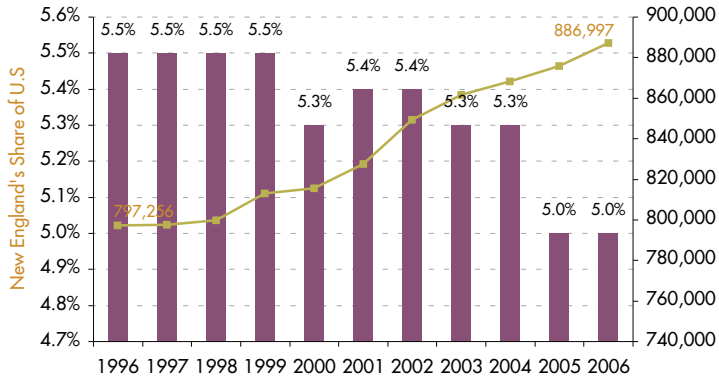
Fig. 16: Intended College Majors of College-Bound Seniors in New England, 2007



Source: The College Board; www.collegeboard.com.

New England college and university enrollment reached 886,997 in 2006, and represents 5 percent of all U.S. higher education enrollment. Students attending college in New England are more likely to be attending full-time and women out-number men on New England campuses by more than 136,000.

Fig. 17: Total Enrollment at New England Colleges and Universities and New England's Share of U.S. Enrollment, 1996 to 2006



Source: New England Board of Higher Education analysis of U.S. Department of Education data.

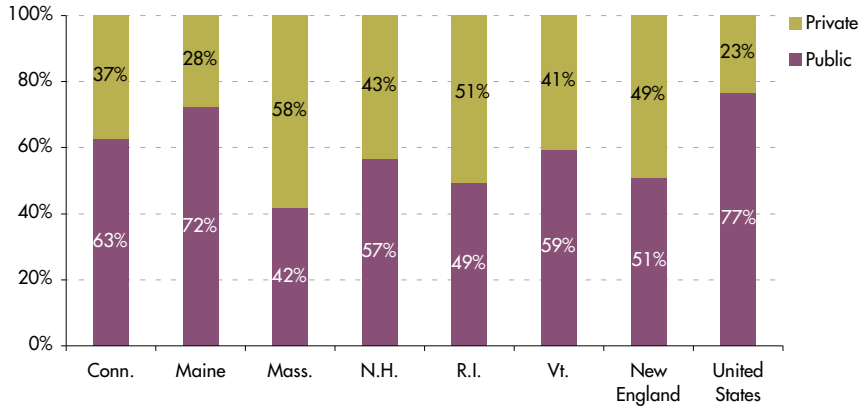
Fig. 18: Higher Education Enrollment in New England by Type of Institution and Full-Time Status, 2006

	All Institutions			Public Institutions			Private Institutions		
	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Connecticut	176,977	113,567	63,410	110,765	64,171	46,594	66,212	49,396	16,816
Maine	66,149	41,316	24,833	47,770	27,623	20,147	18,379	13,693	4,686
Massachusetts	450,309	309,738	140,571	187,925	107,062	80,863	262,384	202,676	59,708
New Hampshire	70,669	48,343	22,326	39,977	25,846	14,131	30,692	22,497	8,195
Rhode Island	81,798	59,836	21,962	40,374	23,456	16,918	41,424	36,380	5,044
Vermont	41,095	30,296	10,799	24,385	16,030	8,355	16,710	14,266	2,444
New England	886,997	603,096	283,901	451,196	264,188	187,008	435,801	338,908	96,893
United States	17,664,000	10,706,000	6,957,000	13,518,000	NA	NA	4,146,000	NA	NA
New England as a % of United States	5.0	5.6	4.1	3.3	NA	NA	10.5	NA	NA

Note: U.S. totals are projected by the U.S. Department of Education. Full-time and part-time breakdowns for public and private institutions were not available.

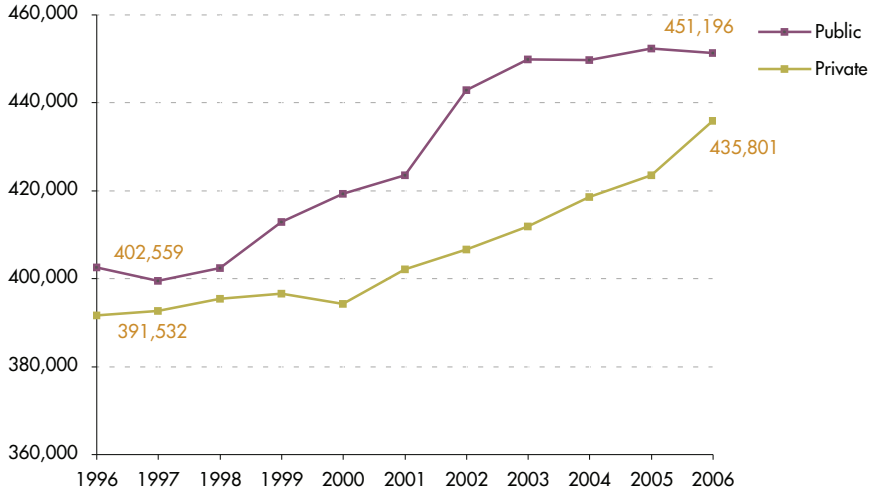
Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 19: Distribution of Higher Education Enrollment, Public vs. Private, 2006



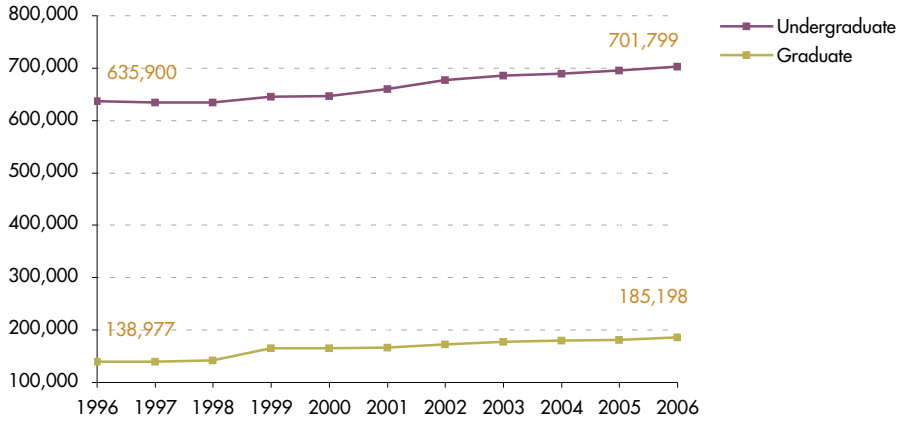
Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 20: Public vs. Private College Enrollment in New England, 1996 to 2006



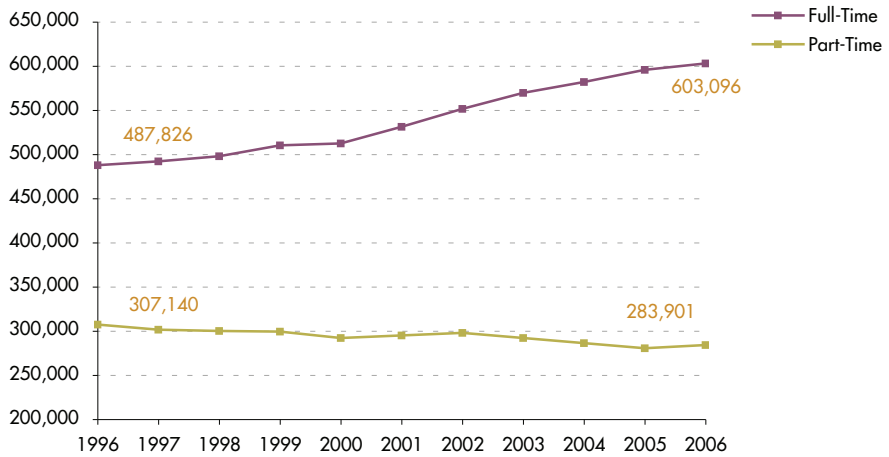
Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 21: Undergraduate vs. Graduate Enrollment in New England, 1996 to 2006



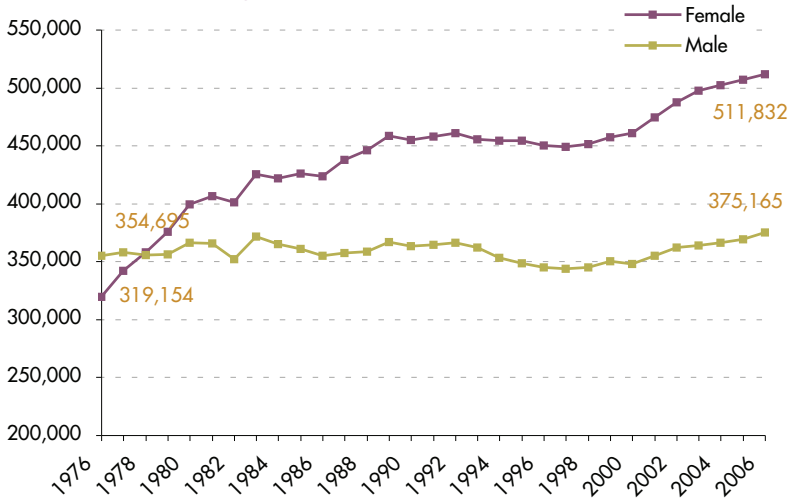
Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 22: Full-Time vs. Part-Time College Enrollment in New England, 1996 to 2006



Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 23: Total Higher Education Enrollment by Gender in New England, 1976 to 2006



Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 24: New England Institutions with the Largest Undergraduate Enrollments, Fall 2006

Institution Name	Full-time	Part-time	Total
University of Massachusetts Amherst	18,435	1,388	19,823
Boston University	17,095	1,426	18,521
Northeastern University	15,195	2,806	18,001
Community College of Rhode Island	6,127	10,246	16,373
University of Connecticut	15,602	745	16,347
University of New Hampshire	11,388	570	11,958
University of Rhode Island	10,210	1,665	11,875
University of Vermont	8,908	1,174	10,082
Harvard University	7,209	2,759	9,968
Boston College	9,405	475	9,880
Central Connecticut State University	7,463	2,181	9,644
University of Maine	7,746	1,781	9,527
Johnson & Wales University	8,437	912	9,349
University of Massachusetts Boston	5,779	3,467	9,246
University of Massachusetts Lowell	5,899	2,749	8,648
Southern Connecticut State University	7,052	1,525	8,577
University of Southern Maine	4,802	3,485	8,287
Bunker Hill Community College	2,487	5,725	8,212
Middlesex Community College (Mass.)	3,576	4,533	8,109
Bridgewater State College	6,457	1,368	7,825
University of Massachusetts Dartmouth	6,600	1,026	7,626
Rhode Island College	5,280	2,302	7,582
Salem State College	5,624	1,831	7,455
Massasoit Community College	3,311	3,664	6,975
North Shore Community College	2,873	4,037	6,910
Total 25 Largest Institutions	202,960	63,840	266,800

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

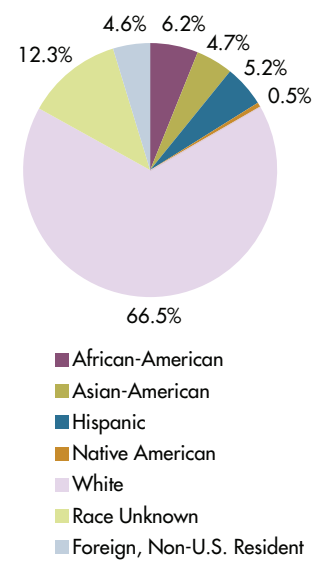
Fig. 25: New England Cities with the Largest Total College Enrollments, 2006

City	Number of Colleges & Universities	Total Enrollment
Boston, Mass.	33	135,349
Cambridge, Mass.	8	49,760
Providence, R.I.	5	46,176
New Haven, Conn.	4	32,438
Storrs, Conn.	1	28,481
Amherst, Mass.	3	28,005
Worcester, Mass.	8	26,926
Warwick, R.I.	2	19,382
Newton, Mass.	7	19,337
Lowell, Mass.	2	19,317
Springfield, Mass.	4	17,102
Burlington, Vt.	4	15,067
Kingston, R.I.	1	15,062
Durham, N.H.	1	14,849
Manchester, N.H.	6	14,318
New Britain, Conn.	2	13,855
Portland, Maine	4	12,184
Waltham, Mass.	1	10,810
Medford, Mass.	1	10,336
Salem, Mass.	1	10,230

Note: Total enrollment includes full-and part-time undergraduate, graduate and non-degree students.

Source: New England Board of Higher Education Annual Survey of new England Colleges and Universities, 2007.

Fig. 26: Enrollment at New England Colleges and Universities by Race/ Ethnicity, 2006



Note: The U.S. Department of Education's designations of race and ethnicity differ from those of the U.S. Bureau of the Census used in other figures.

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

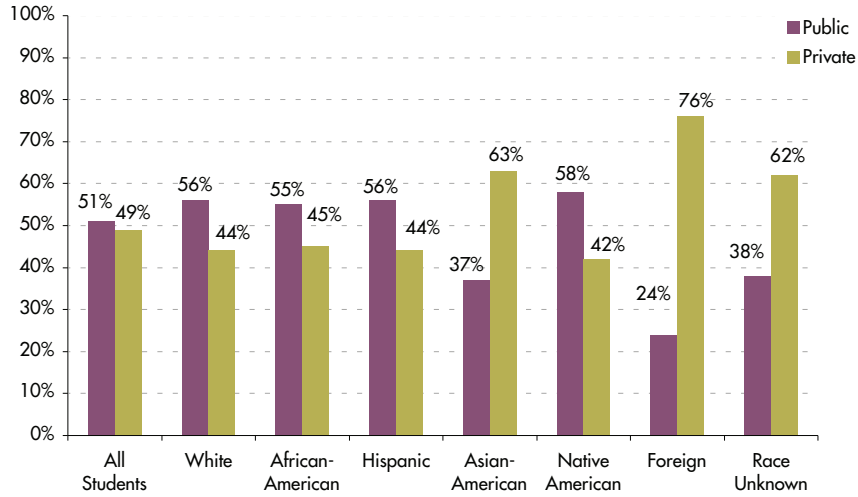
Fig. 27: Minority Enrollment by State and Race/Ethnicity, 1996 and 2006

		Students Enrolled				As % of 18-to 24-Year-Old Population 2006	% Change in Enrollment 1996-2006
		1996	% of Total	2006	% of Total		
Connecticut	African-American	11,403	7.3%	17,395	9.8%	12%	53%
	Asian-American	5,507	3.5	7,293	4.1	3	32
	Hispanic	7,716	5.0	13,711	7.7	15	78
	Native American	515	0.3	639	0.4	1	24
	White	117,909	75.9	116,339	65.7	63	-1
	Race Unknown	6,497	4.2	14,679	8.3	NA	126
Maine	African-American	359	0.6	1,001	1.5	1	179
	Asian-American	681	1.2	1,021	1.5	1	50
	Hispanic	322	0.6	694	1.0	1	116
	Native American	658	1.2	862	1.3	1	31
	White	47,061	84.5	56,519	85.4	95	20
	Race Unknown	6,024	10.8	4,645	7.0	NA	-23
Massachusetts	African-American	20,212	4.9	30,804	6.8	7	52
	Asian-American	22,065	5.4	27,779	6.2	6	26
	Hispanic	15,511	3.8	24,799	5.5	10	60
	Native American	1,485	0.4	1,646	0.4	0.3	11
	White	271,656	66.2	274,995	61.1	71	1
	Race Unknown	54,226	13.2	63,191	14.0	NA	17
New Hampshire	African-American	701	1.1	1,178	1.7	1	68
	Asian-American	892	1.4	1,584	2.2	2	78
	Hispanic	715	1.1	1,435	2.0	1	101
	Native American	233	0.4	375	0.5	1	61
	White	49,307	76.5	52,576	74.4	93	7
	Race Unknown	11,324	17.6	11,791	16.7	NA	4
Rhode Island	African-American	2,954	4.1	4,296	5.3	6	45
	Asian-American	2,491	3.4	2,930	3.6	4	18
	Hispanic	2,724	3.8	4,800	5.9	12	76
	Native American	243	0.3	295	0.4	1	21
	White	55,112	76.1	55,032	67.3	71	0
	Race Unknown	6,267	8.7	11,510	14.1	NA	84
Vermont	African-American	348	1.0	708	1.7	1	103
	Asian-American	473	1.3	899	2.2	1	90
	Hispanic	464	1.3	838	2.0	2	81
	Native American	167	0.5	226	0.5	1	35
	White	29,640	84.5	34,438	83.8	95	16
	Race Unknown	3,197	9.1	3,169	7.7	NA	-1
New England	African-American	35,977	4.4	55,382	6.2	7	54
	Asian-American	32,109	3.9	41,506	4.7	4	29
	Hispanic	27,452	3.4	46,277	5.2	10	69
	Native American	3,301	0.4	4,043	0.5	0.4	22
	White	570,685	69.7	589,899	66.5	74	3
	Race Unknown	87,535	10.7	108,985	12.3	NA	25
United States	African-American	1,505,600	10.5	2,214,561	12.7	12	47
	Asian-American	828,200	5.8	1,134,382	6.5	4	37
	Hispanic	1,166,100	8.2	1,881,975	10.8	15	61
	Native American	137,600	1.0	176,303	1.0	1	28
	White	10,263,900	71.8%	11,495,440	65.7%	68%	12%

Note: Table does not include enrollment at military academies. African-American, Asian-American, Native American and White totals reflect non-Hispanic population. Does not include the category non-resident alien. United States data is 2005.

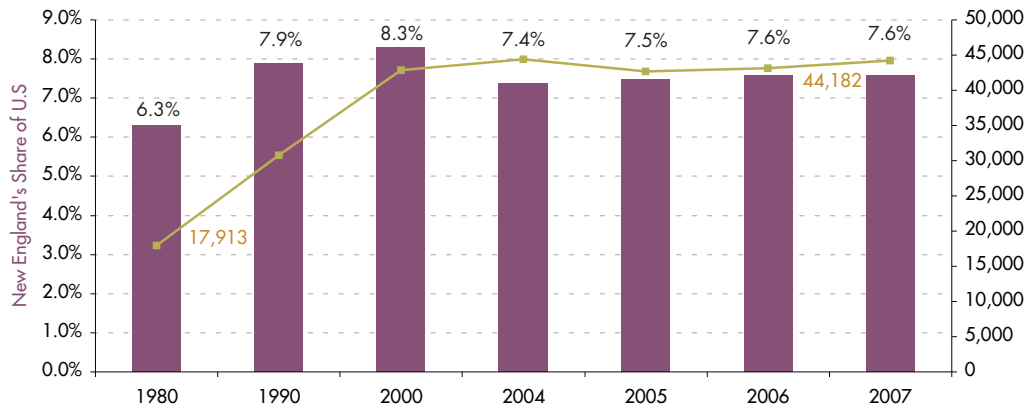
Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 28: Public vs. Private College Enrollment in New England by Race/Ethnicity, 2006



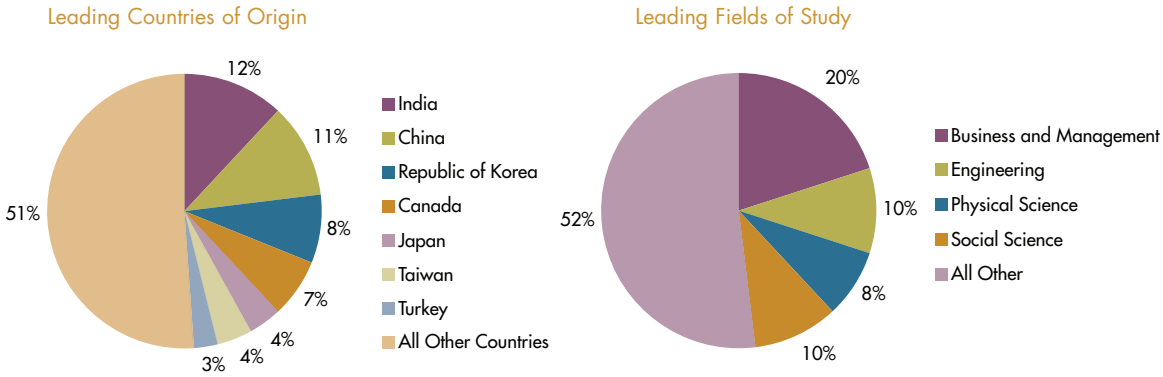
Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 29: Foreign Enrollment at New England Colleges and Universities and Share of U.S. Foreign Enrollment, 1980 to 2007



Source: New England Board of Higher Education analysis of Institute of International Education data.

Fig. 30: Foreign Students in New England by Countries of Origin and Fields of Study, 2007



Source: New England Board of Higher Education analysis of Institute of International Education data; www.iie.org.

Fig. 31: Estimated Economic Impact from International Students, 2006-07

	Number of Foreign Students	Tuition & Fees	Living Expenses & Dependents	U.S. Funding	Total Contribution Minus U.S. Support
Connecticut	7,403	$168,799,490	$163,909,938	$115,114,259	$217,595,169
Maine	1,388	26,560,266	23,501,223	17,018,806	33,042,68
Massachusetts	28,680	739,579,366	669,604,019	471,572,405	937,610,980
New Hampshire	2,099	50,509,876	42,446,059	29,246,095	63,709,840
Rhode Island	3,629	85,620,234	70,988,488	41,830,688	114,778,034
Vermont	983	23,807,722	16,223,888	12,010,916	28,020,694
New England	44,182	$1,094,876,954	$986,673,615	$686,793,169	$1,361,714,717
United States	582,984	$9,928,605,656	$10,850,201,226	$6,279,696,060	$14,499,110,822

Source: New England Board of Higher Education analysis of Institute of International Education data; www.iie.org.

Fig. 32: New England Institutions Enrolling More than 1,000 Foreign Students, 2007

U.S. Rank	Institution	Foreign Enrollment	Total Enrollment	Foreign Students as a % of Total Enrollment
9th	Harvard University	4,514	20,042	23%
10th	Boston University	4,484	31,574	14
32nd	Massachusetts Institute of Technology	3,042	11,032	28
47th	Northeastern University	2,223	23,385	10
55th	University of Massachusetts Boston	2,061	12,362	17
58th	Yale University	2,026	11,416	18
76th	University of Massachusetts Amherst	1,739	25,093	7
84th	University of Connecticut	1,616	28,481	6
105th	University of Bridgeport	1,423	4,018	35
116th	Johnson & Wales	1,280	10,171	13
146th	Brown University	1,073	8,125	13
Total of Above Institutions		**25,481**	**185,699**	**14%**
Total of All New England Institutions		**44,182**	**886,997**	**5%**
Above Institutions as a Share of All New England Institutions		**58%**	**21%**	

Source: New England Board of Higher Education analysis of Institute of International Education data; www.iie.org.

Fig. 33: New England Institutions with More than 10% of Undergraduates Studying Abroad, 2006

Institution	Undergraduates Studying Abroad	Total Undergraduate Enrollment	Percentage of Students Studying Abroad
Norwich University	686	1,958	35%
Colby College	407	1,865	22
Babson College	350	1,776	20
Bates College	296	1,744	17
Dartmouth College	627	4,085	15
Tufts University	690	4,995	14
Bowdoin College	239	1,734	14
Trinity College	300	2,323	13
Salve Regina University	259	2,090	12
Smith College	317	2,634	12
Wheaton College	184	1,551	12
Wesleyan University	312	2,813	11
Mount Holyoke College	235	2,149	11
Worcester Polytechnic Institute	307	2,866	11%

Source: New England Board of Higher Education analysis of Institute for International Education data; www.iie.org.

COLLEGE SUCCESS

Less than 20 percent of students graduate from New England community colleges within three years of starting and rates vary dramatically among racial/ethnic groups. Less than half of students enrolled at public four year institutions (excluding land-grants) graduate within six years of starting.

Fig. 34: Graduation Rates by State, Race/Ethnicity and Type of Institution, 2006

	Foreign	Black, non-Hispanic	American Indian or Alaskan Native	Asian or Pacific Islander	Hispanic	White, non-Hispanic	Race/Ethnicity Unknown	Total
Public Two-Year								
Connecticut	30%	7%	7%	13%	8%	13%	9%	11%
Maine	30	17	33	9	22	32	29	31
Massachusetts	23	13	14	14	11	20	15	18
New Hampshire	NA	18	25	26	24	29	37	30
Rhode Island	NA	8	NA	9	5	11	8	10
Vermont	NA	NA	17	NA	50	14	28	16
New England	24	11	21	14	10	20	18	18
Public Four-Year								
Connecticut	24	32	29	37	34	42	43	40
Maine	53	9	30	24	42	36	46	37
Massachusetts	47	36	32	40	42	51	43	48
New Hampshire	NA	14	40	38	25	55	55	55
Rhode Island	50	22	NA	35	27	48	47	45
Vermont	NA	NA	20	25	25	46	29	42
New England	42	33	29	38	33	47	42	45
Public Land Grant								
Connecticut	41	61	75	78	65	76	69	74
Maine	72	45	38	40	42	59	50	59
Massachusetts	69	54	73	58	55	67	67	66
New Hampshire	88	56	50	67	64	75	62	73
Rhode Island	9	40	10	44	59	59	59	57
Vermont	56	43	67	74	80	67	52	67
New England	59	54	51	63	61	68	64	67
Private Four-Year								
Connecticut	74	61	54	82	67	73	68	72
Maine	92	68	56	73	70	72	60	72
Massachusetts	70	67	74	83	71	74	70	74
New Hampshire	69	67	73	87	83	67	66	68
Rhode Island	78	61	71	79	63	67	80	68
Vermont	76	43	50	84	59	68	48	66
New England	72%	64%	69%	82%	69%	72%	70%	72%

Note: The graduation rate is the percentage of students who complete an associate degree (at two-year institutions) within three years or a bachelor's degree (at four-year institutions) within six years.

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 35: Graduation and Transfer Rates by State and Type of Institution, 2006

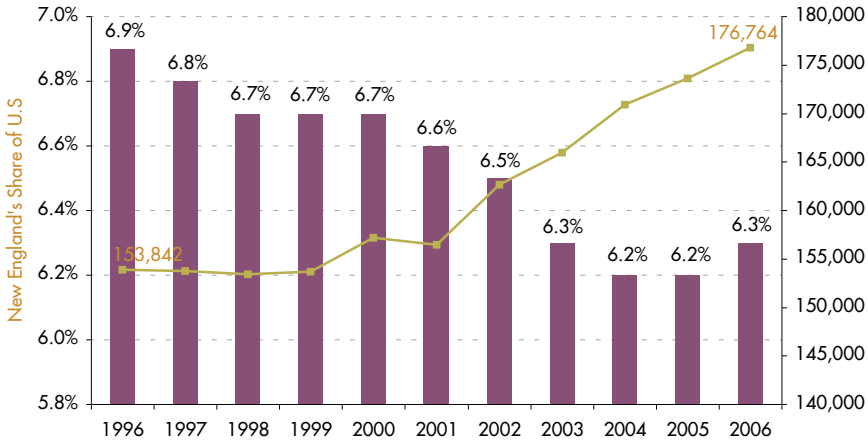
	Public Two-Year		Public Four-Year		Public Land Grant		Private Four-Year	
	% Graduating	% Transferring to other Institutions	% Graduating	% Transferring to other Institutions	% Graduating	% Transferring to other Institutions	% Graduating	% Transferring to other Institutions
Connecticut	11%	20%	40%	12%	74%	18%	72%	NA
Maine	31	13	37	8	59	NA	72	3
Massachusetts	18	19	48	16	66	NA	74	NA
New Hampshire	30	NA	55	NA	73	NA	68	5
Rhode Island	10	20	45	NA	57	NA	68	NA
Vermont	16	NA	42	NA	67	NA	66	6
New England	18%	17%	45%	NA	67%	NA	72%	2%

Note: The graduation rate is the percentage of students who complete an associate degree (at two-year institutions only) within three years or a bachelor's degree (at four-year institutions) within six years. Figures are based on cohorts entering in 2000 (four-year institutions) or 2003 (two-year institutions). The New England figures are based on the aggregate numbers of all institutions of a given type, rather than an average of the states' graduation rates.

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

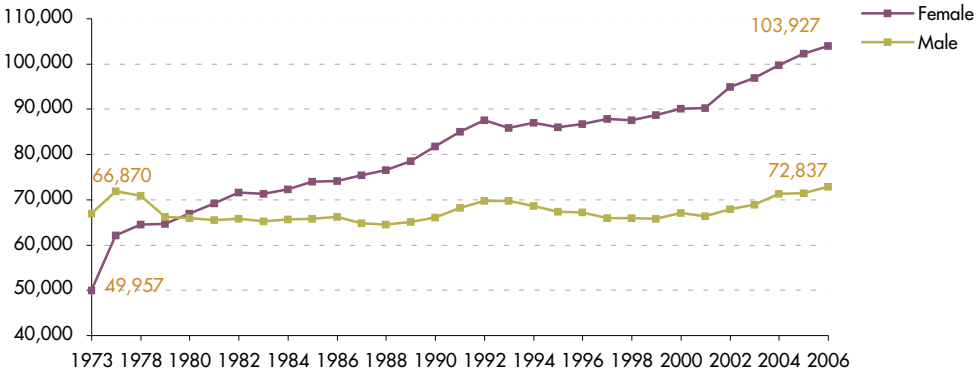
The region awards over 6 percent of all higher education degrees in the United States —nearly 60 percent are awarded to women.

Fig. 36: Total Degrees Awarded at New England's Colleges and Universities and New England's Share of U.S. Degrees, 1996 to 2006



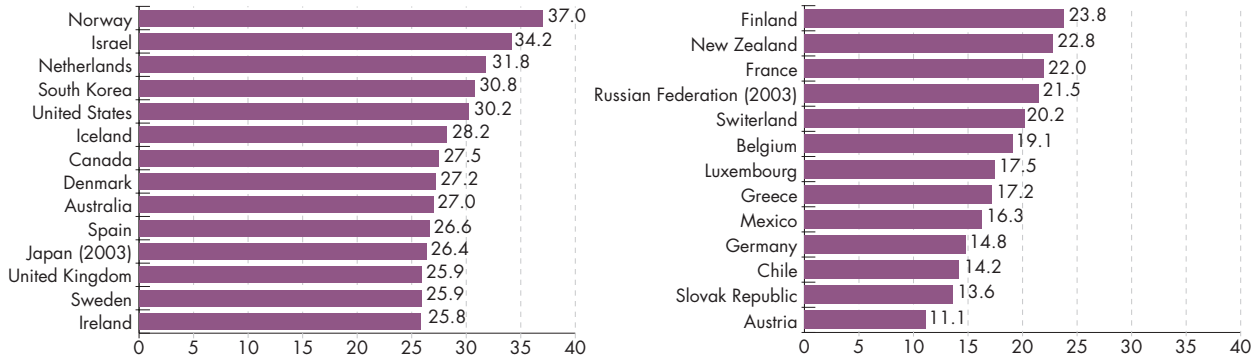
Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 37: Degrees Awarded in New England by Gender, 1973 to 2006



Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 38: Attainment of Tertiary-Type A and Advanced Research Degrees by 25–34-year-olds by Country, 2004



Notes: Tertiary-type A programs are largely theory-based and designed to provide sufficient qualifications for entry to advanced research programs and professions with high skill requirements such as medicine, dentistry, or architecture and have a minimum duration of 3 years' full-time equivalent, although typically last 4 years. In United States, correspond to bachelor's and master's degrees. Advanced research programs are tertiary programs leading directly to an advanced research qualification, such as doctorate.

Source: Organisation for Economic Co-operation and Development (OECD), Education at a Glance: OECD Indicators 2006

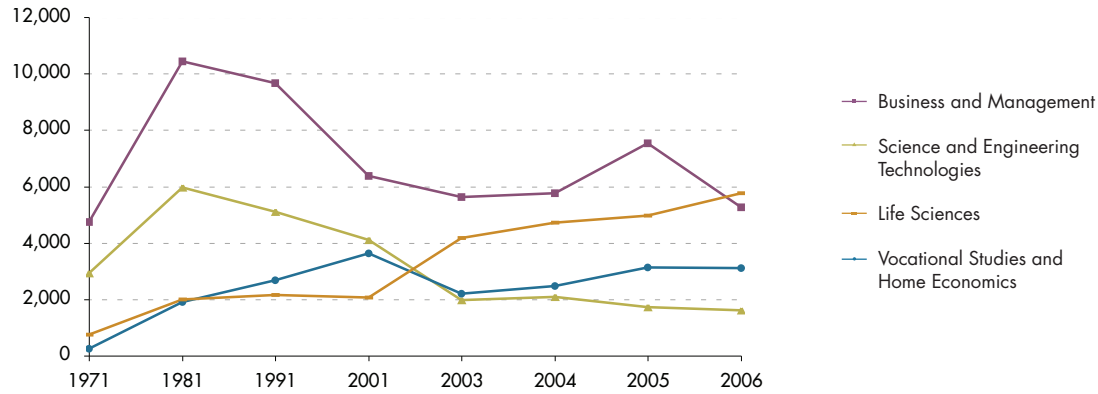
Fig. 39: Associate Degrees Awarded to Men, Women, Minorities and Foreign Students, 2006

	Total	Men	Women	Foreign	African-American	Native American	Asian	Hispanic	White	Race Unknown
Connecticut	4,993	1,579	3,414	104	771	26	110	558	3,186	238
Maine	2,416	877	1,539	11	27	32	11	15	2,136	184
Massachusetts	11,126	4,040	7,086	235	945	38	426	678	7,777	1,027
New Hampshire	3,237	1,217	2,020	11	62	43	45	87	2,575	414
Rhode Island	3,844	1,844	2,000	107	274	16	96	230	2,771	350
Vermont	1,380	604	776	9	14	13	28	14	1,174	128
New England	26,996	10,161	16,835	477	2,093	168	716	1,582	19,619	2,341
% of New England Associate Degrees		38%	62%	2%	8%	0.6%	3%	6%	73%	9%

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 40: Associate Degrees Awarded at New England Colleges and Universities by Selected Fields of Study, 1971 to 2006

Total Associate Degrees Awarded 1971: 16,782; **2006:** 26,996



Note: Disciplines not listed include: Arts and Music, Education, Social Service Professions, Communication and Librarianship, Engineering, Psychology, Social Sciences, Geosciences, Law, Interdisciplinary or other Sciences, Physical Sciences, Architecture and Environmental Design, Humanites, Religion and Theology, Math and Computer Sciences and unknown disciplines. These unlisted disciplines awarded 11,250 degrees in 2006.

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

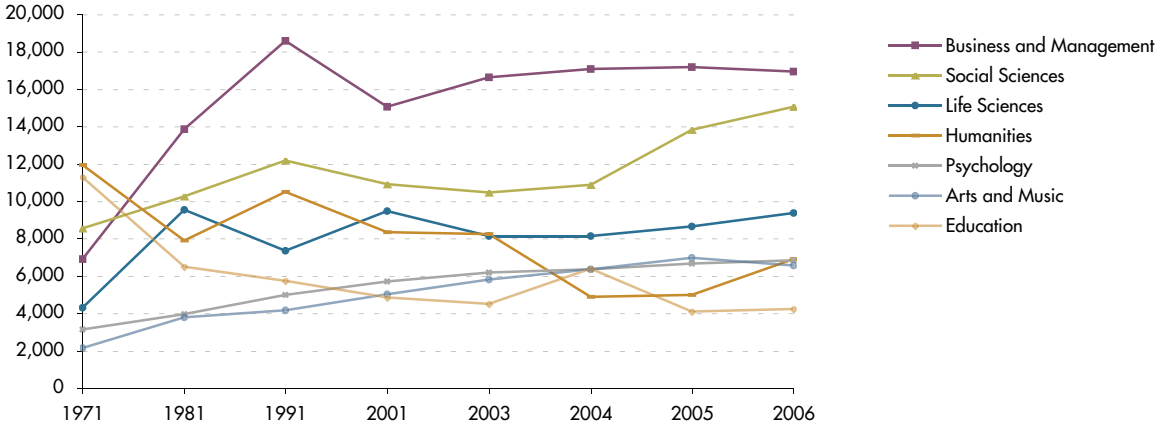
Fig. 41: Bachelor's Degrees Awarded to Men, Women, Minorities and Foreign Students, 2006

	Total	Men	Women	Foreign	African-American	Native American	Asian	Hispanic	White	Race Unknown
Connecticut	17,786	7,424	10,362	511	1,185	81	811	913	12,880	1,405
Maine	6,544	2,802	3,742	415	75	57	133	84	5,517	263
Massachusetts	46,973	19,757	27,216	2,176	2,502	169	3,410	2,132	31,363	5,221
New Hampshire	8,030	3,406	4,624	266	130	48	221	160	6,347	858
Rhode Island	9,686	4,042	5,644	325	432	27	449	436	7,127	890
Vermont	4,981	2,263	2,718	92	57	24	96	76	4,332	304
New England	94,000	39,694	54,306	3,785	4,381	406	5,120	3,801	67,566	8,941
% of New England Bachelor's Degrees		42%	58%	4%	5%	0.4%	5%	4%	72%	10%

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 42: Bachelor's Degrees Awarded at New England Colleges and Universities by Selected Fields of Study, 1971 to 2006

Total Bachelor Degrees Awarded 1971: 70,024; **2006:** 94,000



Note: Disciplines not listed include: Communication and Librarianship, Math and Computer Sciences, Engineering, Vocational Studies and Home Economics, Science and Engineering Technologies, Social Service Professions, Physical Sciences, Architecture and Environmental Design, Geosciences, Religion and Theology, Interdisciplinary or other Science, Law and unknown disciplines. These unlisted disciplines awarded 28,017 degrees in 2006.

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

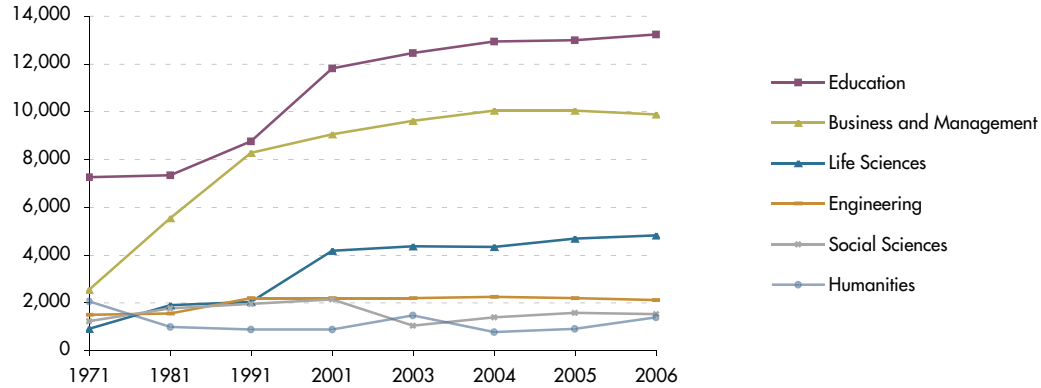
Fig. 43: Master's Degrees Awarded to Men, Women, Minorities and Foreign Students, 2006

	Total	Men	Women	Foreign	African-American	Native American	Asian	Hispanic	White	Race Unknown
Connecticut	8,778	3,444	5,334	1,067	525	23	336	261	5,663	903
Maine	1,655	476	1,179	47	16	12	24	15	1,394	147
Massachusetts	27,603	10,842	16,761	3,856	1,518	113	1,445	920	14,136	5,615
New Hampshire	3,068	1,308	1,760	361	36	6	75	45	1,931	614
Rhode Island	2,146	853	1,293	344	65	8	69	45	1,276	339
Vermont	1,782	709	1,073	102	37	8	36	63	1,221	315
New England	45,032	17,632	27,400	5,777	2,197	170	1,985	1,349	25,621	7,933
% of New England Master's Degrees		39%	61%	13%	5%	0.4%	4%	3%	57%	18%

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 44: Master's Degrees Awarded at New England Colleges and Universities by Selected Fields of Study, 1971 to 2006

Total Master's Degrees Awarded: 1971: 19,113; **2006:** 45,032



Note: Disciplines not listed include: Physical Science, Geosciences, Math and Computer Science, Psychology, Science and Engineering Technologies, Interdisciplinary or other Sciences, Religion and Theology, Arts and Music, Architecture and Environmental Design, Communication and Librarianship, Law, Social Service Professions, Vocational Studies and Home Economics, unknown Disciplines. These unlisted disciplines awarded 13,470 degrees in 2006.

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

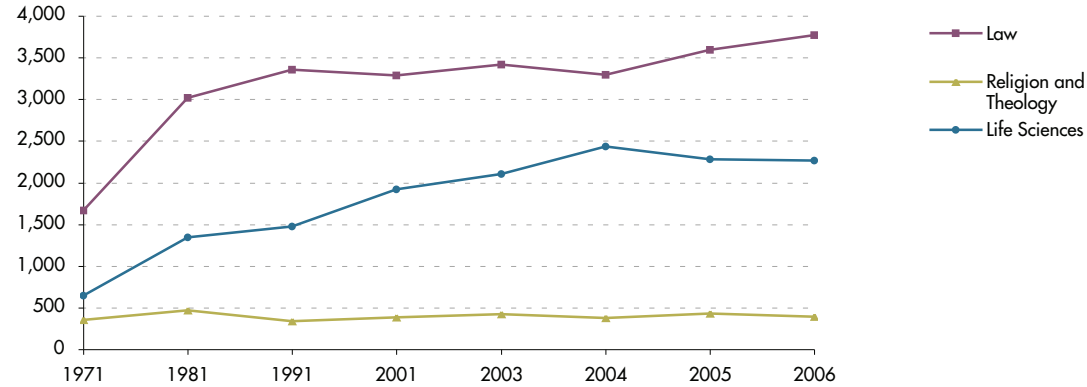
Fig. 45: First-Professional Degrees Awarded to Men, Women, Minorities and Foreign Students, 2006

	Total	Men	Women	Foreign	African-American	Native American	Asian	Hispanic	White	Race Unknown
Connecticut	1,054	517	537	23	61	1	96	62	756	55
Maine	214	116	98	1	1	0	10	1	201	0
Massachusetts	4,321	2,111	2,210	193	207	18	625	145	2,685	448
New Hampshire	206	120	86	11	3	1	23	3	159	6
Rhode Island	354	162	192	4	18	1	36	9	242	44
Vermont	272	128	144	4	16	2	18	10	208	14
New England	6,421	3,154	3,267	236	306	23	808	230	4,251	567
% of New England First-Professional Degrees		49%	51%	4%	5%	0.4%	13%	4%	66%	9%

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 46: First-Professional Degrees Awarded at New England Colleges and Universities by Fields of Study, 1971 to 2006

Total First-Professional Degrees Awarded: 1971: 2,664; **2006:** 6,421



Source: New England Board of Higher Education analysis of U.S. Department of Education data.

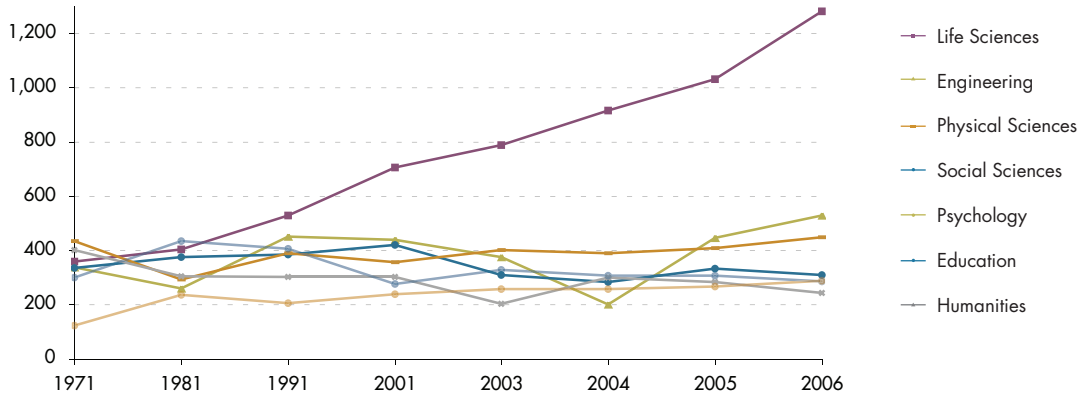
Fig. 47: Doctorates Awarded to Men, Women, Minorities and Foreign Students, 2006

	Total	Men	Women	Foreign	African-American	Native American	Asian	Hispanic	White	Race Unknown
Connecticut	735	359	376	238	28	0	28	26	313	102
Maine	39	19	20	10	0	0	1	0	28	0
Massachusetts	3,001	1,542	1,459	843	85	7	153	77	1,307	529
New Hampshire	175	80	95	47	2	2	3	2	93	26
Rhode Island	301	164	137	106	7	0	13	5	104	66
Vermont	64	32	32	18	0	0	1	2	41	2
New England	4,315	2,196	2,119	1,262	122	9	199	112	1,886	725
% of New England Doctorates		51%	49%	29%	3%	0.2%	5%	3%	44%	17%

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 48: Doctorates Awarded at New England Colleges and Universities by Selected Fields of Study, 1971 to 2006

Total Doctorates Awarded 1971: 2,624; **2006:** 4,315



Note: Disciplines not listed include: Geosciences, Math and Computer Science, Science and Engineering Technologies, Interdisciplinary or other Sciences, Religion and Theology, Arts and Music, Architecture and Environmental Design, Business and Management, Communication and Librarianship, Law, Social Service Professions, Vocational Studies and Home Economics, unknown Disciplines. These unknown disciplines awarded 932 Degrees in 2006.

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

FINANCING HIGHER EDUCATION

Average total yearly charges for resident students, including room and board, top $40,000 at New England's private four-year institutions and $20,000 at the region's public institutions—far above national rates.

Fig. 49: Average Student Expenses, New England vs. United States, Academic Year 2007-08

	Tuition & Fees for State Residents	Additional Charges for Out-of-State Residents	Books & Supplies	Resident			Commuter		
				Room & Board	Transportation	Other	Room & Board	Transportation	Other
New England									
Two-year public	$3,492	$5,985	$805	NA	NA	NA	$6,708	$1,170	$1,680
Four-year public	8,116	11,920	906	8,043	531	1,262	6,862	929	1,586
Four-year private	30,154	NA	913	10,232	584	1,126	8,827	905	1,257
United States									
Two-year public	$2,361	$4,202	$921	NA	NA	NA	$6,875	$1,270	$1,699
Four-year public	6,185	10,455	988	7,404	911	1,848	7,419	1,284	2,138
Four-year private	23,712	NA	988	8,595	768	1,311	7,499	1,138	1,664

Note: Room & board costs for commuter students are average estimated living expenses for students living off-campus but not with parents.

Source: Table 5, Average Student Expenses, by College Board Region, 2007-2008 (Enrollment-Weighted). Trends in College Pricing 2007,

Fig. 50: Tuition and Fees, Academic Years 2006-07 and 2007-08 with Percent Change

	2006-07	2007-08	Percent Change		2006-07	2007-08	Percent Change
Connecticut				**New Hampshire**			
Two-year public	$2,672	$2,828	6%	Two-year public	$5,234	$5,692	9%
Four-year public	7,135	7,586	6	Four-year public	9,127	9,673	6
Four-year private	28,547	30,273	6	Four-year private	26,841	28,365	6
Maine				**Rhode Island**			
Two-year public	2,926	3,171	8	Two-year public	2,686	2,846	6
Four-year public	6,616	7,316	11	Four-year public	6,787	7,192	6
Four-year private	26,635	28,073	5	Four-year private	26,541	28,066	6
Massachusetts				**Vermont**			
Two-year public	3,579	3,702	3	Two-year public	5,230	5,500	5
Four-year public	7,583	7,897	4	Four-year public	9,783	10,428	7
Four-year private	29,299	31,052	6%	Four-year private	25,629	28,117	10%

Note: Figures for public institutions show rates for state residents. All data are enrollment-weighted averages, intended to reflect the average costs that students face in various types of institutions.

Source: Table 6, Tuition and Fees by Region and Institution Type, in Current Dollars, 1997-1999 to 2007-2008 (Enrollment-Weighted), Trends in College Pricing 2007, (2007); 14.

Americans pay an average of $257 each in state taxes to support public higher education and student aid in their states. New Englanders, however, pay just $190.

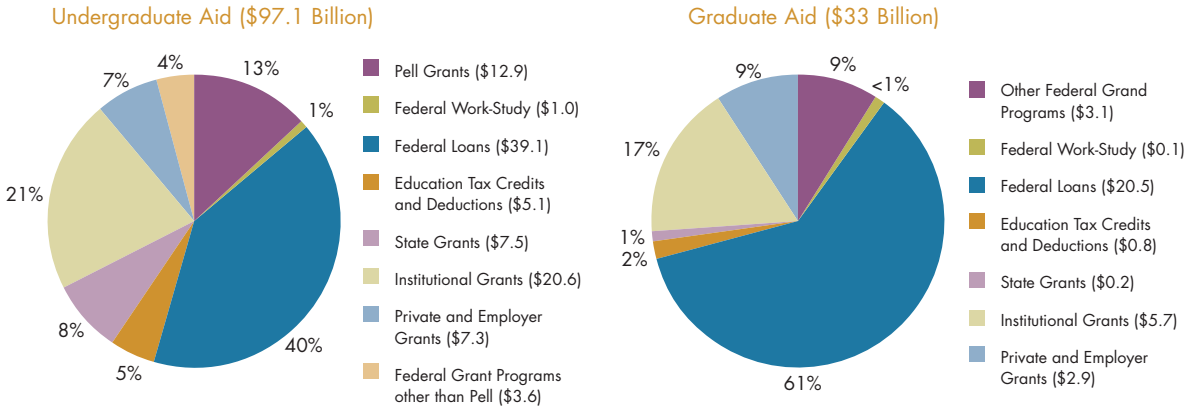
Fig. 51: Appropriations of State Tax Funds for Higher Education Operating Expenses, Fiscal 2008

	Appropriations	1-Year % Change	10-Year % Change	Per-Capita Appropriations	U. S. Rank 2008	Appropriations Per $1,000 of Personal Income	U.S. Rank 2008	FY06 Appropriations Per FTE Student	U. S. Rank 2006
Connecticut	$989,436,000	7%	70%	$282.51	18th	$5.24	42nd	$9,503	3rd
Maine	274,767,000	6	47	208.60	37th	6.22	31st	6,096	25th
Massachusetts	1,051,518,000	2	13	163.03	46th	3.35	49th	8,372	7th
New Hampshire	133,607,000	8	50	101.54	50th	2.45	50th	3,193	49th
Rhode Island	180,177,000	-1	35	170.33	45th	4.35	46th	6,413	20th
Vermont	88,195,000	3	54	141.96	49th	3.91	47th	3,030	50th
New England	2,717,700,000	7	39	190.52		4.08		6,958	
United States	$77,504,009,000	7.5%	56%	$257.46		$6.59		$6,325	

Note: FY06 appropriations per FTE data obtained via NCHEMS Information Center; www.higheredinfo.org/analyses.

Source: New England Board of Higher Education analysis of data from Illinois State University Center for Higher Education and Education Finance; www.grapevine.ilstu.edu.

Fig. 52: Undergraduate and Graduate Student Aid by Source, 2006-07



Source: Trends in Student Aid. Copyright ©2007 The College Board. All rights reserved; www.collegeboard.com.

Fig. 53: Federal Student Financial Aid Programs, Total Expenditures or Allocations and Number of Recipients

	Pell Grants		College Work-Study		Perkins Loans		Supplemental Educational	
	2005-06 Expenditures	2006 Total Recipients	2007-08 Allocations	2006 Total Recipients	2007-08 Level of Expenditure*	2006 Total Recipients	2007-08 Allocations	2006 Total Recipients
Connecticut	$82,847,284	37,415	$11,410,778	9,864	$29,267,987	8,713	$8,853,733	13,767
Maine	44,884,410	18,469	7,945,206	6,805	21,889,884	7,252	6,869,693	10,564
Massachusetts	178,832,502	74,931	45,308,430	36,931	124,892,877	36,652	29,483,968	40,642
New Hampshire	29,102,132	13,060	6,601,275	6,343	18,701,821	6,558	4,988,766	8,457
Rhode Island	48,479,050	20,842	7,888,917	7,014	27,850,412	10,032	6,956,367	11,861
Vermont	19,567,065	8,326	5,823,156	5,541	14,911,584	5,664	5,294,824	5,195
New England	403,712,443	173,043	84,977,762	72,498	237,514,565	74,871	62,447,351	90,486
United States	$12,693,127,982	5,167,979	$973,884,748	710,907	$2,230,817,783	727,600	$770,690,892	1,419,055
New England as a % of United States	3.2%	3.3%	8.7%	10.2%	11%	10.3%	8.1%	6.4%

*Note: Spending on federal campus-based programs is reported as 2007-08 allocations. Spending on Pell Grants is reported as 2005-06 expenditures. *Level of Expenditure (LOE): A school must request and have approved for each award year an LOE authorization that represents the maximum amount it may expend from its revolving Federal Perkins Loan fund.*

Source: New England Board of Higher Education analysis of U.S. Department of Education data.

Fig. 54: Total Grant Aid Awarded by State, 1995-96, 2000-01, 2004-05, 2005-06

	1995-96	2000-01	2004-05	2005-06	5-Year % Change	10-Year % Change
Connecticut	$20,414,000	$44,763,000	$36,773,000	$39,382,000	-12%	93%
Maine	8,262,000	12,351,000	12,984,000	13,387,000	8	62
Massachusetts	54,646,000	116,892,000	79,526,000	80,093,000	-31	47
New Hampshire	773,000	1,497,000	3,648,000	3,753,000	151	386
Rhode Island	5,741,000	6,164,000	13,945,000	12,883,000	109	124
Vermont	12,022,000	14,625,000	16,884,000	18,580,000	27	55
New England	$101,858,000	$196,292,000	$163,760,000	$168,078,000	-14%	65%
United States	2,913,641,000	4,677,795,000	6,683,668,000	7,043,186,000	51	142

Note: Figures may not include aid funds provided through entities other than the principal state student aid agency.

Source: National Association of State Student Grant and Aid Programs; www.nassgap.org.

Fig. 55: State Need-Based Aid as a Percent of Federal Pell Grant Aid, 2006

	State Need-Based Grant Total	Federal Pell Grant Total	State Need-Based Aid as a Percent of Federal Pell Grant Aid
Connecticut	$39,382,000	$82,847,284	48%
Maine	13,387,000	44,884,410	30
Massachusetts	80,093,000	178,832,502	45
New Hampshire	3,753,000	29,102,132	13
Rhode Island	12,883,000	48,479,050	27
Vermont	18,580,000	19,567,065	95
New England	$168,078,000	$403,712,443	42%
United States	7,043,186,000	12,693,127,982	55

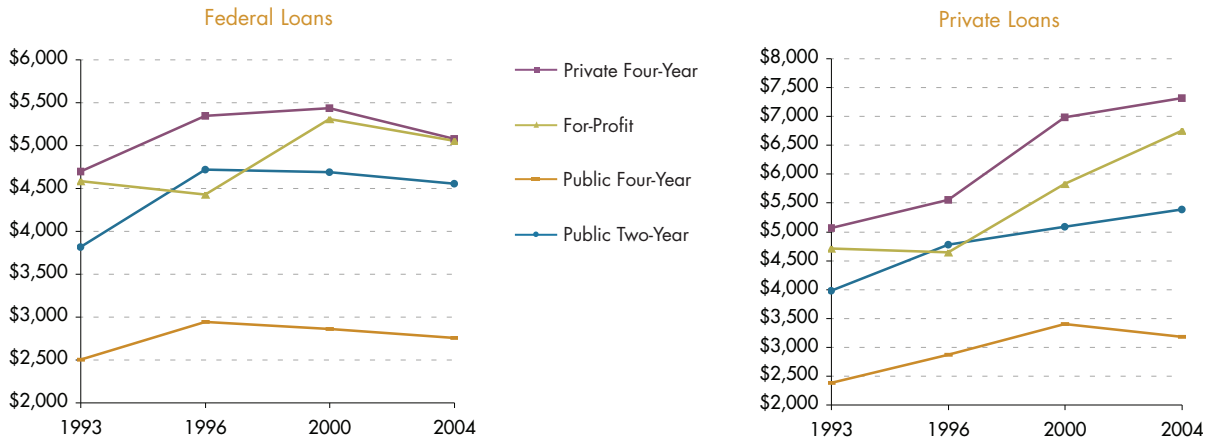
Source: The New England Board of Higher Education analysis of data from National Association of State Student Grant and Aid Programs; www.nassgap.org and U.S. Department of Education data.

Fig. 56: Percent of Family Income Needed to Pay for College by Income Groups, 2006

	% of All Family Income Needed to Pay	% Lowest Income Quintile	% 2nd Income Quintile	% 3rd Income Quintile	% 4th Income Quintile	% Highest Income Quintile
Connecticut						
Public Two-Year	25%	66%	26%	16%	11%	7%
Public Four-Year	33	85	34	21	14	9
Private Four-Year	76	208	78	45	30	19
Maine						
Public Two-Year	30	73	34	21	14	9
Public Four-Year	36	86	40	27	18	11
Private Four-Year	78	205	85	49	32	21
Massachusetts						
Public Two-Year	25	64	27	16	11	6
Public Four-Year	34	88	37	23	15	9
Private Four-Year	83	225	89	50	32	19
New Hampshire						
Public Two-Year	28	70	31	20	14	8
Public Four-Year	32	79	35	23	16	10
Private Four-Year	60	152	65	39	27	17
Rhode Island						
Public Two-Year	30	77	32	20	13	8
Public Four-Year	39	98	41	26	17	10
Private Four-Year	85	227	91	53	34	22
Vermont						
Public Two-Year	31	74	34	22	15	9
Public Four-Year	41	98	45	30	20	12
Private Four-Year	65	166	71	42	28	18
United States						
Public Two-Year	24	58	27	17	11	7
Public Four-Year	31	73	34	23	15	9
Private Four-Year	72%	183%	78%	47%	31%	18%

Source: The National Center for Higher Education Management Systems (NCHEMS); www.higheredinfo.org.

Fig. 57: Average Amounts of Federal and Private Loans Borrowed by Full-Time Dependent Undergraduate Students, 1993 to 2004



Source: New England Board of Higher Education analysis of College Board data; www.collegeboard.org

Fig. 58: Average Student Debt and Percent of Students with Debt by State, Class of 2006

	Average Debt				Percent of Students with Debt		
	2006	2005	1-Year Change in Debt	U.S. Rank 2006	2006	2005	U.S. Rank 2006
Connecticut	$23,469	$21,402	$2,067	4th	58%	59%	24th
Maine	22,877	21,900	977	7th	72	71	3rd
Massachusetts	19,018	17,721	1,297	26th	60	59	20th
New Hampshire	24,800	22,789	2,011	2nd	71	71	5th
Rhode Island	21,577	23,616	-2,039	NA	52	51	NA
Vermont	23,839	19,660	4,179	3rd	66	66	10th
United States	$19,646	$18,259	$1,387		58%	58%	

Source: New England Board of Higher Education analysis of data from The Project on Student Debt; www.projectstudentdebt.org.

Fig. 59: New England's Ten Largest College Endowments, Fiscal 2007

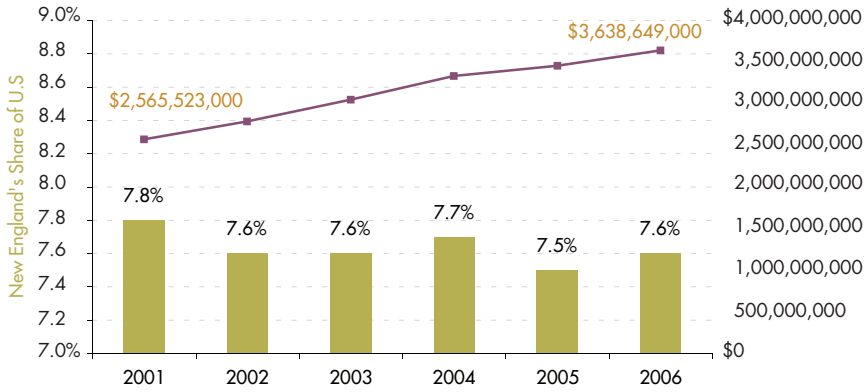
U.S. Rank	New England Rank	Institution	Market Value at End of Fiscal 2007	% Change from Fiscal 2006
1st	1st	Harvard University	$34,634,906,000	20%
2nd	2nd	Yale University	22,530,200,000	25
6th	3rd	Massachusetts Institute of Technology	9,980,410,000	19
21st	4th	Dartmouth College	3,760,234,000	22
26th	5th	Brown University	2,780,798,000	21
33rd	6th	Williams College	1,892,055,000	29
41st	7th	Boston College	1,670,092,000	15
42nd	8th	Amherst College	1,662,377,000	24
43rd	9th	Wellesley College	1,656,565,000	17
49th	10th	Tufts University	1,452,058,000	26%

Source: New England Board of Higher Education analysis of 2007 National Association of College and University Business Officers data; www.nacubo.org.

UNIVERSITY RESEARCH

New England universities performed $3.6 billion worth of research and development in 2006 and the region's share of all U.S. university R&D was level with 2004 at 7.6 percent—the region might never re-capture the 10 percent share of the mid-1980s.

Fig. 60: Research and Development Expenditures at New England's Universities and Colleges and New England's Share of U.S. R&D Expenditures, 2001 to 2006



Source: New England Board of Higher Education analysis of National Science Foundation data; www.nsf.gov.

Fig. 61: Regional Comparison of Research and Development Expenditures at Universities and Colleges, 2001 and 2006

				Per-Capita Expenditures		Per-Captia U.S. Rank	
	2001	2006	5-Year % Change	2001	2006	2001	2006
East North Central	4,699,000,000	6,795,803,000	45%	$103.4	$146.9	7th	6th
East South Central	1,435,812,000	2,193,224,000	53	83.8	123.5	9th	9th
Middle Atlantic	4,797,558,000	7,076,417,000	48	120.2	174.8	3rd	2nd
Mountain	2,033,640,000	2,992,233,000	47	108.9	143.5	6th	7th
New England	*2,565,523,000*	*3,638,649,000*	*42*	*182.5*	*255.0*	*1st*	*1st*
Pacific	5,775,719,000	8,458,928,000	46	125.9	174.4	2nd	3rd
South Atlantic	6,126,987,000	9,108,654,000	49	116.1	159.4	4th	4th
West North Central	2,214,989,000	3,024,145,000	37	114.3	151.6	5th	5th
West South Central	3,085,849,000	4,345,254,000	41	96.5	127.1	8th	8th
United States	32,811,229,000	47,760,402,000	46%	$115.0	$159.5		

Source: New England Board of Higher Education analysis of National Science Foundation data; www.nsf.gov.

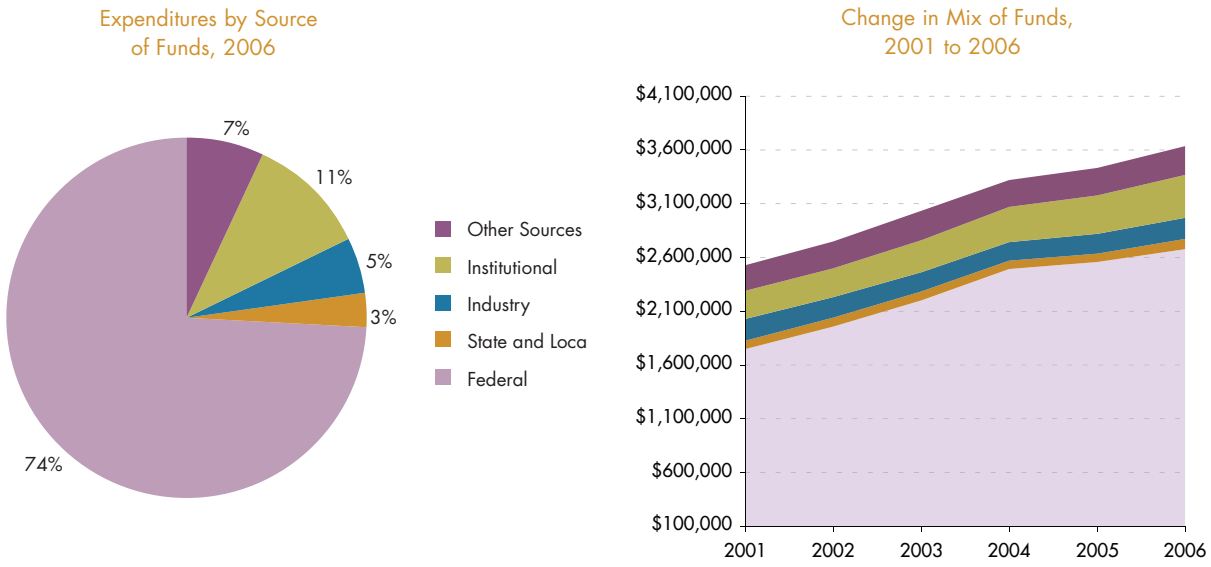
Fig. 62: Research and Development Expenditures at New England Universities and Colleges by Field, 2006

	Engineering	Physical Sciences	Environmental Sciences	Math and Computer Sciences
Connecticut	32,702,000	34,849,000	14,252,000	11,329,000
Maine	14,944,000	5,774,000	23,006,000	2,511,000
Massachusetts	382,945,000	261,201,000	191,482,000	100,654,000
New Hampshire	43,774,000	11,202,000	56,986,000	6,537,000
Rhode Island	26,722,000	14,297,000	34,620,000	17,860,000
Vermont	2,265,000	1,372,000	539,000	1,388,000
New England	503,352,000	328,695,000	320,885,000	140,279,000
United States	7,076,182,000	3,823,362,000	2,601,993,000	1,967,831,000
New England as a % of U.S.	7%	9%	12%	7%

	Life Sciences	Psychology	Social Sciences	Other Sciences	Total
Connecticut	562,523,000	24,107,000	12,300,000	462,000	692,524,000
Maine	45,887,000	1,542,000	21,334,000	5,040,000	120,038,000
Massachusetts	1,057,381,000	38,425,000	81,447,000	45,213,000	2,158,748,000
New Hampshire	164,545,000	8,048,000	5,756,000	18,546,000	315,394,000
Rhode Island	107,015,000	4,632,000	12,972,000	11,986,000	230,104,000
Vermont	107,137,000	1,770,000	288,000	7,082,000	121,841,000
New England	2,044,488,000	78,524,000	134,097,000	88,329,000	3,638,649,000
United States	28,831,208,000	874,831,000	1,703,365,000	881,630,000	47,760,402,000
New England as a % of U.S.	7%	9%	8%	10%	8%

Source: New England Board of Higher Education analysis of National Science Foundation data; www.nsf.gov.

Fig. 63: Research and Development Expenditures at New England Universities and Colleges by Source of Funds, 2001 to 2006



Source: New England Board of Higher Education analysis of National Science Foundation data; www.nsf.gov.

Fig. 64: Research and Development Expenditures at New England Colleges and Universities by U.S. Rank and Source of Funds, 2006

Rank	Institution	All R&D Expenditures	Federal Government	State and Local Government	Industry	Institutional Funds	All Other Sources
14th	Massachusetts Institute of Technology	$600,748,000	$476,362,000	$681,000	$75,790,000	$10,576,000	$37,339,000
27th	Yale University	460,075,000	348,500,000	867,000	16,664,000	29,828,000	64,216,000
29th	Harvard University	453,156,000	403,458,000	915,000	6,155,000	0	42,628,000
66th	Boston University	255,615,000	238,560,000	534,000	7,344,000	0	9,177,000
78th	University of Connecticut (all campuses)	215,184,000	124,837,000	7,180,000	7,096,000	62,034,000	14,037,000
82nd	Dartmouth College	200,277,000	140,430,000	4,593,000	4,543,000	37,092,000	13,619,000
85th	University of Massachusetts Worcester	191,659,000	136,141,000	35,242,000	9,465,000	2,377,000	8,434,000
100th	Brown University	157,926,000	96,922,000	130,000	11,766,000	47,746,000	1,362,000
107th	University of Massachusetts Amherst	136,057,000	69,642,000	5,684,000	5,934,000	45,773,000	9,024,000
109th	Tufts University	128,965,000	95,964,000	848,000	8,161,000	8,836,000	15,156,000
115th	Woods Hole Oceanographic Institution	121,888,000	101,631,000	117,000	881,000	12,528,000	6,731,000
116th	University of Vermont	121,841,000	82,519,000	5,679,000	7,874,000	18,806,000	6,963,000
118th	University of New Hampshire	115,117,000	86,416,000	4,832,000	5,818,000	14,602,000	3,449,000
133rd	University of Maine	93,153,000	41,394,000	6,133,000	3,469,000	39,269,000	2,888,000
145th	University of Rhode Island	70,696,000	46,898,000	7,891,000	3,865,000	12,042,000	0
150th	Northeastern University	66,495,000	36,071,000	1,428,000	9,595,000	19,401,000	0
159th	Brandeis University	57,017,000	41,184,000	31,000	0	5,835,000	9,967,000
185th	Boston College	35,659,000	18,344,000	251,000	861,000	6,803,000	9,400,000
Total, Above New England Institutions		$3,481,528,000	$2,585,273,000	$83,036,000	$185,281,000	$373,548,000	$254,390,000
Total, All U.S. Institutions		47,760,402,000	30,033,156,000	3,016,240,000	2,427,627,000	9,062,058,000	3,221,321,000
Above New England Institutions as % of U.S. Total		7.3%	8.6%	2.8%	7.6%	4.1%	7.9%

Source: New England Board of Higher Education analysis of National Science Foundation data; www.nsf.gov.

The New England Board of Higher Education gratefully acknowledges the following sponsors whose financial support makes our programs, events, and *The New England Journal of Higher Education* possible.

Arbella Charitable Foundation ■ Fidelity Investments
Gilbane Building Company ■ Lumina Foundation
Massachusetts Educational Financing Authority (MEFA)
National Science Foundation ■ Nellie Mae Education Foundation
Rhode Island Higher Education Assistance Authority ■ TD Banknorth
TERI (The Education Resources Institute) ■ URS Corporation
Westfield State College ■ XAP Corporation

For more information on NEBHE sponsorship opportunities, please call Amanda Krupkoski at 617.357.9620, ext.105, or email: akrupkoski@nebhe.org.

THE NEW ENGLAND JOURNAL OF HIGHER EDUCATION

New England Board of Higher Education
45 Temple Place, Boston, MA 02111-1305

NEW ENGLAND BOARD OF HIGHER EDUCATION · 1955 ·
MAINE · CONNECTICUT · NEW HAMPSHIRE · MASSACHUSETTS · RHODE ISLAND · VERMONT

Nonprofit
U.S. Postage
PAID
Hanover, NH 03755
Permit No. 91